Courses and Curricula
The following symbols are used in the departmental faculty rosters and course listings:

**Faculty Roster**

- On leave, Fall, Spring
- On leave, Fall
- Recalled to active service

**Course Listings**

Colleges and Schools are presented alphabetically as indicated in the Table of Contents. Following the Colleges and Schools is a list of Special Studies. Departments are treated as subdivisions within Colleges, Schools, and Special Studies. If you are unable to locate the department of your choice, consult the Index.

Prerequisites for courses should be noted carefully, although they are sometimes waived at the discretion of the instructor.

Courses with double numbers (for example, English 1A-1B) are two-semester sequences normally beginning in the Fall Semester. Except as noted, each course in a sequence is normally prerequisite to one following, and a student who has completed 60 units of undergraduate study and is in good academic standing (2.00 grade-point average or better). Exceptions to these rules may be granted by the Committee on Courses of Instruction.

**197. Field study (upper division).** 197 courses are restricted to Passed/Not Passed grading; they are open only to students who have completed 60 units of undergraduate study and are in good academic standing (2.00 grade-point average or better). Exceptions to these rules may be granted by the Committee on Courses of Instruction.

**198. Supervised group study (upper division).** Each section of a 198 course must receive approval by the chair of the department, based upon a written proposal. Only a grade of Passed/Not Passed is to be assigned. The Dean of the student's College or School, on the advice of the instructor, may authorize exceptions to the grading limitation.

**99, 197, 198, 199. Special Studies Courses.** (See limitations listed below.) Effective Fall, 1983, no more than a total of 16 semester units of courses numbered 99, 197, 198, and 199 may be used to meet requirements for the A.B. degree. Exceptions to this rule may be granted by the Committee on Courses of Instruction.

Courses numbered 99, 197, 198, and 199 are restricted to Passed grading; they are open only to students who have completed 60 units of undergraduate study and are in good academic standing (2.00 grade-point average or better). Only a grade of Passed/Not Passed is to be assigned. The Committee on Courses of Instruction may, on the advice of the department, based upon a written proposal, only a grade of Passed/Not Passed is to be assigned. Only a grade of Passed/Not Passed is to be assigned. The Dean of the student's College or School, on the advice of the instructor, may authorize exceptions to the grading limitation.

**601. Special study for graduate students in preparation for the master's examination.**

**602. Special study for graduate students in preparation for the doctoral qualifying examination.**

**Note:** The University offers a number of experimental courses. Information on these courses is contained in this Catalog under (1) the Personalized System of Instruction, presented under Special Studies; (2) some of the Interdepartmental Studies courses, also under Special Studies; and (3) all courses numbered 91, 191, and 291 in departmental course listings throughout this Catalog.
The Undergraduate School of Business Administration

The Undergraduate School of Business Administration admits students at the junior level and offers a curriculum leading to the undergraduate degree of Bachelor of Science in Business Administration. The primary function of the School is to prepare students for responsible positions in administration and management.

Prior to admission to the School, you should obtain an Announcement of the Undergraduate School of Business Administration, available in 310 Barrows Hall. This contains complete information concerning academic qualifications for admission as well as details about important prerequisites and degree requirements. Because there are many more applications than spaces available, completion of the prerequisites does not guarantee admission to the School. As a professional school, we expect students to come to us with strong academic records in their lower division work either at Berkeley or elsewhere, particularly in the courses specified as prerequisites. Requests for advice on programs of study and general information should be addressed to the Office of the School of Business Administration, 310 Barrows Hall, University of California, Berkeley, CA 94720.

Lower Division. Students preparing for admission to the Undergraduate School of Business Administration may complete required lower division courses in any college or school in the University, or at other colleges or schools at other institutions. Counselors in the Undergraduate School of Business Administration will assist lower division students in selecting courses prerequisite to the upper division business administration curriculum. Detailed information on prerequisites is available in the Announcement of the Undergraduate School of Business Administration.

Upper Division. Upper division courses which are required in Business Administration are:

110-Microeconomic Analysis for Business Decisions
111-Macroeconomic Analysis for Business Decisions
120-Management Accounting
150-Organizational Behavior
160-Marketing
170-Social and Political Environment of Business

Beyond these requirements, additional courses within a subject matter field must be taken. Advisers will assist students in the selection of these courses. A minimum of 90 units in upper division business courses is required.

The following subject matter fields are available:
Accounting, Economic Analysis and Policy, Finance, Management Science, Marketing, Organizational Behavior and Industrial Relations, Production Management, Real Estate and Urban and Land Economics.

Graduate School of Business Administration

The Graduate School offers curricula leading to the Master of Business Administration degree and to the Ph.D. degree.

The M.B.A. degree provides advanced and specialized training in a variety of fields of management, research, and decision making. It provides opportunities for placement in executive positions in both public and private institutions. Optimum enrollment in the full-time program is three years by taking from two to three courses per semester. However, most students will find it difficult to maintain this pace and wish to extend their work over a somewhat longer period. The Berkeley M.B.A. program is intended for full-time students and requires a minimum of two years to complete.

Both programs include a set of required core courses, covering basic topics such as accounting, finance, marketing, and organization behavior. Students in the full-time campus program who, prior to admission, have achieved comprehensive grade-point averages in one or more of these areas may be able to waive one or more of these basic courses. Waiver is possible either through equivalent work from prior education at institutions of acceptable standing or through a special examination. With the completion of core courses, the student undertakes a series of elective courses in advanced topics to finish his or her course of study. The course of study includes a course in finance, economic analysis, international business, marketing, management science, organizational behavior and industrial relations, public policy, real estate, and various other area programs.

Where space is available, core and advanced courses are offered. The Berkeley M.B.A. program is open to students from other fields of study on the campus who have satisfied prerequisite requirements. Since available classroom space is often limited, non-business students may not be able to take courses given in a specific semester and must plan far in advance. Students should consult the Associate Dean's office concerning space availability and faculty to venture from their own fields. The advisor in planning to take business school courses.

The Ph.D. program requires students to possess a strong background in a number of fields of business as well as the intensive study of quantitative techniques, decision making, and social science theory. The Ph.D. program is open to students from a number of other Berkeley departments. The Ph.D. program calls for advanced skills in research, most graduate students in business school courses.

Notes: For key to symbols, see Table of Contents.
may be obtained by writing the Graduate School of Business, 350 Barrows Hall, University of California, Berkeley, CA 94720, and specifying the program or programs of particular interest.

### Lower Division Courses

1. **Introduction to Accounting.** (3). Formerly 1. Two hours of lecture and two hours of discussion per week. Semester Prerequisites: Sophomore standing. The identification, measurement, and reporting of the financial effects of economic events on enterprises; the contemporary model and its origins. (F,SP)  

2. **Managerial Accounting for Business Decisions.** (3). Formerly 111. Students will receive no credit for 110 after taking Economics 100A or 101A. Three hours of lecture and one hour of optional discussion per week. Semester Prerequisites: Economics 1, Mathematics 16A-16B and Statistics 21 or equivalents. Economic analysis applicable to the problems of business enterprises with emphasis on the determination of the level of prices, outputs, and inputs; effects of the state of the competitive environment on business and government policies. (F,SP)  

3. **Macroeconomic Analysis for Business Decisions.** (3). Formerly 110. Students will receive no credit for 111 after taking Economics 100A or 101A. Three hours of lecture per week. Semester Prerequisites: 110. Analysis 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)  

4. **Economics of Regulated Industries.** (3). Formerly 112. Three hours of lecture per week. Semester Prerequisites: 110 or equivalent. Survey of industry structures and regulations in the transportation, energy, communications, and financial sectors of the American economy. Application of economic analysis to the administrative aspects of regulated industries including costs, pricing policies, service quality, and other managerial decisions. Analysis of regulatory policies and alternatives to economic regulation, including market competition and public ownership. (F,SP)  

5. **Managerial Economics.** (3). Formerly 113. Three hours of lecture per week. Semester Prerequisites: 110 and 111 or equivalents. Analysis of the theory and practice of decision-making in business firms, utilizing the concepts and techniques of managerial economics. The business firm will be investigated with particular emphasis on pricing policies, internal transfer pricing, and various choices under uncertainty. (F,SP)  

6. **Forecasting for Managerial Decisions.** (3). Formerly 114. Three hours of lecture per week. Semester Prerequisites: 110 and 111 or equivalents. Theory and analysis of methods and short-run forecasts of economic activity. (SP)  

7. **Management in the Public and Not-For-Profit Sectors.** (3). Formerly 115. Three hours of lecture per week. Semester Prerequisites: 110. Economic basis 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 be used in a nonprofit environment. (F)  

8. **Managerial Accounting.** (3). Formerly 120. Two hours of lecture and 2 hours of discussion per week. Semester Prerequisites: 1. The uses of accounting systems and their outputs in the process of management of an enterprise. Classification of costs and revenue on several bases for various uses; budgeting and standard cost accounting; analyses of relevant costs and other data for decision making. (F,SP)  

9. **Financial Accounting I.** (4). Formerly 121. Three hours of lecture and 2 hours of discussion per week. Semester Prerequisites: 1 and 120. An intermediate level course in the theory and practice of financial accounting. Emphasis on the economic effect of events involving working capital and long-term plant assets, investment in securities, intangible assets. (Required for those specializing in accounting.) (F,SP)  

10. **Financial Accounting II.** (4). Formerly 122. Three hours of lecture and 2 hours of discussion per week. Semester Prerequisites: 121. Continuation of 121. Sources of long term capital; funds statements, financial analysis, accounting for partnerships, consolidated financial statements, adjustments of accounting data using price indexes; accounting for the financial effects of pension plans; loan and lease accounting problems. (Required for those specializing in accounting.) (F,SP)  

11. **Cost Accounting.** (3). Formerly 124. Two hours of lecture and one 11/2-hour discussion per week. Semester Prerequisites: 1 and 120. Intensive study of basic cost accumulation systems and refinements thereof used to determine costs of products or activities in various types of enterprises. (SP)  

12. **Administrative Accounting.** (3). Formerly 125. Students will receive no credit for 125 after taking 1 or 120. Three hours of lecture per week. Introduction to the concepts and techniques of managerial economics, planning and controlling the operations of organization of all types. (For students interested in administration or management who are not majors in business administration.) (F,SP)  

13. **Auditing.** (4). Formerly 126. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 121; 122 recommended. Concepts and problems in the field of professional verification of financial and related information, including ethical, legal and other professional issues, historical developments, and current concepts in auditing. (F,SP)  

14. **Accounting Systems for Management.** (4). Formerly 127. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 124 or consent of instructor. The study of accounting systems, including computer-oriented systems, with an emphasis on the information and control functions of the management decision-making process. The COBOL language will be used. (F)  

15. **Federal Income Taxation.** (4). Formerly 128. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 1 and 120.121 recommended. Determination of individual and corporation tax liability; influence of federal taxation on economic activity; tax considerations in business and investment decisions. (F,SP)  

16. **Financial Management.** (4). Formerly 130. Three hours of lecture per week. Semester Prerequisites: 120 and 121 recommended. Analysis and management of the flow of funds through an enterprise. Cash management, source and application of funds, term structure of financial assets and sources of long term capital. Capital budgeting, cost of capital, and financial structure. Introduction to capital markets. (F,SP)  

17. **Money and Capital Markets.** (3). Formerly 132. Three hours of lecture per week. Semester Prerequisites: 111 and 130. Organization, behavior, and management of financial institutions. The operations of financial assets and the structure of yields, influence of Federal Reserve System and monetary policy on financial assets and institutions. (F,SP)  

18. **Investments.** (3). Formerly 133. Three hours of lecture per week. Semester Prerequisites: 130 or consent of instructor. Sources of and demand for investment capital, operations of security markets, determination of investment policy, and procedures for analysis of securities. (F,SP)  

19. **Seminar in Finance.** (3). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 130 or consent of Instructor. A variety of topics in finance. Seminar for honors students in finance with emphasis on current financial problems and research. (F,SP)  

20. **Introduction to Management Science.** (4). Formerly 134. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: Mathematics 16A-16B and Statistics 21 or equivalent. Survey of management science and its applications to business inventory control, quality control, and operations research; linear programming, project management, dynamic programming, inventory control, queueing theory, and simulation. (F,SP)  

21. **Strategic Planning of Production and Operations.** (3). Formerly 141. Three hours of lecture per week. Semester Prerequisites: 140 or consent of instructor. Survey of the strategic issues in production and operations management and methodologies a manager can use to address these issues. Topics include plant design, plant and warehouse location, capacity expansion, R & D, and for new products, and acquisition of new technologies. (F)  

22. **Production and Operations Management.** (3). Formerly 142. Three hours of lecture per week. Semester Prerequisites: 140 or consent of instructor. A survey of the concepts and methodologies for production management of production and operations systems. Topics include the analysis and design of systems and controls of production and operations, and introduction to multistage production systems, aggregate planning, scheduling, and production distribution. (SP)  

23. **Applications of Linear Models to Decision Making.** (4). Formerly 146A. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 140 or consent of instructor. A 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, computers, problem-oriented languages, simulation models, current developments in computer systems. (F,SP)  

24. **Computers and Modern Organizations.** (4). Formerly 147. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 140 and 150 or consent of instructor. A survey of the 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, computers, problem-oriented languages, simulation models, current developments in computer systems. (F,SP)  

25. **Organizational Behavior.** (3). Formerly 150. Three hours of lecture per week. A general descriptive and analytical study of organizations from a behavioral science point of view. Problems of motivation, leadership, morale, social structure, groups, communications, hierarchy, and control in complex organizations are addressed. The interaction of technology, environment, and human behavior are considered. Alternate theoretical models are discussed. (F,SP)  

26. **Management of Human Resources.** (3). Formerly 151. Three hours of lecture per week. Semester Prerequisites: 150 or consent of instructor. The design of systems of rewards, assessment, and manpower development. The interaction of selection, placement, training, personnel evaluation, and career ladders within an on-going organization. Role of the staff manager. Introduction of change. Implications of behavioral research for management problems and policies. (SP)  

27. **Industrial Relations.** (3). Formerly 154. Students will receive credit for both Economics 151 and Business Administration 154. Three hours of lecture per week. An analysis of manual, white collar, and professional employee relations. Background and functioning of unions and labor-management relations. An introduction to labor markets and wage and income security issues. Questions of public policy in labor economics and industrial relations. (F,SP)  

28. **Labor and the Law.** (3). Formerly 155. Three hours of lecture per week. Analysis of the issues arising from administrative and legal efforts to define the rights, duties, and responsibilities of employers and labor relations. Includes programs to deal with racial, ethnic, sex, and age discrimination as well as the law of union-management relations. (F)
156. Collective Bargaining Systems. (3). Formerly 156. Three hours of lecture per week. The nature, institutions, and processes of collective bargaining. Analyses of labor-management issues and their economic and political significance. Comparative analyses of industrial relations systems in major industries, in public employment, and in other countries.

159. Special Topics in Organizational Behavior. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: BA150 or equivalent or consent of instructor. Analysis of recent literature and development related to such topics as organization development, environmental determinants of organization structure and development, behavior; management of professionals and managers in temporary structures; cross cultural studies of management and organization. (F)

160. Marketing. (3). Formerly 160. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: 110 or equivalent. The evolution of markets and marketing; market structure; marketing cost and efficiency; public and private regulation; the development of marketing programs including decisions involving products, price, promotional distribution. (F,SP)

161. Introduction to Marketing Research. (3). New Course since Spring 1983. Two 1½-hour lectures per week. Semester Prerequisites: Marketing research objectives; qualitative research, surveys, experiments, sampling, data analysis. (F,SP)

162. Sales Management. (3). Formerly 165. Two 1½-hour lectures per week. Semester Prerequisites: 160. Analysis of selling function, sales management, and channel management within the firm. (F,SP)

164. Organizational Buying Behavior. (2). Formerly 164. Two 1-hour lectures per week. Semester Prerequisites: 160. The interaction of buyer and seller in a non-ultimate consumer environment. Development of buying behavior; quality and quantity; decision criteria; vendor selection; make-buy-decision; pricing and terms of sale; energy and resource conservation; negotiation. (SP)

165. Advertising. (2). Formerly 163. Two 1-hour lectures per week. Semester Prerequisites: 160. Basic concepts and functions of advertising in the economy; community motivation; problems in utilizing advertising and its effectiveness. (F,SP)

166. Retailing. (3). Formerly 162. Two 1½-hour lectures per week. Semester Prerequisites: 160 or equivalent. History and development of retail management; types, geographical structure of retail trade; assortment of goods and services; store management; government regulations. (SP)

169. Marketing Policies and Problems. (2). Formerly 169. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 160. Consultant in special topic. Special topics in marketing including geographic market structures, consumer behavior, product policy, consumerism, and other topics. (F,SP)

170. Social and Political Environment of Business. (3). Formerly 170. Two 1½-hour lectures per week. Semester Prerequisites: Senior standing. 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 issues, and national priorities. The expanding role of the corporation in dealing with social problems and issues. (F,SP)

171. Business, Government, and Law in the American Political Economy. (3). Formerly 171. Course may be repeated for credit with consent of instructor. Two 1½-hour lectures per week plus one 1½-hour discussion per week. Semester Prerequisites: 175 and/or 170 recommended. In this course, students examine the complex relationships between the "public and private" sectors in the American political economy. Focus is on diverse interactions among governmental institutions, business organizations, and legal processes which provide the framework for both economic and political activity in the U.S. (SP)

172. Business in its Historical Environment. (3). Formerly 172. Two 1½-hour lectures per week. Semester Prerequisites: 170 recommended. 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. (F)

175. Legal Environment of Business. (3). Formerly 175 Two 1½-hour lectures per week. Semester Prerequisites: 170 recommended. An analysis of the law and the legal process, emphasizing the nature and functions of law within the U.S. federal system, followed by a discussion of the legal problems pertaining to contracts and related topics, business association, and the impact of law on economic enterprise. (F,SP)

177. Legal Aspects of Business Transactions. (3). Formerly 177. Two 1½-hour lectures per week. Semester Prerequisites: 175. A review of the legal implications of certain business transactions and situations, including problems arising in sales, installment buying, inventory financing, obtaining and extending credit, negotiable instruments, and insolventy, with emphasis on the Uniform Commercial Code. (SP)

178. Legal Aspects of Real Estate. (3). Formerly 178. Two 1½-hour lectures per week. Semester Prerequisites: 175; 180 recommended. The law affecting ownership and use of real property; transfers, titles, development rights, and the regulation thereof in the public interest. (F,SP)

180. Introduction to Real Estate and Urban Land Economics. (3). Formerly 180. Three hours of lecture per week. The nature of real property; market analysis; construction; cycles; mortgage lending; equity investment; real estate administration; metropolitan growth; land development; land utilization; real property valuation; public policies. (F,SP)

181. Valuation of Real Property. (3). Formerly 181. Three hours of lecture per week. Semester Prerequisites: 180 or equivalent. Critical examination of appraisal concepts and methods; the role of value estimates in private land-use and real estate decisions in the implementation of public policies affecting urban development. (F)

183. The Financial Management of Real Estate Resources. (3). Formerly 183. Three hours of lecture per week. Semester Prerequisites: 180. Real estate debt and equity financing; mortgage market structure; effects of credit on demand; equity investment criteria; public policies in real estate finance and urban development. (SP)

188. Introduction to International Business. (3). Formerly 188. Two 1-hour seminars and one 1½-hour discussion per week. Semester Prerequisites: Senior standing. Introduction to Accounting, Micro and Macro Economic Theory. 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 commercial and strategic analysis of a firm; management problems and development potential of international operations. (F,SP)

190. Strategic Planning: Models and Design. (3). Formerly 190. Three hours of lecture per week. Concepts and strategies for the development of business goals and plans. Several types of planning models and techniques are evaluated for strategic policy choices, organizational design, and the allocation of resources. Not offered 1984-85. (F,SP)

191A. Management Communications. (3). Formerly 191. Three hours of lecture per week. In management communication, the ability to communicate is essential. This course considers the spoken and written word to be important at all levels of responsibility. This course is designed to strengthen that ability by preparing students for the type of writing and speaking that will be expected of them during their business careers.

198. Directed Study. (1-4). Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Consent of instructor.

199. Supervised Independent Study and Research. (1-4). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Consent of instructor. Enrollment is restricted by regulations listed in the Key to Symbols section of the General Catalog. (F,SP)

Graduate Courses

201A. Economic Analysis for Business Decisions I. (3). Formerly 201A. Three hours of lecture and one hour of optional discussion per week. Semester Prerequisites: 204A or equivalent. Economic analysis applicable to the problems of business and operation of the market system; the determination of prices, inputs, and outputs; effects of the state of the competitive environment on business policies. (F,SP)

201B. Economic Analysis for Business Decisions II. (3). Formerly 201B. Three hours of lecture and one hour of optional discussion. Semester Prerequisites: 201A or equivalent. Theories of fiscal and monetary policy and their impact on business and society. Economic analysis is applied to the problems of the market system; the determination of prices, inputs, and outputs; effects of the state of the competitive environment on business policies. (F,SP)

202A. Financial Reporting. (3). Formerly 202A. Four hours of lecture and two hours of discussion per week for 7½ weeks. Mini-course. A study of accounting measurements for general purpose financial reports. The objective of the course is to provide a working knowledge of and clear understanding of the contents of published financial statements. (F)

202B. Managerial Accounting. (3). Formerly 202B. Four hours of lecture and two hours of discussion per week for 7½ weeks. Mini-course. Semester Prerequisites: 202A or equivalent. Management is dependent upon an information system which provides dependable, timely, and relevant information to all decision makers. In this course, information needs of managers are identified and methods developed by which managerial accountants can provide necessary data through appropriate budget, cost, and other information systems. (F,SP)

203. Financial Policies of Business. (3). Formerly 203. Three hours of lecture and one hour optional discussion per week. Semester Prerequisites: 201A, 202A, and 203. The financial policies and business finance involved in determining financial problems and policies of corporations; the role of commercial banks, institutional, and other investors in supplying funds for corporations. (F,SP)

204A. Uses and Limitations of Computers in Business. (2). Formerly 204A. One hour of lecture and one hour laboratory per week. Introduction to computers, elements of information systems, and computer programming for business purposes. Includes basic techniques of language and exercises drawn from business fields. (SP)

204B. Quantitative Models of Business Decisions. (2). Formerly 204B. Three hours of lecture and one 1½-hour discussion per week for 7½ weeks. Mini-course. Semester Prerequisites: 204A or equivalent. An introduction to mathematical models of decision problems. Topics include linear programming, project management, decision analysis, and inventory control. (F)

204C. Data Analysis. (2). Formerly 204C. Three hours of lecture and one 1½-hour discussion per week for 7½ weeks. Mini-course. Semester Prerequisites: 204A or equivalent. An introduction to statistical analysis and its application to the problems of business. Topics include descriptive statistics, estimation, tests of hypothesis, analysis of variance and correlation, and time series analysis. (F)

205. Organizational Behavior. (3). Formerly 205. Three hours of lecture per week. A general descriptive and analytical study of organizations from the behavioral point of view. Problems of leadership, morale, social structure, groups, communications, hierarchy, and control in complex organizations are examined. The interaction among technology, environment, and human behavior is discussed. Alternate theoretical models are considered. (F,SP)

206. Marketing Organization and Management. (3). Formerly 206. Two 1½-hour lectures per week. Semester Prerequisites: 201A or equivalent. Topics include an overview of the marketing system and the marketing Notes: For key to symbols, see Table of Contents.
207. Business and Public Policy. (3). Formerly 207. Two 1 1/2-hour lectures per week. Semester Prerequisites: 201A-201B, 204B-204C, or equivalents. Examine 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 government policies (including taxation) affect output and prices. Why are particular market structures preferred by decision makers of competitive firms also explored. (F)

210. Market Structure and Economic Performance. (3). Formerly 210. Three hours of lecture per week. Semester Prerequisites: 201A-201B, 204B-204C, or equivalents. Efficiency of resource allocation; failure of markets and substitution of hierarchical control; the economic cost of externalities; public goods and public bads (environmental problems). Behavior of firms under regulatory constraints. (SP)

211. Market Failures and Bounds of the Firm. (3). Formerly 211. Three hours of lecture per week. Semester Prerequisites: 201A-201B, 204B-204C, or equivalents. Efficiency in resource allocation; failure of markets and substitution of hierarchical control; the economic cost of externalities; public goods and public bads (environmental problems). Behavior of firms under regulatory constraints. (SP)

212. Managerial Decisions in Regulated Industries. (3). Formerly 212. Three hours of lecture per week. Semester Prerequisites: 201A or equivalent. Introduction to administrative law and the regulatory process; Economic principles of administrative regulation of pricing, investment, and service quality. Analysis of critical problems in regulated industries, including transportation, communication, and financial services, and financial sectors, with emphasis on emerging competition in these industries. Potential regulatory reforms with alternatives to regulation. Not offered 1986-85.

213. Statistical and Econometric Methods for Business. (3). Formerly 213. Three hours of lecture per week. Semester Prerequisites: 201A or equivalent. Multivariate statistics; introduction to econometric techniques and applications. Topics include regression analysis; special problems in regression analysis; simultaneous equations estimation; elements of multi-variate analysis. (SP)

214. Forecasting Methods for Business. (3). Formerly 214. Three hours of lecture per week. Semester Prerequisites: 201A-201B, 204B-204C, or equivalents. The theory and use of statistical and econometric methods with special emphasis on practical applications. Topics include regression analysis; special problems in regression analysis; simultaneous equations estimation; elements of multi-variate analysis. (F,SP)

215. Management in the Public and Not-For-Profit Sectors. (3). Formerly 215. Three hours of lecture per week. Semester Prerequisites: 201A-201B, 204B-204C, or equivalents. Planning-programming-budgeting systems and benefit-cost analysis for resource allocation and planning in the public sector. Efficiency when profit criteria are absent. Applications in natural resources, medical services, transportation, and education. (F)

217. Seminar in Applied Economics. (3). Formerly 219. Three hours of lecture per week. Topics will vary with the faculty. A description of the topics and objectives of the seminar will be available to prospective students each year. (F,SP)

220A. Financial Accounting I. (4). Formerly 220A. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 202A or consent of instructor. This course and the following course intensively examine the theory and practice of financial accounting, including asset and liability measurement, income determination, and financial reporting. It is designed for those students who have had little familiarity with the concepts and methods of financial accounting. (FSP)

220B. Financial Accounting II. (4). Formerly 220B. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 220A or equivalent. Continuation of the study of financial accounting. Special emphasis is given to detailed financial statement analysis and contemporary topics in income measurements such as inflation accounting, leases, pensions, and foreign currency translation. Study of theoretical framework for measurement of assets and liabilities, criteria, elements of financial statements and alternative approaches to their measurement. Current issues in the development of a conceptual framework for financial reporting. (SP)

222. Financial Information Analysis. (2). Formerly 222. Two hours of lecture per week. Semester Prerequisites: 220A or equivalent. 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 financial economics and external reporting issues will be explored. Emphasis will be placed on models that describe the user's decision context. (F)

223A. Doctoral Seminar in Accounting I. (2). Formerly 223A. Two 1 1/2-hour lectures per week for 7 1/2 weeks. Semester Prerequisites: 220A or equivalent, 222C and Economics 201A-201B or equivalent. A critical evaluation of recent accounting literature involving empirical research. (F,SP)

223B. Doctoral Seminar in Accounting II. (3). Formerly 223B. Three hours of lecture per week. Semester Prerequisites: 220A or equivalent, 222C and Economics 201A-201B or equivalent. A critical evaluation of recent accounting literature involving empirical research. (F,SP)

223C. Doctoral Seminar in Accounting III. (3). Formerly 223C. Three hours of lecture per week. Semester Prerequisites: 220A or equivalent, 222C and Economics 201A-201B or equivalent. A critical evaluation of recent accounting literature with emphasis on managerial and behavioral accounting. (SP)

224. Managerial Accounting. (3). Formerly 224. Three hours of lecture per week. Semester Prerequisites: 222 or equivalent. 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)

228A. Income Taxation I. (4). Formerly 228A. Three hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 222 or equivalent. The study of the fundamentals of income taxation relating to individuals and business entities. Students are also introduced to tax research, tax planning, and tax policy. (F,SP)

228B. Income Taxation II. (2). Formerly 228B. Two hours of lecture per week. Semester Prerequisites: 228A or equivalent. The study of corporation tax problems, partnership tax problems, sub-chapter S corporations, estates and礼品 tax, income taxation of estates and trusts. (SP)

228C. Seminar in Income Taxation. (2). Two hours of lecture per week. Semester Prerequisites: 228A or 228B recommended. Tax research, tax planning, and tax policy. (F,SP)

229. Management Planning and Control. (2). Formerly 229. Three hours of lecture per week. Semester Prerequisites: 228A or 228B recommended. All core courses. 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. (F,SP)

230. Theory of Finance. (3). Formerly 230. Three hours of lecture and one 1 1/2-hour discussion per week. Financial decision problems, their structure, solution, and implications, including decision diagrams and dynamic decision models, the representation of preferences, asset composition models, and the structure of asset prices. (F,SP)

231. Project and Security Valuation. (2). Formerly 231. Two hours of lecture per week. Semester Prerequisites: 203 or equivalent. Estimation of financial flows; valuation of risky projects, decision on valuation of financing mechanisms, inflation, and taxes. Traditional security analysis and capital budgeting models and techniques. (SP)


233. Securities Markets and Investment Policies. (2). Formerly 233. Two hours of lecture per week. Semester Prerequisites: 231. Normative issues in financial institutions, regulation of financial institutions, the analysis of money and capital markets, and empirical studies on financial institutions and financial markets. Topics to be covered vary. (SP)

234. Corporate Financial Management. (2). Formerly 234. Two hours of lecture per week. Semester Prerequisites: 230. Valuation of the firm; financial policies of firms, including asset acquisition and replacement, capital structure, dividends, working capital, and mergers. Development of theory and application to financial management decisions. (F,SP)

235. Advanced Topics in Financial Institutions and Financial Markets. (2). Formerly 235. May be repeated for credit. Two hours of lecture per week. Semester Prerequisites: 233. Normative issues in financial institutions, regulation of financial institutions, the analysis of money and capital markets, and empirical studies on financial institutions and financial markets. Topics to be covered vary. (SP)

236. Advanced Topics in Securities Markets and Investment Policies. (2). Formerly 236. May be repeated for credit. Two hours of lecture per week. Semester Prerequisites: 233. Recent development in financial economics, including the theory of intertemporal choice under certainty or uncertainty, portfolio optimization, asset market equilibrium, valuation of uncertainty, problems in information, financial econometrics, and empirical verification of financial models. (F,SP)

238A-238B-238C. Doctoral Seminar in Finance. (2,3,3). Formerly 238A-238B-238C. Course may be repeated for credit. 238A, B, C for 7 1/2 weeks. 238B-238C. Three hours of lecture per week. Semester Prerequisites: 230 and 292C or other introduction to decision theory; Economics 201A-201B or equivalent. Recent development in financial economics, including the theory of intertemporal choice under certainty or uncertainty, portfolio optimization, asset market equilibrium, valuation of uncertainty, problems in information, financial econometrics, and empirical verification of financial models. (F,SP)

240. Introduction to Management Science. (3). Formerly 240. Two hours of lecture and one 1 1/2-hour discussion per week. Semester Prerequisites: 204A, 204B, and 204C, or equivalents. Survey of management science as a tool for application to business. Techniques covered are matrix algebra, linear programming, quadratic programming, queueing theory, Markov chains, and dynamic programming. (F,SP)
241. Strategic Planning of Production and Operations. (2). Formerly 241. Two hours of lecture per week. Semester Prerequisites: 240 or 245A-245B. Strategic issues involved in planning the production and logistics of a firm and models of those functions that are useful for the manager. Topics include models of a firm's capacity expansion, facility location, and technology selection decisions; learning curve strategies; and industry cost models. (F) SP

242B. Production and Operations Management. (1). Formerly 242B. Two hours of lecture per week for 7 1/2 weeks. Semester Prerequisites: 240 or 245A-245B. Managers of business, commercial, and government operations are responsible for producing and distributing goods and services in an efficient manner. The manager faces constraints and uncertainties with regard to both availability of resources and demands for products. Decision making in this context will be discussed. (SP)

243. Decision Analysis. (2). Formerly 243. Two hours of lecture per week. Semester Prerequisites: 204A, 204B, or 204C or equivalents. Focus is on how an inventory and management system can ensure that items are available when and where they are needed and that the total cost associated with the system is kept to a minimum. (SP)

245A. Applied Optimization in Management Science. (1). Formerly 245A. Two hours of lecture per week for 7 1/2 weeks. Semester Prerequisites: 240 or 245A-245B. Application of optimization methods to various types of planning and decision problems encountered relatively frequently in the practice of management science. Includes linear programming, matrix methods, and large-scale problems; applications of mathematical programming with other than linear forms. (SP)

245B. Discrete Programming Models. (1). Formerly 245B. Two hours of lecture per week for 7 1/2 weeks. Semester Prerequisites: 245A or consent of instructor. A survey of mathematical models of bargaining, bidding, and negotiations. This course will focus on the interplay among the decisions of several decision makers, each with different goals and different information. Examples in oil leasing, contract bidding, and labor negotiations. (SP)

246. Advanced Topics in Management Science. (2). Formerly 246. May be repeated for credit. Two hours of lecture per week. Semester Prerequisites: Consent of instructor. This course will focus on a particular topic in management science and its application to decision making. The chosen topic will vary, with likely candidates being integer programming models, network models, stochastic programming, Markov decision models, continuous-probabilistic models, and management information systems. Not offered 1984-85. (F)

247. Simulation for Business Decisions. (2). Formerly 247. Two hours of lecture per week. Semester Prerequisites: 204A, 204B, and 204C, or equivalents. Use of computer modeling in business decision making contexts. Techniques of simulation models; simulation languages, data structures, techniques, and interpretation of results. Course involves hands-on modeling via simulation projects, as well as technique-oriented lectures. (SP)

248. Management Information Systems. (3). Formerly 248. Three hours of lecture per week. Semester Prerequisites: 204A, 204B, and 204C, or equivalents. The organization, retention, analysis, and display of information used to support business decision making. Discussion of the technological and human implications involved in designing management information systems. (F,SP)

249. Research Topics in Management Science. (2). Formerly 249. May be repeated for credit. Formerly 241. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. A Ph.D. level seminar focusing on current examples from the literature of management science as well as current developments in the field. (F,SP)

250. Organization Diagnosis and Change. (3). Three hours of lecture per week. Semester Prerequisites: 205. Course examines current models of strategy, structure, and organization in an attempt to develop useful organizational structures. Emphasis is on how the role of the organization is changing, and the implications of these changes for the development of strategies and organizations. (F,SP)

251. Human Resources Management. (3). Formerly 251. Three hours of lecture per week. Semester Prerequisites: 245A or consent of instructor. Study of the problems and techniques associated with managing the personnel function. Topics include the processes of recruitment, selection, placement, training, and evaluation of personnel. The role of the human resource manager is considered, with special emphasis on policies and procedures of interest to the human resource manager. (F)

252. Labor-Management Relations in the Public and Non-Profit Sectors. (3). Formerly 252. Three hours of lecture per week. Analyzes issues created by the expansion of collective bargaining in public and non-profit sectors. Examples: selection of bargaining agents, representation units, bargaining topics and procedures, and conflict resolution. Approach is comparative in terms of jurisdiction, federal, state, local; and by industry, e.g., in education, health, and transit. Includes a simulated bargaining project. (SP)

255. Employment and Pay Policy. (3). Formerly 255. Three hours of lecture per week. Employment discrimination, and unemployment. Analyses of wage and salary administration and labor market behavior of organizational groups: production and clerical workers, managers, and professional workers. Problems of wage and income policies of the firm, union, and the national economy. (F)

256. Collective Bargaining. (3). Formerly 256. Three hours of lecture per week. Studies of the bargaining process; the role of the union; collective bargaining; administration of collective agreements, including contract negotiation and arbitration of grievances; processes of disputes settlement; comparative international systems. Includes a simulated bargaining project. (F)

257. Human Behavior in Organizations. (3). Formerly 257. Three hours of lecture per week. Semester Prerequisites: 205 or equivalent, or consent of instructor. A study of the social and psychological factors affecting human behavior and performance in work places. Topics include motivation, job design, leadership, human information processing, social influence, and intra- and inter-group dynamics. (F)

258. Technology, Organization, and Environment. (3). Formerly 258. Three hours of lecture per week. Semester Prerequisites: 205 or equivalent, or consent of instructor. A consideration of the various ways environment and technological factors impinge upon the structure and management of organizations. Subjects include organization growth, structure, control systems, professionalism, and reactions to change and uncertainty. (SP)

259A. Special Topics in Organizational Behavior and Industrial Relations. (3). Formerly 259A. May be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 205 or equivalent, or consent of instructor. Examines current models of organization development and environmental determinants of organization structure and decision-making behavior; management of professionals, and management in temporary structures. Cross-cultural studies of management organizations, and industrial relation systems and practices are examined. (F)

259B. Special Topics in Organizational Behavior and Industrial Relations. (3). Formerly 259B. May be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 205 or equivalent. Analysis of recent literature and developments related to such topics as organization development; environmental determinants of organization structure and decision-making behavior; management of professionals, and management in temporary structures; cross-cultural studies of management organizations, and industrial relation systems and practices are examined. (F)

260. Consumer Behavior. (2). Formerly 260. One 2-hour lecture per week. Semester Prerequisites: 205 or equivalent. Examines concepts and theories from behavioral science useful for the understanding and prediction of market behavior and demand analysis. Emphasizes applications to the development of marketing policy planning and strategy and to various decision areas within marketing. (F)

261A. Introduction to Marketing Research. (2). Formerly 261A. Two 1 1/2-hour lectures and one 1 1/2-hour laboratory per week for 7 1/2 weeks. Semester Prerequisites: 202A, 202B, or 202C or equivalent. Development of the marketing research purpose and objectives. Survey of marketing research approaches, including qualitative, survey, and experimentation. Very suitable and useful for students not emphasizing marketing. (F)

261B. Analysis for Marketing Research. (2). Formerly 261B. Two 1 1/2-hour lectures and one 1 1/2-hour laboratory per week for 7 1/2 weeks. Semester Prerequisites: 202A or 202B or 202C or equivalent. A continuation of 261A designed for those interested in utilizing intensively with data preparation and analysis. (F,SP)

262. Marketing Management. (2). Formerly 262. One 2-hour lecture per week. Semester Prerequisites: 202A, 202B, 202C, or equivalent. The development of the marketing program is presented including policies regarding products, prices, distribution and promotion. There is a heavy use of case analysis. Course is primarily for those planning to take one or two marketing courses. (SP)

263. Product and Price Management. (2). One 2-hour lecture per week. Semester Prerequisites: 202B, 202C, or 202D or equivalent. Analysis of methods of new product development and management, and pricing tactics in a variety of settings for both new and mature products. Not offered 1984-85. (SP)


265. Advertising Management. (2). Formerly 265. One 2-hour lecture per week. Semester Prerequisites: 206, 206A, or 206B or equivalent. A specialized course in advertising, focusing on management and decision-making. Topics include objective setting, decision making, marketing strategy, 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. (SP)

266. Retailing. (2). Formerly 266. One 2-hour lecture per week. Semester Prerequisites: 202A, 202B, or 202C or equivalent. The course examines the retailer's role in the distribution system, site selection, the buying function, pricing, store layout, and store management. (F)


Notes: For key to symbols, see Table of Contents.
business strategies. Primarily for those planning on taking one or two marketing courses. (F)

268. Seminar in Marketing Management. (2). Formerly 269. May be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 201A or 201B, or equivalent. Advanced selected topics in marketing. Intended principally for MBA students. Topics will vary from year to year. Not offered 1984-85. (F)

269A. Seminar in Marketing: Buyer Behavior. (2). Formerly 269A. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (F,SP)

269B. Seminar in Marketing: Decision Models. (2). Formerly 269B. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (SP)

269C. Seminar in Marketing: Social Environment and Public Policy. (2). Formerly 269C. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (SP)

269D. Seminar in Marketing: Marketing Systems. (3). Formerly 269D. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Advanced topics seminar intended principally for Ph.D. students but open to advanced MBA students. (SP)

270. Seminar on the Modern Corporation. (2). Formerly 270. One 2-hour seminar per week. Semester Prerequisites: 207 or equivalent. Will consider in depth one or two of the major issues arising out of the role of the large corporation in modern society. Topics have included social policy and responsibility, implications of social change for the corporation, proposals for reform of corporate governance, and interactions between private economic institutions and the social, political, and legal systems. (F)

271. Seminar on the Interaction of Business and Government. (2). Formerly 271. One 2-hour seminar per week. Semester Prerequisites: 207 or equivalent, or consent of instructor. There exists considerable diversity of opinion among observers of American society concerning the relationship between business and government in the United States. In this seminar, students examine the diverse and complex relationships between the “public” and “private” sectors by focusing on a variety of interactions between the government and business in this country, including: economic planning; resource allocation; stabilization of the economy; purchasing of goods and services; regulation(F)

272. Seminar in Business and Public Policy. (2). Formerly 272. One 2-hour seminar per week. Semester Prerequisites: 207 or equivalent, or consent of instructor. Students in this seminar undertake a comparative analysis of a selected number of advanced capitalist economic systems. The primary objective is to develop an understanding of the diverse historical, political, and cultural factors that underlie the contemporary political, social, and legal environment of the corporate enterprise. (SP)

275. Legal Aspects of Management and the Market System. (2). Formerly 275. One 2-hour seminar per week. Semester Prerequisites: 201A and 207, or equivalents. A managerial approach to important legal issues confronting business and a study of the public policy process as it affects the firm is presented. The focus is on those aspects of law which affect managers directly and which are of current topical importance, including contracts and corporations in perspective, securities law, management of international activities, and the impact of law on the market system. (SP)

280. Real Estate and Urban Land Economics. (3). Formerly 280. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Intensive review of literature in the theory of land utilization, urban growth, and real estate market behavior; property rights and valuation; residential and non-residential markets; construction; debt and equity financing; public controls and policies. (F,SP)

282. Seminar in Urban Economic Resource Policy. (3). Formerly 282. May be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: The interaction of the private and public sectors in urban development; modeling the urban economy; analyses of specific areas; selected policy issues: housing, transportation, financing, local government, urban redevelopment and neighborhood change are examined. (F)

284. Seminar in Real Estate Investment Analysis. (3). Formerly 284. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: 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 investment, valuation, and zoning. (SP)

285. Applied International Economics. (3). Formerly 285. Two 1 1/2-hour lectures per week. Semester Prerequisites: 201A and 201B, or equivalents. Analysis and review of international economic theory applied to multinationals business problems. In the study of international trade theory, the effect of tariffs and customs unions, economic development, direct foreign investment, and a comprehensive view of the changing international environment are analyzed. Students will be required to write a term paper. (F,SP)

286. International Operations Management. (2). Formerly 286. One 2-hour seminar per week. Semester Prerequisites: All core courses or equivalents. A summary of management of international operations, including strategic planning, organization, accounting, tax planning, financial management, and especially marketing, supplemented with cases. Assumes a course in international economics. (F,SP)

287. International Financial Management. (2. Formerly 287. One 2-hour seminar per week. Semester Prerequisites: 230 or 203 and 285, or their equivalents. The financial problems facing an internationally-oriented corporation. Topics include: the international financial system, foreign exchange markets, international sources of funds, foreign equity markets, direct foreign investment, capital budgeting for multinationals, international cash management, managing foreign exchange rate exposure, international investment portfolio allocation, accounting for multinational business, international taxation, international financial paradigms. (F,SP)

288. Survey of International Business. (3). Students may not receive credit for 288 and 285 or 286. Two 1 1/2-hour lectures per week. Semester Prerequisites: All core courses or equivalents. The seminar will be aimed at management problems unique to international operations including strategic planning, organization, accounting, tax planning, financial management, and especially marketing, supplemented with cases. (F)

289. Seminar in International Business. (3). Formerly 289. May be repeated for credit. Two 1 1/2-hour lectures per week. Semester Prerequisites: Consent of instructor. Seminar techniques will be applied to highly topical subjects in the international business field. The subject of the seminar varies from semester to semester. (SP)

290. Strategic Planning: Models and Decisions. (3). Formerly 290. Three hours of lecture per week. Concepts of strategy and planning are developed. Several major types of planning models and techniques are evaluated for strategic policy choices, organizational design, and the allocation of resources. (SP)

292A. Research and Theory in Business Administration. (1). Formerly 292A and 292D. Must be taken on a satisfactory/unsatisfactory basis. One 1 1/2-hour seminar per week. Semester Prerequisites: Ph.D. student in Business Administration. A seminar designed to introduce the Ph.D. student to the faculty of the School of Business Administration and to the research they are conducting in the various fields of management. (F)

292B. Research and Theory in Business Administration. (3). Formerly 292B. Three hours of lecture per week. Semester Prerequisites: Ph.D. student or consent of instructor; previous work in statistics and probability theory. The focus is on defining a research problem, designing and executing specialized techniques to solve the problem. Topics will include concepts of causality, variance, experimental design, survey research, observation, and the use of different multivariate statistical techniques. (F)

292C. Research and Theory in Business Administration. (3). Formerly 292C. Three hours of lecture per week. Semester Prerequisites: Ph.D. student or consent of instructor. The focus is on the formulation of normative models of individual and group decision-making under conditions of risk and uncertainty. Topics to be covered include decision theory, limits to rationality, the design of organizations, game theory, and models of social organization reflecting elements of conflict and cooperation. (SP)

293. Individually Supervised Study for Graduate Students. (1-5). Formerly 293. May be repeated for credit. Semester Prerequisites: Graduate standing. 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)

294A. Seminar in Business Policy. (2). Formerly 294A. Two hours of lecture per week. Case problems presented by senior company executives covering organizational planning, policy formulation, policy communication, and management. (F)

294B. Philosophy of Systems Management. (3). Formerly 294B. May be repeated for credit. Two hours of lecture and 1 1/2 hours of discussion per week. The concept of a management philosophy as a social systems improvement by means of management science, operations research, planning, etc. An emphasis is placed on the basic philosophical issues involved in the evaluation of system performance. (SP)

295. Entrepreneurship and Business Development. (3). Formerly 295. Three hours of lecture per week. Semester Prerequisites: All core courses or equivalents. Guest lecturers discuss various aspects of starting, operating, and expanding the owner-managed business. May be repeated for credit. (SP)

299. Individual Research in Business Problems. (1-5). Formerly 299. May be repeated for credit. Semester Prerequisites: Graduate standing. An analysis of important issues in the respective subject areas. Intensive work in preparing and presenting the results of these analyses, with special attention to methods of inquiry applicable to the various subject areas for Ph.D. specialization. (F,SP)

299. Individual Research in Business Problems. (1-5). Formerly 299. May be repeated for credit. Semester Prerequisites: Graduate standing. An analysis of important issues in the respective subject areas. Intensive work in preparing and presenting the results of these analyses, with special attention to methods of inquiry applicable to the various subject areas for Ph.D. specialization. (F,SP)

601. Individual Study for Master's Students. (1-5). Formerly 601. May not be used to meet either unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing. Individual study for comprehensive requirements in consultation with field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-7). Formerly 602. May not be used to satisfy unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing. Individuals study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. (F,SP)
The requirements for the B.S. degree are: A total of 120 semester units; Mathematics 1A, 1B, 50A, 50B, Physics 7A, 7B, 7C, Chemistry 1A, 1B (or 4A, 4B), 1C, 1D, 2A, 2B, 110A, 110B, 125; Chemical Engineering 140, 141, 142, 150A, 150B, 152, 154, 160, 165, and 6 units of elective courses in chemical engineering. Fifteen units of additional technical courses must be taken in fields which must be from courses in the College of Engineering, with approval of the student's adviser. These 15 technical units may be among those used for satisfying special requirements of the Interdisciplinary Options. An option program is selected. Satisfaction of the American history and government, English, foreign language, and social sciences requirement. Fifteen units in English composition, humanities, and social science, chosen from a list provided by the College of Chemistry.

Interdisciplinary Options. Students can select their courses in the chemical engineering electives, the advanced technical electives, and some of the College of Engineering units so as to explore several scientific fields, or so that they supplement one another and provide an in-depth study of a single field and its relation to chemical engineering. The options now available for the in-depth alternative are chemistry; applied physics; systems analysis and applied mathematics; technology and society; business organization and enterprise; and science education. Further information is available from the Department of Chemical Engineering.

Double Major Programs with the College of Engineering. In addition to the interdisciplinary options described above, two major curricula involving the Colleges of Engineering and Chemistry are offered. These are: (1) Chemical Engineering/Materials Science and Engineering; (2) Chemical Engineering/Nuclear Engineering. These curricula include the core courses in both departments and require slightly more units than the single major degree in chemical engineering. Details on these curricula can be found in the Announcements of the College of Chemistry and the College of Engineering.

Graduate Programs
Students interested in graduate study are invited to write to the Department of Chemical Engineering for information.

Lower Division Courses
40. Modern Chemical Technology. (2). Formerly 40. Two hours lecture, one hour discussion per week. Semester Prerequisites: Chemistry 1A. Application of chemical science and engineering to significant problems. Case studies illustrate the roles of research, development, design, and production. (SP) Not offered 1984-85.

Upper Division Courses
140. Introduction to Chemical Process Analysis. (3). Formerly 140. Three 1-hour lectures and one hour of discussion per week. Semester Prerequisites: Chemistry 1A. Introduction to chemical and material and energy balances applied to chemical process systems. Determination of thermodynamic properties needed for such calculations. Sources of data. Calculation procedures. (FSP)

141. Chemical Engineering Thermodynamics. (3). Formerly 141A. Three hours lecture, one hour discussion per week. Semester Prerequisites: 140 with grade C- or higher. Quarter Prerequisites: 140 with grade of C- or higher. Chemistry 14. Thermodynamic behavior of pure substances and mixtures. Properties of solutions, phase equilibria. Thermodynamic cycles. Chemical equilibria for homogeneous and heterogeneous systems. (FSP)

142. Chemical Kinetics and Reaction Engineering. (3). Formerly 142. Four hours lecture and one hour of discussion per week. Semester Prerequisites: 141; Math 50A. Quarter Prerequisites: 141A; Math 51C or 50A desirable. Analysis and prediction of rates of chemical conversion in flow and nonflow processes. (FSP)

150A. Transport Processes. (3). Formerly 150. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 140 with grade of C- or higher. Principles of fluid mechanics and heat transfer with application to chemical processes. Fluids in ducts, in laminar and turbulent flow, in ducts, in tubes, in porous media, heat transfer and radiation; heat-transfer coefficients. (FSP)

150B. Transport Processes. (3). Formerly 153. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 150A with grade of C- or higher. Quarter Prerequisites: 150A and Mechanical Engineering 109A. Principles of heat and mass transfer with application to chemical processes. Diffusion, convective heat and mass transfer, transfer in boundary layers, analogies. Interphase transfer. Heat- and mass-transfer coefficients; correlations. (FSP)

152. Separation Processes. (3). Formerly 152. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 141; 150B which should be taken concurrently. Quarter Prerequisites: 141A and 153. Principles of equilibrium and transport-controlled separation. Design of staged and continuous separation processes including distillation, absorption, stripping, and extraction. Processes involving simultaneous heat and mass transfer including humidification and drying. (FSP)

154. Chemical Engineering Laboratory. (3). Formerly 151A-151B. Two 4-hour laboratory periods per week. Semester Prerequisites: 150B; 152; 185 or demonstration of competence by exam. Quarter Prerequisites: 140; 150 with grade of C- or higher; 185 or demonstration of competence by exam; 142; 152; 153. Experiments in physical measurements, fluid mechanics, heat and mass transfer, kinetics, and separation processes. Emphasis on investigation of theoretical relationships important in engineering. Experimental design, analysis of results, and preparation of engineering reports are stressed. (FSP)

160. Chemical Process Design. (3). Formerly 160. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 150A; 152; 153. Design principles of chemical process equipment. Design of integrated chemical process equipment with emphasis upon economic considerations. (FSP)

170. Introduction to Biochemical Engineering. (2). Formerly 170. Two hours lecture per week. Semester Prerequisites: 150B. Quarter Prerequisites: 153. Special methods and theory for design and operation of processes in the biochemical industries, with special emphasis on fermentation systems. (F)

170L. Biochemical Engineering Laboratory. (1). Formerly 170L. One 3-hour laboratory per week. Semester Prerequisites: 170 (may be taken concurrently), or consent of instructor. Laboratory techniques for microbial culture and enzymatic conversion processes. (SP)

171. Transport Phenomena. (3). Formerly 171. Three hours of class meetings per week. Semester Prerequisites: 150B. Quarter Prerequisites: 153. Study of momentum, energy, and mass transfer in laminar and turbulent flow. (F)

172. Dynamics and Control of Chemical Processes. (3). Formerly 172. Two hours lecture; one hour discussion plus three hours of laboratory per week. Semester Prerequisites: 150B; Math 50B. Quarter Prerequisites: 153; Math 50B. The unsteady behavior of industrial chemical process units, and methods and theory for their control. Laboratory in process control systems and measurement of process dynamics. (F)

173. Particulate Systems. (3). Formerly 173. Three hours of class meetings per week. Semester Prerequisites: 150A. Quarter Prerequisites: 150. Production and separation of particulate systems in force and flow fields. Dust and mist collection, sedimentation, and coagulation processes. (SP)


175. Selection and Evaluation of Chemical Processes. (3). Formerly 175. Three hours of lecture per week. Semester Prerequisites: 160 (may be taken concurrently). Development characteristics and selection of the best alternatives in involving engineering of chemical processes. Process selection and synthesis. Evaluation of process alternatives. (SP)
176. Principles of Electrochemical Processes. (3). Formerly 146. Three hours of lecture per week. Semester Prerequisites: 141; 150B. Quarter Prerequisites: 141A; 153. Principles and application of electrochemical equilibria, kinetics, and transport processes. Technical electrochemistry and solar energy conversion. (F)

178. Polymer Science and Technology. (3). Formerly 244. Three hours of class meetings per week. Semester Prerequisites: 150A; Organic Chemistry. Quarter Prerequisites: 150; Organic Chemistry. Introduction to physical and chemical behavior of organic polymers, properties of solutions, melts, glasses, elastomers, and crystals. Engineering applications, emphasizing processing technology. Experiments in polymerization and characterization. (F)

179. Process Technology of Solid-State Materials. (3). Formerly 158. Three hours of lecture per week. Semester Prerequisites: Engineering 45; one course in electronic circuits recommended; senior standing. Quarter Prerequisites: Materials Science 130. Chemical processing, properties of solid-state materials. Crystal growth and purification. Thin film technology. Application of chemical processing to the manufacture of semiconductors and solid-state devices. (SP)

185. Technical Communication for Chemical Engineers. (2). Formerly 185. Course may be repeated for credit. Individual conferences. Semester Prerequisites: Honors and senior standing. Original research under direction of one of the members of the staff. (F,SP)

186. Special Topics. (2-3). Formerly 186. May be repeated for credit. Individual conferences. Semester Prerequisites: Consent of instructor. Lectures and/or tutorial instruction on special topics.

196. Special Laboratory Study. (2-3). Formerly 196. May be repeated for credit. Individual conferences. Semester Prerequisites: Senior standing. Consent of instructor. Special laboratory or computational work under direction of one of the members of the staff. (F,SP)


232. Computational Methods in Chemical Engineering. (3). Formerly 232. Three hours of lecture per week. Semester Prerequisites: 230 or Math 50A or equivalent. Open to senior honor students with consent of instructor. Introduction to modern computational methods for treatment of problems not amenable to analytic solution. Application of numerical techniques to chemical engineering calculations with emphasis on computer methods. (F)

240. Phase Equilibria with Applications of Statistical Mechanics. (3). Formerly 240. Three hours of lecture per week. Semester Prerequisites: 251 or equivalent. Molecular thermodynamics of multicomponent systems with applications to separation operations. Equilibrium properties of pure and mixed fluids. Principles of statistical mechanics with emphasis on configuration properties of fluids. Introduction to theories for gases, liquids, polymers and their mixtures, and adsorbed fluids, with applications to separation operations. (F)

244. Applied Chemical Kinetics and Reaction Analysis. (3). Formerly 244 and 247. Three hours of lecture per week. Semester Prerequisites: 142 and 230, or equivalents, or consent of instructor. Quarter Prerequisites: 142 and 230, or equivalents. Reaction theory and transition-state calculations, chain reactions and free radical mechanisms, adsorption phenomena. Lamellar structures and applications of selected systems of industrial importance. Interaction of chemical and physical rate processes in governing the apparent behavior of chemically reactive systems. (F)

245. Catalysis. (3). Formerly 245. Three hours of lecture per week. Semester Prerequisites: 244 or Chemistry 219A, or consent of instructor. Quarter Prerequisites: 244 or Chemistry 219A, or consent of instructor. Adsorption and kinetics of surface reactions; catalyst preparation and characterization; poisoning, selectivity, and empirical activity patterns in constant-rate chemistry, catalytic mechanisms and modern experimental techniques in catalytic research; descriptive examples of industrial catalytic systems.


248. Applied Surface and Colloid Chemistry. (3). Formerly 248. Three hours of lecture per week. Semester Prerequisites: Graduate standing, or consent of instructor. Principles of surface and colloid chemistry with current applications; surface thermodynamics, wetting, ad- sorption, electrokinetics. Surface chemistry of colloids, interacting electrical double layers and colloid stability, kinetics of coagulation, and electrokinetics. (SP)

249. Biochemical Engineering. (3). Formerly 249. Three hours of lecture per week. Semester Prerequisites: 150; Bacteriology 102; Chemistry 120B, 112E or consent of instructor. Quarter Prerequisites: 150B; Bacteriology 120B, 112E. Application of chemical engineering principles to the processing of biological and biochemical materials. Design of systems for cultivation of microorganisms, separation and purification of biological products. Offered 1984-85.

250. Process Fluid Mechanics. (3). Formerly 250. Three hours of lecture per week. Semester Prerequisites: Graduate standing, or consent of instructor. An advanced-level first course in fluid mechanics, with emphasis on topics relevant to problems of the processing industries. Development of basic conservation equations; constitutive equations for Newtonian and elementary non-Newtonian fluids; exact solutions; ordering and approximate methods; application of low and high Reynolds number flow, including convective mass and heat transfer. (F)

251. Separation Processes and Mass Transfer. (3). Formerly 251 and 253. Three hours of lecture per week. Semester Prerequisites: Graduate standing, or consent of instructor. Methods for separating homogeneous mixtures. Computational approaches for binary and multicomponent separations, carried out in simple continuous and batch columns, and in staged and countercurrent equipment. Diffusion and interphase mass transfer. Effects of high flux and simultaneous reaction. Patterns of change and energy consumption in separation processes. Selection of separation techniques. (SP)

254. Advanced Transport Phenomena. (3). Formerly 254. Three hours of lecture per week. Semester Prerequisites: Graduate standing, or consent of instructor. Formulation and rigorous analysis of the laws governing the transport of momentum, heat, and mass, with special emphasis on chemical engineering applications. Detailed investigation of laminar flows. (SP)

257. Polymer Rheology and Melt Processing. (3). Formerly 257. Three hours of lecture per week. Semester Prerequisites: 150A or equivalent. 178 or equivalent recommended. Quarter Prerequisites: 150 or equivalent. 158 or equivalent recommended. Rheological properties of polymers and melt models. Analysis of flow processes including extrusion, calendaring, fiber spinning, wire coating, and mixing.

258. Polymerization Reaction Engineering. (3). Formerly 258. Three hours of lecture per week. Semester Prerequisites: 178, 230, 244, or consent of instructor. Quarter Prerequisites: 158, 230, 247, or consent of instructor. Polymerization mechanisms and kinetics. Principles of polymerization reactor design including reactor dynamics, optimization, and control. Not offered 1984-85.

260. Optimization in Chemical Process Design. (3). Formerly 260. Three hours of lecture per week. Semester Prerequisites: 160 or equivalent. Applications of linear and nonlinear mathematical programming to problems of optimum design and operation of chemical processes.


262. Computer Control of Chemical Processes. (3). Formerly 262. Two hours of lecture and one 3-hour laboratory per week. Semester Prerequisites: 172; Math 50A and 508 (linear algebra) or equivalent, or consent of instructor. Quarter Prerequisites: 162; Math 50A and 50B or equivalent. Synthesis and implementation of digital control systems for complex systems. Control configurations, process modeling and identification, multivariable and adaptive controls. Applications to distributed, combustion, heat exchange, and flow reactors. (SP)

263. Chemical Process Economics and Project Evaluation. (3). Formerly 263. Three hours of lecture per week. Semester Prerequisites: 160 or consent of instructor. Methods used by the chemical and petroleum engineer to evaluate the economic worth of processes using accepted economic, marketing, and managerial factors. Practice is offered through the medium of unstructured and open-ended projects involving group participation and individual efforts. (SP)
295T. Chemical Reactor Engineering (2). Formerly 295T.
295U. Innovations in Food Production and Processing. (2). Formerly 295U.
295V. Chemical Reactor Engineering (1-12). Formerly 295V. (F,SP)
295W. Chemical Reactor Engineering (1-12). Formerly 295W. May be repeated for credit. Sections 1-29: 1 hour lecture, one 1-hour laboratory lecture, and three hours of supervised teaching. (F,SP)
298. Seminar In Chemical Engineering. (1). Formerly 298. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Open to properly qualified graduate students with consent of instructor. Lectures, reports, and discussions on current research in chemical engineering. Sections are operated independently and directed toward different topics. (F,SP)
299. Research In Chemical Engineering. (1-12). Formerly 299. May be repeated for credit. Sections 1-29: S/U grading; 30 letter grade. Individual conferences. Semester Prerequisites: Consent of instructor. Special laboratory and theoretical studies. (F,SP)
602. Individual Studies for Graduate Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: Graduate standing in Ph.D. program. Individual study in consultation with the major field advisor for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)
Professional Courses
300. Professional Preparation: Supervised Teaching of Chemical Engineering. (2). Formerly 300. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences and participation in teaching activities. Semester Prerequisites: Graduate standing, appointment as a teaching assistant, or consent of instructor. Discussion, problem review and development, guidance of large scale laboratory experiments, course development, supervised practice teaching. (F,SP)
Interdepartmental Studies Courses
IDS124. Applied Chemical Thermodynamics. (3). Three hours of lecture per week. Semester Prerequisites: Chemistry 120B or equivalent. Quarter Prerequisites: Chemistry 130A or equivalent. A total of 120 semester units; Mathematics 1A, 1B, and one of 50A, 50B, 51; Physics 7A, 7B, 7C; Chemistry 1A, 1B, 5, 1A-4B; 14, 104, 112A, 112B, 120A, 120B, 125, and a choice of one additional upper division laboratory course. 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 course in chemistry. These courses 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, ceramic engineering, nuclear science, or to complete the premedical requirements (Biochemistry 102 and Zoology 105, for example). With the approval of the advisor or the Dean of the College, these 15 units of advanced scientific courses and a portion of the 15 units of breadth electives (see below) can be used for coherent programs in other interdisciplinary areas.
Chemistry Major in the College of Chemistry
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, and one of 50A, 50B, 51; Physics 7A, 7B, 7C; Chemistry 1A, 1B, 5, 1A-4B; 14, 104, 112A, 112B, 120A, 120B, 125, and a choice of one additional upper division laboratory course. 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 course in chemistry. These courses 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, ceramic engineering, nuclear science, or to complete the premedical requirements (Biochemistry 102 and Zoology 105, for example). With the approval of the advisor or the Dean of the College, these 15 units of advanced scientific courses and a portion of the 15 units of breadth electives (see below) can be used for coherent programs in other interdisciplinary areas.
Chemistry
University Professors:
Melvin Calvin, Ph.D., D.Sc., D.L.L.D.
William D. Gwinn, Ph.D.
G. Thomas Young, Ph.D.
John D. Anderson, Ph.D.
Sheldon G. Pearson, Ph.D.
Lawrence E. Paul, Ph.D.
Robert A. Raimondi, Ph.D.
Robert G. Bergman, Ph.D.
George C. Pimentel, Ph.D.
Glenn T. Seaborg, Ph.D.
Neil Bartlett, Ph.D., D.Sc.
Donald S. Noyce, Ph.D.
K. Peter C. Vollhardt, Ph.D.
Kenneth S. Pitzer, Ph.D.
John O. Rasmussen, Ph.D.
Kenneth N. Raymond, Ph.D.
William L. Jolly, Ph.D.
Fred Yaeger, Ph.D.
Glenn T. Seaborg, Ph.D.
John H. Clark, Ph.D.
K. Peter C. Vollhardt, Ph.D.
Robert G. Bergman, Ph.D.
Lawrence E. Paul, Ph.D.
Fred Yaeger, Ph.D.
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Kenneth N. Raymond, Ph.D.
Three 1-hour lectures per week. Semester Prerequisites: 120B. Quarter Prerequisites: 110B. Posts-Experiments in thermodynamics, kinetics, molecular structure, and general physical chemistry. (F,SP)

120A-130B. Biophysical Chemistry. (2-3-2). Formerly 11AS-130B. Students with credit in 120A and/or 120B may not receive credit for 130B. Two hours of lecture and one optional 1-hour discussion per week. Semester Prerequisites: 120A or 205. Additional course work at the graduate level is recommended for those who have no prior experience in physical chemistry. (F,SP)

125. Physical Chemistry Laboratory. (3). Formerly 111A-111B. One 1-hour lecture and one 4-hour laboratory per week. Semester Prerequisites: 120A with grade of C- or higher and 120B may be taken concurrently. 111B with consent of instructor. Quarter Prerequisites: 110B. Experiments in thermodynamics, kinetics, molecular structure, and general physical chemistry. (F,SP)

130A-130B. Organic Chemistry. (2-3). Formerly 125A-125B. Organic chemistry, high-pressure, and other synthetic techniques. Kinetic and mechanistic studies of inorganic compounds. (SP)

112A-112B. Organic Chemistry. (5-5). Formerly 122A-122B and 112. Students with credit in 8A and/or 8B may receive 1 and/or 2 units of credit respectively for the corresponding semesters of 112. Three hours of lecture; one hour of laboratory per week and five hours of laboratory per week. Semester Prerequisites: Completion of 112A with grade of C- or higher. For students majoring in chemistry or a closely related field such as biochemistry or chemical engineering. Quarter Prerequisites: 1C or 4C with a grade of C- or higher. A study of the fundamental aspects of organic chemistry, multistep synthesis and spectroscopic and analytical separation methods, and the chemical of polymeric and heterocyclic compounds. Deficiency in 8A and/or 8B may be removed by successfully completing the corresponding semesters of 112. Deficiency in 112A may be removed by successfully completing 112B. Students with credit in 112A may receive 2 units of credit for 112B. (F)

112E. Organic Chemistry: Lecture Only. (3). Formerly 122E. Students with credit in 112B may not receive credit for 112E. Three hours of lecture per week. Semester Prerequisites: 112A with grade of C- or higher. Taken at UC Berkeley. Primarily for chemical engineering students, but open to others with consent of instructor. Quarter Prerequisites: 12B. Equivalent to lecture portion of 112B. Students who have not completed 12B may be partially removed by successfully completing 112E. (SP)

112H. Organic Chemistry with Honors Laboratory. (5). Formerly 1112H. Must attend 112B lecture; plus one 1-hour laboratory per week and one 4-hour laboratory per week. Semester Prerequisites: Completion of 112A with high standing and consent of instructor. Quarter Prerequisites: 12B. Provides laboratory experience in advanced multistep synthesis and spectroscopic and chromatographic techniques as preparation for research. (SP)

113. Advanced Organic Chemistry. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: 112B and 120A. Quarter Prerequisites: 112 and 110A. Study of advanced topics of organic chemistry including linear free energy relations, orbital symmetry, electronic effects, and complex synthesis, including heterocyclic systems. (F)

115. Organic Chemistry — Advanced Laboratory Methods. (4). One hour of lecture and 9 hours of laboratory per week. Semester Prerequisites: 112A: a reading knowledge of German or consent of Instructor. Quarter Prerequisites: 112A: a reading knowledge of German or consent of Instructor. Formerly 128 and 129. Advanced synthetic methods, chemical and spectroscopic structural methods, designed as a preparation for experimental research. (F,SP)

120A. Physical Chemistry. (2). Formerly 1110A. Students with credit in 120A may receive 1 unit of credit for 120A. Two 1-hour lectures per week. Semester Prerequisites: 14 with grade of C- or higher and Physics 7C (may be taken concurrently). Quarter Prerequisites: 14 and Physics 7A or 7B. Quantum mechanics, atoms, periodic table, spectroscopy of simple molecules. Deficiency in 130B may be removed by successfully completing 120A and 120B. (F,SP)

120B. Physical Chemistry. (3). Formerly 1110B. Students with credit in 130B may receive 1 unit of credit for 120A. Three 1-hour lectures per week. Semester Prerequisites: 120A. Quantum mechanics, kinetics, transport properties, and complex chemical systems. Deficiency in 130B may be removed by successfully completing 120A and 120B. (F,SP)

122. Quantum Mechanics and Spectroscopy. (3). Formerly 130. Three hours of lecture per week. Semester Prerequisites: 120B. Quarter Prerequisites: 110B. Posts- Philosophies of quantum mechanics and group theory applied to molecular structure and spectra. (F,SP)

125. Physical Chemistry Laboratory. (3). Formerly 111A-111B. One 1-hour lecture and one 4-hour laboratory per week. Semester Prerequisites: 120A with grade of C- or higher and 120B may be taken concurrently. 111B with consent of instructor. Quarter Prerequisites: 110B. Experiments in thermodynamics, kinetics, molecular structure, and general physical chemistry. (F,SP)

130A-130B. Biophysical Chemistry. (2-3-2). Formerly 11AS-130B. Students with credit in 120A and/or 120B may not receive credit for 130B. Two hours of lecture and one optional 1-hour discussion per week. Semester Prerequisites: 120A or 205. Additional course work at the graduate level is recommended for those who have no prior experience in physical chemistry. (F,SP)

143. Nuclear Chemistry. (2). Formerly 123. Two 1-hour lectures per week. Semester Prerequisites: Physics 7C or equivalent. Quarter Prerequisites: 110A. Radioactivity, fission, nuclear models and reactions, nuclear processes in nature. Computer methods will be introduced. (F)

192. Individual Study for Advanced Undergraduates. (1-3). Formerly 1222. Course may be repeated for credit. Individual conferences. Semester Prerequisites: Consent of instructor and adviser. All properly qualified students who wish to pursue a problem of their own choice through reading or nonlaboratory study, may do so if their proposed project is acceptable to the member of the staff with whom they wish to work. (F,SP)

1994. Research for Advanced Undergraduates. (2-4). Formerly 1994. Course may be repeated for credit. Laboratory. Semester Prerequisites: Honors standing; 120B, and consent of instructor and adviser. Quarter Prerequisites: Honors standing, 110B, and consent of instructor and adviser. Students who have completed a satisfactory number of advanced courses may pursue an original research under the direction of one of the members of the staff. (F,SP)

195. Special Topics. (3). Formerly 1995. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 128 or 130A. A rigorous presentation of classical thermodynamics followed by an introduction to statistical thermodynamics. (F,SP)

208. Structure Analysis by X-Ray Diffraction. (3). New Course since Spring 1983. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour lectures and two 4-hour laboratories per week. Semester Prerequisites: 104-130-120B, 125, 203: or equivalent. Quarter Prerequisites: 104A-104B, 110A-110B, 111A-111B, and 201. Current techniques including discussion of the structure, bonding, and reactivities of inorganic compounds. 204A: (SP); 204B: (F)

210A. Physical Organic Chemistry. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: 112, 120, or consent of instructor. Fundamental bonding, energy, dynamical, and structural concepts. (SP)

210B. Physical Organic Chemistry. (3). New Course since Spring 1983. Three 1-hour lectures per week. Semester Prerequisites: 210A or consent of instructor. Mechanisms of organic chemical transformations. (SP)

211A. Synthetic Organic Chemistry. (3). New Course since Spring 1983. Three 1-hour lectures per week. Semester Prerequisites: 112B, 210A must be taken concurrently, or consent of Instructor. Application of stereochemistry and conformational analysis to organic chemical synthesis; synthesis of carbonyl-containing compounds and related reactions. (F)

211B. Synthetic Organic Chemistry. (2). New Course since Spring 1983. Two 1-hour lectures per week. Semester Prerequisites: 211A or consent of the Instructor. Application of carbonyl condensation reactions and organometallic reagents to organic synthesis, oxidation of functional groups, reduction reactions, modern synthetic methods. (SP)

213. Introduction to Organic Research. (2. Formerly 228. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture and three hours of discussion and laboratory per week. Semester Prerequisites: 210A (may be taken concurrently) or consent of Instructor. Introduction to organic research. (F)

220A. Thermodynamics and Statistical Mechanics. (3). Formerly 216A-216B. Three 1-hour lectures per week. Semester Prerequisites: 210A or equivalent. Quarter Prerequisites: Principles of statistical mechanics, ensemble theory, and application to complex systems. (SP)

221A. Advanced Quantum Mechanics. (3). Formerly 217A-217B. Three hours of lecture per week. Semester Prerequisites: 210A and 122 or equivalent. Quarter Prerequisites: 110B and 120. Introduction, one dimensional problems, matrix mechanics, approximation methods. (F)

221B. Advanced Quantum Mechanics. (3). Formerly 217B-217C. Three hours of lecture per week. Semester Prerequisites: 210A and 122 or equivalent. Quarter Prerequisites: 110B and 120. Introduction, one dimensional problems, matrix mechanics, approximation methods. (SP)

223. Chemical Kinetics. (3). Formerly 219A-219B. Three hours of lecture per week. Semester Prerequisites: 210A (may be taken concurrently). Quarter Prerequisites: 217A. Deduction of mechanisms of complex reactions,
activated complex theory; classical and quantum mechanical collision theory of elastic, inelastic, and reactive processes. (F)

231. Advanced Biophysical Chemistry. (3). Formerly 241 A-D. Three hours of lecture per week. Semester Prerequisites: Graduate standing or consent of instructor. Topics dealing with structural and dynamic aspects of RNA, DNA, and proteins, and with bioenergetics, membrane organization, and membrane protein structure. Physical-chemical approaches to these topics will be emphasized. (F)

243. Advanced Nuclear Structure and Reactions. (3). Formerly 222A-222B. Three hours of lecture per week. Semester Prerequisites: 143 or equivalent and introduction to quantum mechanics. Quarter Prerequisites: 123. Selected topics on nuclear structure and nuclear reactions. (SP)

295. Special Topics. (1-3). Formerly 295. Course may be repeated for credit. Lecture series on topics of current interest. Recently offered topics: inorganic compounds, metallo-organic chemistry, bio-molecular spectroscopy, magnetic resonance, the chemistry of air pollution, and natural products. (SP)

298. Seminars for Graduate Students. (1-3). Formerly 298. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Seminars. Students pursuing original investigations toward an advanced degree of the laboratory. The facilities of the laboratory are available at all times to graduate students pursuing original investigations toward an advanced degree at this University. Such work is ordinarily in collaboration with a member of the staff. (FSP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. degree. May not be used for unit or residence requirements for the doctoral degree. (FSP)

Professional Courses

300. Professional Preparation: Supervised Teaching of Chemistry. (0). Formerly 300. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing. The facilities of the laboratory are available at all times to graduate students pursuing original investigations toward an advanced degree at this University. Such work is ordinarily in collaboration with a member of the staff. (FSP)

Undergraduate Chemistry Instruction. (2). Formerly 301. Course may be repeated once for credit. Must be taken on a pasted/past basis. One hour of lecture and 5 hours of laboratory per week. Semester Prerequisites: Sophomore standing; completion of 1A-1B with a grade of B- or better. Quarter Prerequisites: Sophomore standing; completion of 1A-1B-1C with a grade of B- or better. Tutoring of students in 1A-1B. Students enrolled in the weekly meeting on tutoring methods at the Student Learning Center, and who attend 1A-1B lectures. (FSP)

Indeterminate Studies Courses

IDS124. Applied Chemical Thermodynamics. (3). Three hours of lecture per week. Semester Prerequisites: Chemical engineering or equivalent. Quarter Prerequisites: Chemistry 110B. Properties of real fluids and fluid mixtures, including chemical equilibria and phase equilibria. Additional topics to be chosen by the instructor. Sponsoring Departments: Chemistry and Chemical Engineering.

IDS145. Chemical Methods in Nuclear Technology. (3). Formerly 124. One 1/2-hour lecture and one 1/2-hour laboratory per week. Semester Prerequisites: Nuclear Engineering 101 or Chemistry 143. Quarter Prerequisites: Chemistry 123. Experimental illustrations of the interrelation between chemical and nuclear science and technology. Development of the concept of fuel elements, chemical effects of nuclear transformations; application of radioactivity to study of chemical problems; neutron activation analysis. Sponsoring Departments: Chemistry and Nuclear Engineering. (SP)

Graduate Courses

IDS229. Mechanisms of Enzyme Action. (3). Formerly 212. Must be taken on a satisfactory/unsatisfactory basis. Three hours of lecture per week. Semester Prerequisites: Graduate standing or consent of instructor. Current concepts of the mode of action of enzymes. Binding of substrates and allosteric effectors to enzymes, and analysis of the thermodynamics and kinetics of these reactions. Catalytic mechanisms utilized by enzymes and correlation of mechanism with 3-dimensional structure. The design of mechanism-based enzyme inhibitors. Sponsoring Departments: Chemistry and Biochemistry. Not offered 1984-85.

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Professors: Charles S. Benson, Ph.D.
Guy Benveniste, Ph.D.
Merle L. Cooper, Ph.D.
El M. Bowen, Jr., Ed.D.
Earl F. Chest, Ph.D., J.D., H.D.L. (Hon.)
Geraldine Jonich Clifford, Ed.D.
David P. Gardner, Ph.D., D.H. (Hon.), (President of the University)
Bernard Gifford, Ph.D., Dean, Chancellor's Professor in Residence
James W. Guthrie, Ph.D.
Curtis D. Hardy, Ph.D.
Paul A. Heist, Ph.D., D.H. (Hon.)
John G. Hunt, Ph.D.
James L. Jarrett, Ph.D.
Arthur R. Jensen, Ph.D.
Norm F. Kaiser, Ph.D.
Nadine M. Lambert, Ph.D.
Lawrence B., Lowery, Ph.D.
Leonard A. Marasculo, Ph.D.
William D. Rothweir, Jr., Ph.D.
Robert B. Ruddle, Ed.D.
Edward Lawrence Stewart, Ed.D.
James C. Stone, Ed.D.
Eliot Turiel, Ph.D.
Robert W. Webster, Ph.D.
Alan W. Wilson, Ph.D.

Associate Professors: Paul R. A. G., Ph.D.
Lily Wong Fillmore, Ph.D.
Sarah W. Freedman, Ph.D.
Donald A. Hansen, Ph.D.
John David Miller, Ph.D.
Rodney J. Reed, Ph.D.

Senior Lecturers: James R. Gray, M.A.
Mille Almy, Ph.D. (Emerita)
Guy T. Buzwell, Ph.D., D.Lit.
T. Bartley Edwards, Ph.D. (Emerita)
Clyde Glenny, Ph.D. (Emerita)
Mary Jane Jones, Ph.D. (Emerita)
Frederick L. Reeler, Ph.D. (Emerita)
Walter D. Loban, Ph.D. (Emerita)
Jack London, Ph.D. (Emerita)
S.E. Torsten Lund, Ph.D. (Emerita)
Thomas R. McConnel, Ph.D., LL.D., D.H.L. (Emerita)
John U. Michael, Ph.D. (Emerita)
Edgar L. Mohr, Ph.D. (Emerita)
Theodore L. Reller, Ph.D. (Emerita)
Lloyd F. Scott, Ph.D., J.D. (Emerita)
J. Chester Swanson, Ph.D. (Emerita)
Dale Tillery, Ph.D. (Emerita)

Graduate Division. Contact the Education Admissions Office, 1607 Tolman Hall, (415) 642-0841 for specific instructions on applying.

Education

Lower Division Courses

39. The College and University Novel. (3). Two 1½-hour lectures/discussions per week. Analysis of novels with college and university settings to gain the perspectives of students and faculty on essential features of higher education, especially in the United States. Institutional types and images, student subcultures, faculty-student relationships, male and female experiences. (F)

11 Upper Division Courses

180. Logic of Inquiry. (3). Formerly 117. Three hours of lecture per week. Analysis of the logical and philosophical roots of modern scientific research with the aim of developing a critical and vigorous 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. (SP)

181. Work, Leisure, Education, and Career Choice. (2). Formerly 191W. One 2-hour lecture/discussion per week. Semester Prerequisites: Upper division standing or consent of instructor. Philosophical and psychological ideas about work, leisure, and education and the relationship between these ideas and the students' self-knowledge and career/life plans. Opportunity for personal planning. (FSP)

182. Social Foundations of Education. (2). Formerly 182. Two one-hour lectures per week. Historical and contemporary relationships between schools and society, schools as social systems, and educational implications of social diversity and conflict from the perspective of the social sciences. (F)

183. History of Education in the United States. (3). Formerly 210-211. Three hours of lecture per week. Sociocultural and epistemological history of education since independence. Adaptations of European theory and practice in education. Effects of political, social, and economic change on families, churches, schools, colleges, and other educational agencies. Reform movements and their effects. (F)

184. Philosophical Foundations of Education. (3). Formerly 184. Three hours lecture per week. Survey of educational thought with emphasis on four kinds: (1) courses for undergraduates that contribute to their liberal education and preparation for citizen involvement with the public schools and universities; (2) teaching credential programs for those preparing to teach in the public schools; (3) programs leading toward credentials as administrators, reading specialists, and in pupil personnel services in the public schools; and (4) advanced degree programs with a professional (M.A.T. and Ed.D.) or academic (M.A. and Ph.D.) emphasis. These courses and programs are contained within one of five areas of study: (1) teaching Administration and Evaluation (EAE); Education in Mathematics, Science, and Technology (EMST); Educational Foundations (EDUC); Educational Psychology (EP); and Language and Literacy (ELL). Course numbers bear these prefixes.

To qualify for a teaching credential, a bachelor's degree is required with a major in a field other than education. Other requirements include a teaching authorization and a professional preparation program in an area of specialization. Applicants in the field of teaching credential programs are graduate students, it is possible to complete these programs as undergraduates.

Applicants for advanced credentials and graduate degrees must have earned a bachelor's degree from a university in the United States. (SP)

For details concerning the requirements and areas of specialization for all credential and degree programs in education, consult the Announcement of the Academic Year. Applicants must file an application with the Education Department and the Graduate Division. Contact the Education Admissions Office, 1607 Tolman Hall, (415) 642-0841 for specific instructions on applying.

Education
epistemological, logical, and ethical foundations of the major philosophies of education. (SP)

185. Anthropology of Education. (3). Formerly 222. Three hours of lecture per week. An examination of the ways in which systems, events, and issues in both western and non-western societies have been viewed from the perspective of cultural anthropology. (F)

186. Introduction to Adult Education. (3). Formerly 170. Two 1 1/2-hour lectures per week. The role of adult education in an industrial society. (F) Not offered 1984-85.

187A. Delinquency and Gangs in School and Society. (3). Formerly 188. Three hours of lecture per week. A review of empirical studies of violence and vandalism in public schools. Theories of youth delinquency and gangs, and strategies for effective control and prevention will be examined. (SP) Not offered 1984-85.

187B. Re-Education in Coercive Settings. (4). Formerly 171. Four hours of lecture and one hour of discussion per week. A survey of public school settings facing major policy issues and the historical and political environment of public education. (SP)

189. Democracy and Education. (4). Formerly 191X-Y. Must be taken on a passed/not passed basis. Two 2-hour lectures per week. Semester Prerequisites: Junior standing or consent of instructor. Education as a vehicle for furthering the ideals of democratic societies—political study of principles, philosophies, theories, and practices designed to develop understanding, commitment, and skills to empower a citizenry dedicated to achieving equality, justice, and peace in the world. (F)

197. Field Studies. (1-4). Formerly 197. Course may be repeated for credit. Must be taken on a passed/not passed basis. Field study. Semester Prerequisites: Consent of instructor. University organized and supervised field programs involving experiences in schools and school-related activities. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Independent study. Semester Prerequisites: Consent of instructor. (F,SP)

Graduate Courses

280A. Methodology of Qualitative Research I. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture and discussion per week. Survey of methodological issues in qualitative research. Topics to be offered include the various research strands of the Chicago school, cultural studies, and participatory research. (F) Not offered 1984-85.

280B. Methodology of Qualitative Research II. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture and discussion per week. Semester Prerequisites: 280A. Development of field research skills, data reduction/analysis, and model building. (SP)

281. Social Foundations of Education for Teachers. (3). New Course since Spring 1983. Two hours of lecture and discussion per week. Semester Prerequisites: Admission to a teacher education program in the Department of Education. Relations of the American educational system to the society and culture and considered in the historical, social systems, culture, and part special reference to the needs of teachers in training. Introduction to education law and government. (SP)

282. Sociology of Education. (3). Formerly 223A. One 2-hour lecture and discussion per week. Transmission, stratification, control, and change in educational institutions. Interrelations of school, university, and social structure from functionalist and conflict perspectives. This course requires at least twelve hours of work per week including class time and outside preparation. (F)

283A. History of Educational Thought. (3). Formerly 221A. Three hours of lecture per week. The evolution of systematic theories about educational objectives, and modes of human learning, and interactions between schools and other institutions. Some attention to traditional education in Europe and the Orient but primary emphasis will be given to American thinkers. (F,SP) Not offered 1984-85.

283B. Issues in Education: Historical Perspectives. (3). New Course since Spring 1983. Three hours of lecture per week. Historical perspectives on various current issues in education. Examples of issues to be analyzed are the integration of ethnic groups, the political economy of schooling, educational psychology, science and society and conflict among socio-economic groups. (SP)

283C. Seminar in the Historiography of Education - Selected Topics. (3. Formerly 226. Course may be repeated for credit. Three hours of seminar per week. Advanced study of one or more topics in the history of education with emphasis upon original research by students and independent study and the study of related literature in the seminar. Considerable attention given to methods of historical inquiry. (F)

284A. Philosophy of Education. (3). Formerly 220. Three hours of lecture per week. Philosophy applied to current educational problems and key concepts. (F)

284B. Value Education. (3). Formerly 286A. Three hours of lecture per week. Theories of the nature and types of value will be examined with a view to the development of a scheme of education centered upon the experience and judgement of moral and aesthetic values. (SP)

284C. Signs, Symbols, and Language. (3. Formerly 291A. Three hours of lecture per week. A study of the processes of education considered as the development of the ability to employ and interpret symbols—linguistic and non-linguistic, metaphorical and literal—to serve expressive and communicative needs. (SP)

285A. Education in Non-Literate Societies. (3. Formerly 227A. Three hours of lecture per week. An examination of educational systems of several non-literate societies in different parts of the world, with emphasis on the relevance of the relationships between education, culture, and social structure. (SP)

285B. Education in Developing Societies. (3. Formerly 227B. Three hours of lecture per week. The educational systems of several countries in Africa, Asia, and Latin America will be examined with the intent of understanding the processes and problems involved in creating forms of education appropriate to the needs and aspirations of these developing nations. (F) Not offered 1984-85.

286. Adult Education and Aging. (3. Formerly 270. One 3-hour lecture per week. A critical examination of the problems and issues of aging, and existing and potential influences of formal and adult education upon the aged. (SP) Not offered 1984-85.

287A. Theories of the Self: Freud and Jung. (3. Formerly 224. One 3-hour lecture/discussion per week. Semester Prerequisites: Graduate standing. Philosophical and psychological theories of the nature of human nature and their implications for education and human development. Extensive investigation of Freud and Jung, preceded by an introduction to their main predecessors in the discovery of the unconscious and examination of a few of their successors. (F)

287B. Theories of the Self: Existentialism and Phenomenology. (3. Formerly 224. One 3-hour lecture/discussion per week. Semester Prerequisites: Graduate standing. Philosophical and psychological theories of the nature of human nature and their implications for education and human development. Following brief examination of Dostoevsky, Kierkegaard, Nietzsche, and Husserl, attention is paid to the works of Ortega, Gasset and Ricoeur. (SP) Not offered 1984-85.


288B. Individual Appraisal in Counseling and Guild per week. Designed to develop areas of interdisciplinary research and theory which bear on current problems of significance to counseling and student personnel. (F,SP) Not offered 1984-85.

288C. Special Problems in Counseling Theory and Research. (2. Formerly 249. Two hours of seminar per week. Revises and interprets the theories basic to considering human development and approaches to counseling. (SP) Not offered 1984-85.

289. Family Processes: Implications for Education. (3. Formerly 248. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour seminar per week. Semester Prerequisites: Graduate standing or consent of instructor. The influences of family relationships on individual development and classroom behavior will be studied, using theoretical essays, large-scale research findings, small group studies, and case analyses. A major paper is required. (SP) Not offered 1984-85.

292. Special Topics in the Methodology of Educational Research. (3. Formerly 292. Course may be repeated for credit. Three hours of seminar per week. Special topics such as qualitative construction, attitude measurement and scaling, interviewing, interaction analysis, path analysis, and other topics not adequately covered elsewhere. (F,SP) Not offered 1984-85.

293. Thesis Seminar. (1-4. Formerly 294A. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Research on special problems and topics not covered by courses or seminars. (F,SP) Not offered 1984-85.

298. Group Study for Graduate Students. (3. Formerly 298. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours seminar per week. Semester Prerequisites: Consent of instructor. Research on special problems and topics not covered by courses or seminars. (F,SP) Not offered 1984-85.

299. Special Study and Research. (1-12. Formerly 298. May be repeated for credit on a satisfactory/unsatisfactory basis. Three hours seminar per week. Semester Prerequisites: Consent of instructor. Special study or research under direction of a faculty member. One unit of credit for every 4 hours of conference and independent research per week. (F,SP)

601. Individual Study for Master's Students. (1-12. Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conference and independent study. Semester Prerequisites: Consent of instructor. Individual study in preparation for the doctoral qualifying examination. One unit of credit for every 4 hours of conference and independent research per week. (F,SP)

Professional Courses

300. Teaching Assistants Practicum. (1-6. Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Must be taken on a satisfactory/unsatisfactory basis. One 1/2-hour lecture, one 3/4-hour discussion and one hour field work per
480. Research Assistant Practicum. (1-6). Formerly one 3-four hour lecture and one 3/4-hour discussion and one hour of field work per unit. Semester Prerequisites: Consent of instructor. Consultation and analysis for research assist-

481. Internship in Student Personnel and Counseling. (2-7). Formerly Education 250B. Three hours of lecture per week. Concepts and practices associated with the analysis of teaching and clinical supervision of teachers. (SP)

Economic Administration and Evaluation

165. Economics of Education and Training. (3). New Course since Spring 1983. Two 1 1/2-hour lecture per week. Semester Prerequisites: Economics 100A-100B or Economics 101A-101B or equivalent. Essentials of curriculum and instructional activity. (F)


167. Education and Employment. (3). One 3-hour seminar per week. Designed primarily for employed undergraduates, including work-study students, this course helps students understand the role of the teacher in supervising teachers. (F)


169. Economics of Education and the Professional-Client Law. (3). Formerly Education 253B-253D. Three hours of lecture per week. Facets of the law important for educational administrators. Sources of funding and financing research, public service instruction and buildings. (F) Not offered 1984-85.

170. Economic Development and Education in the Third World. (3). New Course since Spring 1983. Two 1 1/2-hour lecture per week. Semester Prerequisites: Economics 100A-100B or Economics 101A-101B or equivalent. The role of economic development on the distribution of income. The role of expected income in economic development. Proposal for improving the efficiency and equity of schools. (F)

171. American Society. (3). Formerly Education 196. Three hours of lecture per week. Social and ethnic minorities in American schools and communities. Historical and social science analyses of ideologies and practices through case studies. Special attention is given to differing theoretical approaches used to explain minority experience, institutional structures, and dominant values. (F) Not offered 1984-85.

Graduate Courses

250A. Issues in Education Administration and Policy. (3). Formerly Education 250A. Three hours of lecture per week. (Required of all students in the Division of Educational Administration and Evaluation.) Concepts, theories, and institutional structures in a variety of administrative and evaluation. Application is made to governmental policy for school systems. (F)

251A. Organization Theory in Education and Other Social Services. (3). Formerly Education 250B. Three hours of lecture per week. Direct human resources. Authority, legitimacy, control, incentives, etc., as they apply to education or other social services. (F)


252A. School Leadership and Management. (3). Formerly Education 251B. Three hours of lecture per week. (Required of students in the administrative credential program.) An analysis of theories of leadership, motivation, small group dynamics, organizational climate, communication, attendance, school exclusion, organizational analysis associated with site leadership and management. (F)

252B. School Supervision: Theory and Practice. (3). Formerly Education 251A. Three hours of lecture per week. Concepts and practices associated with the analysis of teaching and clinical supervision of teachers. (F)

252C. Personnel Administration in School Systems and Social Organizations. (3). Formerly Education 252. Three hours of lecture per week. Concepts and practices related to the administration of personnel services in education and other social organizations. (SP)

252D. Computer Usage in Education Administration and School Sector Management. (3). New Course since Spring 1983. Three hours of lecture per week. Organizational analysis of the role of experts in social services including Question. Practices and management. (SP)

252E. Special Topics in Urban Education. (3). Formerly Education 251C. Three hours of lecture per week. An examination of topics such as teacher expectation, student motivation, parental education, effectiveness, and efficiency. Organizational analysis of data services in urban settings. (SP)

253A. Administrative Law in Education. (3). Formerly Education 253A. Three hours of lecture per week. History of American legal system. Legal structure and practices in education. Legal standards and requirements for educational administration. Concepts and practices associated with school leader, program evaluators and those working in the social sector. (F)

253B. Education and Professional-Client Law. (3). Formerly Education 253B-253D. Three hours of lecture per week. Palace of law and its impact on economic development. Legal standards and practices in education. Legal errors and their preventive and corrective measures. Legal standards and practices associated with school leader, program evaluators and those working in the social sector. (SP)

254A. Intergovernmental Relations in Social Sector Organizations. (3). Formerly Education 254A. Three hours of lecture per week. History and philosophy of local, state and federal governments. Education and the political economy of social sector finance. (F, SP) Not offered 1984-85.

254B. Special Topics in the Politics of Social Sector Services. (3). Formerly Education 254B. Three hours of lecture per week. Direct human resources. Authority, legitimacy, control, incentives, etc., as they apply to education or other social services. (F)

255A. Economics of Education and the Professional-Client Law. (3). Formerly Education 255A. Three hours of lecture per week. Concepts and practices associated with the analysis of teaching and clinical supervision of teachers. (F)


256C. Economics of Higher Education. (3). Formerly Education 256C. Three hours of lecture per week. Cost benefit analyses and economic returns of higher education. Resources allocation and economic policy of local, state and federal governments. Economics of student loans and grants. Consequences of variable student fees, financial aid policies and financial incentives for institutional programming. International comparisons. (SP)

256A. Finance of Education and Other Social Services. (3). Formerly Education 256B. Three hours of lecture per week. Fiscal policy and financing of social services. Systems of revenue generation. Tax schemes, models and formulas in various social sectors. The political economy of social sector finance. (SP)


257A. Curriculum and Instructional Foundations. (3). Formerly Education 230A-230B. Three hours of lecture per week. Essentials of curriculum and instruction, planning, philosophical thought and human learning, use of taxonomies and models, variables affecting instructional effectiveness and approaches to evaluation in curriculum and instructional activity. (F)

257B. Curriculum Planning: Theories, Principles and Practices of Instruction. (3). Formerly Education 230B. Three hours of lecture per week. Modern advances in teaching and learning, including specific teaching technologies and research findings required to observe and analyze the teaching act and to conduct micro-teaching exercises. (SP) Not offered 1984-85.


258B. Management in the Community College. (3). Formerly Education 260B. Two hours of lecture plus four hours of field work per week. A course exploring leadership and management in the community college (campus, district, system), the work and career of management, the environment of management, professionalization of management, management development and community college management. The course includes the management experience. (SP)
268C. Postsecondary Education - History, Issues, and Problems. (3). New Course since Spring 1983. Three hours of lecture per week. The development of postsecondary education, student characteristics, curricular, organizational forms, demographics, issues, and problems. This survey course is historical in nature. (F,SP)

268D. The Curriculum of Higher Education. (3). Formerly Education 268B. Three hours of lecture per week. Consideration of psychological, biological, and social bases of general, liberal undergraduate education, analytical review of research on collegiate curricula, programmatic innovations, and their effects. (F)

268E. Postsecondary Education in Social-Political Context. (3). Formerly Education 268E. Three hours of lecture per week. Social, political, and economic aspects of the development and management of institutions of postsecondary education. This course is analytical and theoretical in nature. It is intended to explicate internal and external processes in institutions of postsecondary education. (SP) Not offered 1984-85.

269A. Interethnic and Intergroup Relations in Education. (3). Formerly Education 235C. Three hours of lecture per week. Educational implications of the subcultures of non-Anglo minorities. Study of research regarding the ecology of prejudice and educational strategies for its elimination. Exercises in interpersonal and intergroup relations and field work are involved. (SP)

270A. Principles of Program Evaluation. (3). Formerly Education 240D and 291E. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Introductory knowledge of statistics. An overview of the models, methods and issues in educational evaluation. Includes basic concepts and procedures for evaluating programs, projects and curriculum. Course format combines lecture/discussion and practical applications of evaluation principles to "real" educational programs or projects. (SP)

270B. Policy Context of Evaluation. (3). Formerly Education 291G. Three hours of lecture per week. Policy issues of evaluation research; use of evaluation in organizations and at the state and federal level; impact of social and political pressures on current evaluation practice; strategies for designing, implementing and using evaluation in policy settings. (SP) Not offered 1984-85.

271A. Quantitative Analysis of Educational Systems I. (3). Formerly Education 254A-254B. One three hour lecture per week. Semester Prerequisites: A basic course in educational statistics, or equivalent. Methods for estimating predictive models in education systems. Includes models in which outcome variables are either numerical or categorical. (F)

271B. Quantitative Analysis of Educational Systems II. (3). Formerly Education 254B-254C. Three hours of lecture per week. Semester Prerequisites: A basic course in educational statistics, or equivalent. Methods for estimating causal models in education, non-experimental data. Path analysis, structural equations, LISREL. (SP)

272A. Evaluation in the Schools. (3). Formerly Education 290D. Three hours lecture per week. A systematic examination and critical analysis of research concepts, processes, and models. Connections will be made between research in the appraisal of curriculum, programs, projects, courses, and models of instruction in schools, colleges, and universities. (F)

272B. Evaluation in Higher Education. (3). Formerly Education 2904-290B-290C. Course may be repeated for credit. Three hours of lecture and discussion per week. Seminar provides an opportunity for students to conduct evaluative research investigations on innovative projects, programs, curriculum, and courses. (SP)

272C. Special Topics in Evaluation. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture and discussion per week. Detailed treatment of selected topics in evaluation not adequately covered elsewhere. Topics will change from semester to semester according to current interests of students and instructor. Topics may include assessment of attitude change, analysis of non-equivalent control group designs, meta-evaluation. (F) Not offered 1984-85.

273A. Qualitative Evaluation. (3). Formerly Education 290E. Course may be repeated for credit. Two hours of lecture and two hours of discussion plus two hours of fieldwork per week. Detailed treatment and discussion of a few topics and projects in evaluation selected from current interests of class and instructor combined with some field work where possible. (F)

273B. Field Research Methods. (3). Formerly Education 206E. Three hours of lecture and three hours of field work per week. Examination of various qualitative field research techniques drawn from the disciplines of anthropology and sociology. (F)

273C. Applied Field Research Methods. (3). Formerly Education 206E. Three hours of lecture and three hours of field work per week. Application of qualitative research methods with emphasis on practice in their use in educational settings. Focuses on participant observation and other anthropological techniques applied in educational research. (SP)

274A. Data Generation for Evaluation. (4). Formerly Education 206E. 216 and 291F. Course may be repeated for credit. Four hours of lecture per week. Semester Prerequisites: 206A or 208B, or 191A. Three hours of seminar per week. Data collection and measurement techniques. Students develop and administer questionnaires, interviews, tests, observations, and nonreactive measures. Includes both qualitative and quantitative methods. (F)

277. Evaluation Colloquium. (1). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Opportunity to hear current research interests of faculty members in various disciplines on campus who are active in evaluation. Some outside guest speakers. Opportunities for students to present their evaluation designs, papers. (F,SP) Offered every term.

294. Thesis Seminar. (4). Formerly Education 294E. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of seminar and four hours of independent research per week. Recommended for M.A. students working on seminar papers or theses, and doctoral students preparing dissertation proposals. Topic varies with instructor. (F,SP)

296. Group Study for Graduate Students. (3). Formerly Education 290B. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Group study and research on special topics not covered by any other course. (F,SP) Not offered 1984-85.

Professional Courses

460A. Practicum in School Site Management I. (3). Formerly Education 350A. One 3-hour lecture plus field work per week. Semester Prerequisites: Admission to Administrative Services Credential program. Supervised field experience, conferences, and colloquium. (F)

460B. Practicum in School Site Management II. (3). Formerly Education 255B. Three hours of seminar and three hours of field work per week. Semester Prerequisites: Admission to Administrative Services Credential program. Supervised field experience, conferences, and colloquium. (SP)

460C. Practicum in School Site Management III. (3). Formerly Education 350A-350B. Three hours seminar plus three hours of fieldwork per week. Semester Prerequisites: Admission to the Administrative Services Credential Program. Supervised field experience, conferences, and colloquium. (F) Not offered 1984-85.

460D. Practicum in School Site Management IV. (3). Formerly Education 350A-350B. Three hours seminar plus three hours of fieldwork per week. Semester Prerequisites: Admission to the Administrative Services Credential Program. Supervised field experience, conferences, and colloquium. (SP) Not offered 1984-85.

465. Practicum in Evaluation. (1-6). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of conference per week plus four hours of fieldwork per week. Must be taken in Educational Evaluation Program. Practice in the conduct of educational evaluations in the field. Students will individually or in small groups participate in evaluations in educational settings under faculty supervision. (F,SP) Not offered 1984-85.

Educational Language and Literacy

Lower Division Courses

90. Learning From Text. (1). Formerly Education 91A. Course may be repeated for credit. Must be taken on a passed/not passed basis. One hour lecture plus discussion per week. This course assists undergraduates in understanding and using teaching methods. Students learn successful approaches for learning from their texts in such courses as Anthropology, Science, Sociology, Mathematics, and Humanities. (F,SP)

Upper Division Courses

100. Literacy: Individual and Societal Development. (3). New Course since Spring 1983. Three hours of lecture and discussion per week. A consideration of literacy development in individuals and in societies: definitions of literacy, its effects on cognitive functioning in experience, in relation to the experiences in other societies and political development in societies. These relationships and effects will be analyzed historically, psychologically, and sociologically. (F) Not offered 1984-85.

Graduate Courses

240. Language and Literacy Studies. (2-3). Formerly Education 290A. Two hours of seminar per week for an additional unit students must attend one hour discussion. Semester Prerequisites: Consent of instructor. An interdisciplinary study of language and literacy development which provides a broad introduction to the different issues, perspectives, and approaches in this area of research and teaching. A consideration of the social, psychological, cultural, linguistic, and pedagogical factors that influence language and literacy development in students of all ages. The one hour discussion requires at least three hours per week of outside preparation. (F)

241. Issues in Reading Instruction. (3). Formerly Education 290J. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Course, focusing on the implications of theory and research for curricular decisions in teaching reading at elementary and secondary school levels. Critical analysis of instructional programs will be followed by curriculum planning for the school site and district level. (F)

242. Issues in Composition Instruction. (3). Formerly Education 290J. Three hours of seminar per week. Techniques of responding to student writing. Close analysis of the grammar of student generated texts, and of issues involved in evaluating student writing. Connections will be made between research and practice. (F)

243. Perspectives on the Education of Linguistic Minorities. (3). Formerly Education 2802. Three hours of seminar per week. Semester Prerequisites: Consent of the instructor. Emphasis on design, articulation, and implementation of reading-language curricula for primary grades through community college. Dynamics of personal leadership basic to successful curricula implementation. Required for Reading Specialist Credential: other students may enroll provided they have an appropriate professional placement. (SP)

245. The Social Contexts of Language and Learning. (3). New Course since Spring 1983. One 3-hour seminar per week. Influences of social structure and change on language use and learning in contemporary society. Seminar discussions will focus on research and theories, relating language and learning to cultural heritage, social structure, and status, and mass communications systems, as well as family, schooling, and peer group processes. (SP)
247. Research on Computers and the Teaching of Writing. (3). Former Course since Spring 1983. Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 242 or equivalent or consent of instructor. This course focuses on the uses of the computer in instruction and research on the teaching of writing. To learn about the role of the computer in teaching, language arts classrooms students will critique current instructional software and text editors and design research projects. (SP)

250. Methodology of Language and Literacy Research. (3). Formerly Education 280E. Course may be repeated for credit. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. An analysis of common problems in language and literacy research and strategies for dealing with them. Provides guided practice in evaluating published research studies and in interpreting, organizing, and analyzing research data. (F,SP) Not offered 1984-85.

251. Research in Reading. (3). Formerly Education 280F. Course may be repeated for credit. Three hours of seminar per week. An examination of selected topics on reading research including historical aspects of reading research, research methods, and models of the reading process, reading comprehension, the relationship between decoding and comprehension, and attitudes toward reading. (F)

252. Research in Composition. (3). Formerly Education 291A-291B. Course may be repeated for credit. Three hours of seminar per week. Examination of the major rhetorical concepts and theories and their application to literacy instruction. Topics include conversational pros and cons, spoken and written text, and the role of language and culture. (SP)

253. Psycholinguistics and Discourse Analysis. (3). Formerly Education 280G. Three hours of seminar per week. Examination of the major psycholinguistic concepts and theories and their application to literacy instruction. Topics include conversational pros and cons, spoken and written text, and the role of language and culture. (SP)

254. Research in Second Language Acquisition. (3). Formerly Education 218D. Course may be repeated for credit. One 3-hour seminar per week. Students will have the option to take this course for a maximum of 15 credits. Three hours of seminar per week. Group study and research on special problems and topics not covered by any other course or seminar. (F,SP)

Professional Courses

340A-340B. Foundations for Secondary School English. (2,2). Formerly Education 333F-333G-333H. Credit and grade to be awarded upon completion of the sequence. Semester Prerequisites: Admission to a teaching credential program or consent of instructor. Fall: Two hours of lecture and one hour of field work per week. Spring: Two hours of lecture biweekly plus one hour of field work per week. Orientation to reading instruction in secondary schools. Includes study of reading and comprehension, diagnosis and remediation of reading problems, study skills in the content area, classroom teaching, and methods of assessment. (F,SP)

341A-341B. Foundations in Reading for Secondary School Teachers. (F,SP). Credit and grade to be awarded upon completion of the sequence. Semester Prerequisites: Admission to a teaching credential program or consent of instructor. Fall: Two hours of lecture and one hour of field work per week. Spring: Two hours of lecture biweekly plus one hour of field work per week. Orientation to reading instruction in secondary schools. Includes study of reading and comprehension, diagnosis and remediation of reading problems, study skills in the content area, classroom teaching, and methods of assessment. (F,SP)

342A-342B. Foundations in Reading in Grades K-12. (2,1). Formerly Education 134C-134D-134E. Credit and grade to be awarded upon completion of the sequence. Semester Prerequisites: Admission to a teaching credential program or consent of instructor. Fall: Two hours of lecture and one hour of field work per week. Spring: Two hours of lecture biweekly plus one hour of field work per week. Orientation to reading instruction in secondary schools. Includes study of reading and comprehension, diagnosis and remediation of reading problems, study skills in the content area, classroom teaching, and methods of assessment. (F,SP)

390A-390B. Supervised Teaching. (7,8). Formerly Education 334A-334B-334C. Credit and grade to be awarded upon completion of the sequence. One hour of lecture and 24-28 hours of field work per week. Semester Prerequisites: Admission to a teaching credential program. Six to twenty hours of supervised teaching in public school classrooms and one to two hours of lecture per week. (F,SP)

400. Field Work for Advanced Reading-Language Leadership Program. (2). Formerly Education 335. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of seminar and two hours of field work per week. Semester Prerequisites: Admission to Advanced Reading-Language Leadership Program. Application of theoretical knowledge through implementation and evaluation of reading-language programs in individual classrooms and school districts. (F,SP)

Education: Math, Science, Technology

Lower Division Courses

20. Introduction to Computers. (1). New Course since Spring 1983. Four hours of lecture, laboratory, and discussion per week. Introduction to the organization, operation, application, and the social and personal implications of computing hardware and software, and discussion of videotaped television programs, using various campus computing systems, and taking computer-administered examinations to demonstrate understanding of the assigned materials. (F,SP)

Upper Division Courses

12A. Teaching Science in the Non-School Setting. (3). Formerly Education 139. Three hours of lecture per week. A series of workshops conducted in demonstration classrooms at the Lawrence Hall of Science focusing on special techniques for teaching in a non-school setting. The course is designed to develop skills for persons working in museums and youth organizations as well as to introduce teaching to persons considering it as a professional career. Selected topics in Science, Mathematics, and Computing provide the central but not exclusive context for instruction. (SP)

122A. Essentials of Microcomputer Application in Education. (2). Formerly Education 2910. PSI with periodic small group meetings. Semester Prerequisites: Consent of instructor. A PSI course designed for persons who are unskilled in the operation of microcomputers and their peripherals. Students will learn about micros, how they work, and how to use them. Competence will be developed in using computers to do mathematical and descriptive work, and to manipulate various devices and computer programs. Students will use the UNIX system to facilitate feedback, share annotated bibliographies, write, edit, and format papers in accordance with professional journal guidelines. (SP)

19A. Implications of Word Processing for Scientific Writing. (1). Former Course since Spring 1983. Must be taken on a passed/not passed basis. Self-paced with small-group discussion in class and with tutors including periodic group meetings. Semester Prerequisites: Upper division statistics course or concurrent enrollment in an upper division statistics course. Semester Prerequisites: Upper division statistics course. A general introduction to the role of computer software packages in the analysis of social science research. Students will also attend workshops on using word processors and desk-top publishing with students using the Statistical Package for the Social Sciences (SPSS). (F,SP)

Graduate Courses

220A. Educational Perspectives in Mathematics. (3). New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: An upper division course in Mathematics with a grade of B or better or consent of instructor. An examination of several specific, sample areas of mathematics at an upper division, secondary, and elementary levels, to consider different modes of instructional presentation for each, and to analyze the differing educational impacts and problems of such instructional presentation. (SP)

220B. Curriculum Development and Instruction in Mathematics. (2). Formerly Education 234A. Two hours of lecture per week. Semester Prerequisites: Consent of instructor. This course provides an historical review of mathematics curriculum development and accompanying instructional programs in the United States, including an analysis of effects upon them by social trends, cultural influences, national and international events, and legislative decisions. Examination of the more successful programs will be made from various learning theory perspectives and research studies. (SP)

220C. Research in Mathematics Education. (2). Formerly Education 234A. Two hours of lecture per week.
Critical analysis of research in Mathematics education. (F)

221A. Educational Perspectives in Science. (3). New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. This course discusses some of the major conceptual issues in science education, some of the underlying thought processes important in scientific work, and the implications from these for teaching, or for curricular development in science education. (F)

221B. Curriculum Development and Instruction in Science. (3). Formerly Education 233B. Three hours of lecture and one hour of discussion per week. This course provides a historical review of science curriculum development and accompanying instructional programs in the United States, including analysis of effect upon them by social trends, cultural influences, national and international events, and legislative decisions. Examination of the more successful programs will be made from various learning theories, perspectives and research studies. (SP)

221C. Research in Science Education. (3). Formerly Education 234B. Three hours of lecture and one hour of discussion per week. Critical analysis of research in science education. (F)

222A. Educational Perspectives of Computers. (3). New Course since Spring 1983. Three hours of lecture and one hour of discussion/laboratory per week. Semester Prerequisites: 20 or equivalent; computer experience at the level of 191A-191B. Principles and characteristics of computers they may be used in education, both in formal and informal settings. Selected aspects of computer use for assisting learning, classroom management, and administration. Integrating computers into the classroom. (F)

222B. Design of Computer-Based Instruction. (3). New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Consent of instructor. The study of educational and psychological literature related to design of effective computer-based instruction; development of students' abilities to design educational software; and application of design principles in writing computer-based instructional materials. (SP)

222D. Design and Production of Mediated Programs. (3). Formerly Education 235A. Two hours of lecture and three hours of laboratory per week. Introduction to research, design, production, and evaluation issues related to mediated programs in learning environments, including visual, audio, video, programmed instruction, learning packages, multimedia, simulations/games, and cinematography. (F,SP)

222E. Curriculum Development with Microcomputers. (3). Formerly Education 235D. Spring 1990. PSI with periodic group meetings with instructors. Semester Prerequisites: 20 or demonstrated competency in operating micro and DOS systems. A PSI course in which students master principles of sound curriculum development through the use of the PILOT authoring system. Students will be required to develop CAI lessons that reflect the best of design principles and which make full use of the authoring system's capabilities. Enrollment is restricted to students who are competent in the operation of microcomputer systems. Preference will be given to graduate students in education and the helping professions. (F,SP)

223. Advanced Topics in Math, Science, and Technology Education. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 220A or 221A or 222A or consent of Instructor. Problem solving, ethnography, etc. Subject matter changes from offering to offering. (F)

224. Special Problems in Math, Science and Technology Education. (1-2). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture per week; an additional unit may be earned for an extra hour of discussion. Semester Prerequisites: 220A or 221A or consent of instructor. Study of special problems and issues in these educational areas. Examples include issues of science and society, the problem of math anxiety, learning in science centers and museums, environmental education, and health education. (SP)

230A-230B. Instruction in Elementary Schools. (5,3). Formerly Education 137A-137B-137C. Credit and grade to be awarded upon completion of the sequence. Four hours of lecture and seminar, plus 3 hours of workshop per week. Semester Prerequisites: Admission to a credential program. Seminars, lectures, and workshops to meet requirements for the multiple subject credential. Subject areas include educational psychology, instructional strategies, learning processes, and elementary school subject areas. (F,SP)

231A-231B. Instruction in Secondary Schools. (5,3). Formerly Education 137D-137E-137F. Credit and grade to be awarded upon completion of the sequence. Four hours of lecture and seminar, plus 3 hours of workshop, per week. Semester Prerequisites: Admission to a credential program. Seminars, lectures, workshops to meet requirements for the single subject credential. Subject areas include educational psychology, instructional strategies, learning processes, and secondary school mathematics, science, and technology. (F,SP)

233. Research and Advanced Instruction — Elementary and Secondary Schools. (3). Formerly Education 293A-293B. Three hours of lecture and one hour of laboratory per week. Exploration and research in advanced methods and strategies of teaching. (SP)

235. Elementary Teaching in Math and Science. (3). Formerly Education 191R-191T. One 3-hour lecture per week. Semester Prerequisites: Consent of instructor, and one hour of discussion/laboratory per week. Seminar to develop CAI lessons that reflect the best of educational psychology, instructional strategies, learning processes, and secondary school education, both in formal and informal settings. Selected topics in basic human thought processes underling effective performance in science or mathematics. It then examines the implications of these insights to the design of instruction in these fields. (SP)

245A. One 2-hour lecture and one 3-hour laboratory per week. Internship on research and development projects on the UC campus or at a nearby cooperating institution such as the Exploratorium, Oakland museum, etc. Two hours meeting bi-weekly. Topic discussed with instructors. (F,SP)

245B. One 3-hour seminar per week. A graduate level introduction to counseling theory, research and practice. Emphasis on counseling skills associated with positive client behavior change. (F)

245C. One 2-hour lecture and one 3-hour laboratory per week. Advanced practice in those skills associated with positive client behavior change. Introduction to counseling theories. (SP)

250A. Cognitive Development. (3). Formerly Education 215A. One 3-hour seminar per week. An introduction to the development of thinking from early childhood through adolescence, with primary emphasis on Piagetian and neo-Piagetian theory and research. (F)

250B. Social Development. (3). Formerly Education 215D. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. An examination of theory and research on social development from childhood to adulthood. Review of different theoretical orientations to social development: moral, psychosexual development, and the role of social-environmental factors. (SP)

200C. Learning and Memory Development. (3). Formerly Education 217D. Two 1-hour lectures/discussions per week. Semester Prerequisites: Consent of instructor. A consideration of major theories and research on the
development of human learning and memory from early childhood through young adulthood. (F)

200D. Theories of Intelligence. (3). Formerly Education 217A. Two 1/2-hour lectures per week. Semester Pre-requisites: One course in statistics. A consideration of psychological research on the study of individual differences in human mental abilities, with emphasis on intelligence, including theories and empirical research on the measurement, nature, and structure of abilities, from Galton to the present. (SP)

200E. Neuropsychology of Reading. (3). Formerly Education 217C. One 3-hour session per week. Semester Pre-requisites: Consent of instructor: Review and discussion of current research in neuropsychologies and neuro-psychology related to information processing and reading. Emphasis on processes in normally functioning individuals and information processing problems in children and adults. Topics may be specialized at a given offering of the course; e.g., eye movements, aphasia, etc. (SP)

200F. Proseminar in Educational Psychology. (1). Formerly Education 200. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour seminar per week. Semester Pre-requisites: Consent of instructor: Presentations and discussion of topics, including that of students and faculty, in the areas of human development and education. (F,SP) Not offered 1984-85.

201A. Psychology of Reading. (3). Formerly Education 212L. One 3-hour lecture per week. Topics covered include prerequisite to reading acquisition: cognitive, linguistic, models of reading, comprehension, the literacy problems of minority students, and reading disability. (SP)

201B. Seminars in Intellectual Development. (2). Formerly Education 218B-218C. Course may be repeated for credit. One 2-hour seminar per week. Semester Pre-requisites: 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 (F,SP) Not offered 1984-85.

202A. Motivation and Self Perceptions in Human Learning. (3). New Course since Spring 1983. Two 1/2-hour lectures/discussions per week. Achievement motivation and perceived causal attributions for performance. Related variables will be considered. Relevance for educational practice will be explored. (SP)

202B. Play and Games in Human Development. (3). Formerly Education 214C. One 2-hour lecture and one 2-hour laboratory per week. Semester Pre-requisites: Consent of instructor. Examination of play and games in animal, psychological and educational research. Concept of structuralism applied to analysis of new and classic games. Participants create new games for field testing. (SP)

202C. Mental Health. (3). Formerly Education 214C. One 2-hour session and 3 hours of field work per week. Concepts, practices and research related to the prevention of mental health. WIs of integrating cognitive and emotional processes—roles of family, peer play and school experiences in promotion of mental health. (SP) Not offered 1984-85.

202D. Seminars in Social and Personality Development. (2). Formerly Education 214D. Course may be repeated for credit. One 2-hour session per week. Semester Pre-requisites: 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) Moral Development
(3) Personality Development (F,SP)

203A. Individual Differences: Behavioral Genetic Analysis of Human Abilities. (3). Formerly Education 218E. Two 1/2-hour lectures per week. Semester Pre-requisites: Two courses in statistics, including correlation and analysis of variance. A consideration of the application of quantitative genetics methods to the study of human variability in educationally relevant traits, with emphasis on cognitive abilities. The course examines the methods for twin studies, adoption studies, mating systems, heritability estimation, and analysis of the interaction roles of genetic and environmental factors in development. (SP)

203B. Individual Differences: Cognitive Processes. (3). Formerly Education 218E. Two 1/2-hour lectures per week. Semester Pre-requisites: Consent of instructor. Examination of individual differences from the standpoint of recent theory and research on cognitive psychology, information processing models of human learning and memory, mental chronometry, and componential analysis of abilities, with special reference to scholastic learning. (SP) Not offered 1984-85.

203C. Seminars in Individual Differences. (2). Formerly Education 215B and 218E. Course may be repeated for credit. One 2-hour session per week. Semester Pre-requisites: 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) Behavioral Genetics
(2) Information Processes
(3) Neuropsychology
(4) Exceptional Children (F,SP) Not offered 1984-85.

204A. Logic of Theoretical Inquiry. (2). Formerly Education 218F. One 2-hour seminar per week. Semester Pre-requisites: Consent of instructor. A review and discussion of theoretical positions concerning methodological issues, problems of scientific inference, measurement, and interpretation. A reasonable knowledge of statistics is required. The course is not concerned with statistical calculations as such. (F)

204B. Critical Analysis of Empirical Inquiry. (2). Formerly Education 218A. Two 1/2-hour sessions per week. Semester Prerequisites: 204A-204B and consent of instructor. Quarter Prerequisites: 118B. Critical review and detailed discussion of current research. Emphasis is not on content but on method, logic, and appropriateness of inference as represented in the research examined. (SP)

204C. Research Seminars: Inquiry in Educational Psychology. (3). Formerly Education 294D. Course may be repeated for credit. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. The doctoral program in Educational Psychology requires that students complete extensive projects of documentation 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 of others. (SP)

207A. Standard Tests in Education. (2). Formerly Education 212A-212B. Two 1-hour lectures per week, plus two hours of field work bi-weekly. Introduction to measurement concepts and procedures applicable to the development, selection and utilization of educational and psychological tests in school settings. In particular, examines achievement, cognitive abilities, adaptive behavior and other tests commonly confronted by teachers and pupil personnel workers. (SP)

207B. Individual Appraisal of Intelligence. (4). Formerly Education 213C. One 3-hour lecture and 6 hours of field work per week. Semester Pre-requisites: Consent of instructor. Theories of intelligence as applied to the assessment of intelligence, measurement concepts applied to intelligence tests, development, administration and interpretation of the WISC-R, Stanford-Binet, and other test procedures for intelligence testing. Current controversial issues in testing, including issues pertaining to test bias and legal aspects of testing. (F)

207C. Diagnosis of Human Handicaps. (4). Formerly Education 213D. One 3-hour lecture and 6-hours of field work per week. Semester Pre-requisites: 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. (SP)

207D. Assessment and Education of Exceptional Pupils in Regular Classes. (2). Formerly Education 207D. One 1-hour lecture and one hour of discussion per week. Methods for identifying handicapped children and implication for their education in regular classes. Special topics as nondiscriminating testing, least restrictive environments, alternative programs, parent cooperation, interaction, interpersonal relationships, characteristics, behavior of exceptional pupils are covered in studies of individual exceptional children in regular classes. (SP)

208A. Measurement of Individual Differences. (4). Formerly Education 216A. Three 1/2-hour lectures per week. Semester Prerequisites: 208A or Psychology 208A. Development of latent trait and item response theory by way of standard models such as the normal ogive, logistic, etc. Lesesfield's latent class models will be discussed as will be special topics in strong true theory. Tailored testing will be introduced. 208C and Psychology 208C will be offered alternate years. (F) Alternate years.

208B. Psychological Scaling. (4). Formerly Education 216D. Three 1/2-hour lectures per week. An introduction to the measurement of psychological value. Emphasis will be placed on psychophysical judgment. Topics will include Weber's Law, Fechner's Law, Thurstone scaling, signal detection theory, debates on the use of category ratings vs. magnitude estimation, the ratio-difference controversy, cross modality, matching, theories of contextual effects, etc. 208C and Psychology 208C will be offered in alternate years. (F) Alternate years.

208D. Factor Analysis in Educational Psychology. (4). Formerly Education 216S. Three 1/2-hour lectures per week. Introduction to factor and component analysis. Rotation and transformation problems will be dealt with. Fitting the factor analytic model via statistical procedures will be addressed. Factorial indeterminacy issues will also be introduced. 208D and Psychology 208D will be offered in alternate years. (SP) Alternate years.

208E. Test Construction. (4). New Course since Spring 1983. Three 1/2-hour lectures per week. Semester Prerequisites: 208B or Psychology 208B; 208D or Psychology 208D recommended. Issues in the development, administration and evaluation of tests for assessing personality traits and measuring attainment in educational or psychological contexts. Questionnaire development as well as more traditional forms of item development, and the development of the usual form of construct validation. 208E and Psychology 208E will be offered in alternate years. (F) Not offered 1984-85.

208F. Proseminar in Educational Measurement. (1). Formerly Education 216S. Course may be repeated for credit. One hour of seminar per week. Semester Pre-requisites: Consent of instructor. Current research and publications on educational measurement by faculty, students, and others is examined and critiqued. (F,SP)

209A. Data Analysis in Educational Research and Program Evaluation I. (4). Formerly Education 119A-119B and 219C. Two 2-hour lectures per week. Graphic methods; descriptive statistics, hypothesis testing, explained variance, nonparametric procedures, contingency table analysis. (F)

209B. Data Analysis in Educational Research and Program Evaluation II. (4). Formerly Education 119A-119B and 219C. Two 2-hour lectures per week. Statistical analysis: correlation, simple and multiple regression, planned and post hoc comparisons. (SP)

209L. Educational Data Analysis Laboratory I. (1). Formerly Education 119L. One hour of laboratory per week. Exercises and computer problems are presented and discussed. Must be taken concurrently with course 209A. (F)
321A. Advanced Seminar on the Re-Education of Emotionally Disturbed Children. (3). Formerly Agricultural Education 214F. Course may be repeated for credit. One 3-hour seminar and one hour of fieldwork per week. Semester Prerequisites: Consent of instructor. Diagnosis and evaluation of academic abilities in language, reading, mathematics, health, and study practices. Analysis of successful and unsuccessful students including home, school, and vocational factors. (SP)

321B. Theoretical and Scientific Bases for School Psychology Practice. (3). Formerly Education 210A. One 3-hour lecture and six hours of fieldwork per week. Historical and contemporary overview of the professional specialty of school psychology. (F)

321C. School-Based Consultation. (3). Formerly Education 210C. One 3-hour lecture per week. Exercises and computer problems are presented and discussed. Must be taken concurrently with course 210A. (F) Not offered 1984-85.

321D. Educational Interventions for the School Psychologist. (3). Formerly Education 210E. One 3-hour lecture per week. Theories and procedures for implementation of a thesis topic, research design, and statistical analyses. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Recommended for M.A. students in Educational Psychology. (F, SP)

321L. Laboratory for Human Development and Education. (3,3). Formerly Education 202A-202B-202C. One 3-hour lecture/discussion per week. Semester 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. (SP)

321M. Laboratory for Human Development and Education. (1). Formerly Education 201L-201M-201N. Three hours of fieldwork per week. Supervised child study, individual and small group tutoring, field experiences. Must be taken concurrently with 211A. (SP)

321N. Laboratory for Advanced Human Development and Education. (1). Formerly Education 202L-202M-202N. Three hours of fieldwork per week. Supervised experience in implementation and evaluation of theory-based educational plans for pupils, including those with learning handicaps. Must be taken in conjunction with 211C. (SP)

321O. Laboratory for Advanced Human Development and Education. (1). Formerly Education 202L-202M-202N. Three hours of fieldwork per week. Supervised experience in implementation and evaluation of theory-based educational plans for pupils, including those with learning handicaps. Must be taken in conjunction with 211O. (SP)

212A. Advanced Topics on Exceptional Children. (3). Formerly Education 212A. Three 3-hour lecture per week. One hour of fieldwork per week. Semester Prerequisites: Consent of instructor. Topics will include problems in mainstreaming mildly handicapped children and social psychological perspectives on the education of exceptional children. (SP) Not offered 1984-85.

212B. Seminar On the Re-Education of Severely Emotionally Disturbed Children. (3). Formerly Education 214D. Course may be repeated for credit. One 3-hour seminar and one hour of fieldwork per week. Semester Prerequisites: Consent of instructor. Behavior management; remedial techniques in school settings; working with parents and teachers in schools; utilization of community resources and agencies. Use of group procedures with disturbed children; social and educational competencies in school settings; assessment of academic abilities in language, reading, mathematics, health, and study practices. Curriculum and interpersonal processes. Analysis of successful and unsuccessful students including home, school, and vocational factors. (SP)

212C. Advanced Seminar on the Re-Education of Emotionally Disturbed Children. (3). Formerly Education 214F. Course may be repeated for credit. One 3-hour seminar and one hour of fieldwork per week. Semester Prerequisites: Consent of instructor. Diagnosis and evaluation of academic abilities in language, reading, mathematics, health, and study practices. Analysis of successful and unsuccessful students including home, school, and vocational factors. (SP)

213A. Conceptual Bases for School Psychology. (3, F). Formerly Education 210A. One 3-hour lecture and six hours of fieldwork per week. Historical and contemporary overview of the professional specialty of school psychology. (F)

213B. Theoretical and Scientific Bases for School Psychology Practice. (3). Formerly Education 210B-210C. One 3-hour lecture per week. Exercises and computer problems are presented and discussed. Must be taken concurrently with course 210A. (F) Not offered 1984-85.

213C. School-Based Consultation. (3, F). Formerly Education 210D. One 3-hour lecture per week. Theories and procedures for implementation of a thesis topic, research design, and statistical analyses. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Recommended for M.A. students in Educational Psychology. (F, SP)

213D. Educational Interventions for the School Psychologist. (3, F). Formerly Education 210E. One 3-hour lecture per week. Theories and procedures for individual and group assessment of children's learning and behavior problems as applied to the design of individual and group programs in the classroom. (SP)

213L. Laboratory for School Psychology. (1). Formerly Education 210L. One hour of discussion and six hours of fieldwork per week. Laboratory section to evaluate fieldwork records and for supervised school assignments. Must be taken concurrently with 213A-213B-213C-213D. (F, SP)

254A. Thesis Seminar: M.A. (1-4). Formerly Education 294A. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Recommended for M.A. students in Educational Psychology working on seminar papers or theses. One additional unit may be earned by completing 4 hours of independent research per week. (F, SP)

254B. Thesis Seminar: M.A. Developmental Teacher Education. (1-4). Formerly Education 294B. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Recommended for M.A. students in Developmental Teacher Education program working on seminar papers or theses. Topics in the areas of interpretation of a thesis topic, research design, and statistical analyses. One additional unit may be earned by completing 4 hours of independent research per week. (F, SP)

254C. Thesis Seminar: Ph.D. (1-4). Formerly Education 294C. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Recommended for Ph.D. students in Educational Psychology preparing for dissertation research. One additional unit may be earned by completing 4 hours of independent research per week. (F, SP)

258. Group Study and Research. (1-6). Formerly Education 298L. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One to six hours of seminar per week. Group study and research on special problems and topics. (F, SP)

Professional Courses

390C. Supervised Teaching. (1-9). Formerly Education 334D. Course may be repeated for a maximum of 15 units. Two to six hours of supervised teaching in public school classrooms. One to three hours of lecture per week. Semester Prerequisites: Admission to a teaching credential program. Units and hours vary with individual credential programs and semester. (F, SP)

413A-413B. Community-Based Internship in School Psychology. (3, SP). Formerly Education 310. Must be taken on a satisfactory/unsatisfactory basis. One to six hours of fieldwork per week. Supervised assignment to a community mental health agency in the capacity of school psychologist. (F, SP)

413C-413D. School-Based Internship in School Psychology. (6, SP). Formerly Education 310. Must be taken on a satisfactory/unsatisfactory basis. Two hours lecture and three days of field work per week. Supervised assignment to a school district in the capacity of school psychologist. (F, SP)

413L. Consultation for School Psychology Students. (1). Formerly Education 310L. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour consultation on campus and six hours of fieldwork per week. Semester Prerequisites: Must be taken concurrently with 213C-213D and 413C-413D. (F, SP)

Interdepartmental Studies Courses

Upper Division Courses

IDS110. Introduction to Computers. (3). Three hours of lecture per week. Semester Prerequisites: Upper division standing. Students must also be enrolled in IDS 110L must be taken concurrently. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour consultation on campus and six hours of fieldwork per week. Semester Prerequisites: Must be taken concurrently with IDS 110C-110D and IDS 413C-413D. (F, SP)

IDS110L. Introductory Computer Laboratory. (1). Two 2-hour laboratories per week. Semester Prerequisites: Upper division standing. Students must also be enrolled in IDS 110L. One laboratory section may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours lecture/discussion and one day field work per week. Supervised assignment to a school district in the capacity of school psychologist. (F, SP)

IDS121A-121B. Environmental Education. (3,3). Formerly Conservation and Resource Studies 120A-120B-120C. Must be taken on a passed/not passed basis. Five and one half hours of lecture/discussion and six hours of fieldwork per week. Semester Prerequisites: 121A is prerequisite to 121B; consent of instructor. Theory and practice of translating ecological knowledge, environmental issues and values into educational problems for all ages and social classes. Elements of programming. Applications programs. Examples are drawn mainly from word processing, database management, electronic spreadsheet, graphics and simulation and telecommunication. (F, SP)

IDS121C. Seminar in Neuropsychology. (3, SP). Formerly Education 211. Course may be repeated for credit. One 3-hour lecture and one 2-hour laboratory per week. Lectures and case presentations in neuropsychology. Discussion of problems of cognition and information processing manifested in cases of aphasia, dementia stroke, traumatic injury, and other forms of neurological damage. Critical analysis of research methods and formulation of research strategies for evaluation of cognitive functioning. Presentation of neuropsychological populations as opportunities for the study of cognitive functioning. Sponsoring Departments: Education and Psychology. (SP)

IDS271. Seminar in Neuropsychology. (3, SP). Formerly Education 211. Course may be repeated for credit. One 3-hour lecture and one 2-hour laboratory per week. Lectures and case presentations in neuropsychology. Discussion of problems of cognition and information processing manifested in cases of aphasia, dementia stroke, traumatic injury, and other forms of neurological damage. Critical analysis of research methods and formulation of research strategies for evaluation of cognitive functioning. Presentation of neuropsychological populations as opportunities for the study of cognitive functioning. Sponsoring Departments: Education and Psychology. (SP)
The College of Engineering offers programs in a wide variety of fields, based on the concept that the engineer must be well grounded in the sciences and humanities and social studies, with a full command of the principles and practices of the profession.

Four-year undergraduate curricula are offered in the following professional fields: civil engineering, electrical engineering and computer sciences, industrial engineering and operations research, manufacturing engineering, mechanical engineering, materials science and engineering, mineral engineering, naval architecture, nuclear engineering, and petroleum engineering. Each of these curricula is administered by a separate 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 bioengineering, engineering geoscience, engineering mathematics and statistics, and engineering physics. Double Major programs leading to a B.S. degree in two fields are offered through some departments with either Materials Science and Mineral Engineering or Nuclear Engineering. Double Major programs in materials science and engineering and chemical engineering, and nuclear engineering and chemical engineering, are offered jointly by the College of Chemistry and the College of Engineering.

Entering freshmen should have completed the following:

High School Subjects and Units
United States History—1 (1 year of United States history or ½ year of United States history and ½ year of civics or American government.)
English—4
Algebra—2 (or equivalent integrated courses, covering same material, acceptable to the University’s Office of Admissions.)
Plane Geometry—½
Trigonometry—½
Physics—1
Chemistry—1
Foreign Language—2

Other college preparatory subjects—3½

Total units—16

Students may refer to the Announcement of the College of Engineering for detailed presentation of the curricula available. Specific courses are listed in the course section of this Catalog. A student who has attempted more than 130 semester units of college work will not be permitted to register in the College of Engineering without permission of the Dean of the College. Selective enforcement of this requirement should occasion no hardship or difficulty for continuing undergraduates, regardless of units attained, provided they pursue engineering relevant programs of study.

Graduate programs are offered leading to the Master of Science and Doctor of Philosophy degrees for study emphasizing engineering applied sciences, and Master of Engineering and Doctor of Engineering degrees for advanced professional studies of design development. Fields of study include civil engineering, electrical engineering and computer sciences, industrial engineering and operations research, mechanical engineering, nuclear engineering, ceramic engineering and metallurgy, materials science and mining engineering, engineering geoscience, fluid mechanics, applied mechanics, and naval architecture and offshore engineering. Interdisciplinary graduate programs are also available in fields of bioengineering, earthquake engineering, energy and energy resources engineering, environmental engineering, mining and mineral resources engineering, ocean engineering, production systems and manufacturing processes engineering, and urban and public systems. More information will be found throughout the Engineering Sections of this Catalog and in the Announcement of the College of Engineering.

Civil Engineering
Department Office, 760 Davis Hall, 642-3261
Sanitary, Environmental, Coastal, and Hydraulic Engineering
Division Office, 412 O'Brien Hall, 642-6777
Sanitary and Environmental

Professors:
Alexander J. Home, Ph.D.
Robert E. Selleck, Ph.D.
Jerome F. Thomas, Ph.D.

Assistant Professors:
Jerome J. Wesolowski, Ph.D.

Lecturers:
Eugene M. Herson, M.S.
Donald G. Larkin, M.S.

Hydraulic and Coastal

Professors:
James A. Harder, Ph.D.
Robert L. Wiegel, M.S.

Associate Professor:
Rodney J. Sobey, Ph.D.

Lecturer:
Pat Wilde, Ph.D.

Structural Engineering and Structural Mechanics
Division Office, 721 Davis Hall, 642-6463

Professors:
Vittorio Bertolo, Sc.D.
Arif K. Chopra, Ph.D.
Ray W. Clough, Jr., Sc.D., (Byron L. and Elva E. Nashikian Professor of Structural Engineering)
William G. Godden, Ph.D.
James M. Kelly, Ph.D.
Jacob Lubliner, Ph.D.
Hugh D. Michiean, Ph.D.
Povindar M. Mehta, Ph.D.
Joseph Penzenz, Sc.D.
David Pirfz, M.S.
Karl S. Pieter, Ph.D.
Graham H. Powell, Ph.D.
Jerome L. Rackman, Eng., Sc.D.
Alexander C. Scofield, Jr., M.S.

Associate Professors:
Jorgen K. Pedersen, PhD.

Assistant Professor:
Stephen A. Mahin, Ph.D.

Assistant Professor:
Jack P. Moehle, Ph.D.

Professor:
Earl R. Parker, Met.E. (Emeritus)

Assistant Professor:
Michael Oliva, Ph.D.

Lecturers:
Roy M. Stephen, M.S. David L. Wesley, M.S.

Geotechnical, Transportation, Construction, and Surveying
Division Office, 215 McLaughlin Hall, 642-5672
Geotechnical

Professors:
Tor L. Brekke, Dr. Ing.
Richard E. Goodman, Ph.D.
William N. Houston, Ph.D.

Associate Professor:
Nicholas Sitar, Ph.D.

Lecturers:
Clarence C. Chan, M.S.
Thomas Doe, Ph.D.

Transportation

Professors:
William L. Garrison, Ph.D.
Adol Carablan, Ph.D.
Adolif D. May, Jr., Ph.D.
Carl L. Morrison, M.S.
Gordon F. Newell, Ph.D.
Harmon E. Davis, M.S.

Associate Professor:
Carlos Dagenao, Ph.D.

Lecturers:
Elizabeth Deakin, M.S., J.D.
Robert Parsons, M.S.
Wolfgang S. Homberger, M.S.
David W. Jones, Ph.D.

Construction

Professors:
Keith C. Crandall, Ph.D.
Ben C. Gerwick, Jr., B.S.

Associate Professor:
Weston T. Hester, D.Eng.

Surveying

Professors:
James M. Anderson, Ph.D.
Francis H. Moffitt, M.C.E.
(Division Chair)

Civil Engineering is concerned with the planning, design, and construction of public and private works such as buildings, bridges, dams, transportation systems, and water supply systems. The civil engineer must have a full understanding of the physical and economic aspects of structures and systems. The four-year undergraduate curriculum leading to the B.S. degree is designed to provide a basic and fairly comprehensive background in civil engineering and related fields. This curriculum may provide a student with a direct entry to professional experience upon graduation or with preparation for graduate study.

Curriculum for the Bachelor's Degree

A total of 120 units is required. The program of study is described in detail in the Announcemnt of the College of Engineering (available without charge from the College of Engineering, University of California, Berkeley, Berkeley, CA 94720). All students must complete a total of 18 units of humanities and social studies of which six units must
be upper division, and a minimum of three courses, at least one of which is in upper division, must be taken from a single department. Other courses include:

**Lower Division.** Required: Mathematics 1A-1B and 50A-50B, Chemistry 1A, Physics 7A-7B, Engineering 28, 36, and 45, Civil Engineering 85 and 92, Computer Science 7, and Statistics 25. Electives: 15 units including at least three units of basic science and 11 units of humanities or social studies.

**Upper Division.** Required: Mechanical Engineering 104. Civil Engineering 100, 111, 120, 130, 140, 150, or 151, 160, 167, 170, 175, and 192. Electives: 10 units of upper division civil engineering courses, seven units of humanities and social sciences, nine units of upper division engineering electives.

**Electrical and Computer Sciences**

Department Office, 231 Cory Hall, 642-3214

**University Professor:** John W. Levine, Ph.D.

**Professors:**
- Diggens J. Angelakos, Ph.D. (Vice Chair)
- Arthur R. Baer, Ph.D. (Emeritus)
- Charles K. Birdsall, Ph.D. (Ret.)
- Robert W. Brodersen, Ph.D.
- Leon O. Chua, Ph.D., Ph.D. (Hon.)
- Charles A. Desoer, Sc.D., Ph.D. (Hon.)
- Martin H. Graham, D.E.E.
- Paul R. Gray, Ph.D.
- T. Kenneth Gustafson, Ph.D.
- David A. Hodges, Ph.D.
- David A. Hopkins, Ph.D. (Vice Chair)
- Channing Hu, Ph.D.
- Edward L. Keller, Ph.D.
- Ernest S. Kuh, Ph.D.
- Edwin R. Lewis, Ph.D.
- Allen J. Lichtenberg, Ph.D.
- Michael A. Lieberman, Ph.D.
- Kenneth R. Mei, Ph.D.
- David W. dorski, Ph.D.
- Robert G. Meyer, Ph.D. (Vice Chair)
- Steven R. Muller, Ph.D.
- Andrew R. Neureuther, Ph.D.
- William G. Oldham, Ph.D.
- Donald O. Pederson, Ph.D., Ph.D. (Hon. Chair)

**Associate Professors:**
- Nathan Cheung, Ph.D.
- Ping K. Ko, Ph.D.

**Assistant Professors:**
- A. Richard Newton, Ph.D.
- J. Walrand, Ph.D.

**Professors:**
- Vidal R. Alvarez, Ph.D.
- Thomas P. Bogden, M.D., Ph.D. (Residency)
- Andrew D. Wellman, Ph.D.

**Lecturers:**
- Stephen F. Derenzo, Ph.D.
- Horace G. Jackson, E.E.

**Graduate Study**

Graduate programs of study leading to the master's and doctoral degrees are available in the major civil engineering fields: air pollution, construction, geodesy and photogrammetry, hydraulics, sanitary, geotechnical engineering, ocean engineering, structural engineering and mechanical, transportation, and water resources. For details, please consult the Announcement of the College of Engineering.

**Computer Science Division**

Division Office, 573 Evans Hall, 642-1024

**Professors:**
- E. W. Reiser, Ph.D.
- Michael I. Kismeyer, Ph.D.
- David J. Blume, Ph.D.
- Alvis M. Despain, Ph.D.
- Domenico Ferrari, Dr.Eng. (Associate Chair)
- Robert S. Fabry, Ph.D.
- Arif Ali, Ph.D.
- Susan L. Grahan, Ph.D.
- Michael A. Harrison, Ph.D.
- William Kahn, Ph.D.
- Richard M. Karp, Ph.D.
- Eugene L. Lawler, Ph.D.
- Beresford N. Raplett, Ph.D.
- Chintor V. Ramachandran, Ph.D.
- L. S. Sevag, Ph.D.
- Michael R. Stonebraker, Ph.D.
- Lethal A. Zadeh, Ph.D.
- Derrick H. Lehmer, Ph.D. (Emeritus)

**Associate Professors:**
- Richard J. Fateman, Ph.D.
- David A. Patterson, Ph.D.

**Assistant Professors:**
- Brian Banksy, Ph.D.
- Paul N. Hillinger, Ph.D.
- Randy W. W. W. John K. Ousterhout, Ph.D.
- Michael L. Powell, Ph.D.
- Clark Thompson, Ph.D.
- Robert J. Wittenrsky, Ph.D.
- Lawrence A. Rowe, Ph.D.
- Alan J. Smith, Ph.D.

**Lecturers:**
- Michael J. Clancy, M.S.
- Patricia Grosh, Ph.D.
- Michael R. Lyle, M.S.
- Mark S. Tuttle, M.S.
- Anthony L. Wasserman, Ph.D.

With rapid growth in technology, electrical engineering now encompasses solid-state devices, integrated circuits, microwave electronics, quantum and optical electronics, bioelectronics, radiation and propagation, plasmas, power systems, control systems, communications and information theory, computer theory, large-scale networks and systems, ecological systems and pattern recognition.

Programs in computer science are offered by the Department through its Computer Science Division.

These programs include such topics as analysis of algorithms, artificial intelligence, complexity, theory of computation, computer architecture and machine organization, computer graphics, data base management systems, formal languages and automata theory, information theory, numerical analysis, parallel and pipeline computers, performance analysis, programming languages and computers, operating systems, and symbolic algebraic manipulation.

**Curriculum for the Bachelor's Degree**

A minimum of 120 semester units is required for the bachelor's degree in EECS, including:

1. (a) 40 units in the College of Engineering, including:
   - 30 upper division units; (b) EECS 40 or EECS 401, 645 1 and 45; (c) 20 upper division units in EECS, with the upper division number of courses (electives) to count toward this requirement being applied.

2. 16 units of physical or life sciences, including Physics 7A-7B.

Courses must be taken from the current list of acceptable physical and life sciences.

3. 16 units of Mathematics or Statistics from the current list of acceptable courses, including Mathematics 1A-1B, or 8 units of Mathematics 1S.

4. 48 units of electives, with no more than 40 taken on a passed/not passed basis. No more than 3 units of English-as-a-Second-Language, 4 units of Physical Education, and 10 units of course 198 (independent study and research) may be counted toward the degree. 18 units must be approved Humanities and Social Study courses, including: (a) a minimum of two Humanities or Social Study courses from a single department, with at least one in upper division, and (b) at least 6 approved upper division units in Humanities and Social Sciences.

Note: None of the 72 units in requirements 1, 2, and 3 may be taken on a passed/not passed basis except 1(d) laboratory courses, in which case these courses cannot be used to satisfy requirement 1(a) of 40 units in the College of Engineering.

Beyond satisfaction of the minimum requirements for the B.S. degree, students follow upper division basic paths in selecting their major program. They may select the general Electrical Engineering and Computer Sciences program in which they will receive an introduction to a number of areas outlined above. Alternatively they may emphasize particular subject areas by choosing one of the four main programs in the Department of Electrical Engineering and Computer Sciences: electronics, computer systems, computer sciences, and bioelectronics. Or they may plan an individual program to suit their special needs or background.

**General Electrical Engineering and Computer Sciences Program**

The upper division program comprises Physics 7A-7B, 8 units of Math 15, Engineering 45, about 10 units in the College of Engineering, CS 50, approximately 16 units of physical or life sciences and 32 units of electives including Humanities and Social Study courses.

The Department recommends that part of the elective units be taken in engineering, physical or life sciences, mathematics and statistics so as to strengthen and broaden the background and to satisfy some of the requirements in these areas. The upper division program balances a selection of courses in electric circuits, electronics, systems analysis, electromagnetic fields, communication and control theory, computer systems and programming, dynamics, thermodynamics, and modern physics. A detailed listing of recommended courses can be found in the Catalog for UC Berkeley under Engineering and Computer Sciences: electronics, computer systems, computer sciences, and bioelectronics.

**Programs in Specific Areas.** In order to provide a choice of well-integrated programs for the student who has a clearly defined interest in one of the major areas of Electrical Engineering and Computer Sciences, the department offers four programs of study in the following general areas:

1. **Electronics.** For students whose interests fall into areas such as solid state electronics, integrated circuits, plasmas, electron beams, microwave electromagnetics, and superconductivity.

2. **Systems.** For students whose interests fall into areas such as networks, control theory, information theory, communication theory, finite-state systems, mathematical programming, system theory, and large-scale systems.

3. **Bioelectronics.** For students interested in animal control systems, physical modeling of neural systems, application of circuit and system techniques to living systems, and ecological systems.

4. **Computer Science.** For students interested in machine organization and logical design, programming systems and languages, digital circuits, heuristic programming and artificial intelligence, switching and automata theory, algebraic theory of machines, mathematical theory of computations, and pattern classification, and learning systems. This program is offered by the Department through its Computer Science Division.

Undergraduates who wish to major in computer science may do so either through the College of Letters and Science or through the College of Engineering. Details of the Computer Science Major in the College of Letters and Science may be found in the Letters and Science section of the General Catalog for UC Berkeley under Computer Science.
Graduate Program
To prepare the graduate student 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 usually required, students are encouraged 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 about one year of study. About three additional years are usually required for the Doctor of Philosophy. The Master of Engineering 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 coursework for the Master of Engineering and requires a one-year internship in a design and development organization. Students with either a B.S. or an M.S. who intend to study for the D.Eng. 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 Announcement of the College of Engineering. For further information on graduate programs and procedures, see the Electrical Engineering and Computer Sciences Graduate Orientation Notes, available in 299 Cory Hall.

Engineering Science
The student in engineering science studies in one of several areas where engineering closely interacts with the natural sciences, mathematics, physics, or medicine. Students in this program may choose to prepare for graduate study in engineering fields, the natural sciences, or medicine. Graduate programs in engineering science are offered by the individual engineering departments.

Programs for the Bachelor's Degree
The undergraduate Engineering Science curriculum is multidisciplinary and is administered by the Engineering Science Committee. Acceptance into the engineering science program requires a minimum grade-point of 3.00. All engineering science programs must include a total of 18 units of humanities and social studies of which at least three units must be in English and 6 units must be in upper division; a minimum of two courses, at least one of which is in upper division, must be taken from a single department.

Lower Division. Required: (for all upper division programs in engineering science) Mathematics 1A-1B, 50A-50B; Chemistry 1A-1B; Computer Science 7 and 8P for Bioengineering; Physics 7A-7B-7C except for Engineering Mathematics and Statistics which requires 7A-7B only; Electrical Engineering and Computer Science 40 and Engineering 45 for those in Bioengineering.  English 1A or Rhetoric 1A (or Comparative Literature 1A); technical electives, eight units which must include Biology 1A-1B for those in Bioengineering, Geology 100 for those in geological sciences. (Transfer students admitted to Engineering Mathematics and Statistics, or Engineering Physics may substitute six units of upper division technical electives by an adviser.)

Upper Division. All Engineering Science programs must include at least 40 units of approved technical subjects, (mathematics, statistics, science, engineering), of which at least 16 units are upper division engineering courses (required upper division courses may be included).

Particular requirements of the various options in the engineering science program are described below. The Announcement of Engineering should be consulted for full details.

Bioengineering. Required: Chemistry 112A or 8A; Bio- physics 123; Engineering 153; and selected courses chosen from approved skills clusters.

Engineering Geoscience. Required: Physics 105 or Mechanical Engineering 104, Physics 110A-110B or Electrical Engineering and Computer Sciences 117A-117B, Mathematics 120A-120B, or 121A-121B; Geo- physics 122A-122B; Civil Engineering 132 or Mechanical Engineering 185; electives which must include: (a) 4 units of upper-division courses in geology or geophysics; (b) an upper-division course in statistics; (c) for those who did not take in the lower-division a course in materials such as Engineering 45, an upper-division course dealing with materials; (d) a course in thermodynamics; (e) a course in fluid mechanics.

Engineering Mathematics and Statistics. Required: Mathematics 112, 120A, 104, and 185; Statistics 134; electives, which must include: at least four upper division courses in mathematics or statistics.

Engineering Physics. Required: Mathematics 120A-120B or 104 and 185; Physics 110A-110B-110C or Electrical Engineering and Computer Sciences 117A-117B, Physics 137A-137B; Mechanical Engineering 104 or Physics 105; Nuclear Engineering 102 or Physics 111; Physics 112 or Materials Science and Engineering 101 or Engineering 141A-141B; and Engineering 111; Mechanical Engineering 185 or Civil Engineering 132; 14 units of upper division courses in the Department of Physics.

Programs for Graduate Degrees. Students with a B.S. degree in fields other than engineering, as well as those with a B.S. degree in engineering, may be eligible for the M.S. and Ph.D. degrees in engineering science. Programs of study and research leading to a graduate degree in engineering science are offered by all of the engineering departments. These programs emphasize the theoretical principles of mathematics, chemistry, physics, geology, and biology on which developments in engineering and the applied sciences are based.

Industrial Engineering and Operations Research
Department Office, 4135 Etcheverry Hall, 642-5484

Professors:
Richard E. Barlow, Ph.D.
Edward R.F.W. Crossman, Ph.D.
Stuart E. Dreyfus, Ph.D.
C. Roger Glasssey, Ph.D.
Rajiv G. Garg, Ph.D.
Frank S. Gill, Ph.D.

Associate Professor:
Ilan Adler, Ph.D.

Assistant Professor:
Robert C. Leachman, Ph.D.

Lecturer:
Stephen Laner, Ph.D.

Industrial engineering and operations research is a multidisciplinary field of systems design, analysis, and control which is concerned with integrated systems of men, machines, and material and their interaction with their environment. Increased emphasis is placed on applications in socio-engineering, such as water resource management, transportation and pollution and waste disposal systems, as well as the classical studies of production, automation, inventory control, scheduling, systems reliability, engineering economics, incentives, organizations, man-machine systems and information systems.

Undergraduates in Industrial Engineering and Operations Research receive broad training in engineering fundamentals, principles of economics and advanced mathematics and statistics in order to prepare them for elective sequences which stress the construction of systems models, the role of the human being in these systems, and the related mathematical and computer methods of optimization and control. A unified core program is offered both for students who wish to pursue the professional aspects of the field, and for those who, after further education at the graduate level, wish to engage in teaching and research. In order to satisfy the needs of students with diverse objectives, considerable flexibility in planning individual programs is provided.

Curriculum for the Bachelor's Degree
A total of 120 units is required, including:

Lower Division and Outside Course Requirements.
Mathematics 1A-1B, 50A-50B; Statistics 134, 135; Computer Science 7; Physics 7A-7B; Chemistry 1A; Business Administration 120 or 125 (Accounting); English 1A; Technical Writing (Civil Engineering 190; Electrical Engineering and Computer Science 40 or 8A; Engineering Economics); and 120 (Engineering Economics); 18 units of Humanities with 3 units English composition, at least 6 upper-division and at least two courses in the same department.

Graduate Programs
Graduate programs leading to the M.S., M.Eng., Ph.D. and D.Eng. are offered in two interrelated areas of study.

Industrial Engineering.
This program has been developed to meet the needs and interests of engineers and scientists wishing to enhance their competence in industrial, service and public systems design, analysis and operation, thus preparing students for administrative positions.

Operations Research. This program prepares the student for advanced work in the theory of systems science. The development of quantitative model structures and methods of analysis and optimization are emphasized.

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 require oral examination in the major and two minor fields followed by submission of a thesis demonstrating ability to conduct independent advanced research. Graduate research facilities are available in the Human Engineering and Operations Research Laboratory, in the Operations Research Center.

The department requires all graduate applicants to submit Verbal and Quantitative Aptitude scores of the Graduate Record Examination. Further information on graduate programs may be obtained from the Industrial Engineering and Operations Research Office, 4135 Etcheverry Hall and in the Announcement of the College of Engineering.

Manufacturing Engineering
Manufacturing Engineering is an interdisciplinary program offered jointly by the Department of Industrial Engineering and Operations Research and the Department of Mechanical Engineering. The program will educate engineers to have an integrated view of properties of materials, manufacturing process fundamentals, production system analysis, computer-aided manufacturing and robotics, and systems design and synthesis.
Curriculum for the Bachelor's Degree

A total of 120 units is required, including:

- All students must complete a total of 18 units of humanities and social studies which of at least 3 units must be in English composition (cannot be taken Pass/Not Pass) and 6 units must be taken in upper division courses. A minimum of two courses, at least one of which is upper division, must be taken from the following two groups: Group 1: ME 110, 122, 128, 130, 133, 134; Chemical Engineering 176; Group 11: Industrial Engineering 115, 140, 162, 164, 165, 171.

Materials Science and Mineral Engineering

Department Office, 210 Hearst Mining Building, 642-3861

Professors:
- Alex Becker, Ph.D.
- Robert H. Beag, Ph.D.
- Neville G.W. Cott, Ph.D.
- Didier de Fontaine, Ph.D.
- Anthony G. Evans, Ph.D.
- James W. Evans, Ph.D.
- Douglas G. Fuerstenau, Sc.D.
- Eugene E. Hatter, Ph.D.
- Malcom McCracken, Ph.D.
- J.W. Morris, Jr., Ph.D.
- H. Frank Morrison, Ph.D.
- (Chair)
- Robert O. Ritchie, Ph.D.
- K.V.S. Saxtry, Ph.D.
- Alan W. Sealey, Ph.D.

Associate Professors:
- Michael H. Salamon, Ph.D.
- Parham R. Amiri, Ph.D.
- Shimon Coen, Ph.D.
- Fiona Doyle-Garnier, M.Sc.
- Didier de Fontaine, Ph.D.

Assistant Professors:
- Ralph R. Huitgren, Ph.D.
- Didier de Fontaine, Ph.D.
- R. Brady Williamson, Ph.D.

The Department of Materials Science and Mineral Engineering administers undergraduate programs in materials science and mineral engineering and graduate programs in materials science, mineral engineering and engineering geoscience. (The undergraduate program in engineering geoscience is part of Engineering Science.)

Materials science deals with natural and man-made materials—their extraction, development, and characterization for uses particularly in advanced applications such as solid-state electronics, atomic energy, and aerospace industries. Students in the materials science and engineering curriculum is provided a basic background in chemistry, physics, and engineering and applies this background to a field of specialization: ceramic engineering, extractive metallurgy, or physical metallurgy. Engineering geoscience applies the discoveries and knowledge of mathematics, statistics, physics, chemistry, and the geosciences to our total environment: the solid earth, the oceans, the atmosphere, and space. The program provides education in the fundamental subject matter necessary for engineering occupations in mining exploration and exploitation, petroleum exploration, planetary exploration, marine geophysics and engineering geophysics.

Ceramic Engineering. The ceramic engineer studies the physical and chemical properties of the raw materials and products of the ceramic industry and fundamentals of ceramic processing. Ceramics are inorganic nonmetals which are subjected, either in their production or use, to high-temperature environments. Such materials include rocket nozzles, electronic devices, precision molds for metallurgical industry, and glass of all types. Ceramic engineers work not only in the industries producing ceramic products but also in industries which make extensive use of ceramic materials such as aerospace, nuclear, and electrical.

Metallurgy. Metallurgy is the science and art of processing and utilizing metals and alloys. The field has two main areas of specialization.

Extractive Metallurgy. Studies of the scientific and engineering principles utilized in recovering metals from their ores and in refining them to the desired purity. The subject includes mineral processing as well as smelting, leaching, and electrochemical methods of extracting and refining metals and requires using most recent advances in chemistry and physics.

Physical Metallurgy. Primarily studies the relationships between the chemical and physical structure of materials and their properties. The investigation and control of properties of materials for advanced applications is a broad field within which primary emphasis can be directed toward fundamental physics, chemistry, or engineering. Because of the ever-increasing demand for improved or better characterized materials, fundamental and applied research in the field is extremely active, providing a wide choice of rewarding career opportunities.

Mineral Engineering. The materials from which all fuels are introduced originate either from living organisms or from the crust of the earth. Mineral engineering is concerned with the latter and provides a basic source of raw materials upon which the whole fabric of modern civilization depends. This most fundamental of all branches of engineering encompasses exploration for geological zones of mineral enrichment, the evaluation and economic mining of those minerals, and the processes the materials are introduced into salable commodities. The four-year undergraduate program leading to the B.S. degree provides a foundation of knowledge and intellectual development that will prepare the student either for professional involvement in industry or graduate study. The four years include the basic sciences and engineering subjects. The Junior year gives a broad foundation in the basic sciences and engineering subjects. The Senior year student will be offered a choice of studies in mineral extraction, mining engineering, or mineralprocessing.

Materials Science and Mineral Engineering

Students in all programs in materials science and engineering must complete a total of 120 units.

Lower Division. Required: Mathematics 1A-1B, 50A-50B; Chemistry 1A-1B; Physics 7A-7B-7C; Engineering 36, 44, 45; Computer Science 7; 16 units of electives. Note: Physics 7C and 4 units of mathematics if not taken in the lower division may be taken in the junior year without any delay in the progress toward the degree provided a total of 60 units has been completed in the first two years.

Upper Division. Required: Materials Science and Engineering 100, 101, 102, 103, 104, 111, 112, 113, 130, and 44 units of electives. Note: Physics 7C and 4 units of mathematics if not taken in the lower division may be taken in the junior year without any delay in progress toward the degree provided a total of 60 units has been completed in the first two years.

Graduate Study in Materials Science

Qualified holders of the bachelor's degree in fields such as ceramic engineering, metallurgy, physics, chemistry, and various fields of engineering can all successfully undertake graduate study in materials science.

The graduate program emphasizes research. Techniques such as transmission electron microscopy, field ion microscopy, X-ray diffraction topography, mass spectrometry, precision electrical conductivity measurements, micro-probe X-ray emission spectroscopy, differential thermal analysis, precision calorimetry and cryogenic and high temperature mechanical testing are used for fundamental characterization of materials. Research topics include study of the mechanical, chemical, surface, thermodynamic, electrical, and magnetic properties of materials, and study of the kinetics, thermodynamics, and simulation of the processes by which materials are produced.

Graduate Study in Engineering Geoscience

This program is directed toward graduate education and research in applied geophysics. The course of study leads to the M.S., Ph.D., and D.Eng. degrees. Students are required to take undergraduate courses in geophysics, geology, geology, or physics. An M.S. degree is available for persons currently in industry or government who wish to undertake graduate work in the geosciences. The program currently stresses study in mineral and oil exploration, engineering seismology, and applications of geophysical techniques in geological exploration and mapping, ocean engineering, and ground water hydrology.

Through the cooperation of the Department of Geology and Geophysics, students are encouraged to take courses in that department to complete requirements for the major in Engineering Geoscience.

2 Electives include (a) a total of 18 units of humanities and social studies of which 6 units must be upper-division. A minimum of three courses, at least one of which is in upper-division, must be taken from the following two groups: Group 1: ME 110, 122, 128, 130, 133, 134; Chemical Engineering 176; Group 11: Industrial Engineering 115, 140, 162, 164, 165, 171.

3 The program includes 55 units of elective courses, 39 of which must be taken in upper-division. A minimum of three courses, at least one of which is in upper-division, must be taken from the following two groups: Group 1: ME 110, 122, 128, 130, 133, 134; Chemical Engineering 176; Group 11: Industrial Engineering 115, 140, 162, 164, 165, 171.

4 The program includes 55 units of elective courses, 39 of which must be taken in upper-division. A minimum of three courses, at least one of which is in upper-division, must be taken from the following two groups: Group 1: ME 110, 122, 128, 130, 133, 134; Chemical Engineering 176; Group 11: Industrial Engineering 115, 140, 162, 164, 165, 171.

5 The program includes 55 units of elective courses, 39 of which must be taken in upper-division. A minimum of three courses, at least one of which is in upper-division, must be taken from the following two groups: Group 1: ME 110, 122, 128, 130, 133, 134; Chemical Engineering 176; Group 11: Industrial Engineering 115, 140, 162, 164, 165, 171.
Mechanical Engineering

Department Office, 6193 Etcheverry Hall, 642-1338

Professors:
David M. Auslander, Sc.D.
Stanley A. Berger, Ph.D.
David B. Boyce, Ph.D.
Michael C. Carroll, Ph.D., D.Sc.
Joseph D. Davies, Ph.D.
Gilles M. Corcos, Ph.D.
Don M. Collins, Ph.D., S.I.
Iain Finnie, D.Sc., D.Sc. (Chair)
Joseph F. Franch, M.S.
Robert H. Hatcher, Ph.D.
Frank H. Hauth, Ph.D.
Chin S. Hsiu, Ph.D.
Franklin C. Hurbut, Ph.D. (Vice Chair)
Shinobu Koyabashi, F.R.S.
Esfandor V. Laitone, Ph.D.
George Leitmann, Ph.D.
Paul Litscher, Ph.D.
Clayton D. Mote, Jr., Ph.D. (Vice Chair)
Paul M. Naghdi, Ph.D.
Anton K. Oppenheim, Ph.D.
D.Sc.
Patrick J. Pagni, Ph.D.
Charles W. Radcliffe, M.S., M.E.
Robert F. Sawyer, Ph.D.
Ralph A. Seban, Ph.D.
Frederick S. Sherman, Ph.D.
Wilbur H. Somerton, Pet.E.
Robert F. Steider, Jr., D.Eng.
Lawrence Talbot, B.S.E.
Chang-Lin Tien, Ph.D.

Associate Professors:
John W. Daily, Ph.D.
Hari Dharan, Ph.D.
David A. Dornfeld, Ph.D.
A. Carlos Fernandez-Peelo, Ph.D.

Assistant Professors:
Van P. Carey, Ph.D.
Roberto Cervantes, Ph.D.
George C. Johnson, Ph.D.
Leslie A. Month, Ph.D.

Professors:
Michael S. King, Ph.D. (Emeritus)
Ronald R. Pickus, Ph.D. (Emeritus)
Kurt S. Spiegel, Ph.D. (Emeritus)
Lawrence Stark, M.D.

Mechanical Engineering includes the science and art of the formulation, design, development, and control of systems and components involving thermodynamics, mechanics, fluid mechanics, mechanisms, and the conversion of energy into useful work. The mechanical engineer requires thorough preparation in mathematics, physics, chemistry, manufacturing processes, properties of materials, mechanics, fluid mechanics, thermodynamics, as well as intense design and laboratory experience. The program of study includes basic subjects common to all engineering fields, fundamental subjects important to all mechanical engineers and specialization in one or more phases of mechanical engineering. Undergraduate specialization is provided in the choice of technical electives which may be selected from the subject areas of applied mechanics, controls, electro-mechanical systems, analysis, energy conversion, fluid mechanics, heat and mass transfer, materials processing, mechanical design, naval architecture, nuclear engineering, ocean engineering, polymer science, and biomedical, environmental, and petroleum engineering.

Because of the widening range of technical problems and the limited amount of specialization available in the undergraduate curriculum, qualified students should consider graduate study to enlarge their scientific and technical capability. Further details on undergraduate and graduate fields of emphases in mechanical engineering are available in the Announcement of the College of Engineering.

Curriculum for the Bachelor's Degree

A total of 120 units is required, including:

Lower Division. Mathematics 1A-1B, 50A-50B; Chemistry 1A; Physics 7A-7B-7C; Computer Science 7; Engineering 28, 36, 45; 17 units of electives.


Mechanical Engineering Options. The following groups of electives are presented to aid undergraduates to focus their choices on specific professional goals. Each group contains more technical elective courses than can be taken within the standard allowance (for requirements, see footnote). The electives need not be from any single group. For assistance, each group has an advisor.

Applied Mechanics. Engineering 117, 118; Mechanical Engineering 129, 133, 134, 161, 163, 173, 175, 185, 282A; Mathematics 104A. Mr. Johnson

Automatic Controls. Engineering 118; Mechanical Engineering 133, 134, 175; Electrical Engineering and Computer Sciences 119, 128A-128B. Mr. Pisano

Biomechanical Engineering, Biology 1A, 150; Engineering 153, 290A; Electrical Engineering and Computer Sciences 156A; Engineering 117, 130, 134, 151, 173, 210, 213; Anatomy 108; Physiology 1, 105, 110; Interdepartmental Studies 111. Mr. Goldsmith

Energy Conversion. Engineering 117, 160, 161; Mechanical Engineering 110, 140; Physics 132. Mr. Fernandez-Peelo

Environmental Engineering. Engineering 117, 150, 151, 152, 160, 161; Mechanical Engineering 110, 140, 142, 151, 173, 254A; Civil Engineering 140; Nuclear Engineering 143; Geography 144, 147; Architecture 110. Mr. Udell

Fluid Mechanics and Aeronautics. Engineering 117; Mechanical Engineering 133, 134, 151, 161, 163, 175, 185; Civil Engineering 130B, 166; Physics 132; Astronomy 101. M. Coronos

General Mechanical Engineering. Engineering 117; Mechanical Engineering 133, 134, 151, 159, 185. Mr. Bogy

Heat and Mass Transfer. Engineering 117; Mechanical Engineering 140, 142, 151, 264A. Mr. Humphrey


Mechanical Engineering Design. Mechanical Engineering 101, 110, 122, 128, 130, 133, 134. Mr. Dornfeld

Naval Architecture. Naval Architecture 151, 152A-152B, 153, 154A-154B; Civil Engineering 131, 130B; Mechanical Engineering 133, 161, 175; Mathematics 120A-120B. Mr. Webster

Nuclear Engineering. Nuclear Engineering 101A-101B, 102, 120, 150A-150B, 160A-160B, 162; Mechanical Engineering 134, 151, 161, 173, 154A; Physics 137A-137B; Mathematics 120A-120B. Mr. Oppenheim (F), Mr. Daily (S)

Petroleum Engineering. Mechanical Engineering 148, 149, 151; Geology 5, 112A, 116A; Civil Engineering 118; Mineral Engineering 116; Engineering 160. Mr. Udell

Graduate Programs

Both master's and doctoral programs are available. The student may choose either a scientific emphasis in particular areas or integrated studies directed to professional objectives. Master of Science and Ph.D. degrees are the relevant degrees for the scientific emphasis, and Master of Engineering and D.Eng. degrees for the professional one. Specialization is offered in the following areas: (1) Bioengineering, (2) Controls, (3) Design, (4) Dynamics and Dynamical Systems, (5) Environmental Engineering, (6) Fluid Mechanics, (7) Heat and Mass Transfer, (8) Manufacturing, (9) Mechanics of Deformable Media, (10) Petroleum Engineering, (11) Thermodynamics. Details on various aspects of graduate study are available from departmental brochures and from the Announcement of the College of Engineering.

Naval Architecture and Offshore Engineering

Department Office, 202 Naval Architecture Building, 642-5464

Professors:
E. E. Martinson, Ph.D.
J. Randolph Paulling, Jr., Ph.D.
Ronald W. Yeung, Ph.D.
John V. Wehausen, Ph.D. (Emeritus)
William C. Webster, Ph.D. (Chair)

Dr.lng.Eh. (Emeritus)

Dr.lng.Eh. (Emeritus)

Dr.lng.Eh. (Emeritus)

Dr.lng.Eh. (Emeritus)

Dr.lng.Eh. (Emeritus)

Dr.lng.Eh. (Emeritus)

The Department of Naval Architecture and Offshore Engineering offers courses in the fundamentals of machine-vehicle design and the structural mechanics and hydrodynamics of ships and other floating structures.

Undergraduate Program

A total of 120 units is required. 18 units of humanities and social studies; 6 units must be upper division; at least two courses from a single department.

Required Lower Division Courses.

(English Subject A): Mathematics 1A-1B, 50A-50E; Chemistry 1A; Physics 7A-7B-7C; Engineering 28, 36, 45; Naval Architecture 10; Computer Science 7; Statistics 25; and 13 units of electives including at least 12 units of humanities and social studies.

Required Upper Division Courses. Mechanical Engineering 104, 105, 107A, 133; Civil Engineering 130, 167; Naval Architecture 151, 152A-152B, 153, 154, 155; Electrical Engineering and Computer Sciences 100; plus electives which must include 6 units of upper division humanities and social studies.

Graduate study is offered in the area of ship structures and ship hydrodynamics, leading to both the master’s and doctoral degrees. The graduate student normally must take Naval Architecture and Offshore Engineering 240A-240BC and 211A-241B. Other courses are chosen according to the student's background and objectives. With sufficient undergraduate preparation, a student may earn a master's degree in two semesters of study. Further details in graduate programs (including the program in ocean engineering) are available from the department upon request.
Nuclear Engineering

Department Office, 4153 Etcheverry Hall, 642-5010

Professors: Paul H. Chamber, Ph.D. Lawrence M. Grossman, Ph.D. Salig N. Kaplan, Ph.D. Donald H. Ander, Sc.D. (Chair)

Assistant Professor: Edward C. Morse, Ph.D.

Professor: Bert V. de Neve, Ph.D. (In-Residence)

Senior Adjunct Lecturer: T. Kenneth Fowler, Ph.D.

Lecturers: Tek H. Lim, Ph.D. Roger W. Wallace, Ph.D.

Nuclear engineering is concerned with the applications of nuclear reactions, including the design, analysis, and operation of nuclear reactors and their nuclear fuel cycles. The principles taught in the nuclear engineering courses are applicable both to nuclear fission reactors and to the development of nuclear fusion as an energy source. The nuclear engineering courses deal with the physical principles of nuclear reactions, the interaction of nuclear radiation with matter, the behavior of neutrons in reactor media, the thermal and hydrodynamic principles of heat exchangers, the properties of nuclear materials, and the analysis of nuclear fuel cycles. These subjects are taught in courses at the undergraduate and graduate levels. Other courses include radiation protection and environmental effects, nuclear safety, and thermonuclear fusion.

Undergraduates can major in nuclear engineering or jointly in nuclear engineering and in other fields of engineering through the undergraduate double major programs. 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.

Curriculum for the Bachelor's Degree:

A total of 120 units is required, including:

Lower Division. Required: Mathematics 1A-1B, 50A-50B; Chemistry 1A-1B; Computer Science 7; Physics 7A-7B; Engineering 45; Electrical Engineering and Computer Science 100, Introduction to Electronics (may also be satisfied by EECS 40 or 111). Electives.

Upper Division. Required: Engineering 117; Mechanical Engineering 104, 105; Nuclear Engineering 101, 120, 150, 160; Electives. For details on double major degree requirements, please consult: the Announcement of the College of Engineering.

Petroleum Engineering

The Petroleum Engineering program is designed to prepare students for careers in the petroleum producing industry and related fields. Petroleum engineering deals with the wide array of problems associated with the location, drilling, and completion of oil and gas wells, management of subsurface reservoirs to obtain the greatest recovery of oil and gas, development and application of enhanced oil recovery techniques, lifting of oil to the surface and surface handling of the produced fluids. Many petroleum engineers are also becoming involved in related energy areas such as extraction of oil from tar sands and oil shales, and geothermal energy production.

The exploration, development, and production of oil and gas, and other fossil fuels, in an environmentally acceptable manner become more and more complex as we continue to consume these exhaustible resources. The best estimates indicate that from two-thirds to three-fourths of all the oil ever discovered in the United States is still in the subsurface reservoirs awaiting the development of new recovery technology.

The Petroleum Engineering program reflects the energy industry's need for versatile, innovative engineers by providing a strong basic engineering curriculum while maintaining a diversity in elective course offerings. Students will be able to channel their own interests by choosing one of the following three program emphases:

1. Mechanical Engineering emphasis.
2. Chemical Engineering emphasis. Includes physical chemistry, chemical kinetics, and mining principles.

The graduate program in Petroleum Engineering is offered as a field of study in Mechanical Engineering.

Curriculum for the Bachelor's Degree:

A total of 120 units is required, including:

Lower Division. Required: Mathematics 1A-1B, 50A-50B; Chemistry 1A-1B; Physics 7A-7B; Computer Science 7; Engineering 102, 103 or Interdisciplinary Studies 145, 146.

Upper Division. Required: Engineering 104, 105, 106, 107A-107B, 109, 148, 149; Civil Engineering 130; Electrical Engineering 100; Chemical Engineering 140; Mineral Engineering 116; Geology 171; 19 units of electives. Electives must include 16 units of humanities and social studies and the balance (12) from one of the three following groupings: Mechanical Engineering emphasis; Physics emphasis; Mechanical Engineering and Computer Science 102A-102B, and one other upper division Mechanical Engineering course; Chemical Engineering emphasis.

Engineering: Special Programs

Double Major Programs of Study. The Double Major Program is designed for students who wish to undertake study in two major areas of engineering in order to qualify for employment in either field or for positions in which competence in two fields is required. Students may prepare for a bachelor's degree combining study in any of the following areas:


These curricula include the core courses in each of the major fields. They involve normal course loads and can be completed in four years. Both majors are shown on the student's transcript of record. For complete information about programs of study under the Double Major see the Announcement of the College of Engineering.

In addition to the double major programs within the College of Engineering described above, two double major curricula involving the College of Engineering and the College of Chemistry are offered. These are: (1) Materials Science and Engineering/Chemical Engineering; and (2) Nuclear Engineering/Chemical Engineering.

These curricula include the core courses in both departments and require the same number of units and length of time to complete as the single major programs. Details on these curricula can be found in the Announcements of the College of Chemistry and College of Engineering.

Environmental Engineering. The College of Engineering offers a series of courses in environmental engineering open to all junior and senior engineering students and to qualified students in other fields. The courses are intended to provide an introduction to the identification of environmentally related problems in such areas as air pollution, water pollution, solid waste disposal, and nuclear power generation.

These courses, listed as Engineering 150 series, are taught on an interdepartmental basis and bring together a number of faculty with expertise and interests in one of the problems.

For those students interested in applying their engineering background to the solution of specific environmental problems, graduate study is strongly recommended. Particulars of these programs are given under Interdisciplinary Graduate Programs.

Interdisciplinary Studies

The Interdisciplinary Studies Center assists engineers in developing skills that go beyond their preparation in a field of engineering. At the undergraduate level the Center offers the interdepartmental course Engineering 190, Technical Communication and interdepartmental seminars such as Engineering at Berkeley. The Center supports college-wide offerings in engineering, computer science and Power, and the Engineering Science Program. The Center coordinates the technical communication component of departmental courses in the College and the social science and humanities electives through the designation of Interdisciplinary Minors. The Center also coordinates the course, Interdepartmental Studies 110/110L, Introduction to Computers, which is offered to students outside the College.

At the graduate level the Center supports the activities of eight interdepartmental committees and an intercampus graduate group. The interdepartmental committees are:

Interdisciplinary graduate programs currently offered are as follows: Bioengineering Earthquake Engineering Energy and Energy Resources Environmental Engineering Manufacturing Processes Mining and Mineral Resources Ocean Engineering Urban and Public Systems.

These committees provide a wide range of interdepartmental activities including special course offerings, group studies and seminars, and public lectures and conferences by faculty and visitors. The Center publishes occasional reports of its offerings. The intercampus graduate group administers a joint program between the San Francisco and Berkeley Campuses leading to the M.S. and Ph.D. in Bioengineering. This joint program provides the highly quantitative and mathematical approaches of engineering with a rational approach to medical and biological problems in areas ranging from blood flow modeling and measurements and biological feedback systems to the dynamics of head impact injuries and the design of prosthetic devices.

Prospective graduate students wishing to participate in the activities of an interdepartmental committee should apply for admission to one of the departments of the College or to the Graduate Group in Bioengineering. Applicants may designate an interdepartmental committee with which they wish to be associated so that a departmental program of study that addresses their interests can be developed.

Additional information about the Center may be obtained by writing the Meekin Interdisciplinary Studies Center, 230 Bechtel Engineering Center; College of the University of California, Berkeley, CA 94720.
of Engineering, University of California: Berkeley, CA 94720.

Engineering

Lower Division Courses


36. Engineering Mechanics I. (2). Formerly 36. Two hours of lecture per week. Semester Prerequisites: Mathematics 1A-1B; Physics 5A. Quarter Prerequisites: Physics 5A and Mathematics 1C. 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. Stress, strain, and work-energy, the principle of virtual work, stability of equilibrium. Sponsoring Department: Civil Engineering (F,SP)

44. Introduction to Mineral Engineering. (2). New Course since Spring 1983. One 2-hour lecture per week. Semester Prerequisites: Chemistry 1A, Mathematics 50A, 50B, 51A, or 51C. 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, ceramics, and glass, and the electrical properties of semiconducting materials. Sponsoring Department: Materials Science and Mineral Engineering (F,SP)

47. Supplementary Work in Lower Division Engineering. (1-3). New Course since Spring 1983. Course may be repeated for credit. Semester Prerequisites: Mathematics 51C. Limited to students who must make up a fraction of a required lower division course. May be only taken with permission of instructor. Sponsoring Department: Mechanical Engineering (F,SP)

49. Non-Renewable Energy Resources. (2). Formerly 49. Two 2-hour lectures per week and 1 hour of discussion per week. Semester Prerequisites: Mathematics 1A; Physics 5A. Quarter Prerequisites: Mathematics 1A. The technology of non-renewable energy resources is discussed from the engineering, environmental and management points of view. Topics include ecology of fossil fuels, energy reserves, gas and oil production methods, tar sands oil recovery, oil shale development, coal potential and geothermal energy utilization. Sponsoring Department: Mechanical Engineering (F,SP)

Upper Division Courses

102. Introduction to Operations Research. (3). Formerly 102. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: Mathematics 1B. Not open to students majoring in Industrial Engineering and Operations Research. Quarter Prerequisites: Mathematics 1C. Not open to students majoring in Industrial Engineering and Operations Research. Introduction to the models and techniques of operations research as they pertain to engineering system problems. Linear and dynamic programming. Queues and inventory models. Examples will be drawn from various engineering disciplines to illustrate techniques, models, and optimization of engineering systems. Sponsoring Department: Industrial Engineering and Operations Research (SP)

117. Methods of Engineering Analysis. (3). Formerly 117. Three hours of lecture per week. Semester Prerequisites: Mathematics 50B. Quarter Prerequisites: Mathematics 51C; Physics 5C. Analysis of engineering problems, techniques for analyzing transient behavior and the use of special functions related to engineering systems. Sponsoring Department: Mechanical Engineering (F)

118. Introduction to Scientific Computing. (3). Formerly 118. Three hours of lecture per week. Semester Prerequisites: Mathematics 50B; Computer Science 1. Quarter Prerequisites: Mathematics 51C; Computer Science 1. Application of digital computers to solution of engineering problems. Computer languages, of linear algebraic equations, roots of polynomials, ordinary differential equations and error analysis. Sponsoring Department: Mechanical Engineering (SP)

120. Principles of Engineering Economics. (3). Formerly 120. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: Completion of 60 units of an approved engineering curriculum. Quarter Prerequisites: Completion of 90 units of an approved engineering curriculum. Economic analysis for engineering decision making; effect of time and interest rate. Different methods of evaluation of alternatives. Minimum-cost life and replacement analysis. Depreciation and taxes. Uncertainty, preference, uncertainty and decision analysis and the use of models and heuristics. Economic studies. Industrial Engineering and Operations Research (F,SP)

147. Supplementary Work in Upper Division Engineering. (1-3). New Course since Spring 1983. Course may be repeated for credit. Semester Prerequisites: Limited to students who must make up a fraction of a required upper division course. May be only taken with permission of the Dean of the College of Engineering. Sponsoring Department: Materials Science and Mineral Engineering (F,SP)

150. Environmental Engineering: Air Pollution. (3). Formerly 150. Three hours of lecture per week. Semester Prerequisites: Chemistry 1B; Mathematics 51C; Physics 5C; Mathematics 51C. An introduction to the technology of air pollution dealing with air pollutants, effects, sources, combustion processes, control technology and abatement. Sponsoring Department: Mechanical Engineering (SP)

153. Introduction to Bioengineering. (3). Formerly 153. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Chemistry 1B; Physics SC; Mathematics 50A; junior standing. Quarter Prerequisites: Chemistry 1B; Physics SC; Mathematics 50A. Basic analytical tools and applications in bioengineering. Biomechanics, physiological fluid mechanics, biomaterials, bio-heat transfer, physiological mass transport, biological network modeling, physiological control systems. Sponsoring Department: Mechanical Engineering (SP)

160. Energy and Power. (3). Formerly 160. Three hours of lecture per week. Semester Prerequisites: Mathematics 50B; Physics 7C. Quarter Prerequisites: Mathematics 51C; Physics 5SC. Introduction to the analysis of electric power generation, transmission and requirements for energy in human society, concentrating on electric power. Thermodynamic principles. Fuel cell; nuclear fission and fusion and hydroelectric power generation. Electromechanical and electrical power. Direct energy conversion. Ecological and social problems. Sponsoring Departments: Mechanical Engineering, Electrical Engineering and Computer Sciences and Nuclear Clear Energy Research (F,SP)

161. Solar Energy. (3). Formerly 161. Three hours of lecture per week. Semester Prerequisites: Physics 5C or 6A. Quarter Prerequisites: Physics 5SC or 6C. Survey of solar energy engineering, practice and prospects. Solar photoelectrical generation, solar photovoltaic branch, space conditioning. Solar ponds, photo thermal and photovoltaic electricity generation. Photophysical approaches and biomass. Institutional and economic as-
boundary layer and wake flows. Sponsoring Department: Mechanical Engineering. (SP)

290A. Clinical Aspects of Bioengineering. (3). Formerly 290A. Three lectures and six hours of laboratory per week. Semester Prerequisites: Consent of instructor. This course, offered in conjunction with the Pacific Medical Center in San Francisco, is designed to introduce engineering students to the clinical and laboratory setting. Students analyze cardiovascular, pulmonary and opthalmologic problems from an engineering point of view. Sponsoring Department: Mechanical Engineering. Not offered 1984-85. (F)

298A. Group Studies or Seminars. (1-6). Formerly 298A. Course may be repeated for credit. Advanced group studies or seminars in subjects which are interdisciplinary in the various fields of engineering or other sciences associated with engineering problems. Topics which form the basis of seminars will be announced at the beginning of each semester. (F,SP)

298B. Group Studies or Seminars. (1-6). Formerly 298B. Course may be repeated for credit. Advanced group studies or seminars in subjects which are interdisciplinary in the various fields of engineering or other sciences associated with engineering problems. Topics which form the basis of seminars will be announced at the beginning of each semester. (F,SP)

Civil Engineering

Lower Division Courses

85. Engineering Survey Measurements. (3). Formerly 10. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Mathematics 1A-1B. Quarter Prerequisites: Mathematics 1A-1B-1C. Standards, units, calibration; measurement of distance, elevation, angles; systematic and random error analysis; adjustment of measurements; weighing; principles of least squares; direction finding; traversing; horizontal and vertical curves. (F,SP)

86. Plane Surveying. (3). Formerly 21. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Trigonometry. Principles and practice of surveying, including use of maps, theodolite, level, stadia; calculations of traverse, areas, volumes, curves; stadia and plane table measuring. (F,SP)

92. Introduction to Civil Engineering. (1). Must be taken on a passer/fail basis. One 1-hour lecture per week. A course designed to familiarize the entering student with the nature and scope of civil engineering and its component specialty areas; to include study of actual projects and a field trip as appropriate. (F)

Upper Division Courses

100. Elementary Fluid Mechanics. (4). Formerly 165A-165B. Three 1-hour lectures and one 1-hour recitation per week, plus individual laboratory experiments conSemester Prerequisites: Engineering 36. Quarter Prerequisites: Engineering 36; Math 50A. 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. (SP)

101. Hydraulics Laboratory. (2). Formerly 161. One 1-hour lecture plus one 3-hour laboratory per week. Semester Prerequisites: 100. Quarter Prerequisites: 165A. Experiments in metering, open channel flow, hydraulic machinery, hydraulic models; special experiments designed by the student. (SP)

102. Advanced Hydraulics. (3). Formerly 166. Three 1-hour lectures per week. Semester Prerequisites: 100. Quarter Prerequisites: 165B. Energy and momentum in open channel flow, surges, nonuniform flow, sediment transport, natural waters, floods, propagation, flow through porous media, computer applications. (F)

103. Hydrology. (3). Formerly 167. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Hydrologic cycle, aspects of meteorology, circulation of air and water at the earth's surface, interaction between precipitation and runoff, groundwater flow, flood frequency and unit hydrograph analysis, stochastic methods for streamflow data generation, applications of hydrology in engineering design. (F)

111. Introduction to Sanitary/Environmental Engineering. (4). Formerly 141. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 100. Quarter Prerequisites: 165B (may be taken concurrently). Statistics 25. The application of science and engineering to the study of water quality. Topics include provision of an adequate water supply, wastewater disposal and the use of physical, chemical and biological processes for the treatment of water and wastewater. (F,SP)

112. Sanitary Engineering Design. (3). Formerly 142. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 111 (may be taken concurrently). Quarter Prerequisites: 141. Lectures and discussions of the nature of engineering organizations; role of design in engineering practice, and concepts of process, design, and economic evaluation. Parallel problem assignments illustrating the application of design principles to typical units of water and wastewater treatment systems. (SP)

113. Applied Limnology. (2). Formerly 143. Two 1-hour lectures per week. Semester Prerequisites: Upper division standing in civil engineering; oceanography; chemistry; limnology. Two 1-hour lectures per week. Semester Prerequisites: Upper division standing in civil engineering. Not offered 1984-85. (F)

114. Fundamentals of Sanitary Engineering. (2). Formerly 144. Two 1-hour lectures per week. Semester Prerequisites: Upper division standing in civil engineering. (F,SP)

115. Chemistry of Waters. (2). Formerly 145. Two 1-hour lectures per week. Semester Prerequisites: Chemistry 1A or equivalent. Water supply and treatment; wastewater collection, treatment, and disposal; solid waste management; waste reclamation; advanced and appropriate technology. (F)

116. Water Chemistry Laboratory. (2). Formerly 146A-146B. One 1-hour lecture and three hours of laboratory per week. Semester Prerequisites: Chemistry 1A or consent of instructor. Quarter Prerequisites: 145 or equivalent. A study of the chemistry of water, past and present; the effects of man on the environment. (F)

117. Organic Chemistry of Water and Waste Water. (2). Formerly 147. Two 1-hour lectures per week. Semester Prerequisites: Chemistry 1A. A consideration of the inorganic components in water in terms of water quality. Emphasis is placed on the application of chemical principles employed to modify the concentration of the major anions, cations, and dissolved gases comprising the inorganic constituents. (F)

118. Water Chemistry Laboratory. (2). Formerly 148A-148B. One 1-hour lecture and three hours of laboratory per week. Semester Prerequisites: Chemistry 1A or consent of instructor. Quarter Prerequisites: 147 or equivalent. A study of the chemistry of water and wastewater. (F)

120. Introduction to Structural Analysis. (3). Formerly 134. Two 1-hour lectures per week. Semester Prerequisites: 131. Quarter Prerequisites: 130A. Not offered 1984-85. (F)

121. Introduction to Dynamics of Structures and Earthquake Engineering. (2). Formerly 132. Two 1-hour lectures per week. Semester Prerequisites: 120. ME 104A. Quarter Prerequisites: 131, ME 104A. Analysis of response of structures to dynamic excitations with emphasis on response to earthquake ground motion. Basic concepts in earthquake resistant design of buildings. (SP)

122. Advanced Structural Analysis. (2). Formerly 136. Two 1-hour lectures per week. Semester Prerequisites: 120. Quarter Prerequisites: 131, ME 104A. Digital computer analysis of structural systems. Discussion of the theoretical bases for modern computer programs. Application of several standard programs to a variety of structures including three-dimensional buildings. Verification of results. (F)

130. Mechanics of Materials I. (3). Formerly 130A. Three 1-hour lectures per week. Semester Prerequisites: 110 and 131. Introduction to design of structural systems and elements. Design criteria; sources of loads; working stress and design theories; analysis and design of reinforced concrete elements, including beams, slabs, and columns. (F,SP)

132. Structural Design in Timber. (2). Formerly 126. Two 1-hour lectures per week. Semester Prerequisites: 110 and 131. Introduction to design of structural systems and elements. Design criteria; sources of loads; working stress and design theories; analysis and design of reinforced concrete elements, including beams, slabs, and columns. (F,SP)

133. Design of Steel Structures. (3). Formerly 134. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 140. Quarter Prerequisites: 131 and 132. Design of structural systems in steel; working stress and ultimate limit design; shear in structural, and structural properties of steel; bolted and welded connections; design of tension members, compression members, beams, and beam-columns. (F,SP)

134. Reinforced Concrete Design. (3). Formerly 135. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 140. Quarter Prerequisites: 110 and 131. Design of structural systems in reinforced concrete. Floor systems, walls, columns, and footings. Design for serviceability and ultimate loads. Designing for durability behavior. (SP)

135. Design of Structural Systems. (3). Formerly 137. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 140; 141 (may be taken concurrently). Quarter Prerequisites: 133. Conceptual design of structural systems to meet stated objectives. Actions to which structural systems are subjected. Characteristics of various systems and their approximate analysis. Shear systems in wood, concrete, and steel. Designing for strength and economy. (SP)

148A. Structural Systems I. (3). Formerly 128A-128B. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Architecture 150. Analysis of determinate structural systems and prestressed con-
cre. Design of beams and columns in steel, timber, reinforced concrete, and prestressed concrete. Sources of loading and design criteria. (F)

148B. Structural Systems II. (3). Formerly 128B-128C. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 148A. Quarter Prerequisites: 128A-128B. Analysis of indeterminate structural systems, lateral and torsional, design of multi-story and long-span structures. (SP)

150. Introduction to Transportation Engineering. (3). Formerly 170. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 85; Statistics 25. Quarter Prerequisites: 10; Statistics 25. General characteristics of transportation systems and methods of planning highways, rail, transit, air, water. Capacity considerations: time-space diagrams, queueing. Transport system design: horizontal and vertical alignment, cross-sections, earthwork, drainage, pavements. Economic analysis: Operations, maintenance, rehabilitation, energy, environmental considerations. (F,SP)

151. Introduction to Transportation Planning and Implementation. (3). Formerly 171. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 85; Statistics 25. Quarter Prerequisites: 10; Statistics 25. Principles of transportation system operations. Systems control, human factors, traffic engineering. (SP)

153. Design and Construction of Transportation Facilities. (3). Formerly 173. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 175; 150 or 151. Quarter Prerequisites: 170 or 171. Principles of transportation system operations. Systems control, human factors, traffic engineering. (SP)

160. Properties of Civil Engineering Materials. (2). Formerly 110. One 1-hour lecture and one 3-hour laboratory per week. Semester Prerequisites: 130 (may be taken concurrently); E45. Quarter Prerequisites: 130A; E45. Introduction to properties of civil engineering materials, sources of properties, aggregates, concrete, asphalt, wood, plastics, and structural steel. Experiments for evaluating behavior of these materials under simple conditions. (F,SP)

165. Concrete Construction. (2). Formerly 180. Two 1-hour lectures per week. Semester Prerequisites: 160. Quarter Prerequisites: 151 and 122. Geometric, drainage, and guideway design for, and construction and rehabilitation of, transportation facilities, particularly streets and highways, railroads, and airfields. (F)

166. Engineering Construction. (3). Formerly 181. Two 1/2-hour lectures per week; field trips. Semester Prerequisites: Upper division standing. The construction industry:便会, economics, organization, and importance, construction methods and practices, applications and limitations; factors involved in the selection of plant equipment and material, principles of planning and organization and operating construction forces, and estimating costs. (F)

167. Economics and Management of Engineering Systems. (3). Formerly 194. Two 1/2-hour lectures per week. Semester Prerequisites: Upper division standing. Principles of economics, organization, and management techniques applied to the planning, design, construction, and operation of civil engineering systems; professional relations; contracts and specifications. (F,SP)

168. Fire Protection Engineering. (2). Formerly 183. Two 1-hour lectures per week. Semester Prerequisites: 160 and 168. Introduction to fire protection engineering which will give the students the framework for solving fire problems. Model codes are introduced with emphasis on fire safety pro-

visions. Relationship between these codes and fire protection engineering is presented. (SP)

169. Polymeric Materials in Construction. (2). Formerly 182. Two 1-hour lectures per week. Semester Prerequisites: Engineering 45. Consideration of broad categories of poly-

mers in construction, particularly urban housing structures; technical requirements and performance specifications; selection of materials; relationship of mechanical properties to microstructure: fire safety; weatherability; manufacturing techniques; use of sealants and coatings on structures. (SP)

170. Engineering Geology. (2). Formerly 118. Two 1 1/2-hour lecture/laboratory demonstrations per week. Semester Prerequisites: 170 or an introductory course in Physical Geology. Quarter Prerequisites: 118. Geological and geophysical exploration for structures in rock; natural aggregates for construction; geological engineering of underground openings; evaluation of dam sites. (SP)

172. Introduction to Rock Mechanics. (3). Formerly 120. Two 1-hour lectures per week. Semester Prerequisites: 120. Quarter Prerequisites: 120. Rock mechanics principles and their application in civil engi-

neering. Strength and deformability of rocks and discontinuities; Stress on earth. Application to design of facades and underground excavations and foundations on rock. (F)

175. Soil and Foundation Engineering. (3). Formerly 121. Two 1-hour lectures and one 3-hour discussion/laboratory demonstration period per week. Semester Prerequisites: 130 and 151 (may be taken concurrently). Quarter Prerequisites: 130A; 165. Soil formation and identification. Physical and mechanical properties of soils. Bearing capacities of soils and lateral earth pres-

ures on structures. Site investigations, design of sub-
structures, construction problems in foundation engi-

neering. (F,SP)

176. Soil Mechanics and Foundation Design. (2). Formerly 122. Two 1-hour lectures per week. Semester Prerequisites: 175. Quarter Prerequisites: 121. Principles of foundation design; ultimate bearing capacity of soils; theory of consolidation and its application in predicting settlements of structures; allowable bearing pressures; methods of minimizing settlements; radial drainage; lateral pressure on walls. (F)

177. Soil Properties and Their Engineering Appli-
cations. (2). Formerly 189. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 175. Quarter Prerequisites: 121. Laboratory testing of soils and use of results in solving geotechnical problems. Students assume role of consultant and instructor as 

recommends that are conveyed in four short en-

gineering reports. (F)

179. Asphalt and Asphalt Mixtures. (2). Formerly 115. One 1-hour lecture and one 3-hour laboratory per week. Semester Prerequisites: 175. Quarter Prerequisites: 121. Principles of foundation design; ultimate bearing capacity of soils; theory of consolidation and its application in predicting settlements of structures; allowable bearing pressures; methods of minimizing settlements; radial drainage; lateral pressure on walls. (F)

182. Probability Concepts in Engineering Analysis and Decision. (3). Formerly 198. Three 1-hour lectures per week. Semester Prerequisites: Statistics 25 and CS 1. Planning and investment de-

cisions. Forecasting and new technology. (F,SP)

187. Route Surveying. (3). Formerly 102. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 85 or equivalent. Quarter Prerequisites: 10 or equivalent. Simple, compound, reverse, and tran-
sition horizontal curves; vertical parabolic curves; re-

cognition, preliminary, and location surveys; com-

putations of Earthwork and related quantities; alignment studies. (SP)

188. Airphoto Analysis and Interpretation. (3). For-

merly 107. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Senior standing in engineering, geology, or geography. Principles of photo reading, analysis, and interpretation applied to soils, slopes, geological forms, and structures; selection of materials for engineering construction of, (F) Even.

numbered years.

190. Technical Communication. (3). Formerly 190. Two 1/2-hour lectures per week. Semester Prerequisites: Upper division standing. Principles of writing and oral communication: analyzing one's audience; organizing material; developing a clear, economic style; using proper formats and rhetorical strategies for formal technical reports, feasibility descriptions and instructions, proposals, letters and memos. Practice in addressing technical and nontechnical au-

diences. (F,SP)

191A. Use of Computers in Civil Engineering. (3). New Course since Spring 2004. Three 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Computer Science 7. Extensive FORTRAN programming applied to civil engineering problems that involve numerical analysis, data base management, computer graphics, computer hardware, operating sys-

tems, high level languages and interactive computing. (F,SP)

192. The Art and Science of Civil Engineering Prac-
tice. (1). Formerly 192. One 1-hour lecture per week. Semester Prerequisites: Senior standing in Civil En-

gineering. A series of lectures by distinguished civil engineers designed to provide an appreciation of the role of science, technology, and the needs of society in conceiving projects, balancing the interplay of con-

flicting demands, and utilizing a variety of disciplines to produce unified and efficient systems. (SP)

193. Probability Concepts in Engineering Analysis and Decision. (3). Formerly 198. Three 1-hour lectures per week. Semester Prerequisites: Statistics 25 and senior standing. Applications of probability theory and statistical methods, forecasting, analysis, and design of civil en-

gineering systems. Development of probabilistic models for risk and reliability evaluation, Occurrence models; extreme value distributions. Analysis of uncertainties. Introduction to Bayesian statistical decision theory and decision making. (F,SP)

194. Directed Group Study for Advanced Under-

graduates. (1-4). Formerly 198. May be repeated for credit. Must be taken on a pass/fail basis. Semester Prerequisites: Senior standing in Engineering. Group study of a selected topic or topics in civil engi-

neering. (F,SP)

199. Supervised Independent Study. (1-4). Formerly 199. Course may be repeated for a maximum of four units per semester. Must be taken on a pass/fail basis. Individual conferences. Semester Prerequisites: Consent of instructor and major adviser. Subject and time-dates must be approved by the General Catalog for description and prerequisites. (F,SP)

Graduate Courses

201. Physical Oceanology. (2). Formerly 201A. Two 1-hour lectures per week. Semester Prerequisites: 166B. Quarter Prerequisites: 166B. Applied fluid mechanics of the oceans, with emphasis on large scale waves and currents on the continental shelf and the deep ocean. Topics include hydrostatic stability, barotropic and baro-

tocic motions, free and forced long gravity wave, geotropoic effects, Elman transport, astronomical tides, storm surge, coastal upwelling, Kelvin and continental
to water quality improvement. Specific topics include gas transfer, particulate removal processes, chemical precipitation, ion exchange, adsorption, and desiccation. (F)

212. Water Quality Engineering II. (3). Formerly 212. May be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: 111 and 115. Quarter Prerequisites: 117 or consent of instructor. Water resource management, water quality and aquatic life. (SP)

213. Applied Ecology Laboratory. (1). Formerly 125C. One 3-hour laboratory/demonstration per week. Semester Prerequisites: 113 or consent of instructor. Laboratory techniques, the determination of basic quantitative data. (F)

214. Aquatic Chemistry. (2). Formerly 214. Two 1-hour lectures per week. Semester Prerequisites: 115 (may be taken concurrently) or consent of instructor. Quarter Prerequisites: 145. The application of aquatic chemistry to problems of aquatic plants, marine life, and soils. (SP)

215. Advanced Sanitary Engineering Laboratory. (2). Formerly 215. One hour and 4 hours of laboratory per week. Semester Prerequisites: 211; 212 or consent of instructor. Quarter Prerequisites: 211 (may be taken concurrently). Laboratory techniques for the processing of water and wastewater. (F)

216. Industrial Water and Wastewater Treatment. (3). Formerly 216. Three 1-hour lectures per week. Semester Prerequisites: 111, 211, and 212 (formerly 240). Laboratory experiments, and the application of laboratory experiments to the practice of treating industrial effluents. (F)

217. Environmental and Process Kinetics. (3). Formerly 217. Three 1-hour lectures per week. Semester Prerequisites: 211. Quarter Prerequisites: 211, 214; 209A and 209B. Laboratory experiments with the major processes involved in water treatment. (F)

218. Air Pollution—Chemical Aspects of Combustion. (1). Formerly 218A. One 1-hour lecture per week. Semester Prerequisites: Engineering 150 and 117 or a basic course in chemistry. Quarter Prerequisites: 147 (or a basic course in organic chemistry) and Engineering 150. Practical aspects of combustion, primarily from a chemical viewpoint with consideration given to chemical and physical processes. (SP)

219. Air Pollution—Ambient Air Sampling and Monitoring. (1). Formerly 219A. One 1-hour lecture per week. Semester Prerequisites: Engineering 150 and consent of instructor. Quarter Prerequisites: Engineering 150. Fundamental methods, chemistry of air analysis, and continuous air monitoring of the six major pollutants. (SP)

218C. Air Pollution—Atmospheric Processes. (2). Formerly 218C. Three 1-hour lectures per week. Semester Prerequisites: Upper division or graduate standing. Quantitative description of transport, diffusion, and chemical reactions in the lower atmosphere. Characterization and modeling of physical and chemical processes related to dispersion of air pollutants. Emphasis will be on the study of point and areal sources of emissions relating to degradation of air quality in urban areas. (SP)

219. Solid Waste Management. (2). Formerly 219. One 2-hour lecture per week plus one one-half day laboratory per week. Consent of instructor and graduate standing. Practical aspects of Solid Waste Management with emphasis placed on state-of-the-art technology and inter-relationship of environmental, institutional, and resource recovery constraints. (SP)

220. Theory of Structures. (3). Formerly 220A. Three hours of lecture per week. Semester Prerequisites: 131. Analysis of structures by force (flexibility) methods and by displacement (stiffness) methods; matrix methods suited for digital computer solution. Virtual work, real work, energy and complementary energy theorems. Other classical theorems of structural analysis. (F, SP)


223B. Computer Methods for Nonlinear Structural Analysis. (2). Formerly 223B. Two one-hour lectures per week. Semester Prerequisites: 220A and 223A. Computational techniques and computer program development for the analysis of nonlinear structures. Solution of nonlinear problems in structural mechanics. Solution of the equilibrium differential equations. (SP)

224. Analytical Methods in Structural Engineering. (3). Formerly 220A. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 130 or Mechanical Engineering 104A. Quarter Prerequisites: 130A. Introduction to analysis of equilibrium, stability, and vibration of discrete and continuous systems. Strains, stresses, deflections of beams, frames, and certain structures. Matrix methods, calculus of variations, differential equations, Fourier series, and Fourier Integrals. (F)

225. Dynamics of Structures. (3). Formerly 225A-225L. Three hours of lecture per week. Semester Prerequisites: 220A. Analysis of building and foundation vibrations in structures, idealized as discrete parameter systems, due to dynamic forces, moving loads and earthquake ground motion. "Exact" and approximate methods. Analysis of linear and nonlinear response; response spectra; soil-structure interaction. Foundation response; effects of inelastic behavior. Laboratory demonstrations. (F, SP)

Applications in earthquake engineering, wind engineering, and ocean engineering. (F)

227. Earthquake-Resistant Design. (3). Formerly 227. Three hours of lecture per week. Semester Prerequisites: 225 (may be taken concurrently) and 243. Design of structures to resist earthquakes and other dynamic excitations, including vibrations. Establishment of Design Criteria; elastic and inelastic response spectra. Site suitability analysis. Selection of structural configuration. Materials and nonstructural elements. Preliminary design methods. (SP)

228. Earthquake Engineering Analysis. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: 225. Quarter Prerequisites: 225A. Methods for earthquake response analysis of complex structures, including structure-foundation-soil interaction. Comparison of analytical predictions and recorded earthquake response. Response characteristics of various types of structures. (SP)

229. Experimental Dynamics and Model Analysis. (3). Formerly 222. Two 1-hour lectures and one 3-hour laboratory per week. Quarter Prerequisites: 131A. Measures of deformation and stress; equations of motion for deformable solids; constitutive relations for elastic, viscoelastic, and elastic-plastic materials; work, energy; bending and torsion; two-dimensional elasticity. (F,SP)

230. Mechanics of Solids. (3). Formerly 230A. Three hours of lecture per week. Semester Prerequisites: 130. Quarter Prerequisites: 230A. Static and dynamic beam theories; vibration and buckling of plates. Structural stability (equilibrium, energy, dynamic methods; nonconservative problems.) (SP)

231. Structural Mechanics. (3). Formerly 230B and a portion of 230C. Three hours of lecture per week. Semester Prerequisites: 230A. Quarter Prerequisites: 230A. Static and dynamic beam theories; vibration and buckling of plates. Structural stability (equilibrium, energy, dynamic methods; nonconservative problems.) (SP)

232. Mechanics of Nonlinear Solids. (3). Formerly 230C. Three hours of lectures per week. Semester Prerequisites: 130. Quarter Prerequisites: 131A. Measures of deformation and stress; equations of motion for deformable solids; constitutive relations for elastic, viscoelastic, and elastic-plastic solids; relation to experiment. Perfectly plastic solids, behavior of beams, plates, shells; torsion; plane problems. Behavior of physically nonlinear solids. Dynamic problems; impulsive loading, wave propagation. (F)

233. Computational Mechanics. (3). Formerly 235A. Three hours of lecture per week. Semester Prerequisites: 230 or Mechanical Engineering 185. Quarter Prerequisites: 230A or Mechanical Engineering 185. Unified treatment of problems, involving mechanical and thermal phenomena interacting with solids and structures; consistent linearization of nonlinear theory; variational techniques; implications for applications to computational methods, including finite element methods applied to finite deformation problems. (SP)

234A. Thermomechanics of Deformable Bodies I. (3). Formerly 240A and a portion of 240B. Three hours of lecture per week. Semester Prerequisites: 230. Quarter Prerequisites: 230A. Mathematical preliminaries (normal vector spaces, differentiation, vector and tensor fields); kinematics and physics of deformable bodies (balance principles, energy, elasticity). Offered according to student demand and faculty availability. (F)

234B. Thermomechanics of Deformable Bodies II. (3). Formerly 240B-240C. Three hours of lecture per week. Semester Prerequisites: 240A. Quarter Prerequisites: 240A-240B. Equilibrium statistical mechanics and thermodynamics (ensemble theory, Carnot theory, rubber elasticity; non-equilibrium thermomechanics, constitutive theory (viscosity and heat conduction, phase transitions); inelastic solids with hyperelasticity, viscoelasticity, plasticity; wave propagation in solids. Offered according to student demand and faculty availability. (SP)

235. Advanced Solid and Structural Mechanics. Sections may not be repeated for credit; however, sections may be taken concurrently. Three hours lecture per week. Semester Prerequisites: Consent of instructor. Topics of current interest in solid and structural mechanics. To be offered depending on student demand and faculty availability. (F,SP)

235A. Advanced Computational Mechanics. (3). New Course since Spring 1983. Three hours lecture per week. (SP)

235B. Plasticity. (3). New Course since Spring 1983. Three hours lecture per week. (SP)

235C. Viscoelasticity. (3). New Course since Spring 1983. Three hours lecture per week. (SP)

235D. Stability. (3). New Course since Spring 1983. Three hours lecture per week. (SP)

235E. Fracture Mechanics. (3). New Course since Spring 1983. Three hours lecture per week. (SP)

235F. Mechanics of Composites. (3). New Course since Spring 1983. Three hours lecture per week. (SP)

235G. Shell Theory. (3). Formerly 236 - Three hours lecture per week. (SP)

235H. Three-Dimensional Elasticity. (3). New Course since 1993. Three hours lecture per week. (SP)

235I. Wave Propagation. (3). Formerly 235A. Three hours lecture per week. (SP)

240. Advanced Civil Engineering Materials. (3). Formerly 228A. Two 1-hour lectures and one 3-hour laboratory and three 1-hour laboratories per week. Semester Prerequisites: 110. Quarter Prerequisites: 112. Equilibrium and design of structures. (F,SP)

241. Advanced Concrete Technology. (3). Formerly 229. Three hours of lecture per week. Semester Prerequisites: 160 or equivalent. Quarter Prerequisites: 110. Composition and properties of concrete-making materials such as aggregates and different types of hydraulic cements; properties of fresh and hardened concrete; mass concrete, light-weight concrete and heavyweight concretes, polymerizing concretes, and fiber-reinforced concrete. (SP)

242. Comprehensive Design of Structures. (3). Three hours of lecture per week. Semester Prerequisites: 220 (may be taken concurrently). Quarter Prerequisites: 222. Course includes actions and excitations. Selection of structural systems and configuration. Design for serviceability and safety; limit analysis and design. Damage control. Optimum design. Effect of generalized loadings: low cycle fatigue and incremental collapse. (F)

244A. Advanced Reinforced Concrete I. (3). Formerly 242A. Three hours of lecture per week. Semester Prerequisites: 230A. Quarter Prerequisites: 140. Quarter Prerequisites: 133. Behavior and design of reinforced concrete elements. Design criteria. Material properties. Bond and cracking in reinforced concrete. Strength and deformation characteristics of reinforced concrete elements subjected to axial load, flexure, shear, and combined loadings. Failure criteria. Influence of load and environment history. (F)

244B. Advanced Reinforced Concrete II. (3). Formerly 242B. Three hours of lecture per week. Semester Prerequisites: 244A. Lin 244A. Limit states design of reinforced concrete structures. Design for strength and ductility of ductile moment-resisting frames and framework systems; first and second order theories. Behavior of reinforced concrete beams, slabs; recent advances in application of yieldline theory and strip methods. (SP)

245. Prestressed Concrete Design. (3). Formerly 244E. Three hours of lecture per week. Semester Prerequisites: 140. Quarter Prerequisites: 133. Structural behavior and design of prestressed concrete elements and systems; continuous beams, frames, slabs, bridges, buildings; partial prestress. (SP)

246. Design of Concrete Shells. (3). Formerly 245. Three hours of lecture per week. Semester Prerequisites: 130. Quarter Prerequisites: 244A. Prestressed concrete design. Design of plates, composite construction, and hybrid beams. Design of high-strength steel and modern welding techniques on design. Design considerations for connections with emphasis on tubular structures. (SP)

247. Advanced Steel Design. (3). Formerly 246. Three hours of lecture per week. Semester Prerequisites: 243. Quarter Prerequisites: 220A. Inelastic analysis and design of steel members subjected to combined stresses due to bending, shear, axial loads, and torsion. Local and lateral buckling of members. Design of connections. Behavior and strength, ductility and stability for arches, grids, plates and frames. (F)

248. Inelastic Design of Steel Structures. (3). Formerly 246A-246B. Three hours of lecture per week. Semester Prerequisites: 243. Quarter Prerequisites: 220A. Inelastic analysis and design of steel members subjected to combined stresses due to bending, shear, axial loads, and torsion. Local and lateral buckling of members. Design of connections. Behavior and strength, ductility and stability for arches, grids, plates and frames. (SP)

249. Structural Reliability and Risk Analysis. (3). Formerly 229. Three hours of lecture per week. Probability theory and random processes; bases for structural reliability and risk analysis. First order, second-moment, and full distribution methods; structural component and system reliability; probabilistic design codes; loads and load combination; reliability against fatigue; seismic risk analysis of structural systems and lifeline networks. (SP)

250. Transportation Policy and Planning and Deployment. (3). Formerly 250 and 250S. One 2-hour lecture and two 1-hour laboratories per week. The evolution of the U.S. transportation system. Growth and decline of the railroads and mass transportation. The development of highway transportation and aviation. Issues in the regulation, financing, and planning of transportation. Policy analysis and program evaluation. (F)

251. Operation of Transportation Facilities. (3). Formerly 251. Two 1/2-hour lectures per week. Semester Prerequisites: Graduate standing or consent of instructor. The operation of transportation facilities. Methods of traffic control, behavior travel models. Methods of forecasting. (SP)

252. Systems Analysis in Transportation. (3). Formerly 252. Two 1/2-hour lectures per week. Semester Prerequisites: Graduate standing or consent of instructor. Transportation systems and their application to transportation engineering and planning. The transportation system as a production system. Production optimization and economic efficiency: the role of transportation technologies. Systems analysis techniques including optimization, evaluation, and systems modeling. (SP)

253. Principles of Transportation System Design. (2). Formerly 225B. Two 1/2-hour lectures per week. Semester Prerequisites: 251, 252 (may be taken concurrently). Quarter Prerequisites: 251, 252. Design parameters, including human factors and environmental constraints. Design of system components; consideration of system safety and failure in design; design for operations flexibility and for maintenance. (F)

254. Transportation Demand Analysis. (2). Formerly 254A. Two 1-hour lectures per week. Semester Prerequisites: Graduate standing or consent of instructor. Theoretical foundations and analytical approaches to the study of the demand for transportation. Urban and regional travel analysis for passengers and commodities. Behavioral travel models. Methods of forecasting. (SP)

255. Transportation Planning Applications. (2). Formerly 254B. Two 1-1/2 hours of laboratory and three lecture hours. Sections may be taken concurrently. Three hours to be arranged per week. Semester Prerequisites: 251 or Consent of Instructor. The study of land use and traffic data to develop traffic models. The use of transportation demand models in urban transportation planning. The development of models for the analysis and evaluation of multimodal transportation networks. Use of computers in transportation planning and analysis. (SP)

256. Highway Traffic Operations. (3). Formerly 255. Three 1-hour lectures per week. Semester Prerequisites: 251, Consent of Instructor. Quarter Prerequisites: 251. Operational planning and management of the highway transportation system. The highway system is presented including ultimate strength tests. Design problems involving steel structures. (F)
255L Highway Traffic Operations Laboratory. (1). One 3-hour laboratory per week. Semester Prerequisites: 255 (may be taken concurrently) or consent of instructor. Quarter Prerequisites: 255A-255B. Operational planning and management of the highway transportation system. Designed to be taken concurrently with 255. Laboratory emphasis will be given to the study of mathematical analyses and model applications. (SP)

256. Transportation Planning. (3). Formerly 250S. One 3-hour lecture per week. Critiques of urban, regional, and national planning techniques and methodologies. Strategic versus tactical planning. Current research and research needs. (F)


258. Freight Transportation. (3). Formerly 258. Two 3-hour lectures per week. Analysis of the performance characteristics of different transportation modes. Rail, highway, and waterway structures are examined and compared with other modes. Next, rail equipment is examined and equipment guideway interaction is considered and compared for different modes. Systems are examined by extending the analyses to operations and control. Performance characteristics are defined by modal systems interrelationships and measured by comparisons across modes. Current research, technology, and policy. (SP)

258L. Freight Transportation Laboratory. (1). One 3-hour meeting per week. Semester Prerequisites: 258 (may be taken concurrently). Quarter Prerequisites: 258. Analysis of classification terminal design and operations; optimization of sorting subject to train, truck/mass and blocking constraints; route design and operations analysis using train, truck, and lock/operations simulators; and parametric analyses of new technology systems. (SP)

259. Public Transportation Systems. (2). Formerly 259. Two 3-hour lectures per week. Semester Prerequisites: 250, 251, 252, or consent of instructor. Analysis and evaluation of mass transit systems, their operation and management. Technology of transit vehicles and structures. Impact on urban land use. Public policy and financing. (SP)

259L. Public Transportation Systems Laboratory. (1). Formerly 259W. One 3-hour meeting per week. Semester Prerequisites: 259 (may be taken concurrently). Quarter Prerequisites: 259. Design and evaluation project of a public transportation facility. (SP)

260. Air Transportation. (3). Formerly 260A. Three 1-hour lectures per week. Semester Prerequisites: 260A. Principles of seepage and groundwater flow, including flow nets, numerical analysis, pumping tests, and construction projects. Not offered 1984-85. (SP)

261. Feasibility Analysis of Transportation Systems. (2). Formerly 261. One 2-hour lecture per week. Objectives and criteria for choice of transportation investments; economic analysis, estimating benefits and costs, discount rates; treatment of intangibles and uncertainty; site selection and environmental constraints; impact analysis. (SP)

262. Analysis of Transportation Data. (3). Formerly 260W. Two 1-hour sessions per week. Semester Prerequisites: Statistics 134 or equivalent. Quarter Prerequisites: Statistics 134A. The use of field data in transportation. Data gathering techniques, sources of errors, considerations of sample sizes. Experiment design for demand forecasting and transportation operations analyses. Analysis techniques. (F)

263. Operations of Transportation Terminals. (3). Formerly 267B. Two 1-hour sessions per week. Semester Prerequisites: Graduate standing or consent of instructor. Characteristics of terminals on a mode by mode basis (sea ports, rail yards, airports, parking lots, etc.). Methodologies used to study terminal operations and the management of congestion. (Chronographs, input-output diagrams, pricing, simulation). Studies illustrating the use of the methodologies for different modes. (SP)

264. Flows On Transportation Networks. (3). Formerly 264. Three 1-hour lectures per week. Semester Prerequisites: 254 or consent of instructor. Quarter Prerequisites: 254A. Mathematical representation of transportation networks, routing and assignment of traffic, economics of scale on links and nodes in distribution systems, optimal structure of networks. (F)

265. Pavement Design and Rehabilitation. (3). Formerly 265. Three 1-hour lectures per week. Semester Prerequisites: Graduate standing in engineering. Theories, principles, and practices in the structural design, construction, maintenance, and rehabilitation of highways, airfields, and container transfer facilities; stabilization; pavement management; pavement evaluation; overlay design. (F)

266A. Construction Organization and Management. (3). Formerly 266A. Two 1-hour lectures per week. Semester Prerequisites: 166 or equivalent. Quarter Prerequisites: 166 or equivalent. An introduction into the business aspects of construction management including organizational and control concepts during entry into business and for continued operation; system functions and computer utilization. Topics include legal, financial, labor, accounting, and others that impact decision-making in the construction industry. (F)

266B. Management of International Construction and Engineering. (2). Formerly 266B. Two 1-hour lectures per week. Semester Prerequisites: 166 or equivalent. Quarter Prerequisites: 161 or equivalent. Organization and management of major projects in international and multi-national construction and engineering. Planning, investigation, procurement, logistics, construction geography, personnel, relations with host area and government, environmental considerations, communications, financing, special engineering, and management controls. (SP)

266C. Construction Services Marketing. (3). Formerly 266C. Two 1-hour lecture per week. Business development for engineering and construction firms. Emphasizes development of skills in communication by contractors and engineers through letters, personal calls, and conference and contract negotiations, presentation of claims. (SP)

267A. Advanced Foundation and Mass Concrete Construction. (3). Formerly 267A. Two 1-hour lecture per week. Semester Prerequisites: 140 and 141. Quarter Prerequisites: 132J and 141. Foundation and construction aspects of deep foundations for buildings, power plants, and underground structures such as subways. Excavation, bulkheading and shoring, plugging, drilled shafts, driven piles, anchors and supports. Underpinning. Integration of engineering and construction practice in an urban environment. Not offered 1984-85. (SP)

267B. Advanced Concrete Construction. (3). Formerly 267B. Two 1-hour lectures per week. Semester Prerequisites: 140. Quarter Prerequisites: 133. Utilization of concrete for construction; lightweight, high strength, and advanced concrete. ACI codes and processes for resolving problems associated with field processing of concrete. Application to buildings, bridges, pressure vessels, and pollution control structures. (SP)

267C. Construction of Harbor, Coastal, and Ocean Structures. (3). Formerly 267C. Two 1-hour lectures per week. Semester Prerequisites: 140 and 141. Quarter Prerequisites: 121 and 133 or 140 or 141. Construction methods and equipment for construction of cofferdams, caissons, wharves, marine terminals, outfall sewers, power plant intakes and discharges, submarine oil and gas pipelines, dredging, offshore platforms, Arctic Ocean structures, subsea and deep ocean facilities. (SP)

268A. Advanced Construction Estimating. (3). Formerly 267D. Two 1-hour lectures per week. Semester Prerequisites: 166. Quarter Prerequisites: 181. Estimating by heavy, engineering, and specialty contractors. Preparation of cost estimates including planning of methods and program evaluation of labor, material equipment, subcontract, and indirect costs. Rational assessment of risk and profit margins. Value engineering. (F)

268B. Construction Management and Quality Assurance. (3). Formerly 266G. Two 1-hour lectures per week. Semester Prerequisites: 266A or equivalent. Quarter Prerequisites: 266B or equivalent. Methods and techniques associated with construction quality assurance programs. Types of existing programs, identification and role of participating organizations, development of standards and specifications, and initiation of programs. The role of the construction manager will be discussed at length. (SP)

268C. Construction Scheduling, Resource Allocation, and C.R. Applications. (3). Formerly 266C. Two 1-hour lectures per week. Semester Prerequisites: 266A or equivalent. An introduction into the business aspects of construction scheduling and resource allocation. Comparison of techniques and optimization from an applications perspective. (SP)

269. Asphalt Paving Mixtures. (3). Formerly 269. Three 1-hour lectures per week. Semester Prerequisites: Graduate standing or consent of instructor. Advanced course concerned with asphalt paving especially for highway and airport pavements; emphasis on physical properties of asphalts, aggregates, asphalt/pavement combinations, and the relationship of these properties to design, construction, and rehabilitation of pavements; construction methodologies; recycling; and energy considerations. (SP)

270A. Advanced Soil Mechanics. (3). Formerly 270A-270B. Two 1-hour lectures per week. Semester Prerequisites: 175 and 177 or equivalents, or permission of the Instructor. Quarter Prerequisites: 114 and 121. Advanced topics of soil mechanics, including consolidation, settlement, lateral earth pressures, bearing capacity, anchored bulkheads, and excavation bracing, and applications to civil engineering projects. (F)

270B. Advanced Soil Mechanics. (3). Formerly 270B-270C. Three 1-hour lectures per week. Semester Prerequisites: 175A or equivalent. An introduction to principles of soil mechanics, including shear strength, slope stability, and deep foundations, and applications to civil engineering projects. (SP)

270L. Advanced Soil Mechanics Laboratory. (3). Formerly 270L. One 1-hour lecture per week. One scheduled 3-hour laboratory per week plus one unscheduled 3-hour laboratory. Semester Prerequisites: 270A-270B (concurrently), or consent of instructor. Lectures and experimental studies of advanced aspects of soil property measurement and analysis, measurement data acquisition, and measurement techniques. (SP)

271. Seepage and Ground Water Flow. (2). Two 1-hour lectures per week. Semester Prerequisites: 170 and 175 or equivalents. Quarter Prerequisites: 118 and 121. Principles of seepage and groundwater flow, including flow nets, numerical procedures, pumping tests, dewatering, and geological factors. (F)

272. Soil and Site Improvement. (2). Formerly 272. Two hours of lecture per week. Semester Prerequisites: Graduate standing or consent of instructor. Soil stabilization using compaction and admixtures for use in foundation improvement, embankments, dams, highways, and airfields; precompression; in-situ deep densification and strengthening of cohesionless and cohesive soils; gravity and reenforced earth; development of marginal lands. (SP)
273. Soil Behavior. (3). Formerly 273. Two 1-hour lectures per week. Seminar Prerequisites: Consent of instructor. Soil mineralogy, soil formation, and composition; influence of geological factors on properties; soil classification; properties; soil structure; analysis of soil properties; soil mechanics and deformation properties; soil-stress time effects. (F)

274. Introduction to Soil Dynamics. (3). Formerly 274. Two 1½-hour lectures per week. Seminar Prerequisites: Knowledge of FORTRAN programming. Dynamic analysis by finite differences. Computation of ground motion characteristics; computation of ground response using wave propagation analysis and finite element methods; methods of soil liquefaction and settlement; soil-structure interaction effects; lateral pressures on earth retaining structures; analysis of slope stability during earthquakes. (SP)

275. Soil Dynamics-Earthquake Engineering. (2). Formerly 275. Two 1-hour lectures per week. Causes of earthquakes; influence of soil conditions on ground motion characteristics; computation of ground response using wave propagation analysis and finite element methods; methods of soil liquefaction and settlement; soil-structure interaction effects; lateral pressures on earth retaining structures; analysis of slope stability during earthquakes. (SP)

276. Earth Dam Engineering. (2). Formerly 276. Two 1-hour lectures per week. Principles of earth dam design; computation of earth stresses; cracking in dams; causes of failure; slope protection; seepage control measurements; methods of evaluating stability of earth dams; earthquake-resistant design of dams; rockfill dams. (SP)


278. Seafloor Sediments: Origin, Properties, and Offshore Engineering apply. (2). Formerly 201C. Two hours of lecture per week. Formerly 197. Seminar Prerequisites: Introductory courses in geology and soil mechanics. Geologic oceanology, including evolution of the ocean basins, plate tectonics, geology of the seafloor; hardware and techniques for sampling, laboratory and in-situ testing, summary of geotechnical properties with emphasis on cyclic loading behavior, case histories. Spring—odd years.

280. Rock Mechanics. (3). Formerly 280. Two 1½-hour lectures per week, one field trip, and several laboratories. Formerly 280. Quarter Prerequisites: 120. Two hours of lecture per week. Formerly 280. Seminar Prerequisites: 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. (SP)

283. Geological Engineering of Underground Openings. (3). Formerly 283. Two 1½-hour lectures per week. Formerly 283. Two 1½-hour lectures per week. Seminar Prerequisites: Course in engineering geology or physical geology. Geological exploration for underground openings; methods of excavation, rock reinforcement, and shield tunnels; stability problems in hardrock, soft-rock, and soil tunnels; monitoring instrumentation; large openings for special purposes; case histories. (SP)

287. Adjustment Computations. (4). Formerly 289 and part of 287A. Two 2-hour lectures per week. Seminar Prerequisites: Course in engineering geology or physical geology; Statistics 25 or equivalent. Quarter Prerequisites: 102. Two 1½-hour lectures per week. Seminar Prerequisites: Course in engineering geology or physical geology; Statistics 25 or equivalent. Review of matrix algebra and computer programming; introduction to probability and variance and covariance propagation; derivation of the method of least squares adjustment with applications to problems in surveying; coordinate transformations with applications to coordinate refinement in analytical photogrammetry. (F)

288. Analytical Photogrammetry. (4). Formerly 287A-287B. Two 2-hour lectures per week. Seminar Prerequisites: 186 or equivalent; 287 or equivalent. Quarter Prerequisites: 101 or equivalent; 289 or equivalent. Comparator measurements; orientation matrices; analytical solutions for strips and blocks using coplanarity and collinearity conditions; constraints using auxiliary sensors; use of added parameters in the bundle adjustment. (SP)

289. Stereocrestitution and Adjustment. (4). Formerly 288A-288B. Three 1-hour lectures and one 3-hour laboratory per week. Seminar Prerequisites: 185. Quarter Prerequisites: 101 or equivalent; 287 or equivalent. Design of stereorecording instruments; interior, relative, and absolute orientation; map compilation; control extension by independent models; adjustment to ground control; analysis of systematic and random errors. (SP)

290R. Advanced Topics in Geophysical Engineering. (1-2). Formerly 290R. May be repeated for credit. Seminar meetings each week. Seminar Prerequisites: Consent of instructor. Recent applications or research in geophysical engineering and rock mechanics. Topics vary each term. (F,SP)

290T. Advanced Topics in Transportation Theory. (2). Formerly 290T. Two 1-hour lectures per week. Seminar Prerequisites: Consent of instructor. Selected topics in the mathematical analysis of transportation systems. (F)

290U. Transportation Planning for Developing Regions. (2). Formerly 290U. One 2-hour lecture per week. Seminar Prerequisites: Consent of instructor. The technique for, and the problems encountered in, conducting transportation planning studies in developing regions. Discussion of economic development, and the role played by transportation. Case studies of transportation planning in selected regions. (F)

290Z. Selected Topics in Air Transportation. (2). Formerly 290Z. One 2-hour lecture per week. Seminar Prerequisites: 290 (may be taken concurrently). Quarter Prerequisites: 101. Two hours of lecture and one hour of discussion per week. Seminar Prerequisites: Consent of instructor. Topics of current interest, including methods of systems operations analysis, airport and airline planning, and issues of airport transportation policy. (F)

296. Group Studies, Seminars, or Group Research. (1-6). Formerly 296. May be repeated for credit. Sections 1-12: letter grading; sections 13-20: S/U grading. Seminar Prerequisites: Graduate standing. Advanced studies in various subjects of special interest to graduate students on annually selected topics, informal group discussions, special problems, group participation in comprehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP)

299. Individual Research. (1-12). Formerly 299. May be repeated for credit. Must be taken on a pass/no pass basis. One hour of lecture per week. Seminar Prerequisites: Graduate standing. Research or investigation in selected advanced subjects. (F,SP)

301. Individual Study for Master's Students. (1-6). Formerly 301. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or language requirement in consultation with the major field adviser. Units may not be used to meet either unit or residence requirements. (F,SP)

302. Individual Study for Doctoral Students. (1-6). Formerly 302. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser; intended to provide an opportunity for qualified students to prepare for the various examinations required of candidates for the doctoral degree; may not be used for unit or residence requirements. (F,SP)

Professional Courses

301W. Workshop for Future Civil Engineering Teachers. (1-3). Formerly 301W. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Formerly 301. Course may be repeated for credit. Teaching assistant or graduate student status. The course will include supervised teaching of laboratory sections of civil engineering courses, group analysis of video tapes, reciprocal classroom visitations, and an individual project. (F,SP)

Electrical Engineering and Computer Sciences

Electrical Engineering

Lower Division Courses

40. Introduction to Electrical Engineering. (3). Three hours lecture and one hour discussion per week. Semester Prerequisites: Mathematics 1B and Physics 7B. Formerly Engineering 17. Prerequisite: random errors, analog and digital building blocks and analog systems, digital building blocks and digital systems, semiconductor devices, electronic circuits. (F,SP)

401. Introduction to Electrical Engineering (self-study). (3). New Course since Spring 1982. Two hours of discussion per week. Seminar Prerequisites: A course in analysis of passive circuits. Intended for transfer students arriving with backgrounds containing only part of EECs 40 or EECS 401. Instructional format as in EECs 401. Analog building blocks and analog systems, digital building blocks and digital systems, semiconductor devices, electronic circuits. (F,SP)

41. Introduction to Electrical Engineering (self-study). (2). New Course since Spring 1982. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Mathematics 1B. Fundamental principles of electrical engineering with emphasis on topics of interest to students of computer science. It is intended that laboratory course EECS 91A be taken concurrently. Electrical physics; electric circuits; analysis of passive dc circuits; transient response of passive circuits; operational amplifiers; diodes; bipolar transistors; field-effect transistors; TTL, CMOS logic circuits. (F,SP)

90. Topics in Electrical Engineering and Computer Sciences. (1). Formerly 90. Course may be repeated twice for credit. Must be taken on a passed/not passed basis. One hour of lecture per week. Semester Prerequisites: Consent of instructor. Enrollment preference will be given to freshmen Electrical Engineering and Computer Sciences majors and students taking approved advising program. Presentation of topics of interest to Electrical Engineering and Computer Sciences freshmen on the activities of professionals in this field. (F,SP)

91A. Introductory Electronics Lab. (5). New Course since Spring 1982. Must be taken on a passed/not passed basis. One hour of laboratory per week. Semester Prerequisites: Physics 7A (7B may be taken concurrently) and Math 1B. Introductory electronics laboratory. Emphasis on using the equipment and on laboratory technique using an oscilloscope, power supplies, multimeter, curve tracer, spectrum analyzer and LCR bridge. (SP)

Upper Division Courses

100. Electronic Techniques for Engineering. (4). Formerly 100A-100B. Three hours lecture and one 3-hour laboratory per week. Semester Prerequisites: Mathematics 1B, Physics 7B. Analysis of passive circuits, sinusoidal steady-state response, transient response, operational amplifiers, digital building blocks, digital systems, microprocessor control, power systems and machines. This course is not for students majoring in Electrical Engineering. (F,SP)

104. Linear and Nonlinear Circuits. (5). Formerly 104A-104B. Four hours of lecture and two hours of discussion per week. Semester Prerequisites: 40 (may be waived by instructor), Mathematics 50A, and Physics 7B. Kirchhoff's laws. Telegen's theorem. Circuit elements (in-


111. Electronic Circuits and Instrumentation Systems. (3). Formerly 109. Three hour lectures and one hour of discussion per week. Semester Prerequisites: A Physics course in Electrical Fundamentals. Quarter Prerequisites: Physics SC or equivalent. An Introduction to Electronics for non-majors. Passive circuits, electronics, instrumentation, computer circuits. Illustrative demonstrations and experiments. (F,SP)

112. Electrical Transformers and Machines. (4). Formerly 112 and 112L. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 104 (may be taken concurrently). Quarter Prerequisites: 104A. Study of transformers and electromagnetic energy conversion devices— including dc and ac motors and generators. (F)

113. Power Electronics. (3). Formerly 113. Three hours of lecture per week. Semester Prerequisites: 104. Quarter Prerequisites: 104A. Study of semiconductor devices including thyristors. Magnetic components. Power conversion circuits and techniques. Applications to motor control, switching power supplies, and power systems. (SP)

114. Power System Analysis. (3). Formerly 114A- 114B. Three hours lecture and one hour discussion per week. Semester Prerequisites: 104. Quarter Prerequisites: 104A and 104B. Introduction to electric power systems with emphasis on the transmission network. Load flow; voltage control. Economic optimization. Introduction to stability analysis. Synchronous machine modeling. The control problem. Short circuit analysis. (F)


117A. Electromagnetic Fields and Waves - I. (4). Formerly 117A-117B. Three hours lecture and one hour discussion per week. Semester Prerequisites: 104. Quarter Prerequisites: 104A; Mathematics 51B and 51C. Review of static electric and magnetic fields and applications; Maxwell's equations; transmission lines; propagation and reflection of plane waves; introduction to guided waves. (F)

117B. Electromagnetic Fields and Waves - II. (3). Formerly 117B-117C. Three hours lecture and one hour discussion per week. Semester Prerequisites: 117A. General methods of solving field problems; microwave and optical waveguides; resonant cavity systems; electronic materials; radiation and diffraction. (F,SP)

118. Microwave and Optical Communication Systems. (2). Formerly 116. Two hours of lecture per week. Semester Prerequisites: 117A. Basic principles of operation, design, and performance of microwave and optical communication systems with emphasis on bandwidth, dispersion, noise, sensitivity and tradeoffs among them. Studies of major components such as transistors, photodiodes, modulators, amplifiers, correlation devices, and fourier-transforming devices. (F)


121. Noise Analysis of Communications Systems. (3). Formerly 160 and a portion of 126. Three hours lecture and one hour discussion per week. Semester Prerequisites: 120. Quarter Prerequisites: 119, 124 and Statistics 134A. Elementary probability and random process theory; description of modulation systems, AM, FM, digital data transmission, FSK, QAM. Comparative noise analysis of modulation systems. Signal space concepts, error rate analysis of digital modulation systems, including non-coherent systems. (SP)


123. Circuit Theory and Design. (4). Formerly 123. Three hours lecture and two hours of discussion per week. Semester Prerequisites: 104. Quarter Prerequisites: 104B. Approximation, synthesis, and design of modern analog filters. Passivity and positive-real functions. Active RC, switched capacitor and digital circuits. Optimization and computer-aided design. Sensitivity and tolerance analysis. (F,SP)

124. Spectrum Analysis Lab. (1). Formerly 124. One hour laboratory per week. Semester Prerequisites: 117A and Physics 7C. Semester Prerequisites: 120. Approximate frequency spectrum. Periodic waves; aperiodic waves, AM, FM, and PCM; voice and noise waves. (SP)


130. Integrated-Circuit Devices. (3). Formerly 131A. Three hours lecture and one hour discussion per week. Semester Prerequisites: 40 and Physics 7C. Quarter Prerequisites: Physics SC; Engineering 17 and 45. Overview of basic semiconductor physical mechanisms. The electronics of metal-semiconductor contacts, pn junctions, bipolar transistors, and of junction and MOS field-effect transistors. Properties that are significant to device operation for integrated circuits. (F,SP)

131. Semiconductor Electronics. (3). Formerly 130, 131B and a portion of 190. Three hours lecture per week plus several one hour mini-labs. Semester Prerequisites: 130 (which may be taken concurrently). Quarter Prerequisites: 130 and 131A; Physics 5E. Physics of solid-state electronics. Review of quantum-mechanical principles, crystal structure, lattice vibrations, band-theory, electrons and holes, diffusion and drift, recombination, high-field phenomena, optical effects, device applications. Several one hour mini-lab's done in pairs with the aid of computer-interactive software. (SP)

136. Introduction to Quantum and Optical Electronics. (2). Formerly 136. Two hours lecture per week. Semester Prerequisites: 117A and Physics 7C. Quarter Prerequisites: Physics SC. The laser principle and survey of basic laser types; optical resonators; fiber optics and integrated fiber optics; interference; optical diffraction and difference equations, space-time method of analysis. Frequency response, Bode and Nyquist plots, stability analysis. (F,SP)

137. Electron and Ion Beams and Plasmas. (3). Formerly 172. Three hours lecture per week. Semester Prerequisites: 117A or Physics 110A or consent of instructor. Formerly 172. Three hours lecture per week. Semester Prerequisites: 117A or Physics 110A. Fundamental of beam and plasma phenomena, including single particle motion, space charge and fluid (MHD) effects, sources, particle collisions, and inter- actions of beam and plasma. Applications to device fabrication, electron microscopy, microwave tubes, information displays, switching lasers, controlled thermonuclear fusion and MHD power generation. Equal time to be spent on beam and plasma. (SP)

140. Analog Integrated Circuits. (4). Formerly 141. Three hours class and three hours laboratory per week. Semester Prerequisites: 40 and 104. Quarter Prerequisites: 104A-104B; Engineering 17. Introduction to analog integrated circuits. Bipolar transistor inverters and gates. Single stage and two stage transistor amplifiers. Emitter coupled pairs, source coupled pairs, temperature and supply independent biasing. Operational amplifiers. Frequency response, feedback concepts, feedback amplifier theory and design. Basic noise analysis in integrated circuits. MOS analog circuits. (F,SP)

141. Digital Integrated Circuits. (4). Formerly 145. Three hours lecture and three hours laboratory per week. Semester Prerequisites: 40 and 104; 130 recommended. Quarter Prerequisites: 104B, 105L, and 105L. Formerly 114C. Introduction to digital integrated circuits. Large signal models for bipolar and MOS transistors. MOS inverter gates and gates. Propagation delay and noise margins. Dynamic logic concepts. Bipolar transistor inverters and gates. Regenerative logic circuits. Memories. (F,SP)

142. Nonlinear Analog Integrated Circuits. (3). Formerly 140 and a portion of 240. Three hours lecture and one hour discussion per week. Semester Prerequisites: 40, 104, and 141. Quarter Prerequisites: 104B, 105L, and 141. Nonlinear models for junction diodes, bipolar transistors, junction FETS, and MOSFETS. Design of power amplifiers and voiceband nonlinear circuits. Oscillators, mixers, voltage controlled oscillators, phase locked loops. Analysis of distortion in amplifiers at low and high frequencies. (F,SP)

143. Processing and Design of Integrated Circuits. (3). Formerly 147. Two hours lecture and three hours of laboratory per week. Semester Prerequisites: 130. Quarter Prerequisites: 105, 105L and 131A. Integrated circuit fabrication techniques. Mask layout, diffusion, monolithic active and passive components, device structure and characterization, parasitic effects. Relation between physical layout and electrical characteristics. CMOS inverters to be fabricated in the laboratory and electrically evaluated. (F,SP)

145A. Transducers and Circuits for Physiological Signals. (4). Formerly 187 and a portion of 188 and 189. Three hours lecture and one hour discussion per week. Semester Prerequisites: 40, 104, and 140. Physical principles of medical instrumentation. Bioelectricity and biochemistry and physics. Quarter Prerequisites: 130 and 105L. Fundamental principles related to the sources, measurements and significances of physiological parameters and variables. (F)

145B. Computer Applications in Biology and Medicine. (4). Three hours lecture and one hour discussion per week. Semester Prerequisites: 140. Quarter Prerequisites: 105, 105L and CS 1. Formerly 189 and a portion of 188. Transformations utilizing digital computers, both for biological and medical applications. Computer interfaces, compatibility, computer languages, applications to medical diagnosis and medical systems management. (SP)

145L. Transducers and Signals in Biology and Medicine Laboratory. (2). Formerly 182. Three hours lecture and four hours laboratory per week. Semester Prerequisites: 130 or equivalent. Semester Prerequisites: 140 and 145A (may be taken concurrently). Quarter Prerequisites: 105 and 105L. Construction and properties of transducers used in biology and medicine. Differential amplification, analog signal processing, and
216. Microwave Antennas. (3). Formerly 216. Three 1-hour lectures per week. Semester Prerequisites: 210A or consent of instructor. Application of Maxwell’s equations to single antennas and antenna arrays used in transmission and reception of radio waves. Geometrical and numerical methods are emphasized. (SP)

217. Microwave and Optical Distributed Networks. (3). Formerly 217. Three 1-hour lectures per week. Semester Prerequisites: 117A-117B. Relations between field theory and the description of microwave and optical waveguides, resonators, oscillators, amplifiers, couplers, filters, signal processing, and finite difference. Overview of high frequency solid state devices. (SP)


221A. Linear System Theory. (4). Formerly 222. Three 1-hour lectures and two 1-hour recitations per week. Semester Prerequisites: 119: Mathematics 112 recommended. Basic system concepts; state-space and I/O representation; systems, controllability, observability, state and output feedback. Stability. Observers. Characteristic polynomial. Nyquist test. (F,SP)

221B. Multivariable Feedback Systems. (3). Formerly 229B. Three hours of lecture per week. Semester Prerequisites: 221A (or equivalent). Basic concepts and one undergraduate control course. Quarter Prerequisites: 222 and one undergraduate control course. MIMO feedback systems. Matrix fraction description. Stabilization, tracking, disturbance rejection, sensor pretension. Robustness. Large scale interconnected systems. Linear Quadratic Optimal Control. (SP)

222. Nonlinear Systems-Analysis, Stability and Control. (3). Formerly 229. Three hours of lecture per week. Semester Prerequisites: 221A (or equivalent) and one undergraduate control course.秩序 System. Numerical solution methods, the describing function method, linearization, stability - direct and indirect methods of Lyapunov. Applications to the spacecraft problem - Popov, pole criterion, Input-Output stability. Additional topics include: bifurcations of dynamical systems, introduction to the “geometric” theory of control for nonlinear systems, passivity concepts and dissipative dynamical systems.


225. Digital Signal Processing. (3). Formerly 234. Three 1-hour lectures per week. Semester Prerequisites: 119: Statistics 134A or equivalent. Quarter Prerequisites: 123. FFT, FIR, and IIR digital filters, decimation and interpolation. Detailed treatment of one application area, such as speech, sonar, or image processing.

226A. Random Processes in Systems. (2). Formerly 260A. Two 1-hour lectures per week. Semester Prerequisites: Statistics 200A or equivalent. Quarter Prerequisites: 226A and 226B. Two 1-hour lectures per week. Semester Prerequisites: Mathematics 104A. Advanced topics such as martingale theory, stochastic calculus, random fields, queueing networks, stochastic control. (SP)

227A. Optimization Techniques. (3). Formerly 227A. Three 1-hour lectures per week. Semester Prerequisites: Advanced calculus. Quarter Prerequisites: Advanced calculus or 222. First and second order optimality conditions and their role in the construction of optimization algorithms. Algorithms for unconstrained and constrained programming and optimal control problems. Duality and sensitivity. Elementary linear and quadratic programming. (F)

227B. Optimization in Engineering Design, (3). Formerly 227A. Three 1-hour lectures per week. Semester Prerequisites: 227A. Quarter Prerequisites: 222 and 227A. Formulation of engineering design as mathematical programming problems. Case studies from electronic circuit, control system, and structural design. Semi-infinite and statistical optimization algorithms for engineering design. (SP)

228. Communication Networks. (2). Two 1-hour lectures per week. Semester Prerequisites: 226A or equivalent. Quarter Prerequisites: 226A. Markov chains: passage times, restrictions, approximations, control. Queueing models for communication systems. Stability, routing, capacity assignment, flow control, numerical methods. Models of local area networks: architectures, analysis of multiple access strategies. (SP)

229A. Statistical Communication Theory. (3). Formerly 261. Three 1-hour lectures per week. Semester Prerequisites: 227A. Quarter Prerequisites: 226A, Quarter Prerequisites: 227A. Statistical formulation of digital and analog communication, detection, and estimation. Decision rules. Gaussian channel. Radar ranging. Parameter modulation. Rate distortion theory. (SP)

229B. Information Theory. (3). Formerly 265. Three 1-hour lectures per week. Semester Prerequisites: Statistics 200A or equivalent. Quarter Prerequisites: Statistics 134B or 200A or 200F. Fundamental concepts and results in Shannon theory. Source and channel coding theorems. Error correction codes. (F)


231. Solid-State Devices. (3). Formerly 231. Three 1-hour lectures per week. Semester Prerequisites: 131A or 131B; 130 or equivalents. Physical principles and operational characteristics of semiconductor devices. Device fabrication of carrier transport, junctions, interfaces, high-field and hot carrier effects. Advanced discussion of bipolar and field-effect transistors with emphasis on the behavior dictated by present and probable future technologies. (SP)

263A-263B. Quantum and Optical Electronics. (3-3). Formerly 263A-263B. Three 1-hour lectures per week. Semester Prerequisites: 117A, Physics 137A, or equivalents. Quarter Prerequisites: 117A-117B, Physics 137A-137B, or equivalents. The laser principle; analysis of specific laser systems such as gas lasers, semiconductor lasers, and other solid-state lasers; laser dy-
237. Quantum Electronics of Solids. (3). Formerly 237. Three 1-hour lectures per week. Semester Prerequisites: 117B, Physics 137A or equivalents. Quarter Prerequisites: 130A or 130B, or equivalents. Optical properties of solids; electro-optic and magneto-optic effects; nonlinear optical effects; guided-wave optics; semiconductor lasers; recent developments in integrated optics and fiber optics. (SP)


239A-239B. Plasmas. (3, 3). Formerly 270A-270B-270C. Three 1-hour lectures per week. Semester Prerequisites: 117A-117B or Physics 110A-110B; 239A is prerequisite to 239B. Quarter Prerequisites: 117A-117B. Theory and applications of plasmas including particle orbit theory, waves, turbulence, collision, diffusion, heating, and plasma diagnostics; analysis of various controlled fusion experiments. (F)

240. Advanced Analog Integrated Circuits. (3). Formerly 240. Three 1-hour lectures per week. Semester Prerequisites: 140. Quarter Prerequisites: 141. Analysis and design of MOS and bipolar large-scale integrated circuits at the circuit level. Fabrication processes, device characterizations, parasitic effects static and dynamic digital circuits for logic and memory functions. Calculation of speed and power consumption from layout and fabrication parameters. PLL, RAM, EEPROM, circuit design. Use of SPICE and other computer aids. (F, SP)

243. Advanced IC Processing and Layout. (3). Formerly 243. Three 1-hour lectures per week. Semester Prerequisites: 143 and either 140 or 141. Quarter Prerequisites: 229. Three 1-hour lectures per week. Semester Prerequisites: 130. Three 1-hour lectures per week. Semester Prerequisites: 130. Advanced topics in nonlinear system design, control, and distributed systems. Stability, sensitivity, nonlinear oscillation and nonlinear dynamics. (F)

249. Advanced Topics in Adaptive Systems. (3). Formerly 290F. Three 1-hour lectures per week. Semester Prerequisites: An upper division course in classical mechanics or consent of instructor. In-class and homework assignments; computer-aided design circuit, circuit layout, large-scale networks and systems, stability, sensitivity, nonlinear oscillations, and nonlinear dynamics. (F)

250. Mathematical Methods in Electromagnetic Theory. (3). Formerly 250F. Three 1-hour lectures per week. Semester Prerequisites: 210A-210B or consent of instructor. Quarter Prerequisites: 229. Three 1-hour lectures per week. Semester Prerequisites: 229. Current topics in the theory of linear and nonlinear problems which arise in electromagnetic theory. (SP)

250L. Solar Electric Systems Design. (3). Formerly 290L. Three hours lecture and one hour laboratory per week. Semester Prerequisites: 290K. Integration into solar electric systems. Design, instrumentation feedback systems. (SP)

250S. Image Processing. (3). Formerly 290L. Two and one-half hours lecture per week. Semester Prerequisites: 24. Quarter Prerequisites: 24 or 169. Theory and practical application of two and three dimensional photon emission, transmission, and NMR Imaging. Course topics include image manipulation and restoration, noise filtering, Fourier and iterative 3-D image reconstruction and multispectral imaging including display methods. Applications include biological, medical and physical sciences. (F)

290K. Solar Electric Systems Design. (3). Formerly 290K. Three hours lecture and one hour laboratory per week. Semester Prerequisites: Engineering 160 or equivalent and systems to collect the sun's energy and deliver it to consumers solar and wind energy; excluding photo voltaics. Costs, engineering properties, and performance of solar receptors, heat transport and storage, thermodynamic systems, and heat rejection systems. Cost minimizing programs. Hybrid-optimization cycles. Environmental impact. (F)


290M. Advanced Topics in Image Processing. (3). Formerly 290M. Three hours lecture per week. Semester Prerequisites: 290L. Two hours of lecture per week. Semester Prerequisites: 24. Quarter Prerequisites: 24. Three 1-hour lectures per week. Semester Prerequisites: 24. Current research topics in electrical circuits, networks, and systems including spectral modeling, computer-aided circuit design, circuit layout, large-scale networks and systems, stability, sensitivity, nonlinear oscillation and nonlinear dynamics. (SP)

290N. Integrated Circuit Technology Design — Part One. (2). New Course since Spring 1983. Two hours of lecture per week. Semester Prerequisites: 143 or equivalent. The elements of integrated circuit technology design, discussed in seminar format. Review of technology elements: Lithography, Wet and dry etching, Ion implantation, Diffusion, Thin film deposition. Derivation of design rules from technology modules. Process integration. Test pattern design. (F)

290O. Integrated Circuit Technology Design — Part Two. (2). New Course since Spring 1983. Five hours of lecture per week. Semester Prerequisites: 290N and IC Lab Qualification. This is the experimental part of the technology design sequence. The students, in teams, will make masks, fabricate the test patterns, and characterize the key parameters for the process design. (SP)

299Q. Plasma Simulation. (3). Formerly 299Q. Three hours lecture per week. Semester Prerequisites: 137 or Physics 142. Formerly 172 or Physics 142. Theory and design of plasma simulation, using many particle and fluid models on computers. Use of codes ES1 (electrostatic one-dimensional) EM1 (electromagnetic one-dimensional) on projects on oscillations, waves, instabilities, heating, and plasma. Computation from theory; root solving. (SP, Alternate years)

299S. Quantum Electromagnetics. (3). Formerly 299S. Three hours lecture per week. Semester Prerequisites: 117A, Physics 115 and graduate standing. Quarter Prerequisites: 117A, Physics 115 or equivalent. Topics in quantum and classical electromagnetic wave phenomena. Theory: Linear and nonlinear spin resonance description, resonance instrumentation, spin echo, optical spin echo (with lasers). Problems of detection of resonance phenomena in noise. Coherent detection, signal averaging, computer processing of spin echo signals. (SP)

299V. Adaptive and Identification Systems. (3). Formerly 299V. Three hours lecture per week. Semester Prerequisites: Statistics 200A. Quarter Prerequisites: Statistics 200A or equivalent. Adaptive, control, and measurement systems responsive to changes in command, disturbances, components, and models. Time-varying systems. Identification of unknown systems by use of adaptive models, error steepness descent, and instrumental variables. Nonlinear identification by ad-justable decision functions. Convergence with noisy and noiseless state variables. (SP)

298. Group Studies, Seminars, or Group Research. (1-4). Formerly 298. May be repeated for credit. Section 1-40: S/U grading; sections 41-49: letter grade. Lecture: held to facilitate group participation in the discussion of specialized problems selected in various subjects through special seminars on topics to be selected each year, informal group studies of special problems, group participation in comprehensive dissertation or thesis work. Emphasis on the solution of complex problems for analysis and experimentation. (F,SP)

299. Individual Research. (1-12). Formerly 299. May be repeated for credit. Independent, individual study or investigation. Investigation of problems in electrical engineering. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be taken for unit or resident requirements for the doctoral degree, may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Independent study, in consultation with faculty member or research consultant 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)

Interdepartmental Studies Courses

Lower Division Courses

IDS1. Technology and Society. (3). Formerly 1. Three 1-hour lectures per week. Role of technology in the solution of social problems. Historical development of modern technology. Examples of technological systems: communication, transportation, metallurgy, energy, generation. Sponsoring Departments: Political Science and EECS. (F,SP)

Upper Division Courses

IDS100. History of American Technology. (4). Formerly 100. Four hours lecture per week. Survey of American technology from colonial times to the present. Analysis of technical innovation in its cultural, economic, and political setting. Topics include the Industrial Revolution, technology of war, infusion of science in technology, industrialization and the use of corporations. Sponsoring Departments: History and EECS. (SP)

IDS111. Introduction to Neurobiology. (3). Formerly 111. Three hours lecture per week. Semester Prerequisites: Biology 1A. Quarter Prerequisites: Biology 1A or equivalent. Principles of neurobiology and brain mechanisms for initiation, propagation and transmission of activity in neurons. Integration of information in simple and complex systems. Neural plasticity. Sensory and motor systems. Sponsoring Departments: Molecular Biology and EECS. (F)

IDS112A. Mammalian Neuroanatomy. (3). Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Biology 1A-1B or consent of instructor. Properties of neurons and neural systems in terms of their phylogenetic (and functional) distinction. Design is to be taken concurrently with IDS 112B. Sponsoring Departments: EECS and Physiology-Anatomy. (SP)

IDS112B. Mammalian Neurophysiology. (3). Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Biology 1A-1B or consent of instructor. Properties of neurons and neural systems in terms of their function in relation to reflex and goal-directed behavior. Designed to be taken concurrently with IDS 112A. Sponsoring Departments: EECS and Physiology-Anatomy. (SP)

Graduate Courses

IDS200A. Cellular Neurobiology. (3). Formerly 201. Two 1-1/2 hours lecture per week. Semester Prerequisites: Chemistry 1B, Mathematics 1B, Physics 6B, and an introductory biology course. Quarter Prerequisites: Chemistry 1C, Mathematics 1C, Physics 6C, and an introductory neurobiology course. Physico-chemical basis of membrane potentials, electrotonus, action potential generation and propagation, synaptic transmission, sensory receptor function, and voltage conductor potentials. Sponsoring Departments: Physiology, Biophysics, and EECS. (F)

IDS200B. Integrative Neurobiology. (3). Formerly IDS 200 and IDS 202. Sponsoring Departments: Physiology, EECS, and Zoology. Two 1-1/2 hour lectures and one 1-hour recitation per week. Semester Prerequisites: IDS 112A and IDS 112B. Quarter Prerequisites: IDS 201. Zoology 136 or equivalent. In-depth consideration of current research questions central to the understanding of the organization of nervous systems, and of the behavior mediated by these systems. When appropriate these questions are illustrated with examples drawn from both the vertebrate and invertebrate literature. Circuits, networks, or system analysis and analysis will be emphasized. Where these approaches lend clarity, sensorimotor integration is discussed in small systems or neurons (SP)

IDS202. Neurobiology Review. (1). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour discussion per week. Semester Prerequisites: Zoology 121 or equivalent. Discussion of research papers and original research reports on current problems in neurobiology. Sponsoring Departments: Zoology and EECS. (F,SP)

IDS237A-237B. Cognitive Science Seminar. (1-1). Formerly IDS 237A-237B. Two 1-1/2 hour lecture per week. Semester Prerequisites: IDS 202 or equivalent. One 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Weekly presentations by local and visiting researchers of a range of topics in Cognitive Science, with emphasis on diversity. Sponsoring Departments: EECS, Linguistics, Philosophy, and Psychology. (F,SP)

IDS286. Neurobiology of Vision. (2). Two 1-hour lectures per week. Semester Prerequisites: IDS 111, Physiology-Anatomy 110, Zoology 136 or equivalent. Photoreceptors, lateral interactions, retina, visual pathways, and brain mechanisms for photic processing of visual information; neural plasticity; see, movement coding, retinal output codes. Sponsoring Departments: Physiology, Biophysics, and EECS. (SP)

IDS493. Biological Instrumentation. (2). Formerly 493. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 3-hour laboratories per week. Semester Prerequisites: Graduate standing or consent of instructor. Topics will cover problems in the design, fabrication, and recording of bioelectric phenomena; together with the use and design of transducers. Sponsoring Departments: Physiology, Biophysics, and EECS. (SP)

Professional Courses

IDS499. Physiological Instrumentation. (2). Formerly IDS 499. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 3-hour laboratories per week. Semester Prerequisites: Graduate standing or consent of instructor. Topics will cover problems in the design, fabrication, and recording of bioelectric phenomena; together with the use and design of transducers. Sponsoring Departments: Physiology, Biophysics, and EECS. (SP)

Computer Science

Lower Division Courses

7. Introduction to Programming for Scientists and Engineers. (3). Formerly 493. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour lecture, one 1-hour discussion, and one 1-hour lab per week. Semester Prerequisites: Mathematics 1A (which may be taken concurrently). Introduction to computer programming, using the Fortran language. Variables and computation; subroutines and subroutines; control structures; arrays; and input/output. Students will write a program over 500 lines in length. No credit is allowed for courses in the 8 series after 50. (F,SP)

8. Pascal for Programmers. (1-3). Formerly 3. May be repeated for credit up to a total of three units. Three to nine hours of discussion and one to four hours of programming lab per week. Semester Prerequisites: High school algebra. Introduction to computer programming, using the Pascal language. Variables and computation; subroutines and subroutines; control structures; arrays and records. Productive programming techniques; style issues. Assignments and examples are drawn from applications. Students will write a program over 300 lines in length. No credit is allowed for courses in the 8 series after 50. (F,SP)

8P. Pascal for Programmers. (1-3). Formerly 3. May be repeated for credit up to a total of three units. Three to nine hours of discussion and one to four hours of programming lab per week. Semester Prerequisites: High school algebra. The same material as 8 but in a self-paced format. Units assigned depend on amount of work completed. Computer solution, using the Pascal language of problems drawn from various fields with emphasis on non-numerical applications. At most three units of credit may be earned for courses in the 8 series after 50. (F,SP)

8S. Self-Paced Introduction to Programming Using Pascal. (1-3). Formerly 3. May be repeated for credit up to a total of three units. Three to nine hours of discussion and one to four hours of programming lab per week. Semester Prerequisites: High school algebra. The same material as 8 but in a self-paced format. Units assigned depend on amount of work completed. Computer solution, using the Pascal language of problems drawn from various fields with emphasis on non-numerical applications. At most three units of credit may be earned for courses in the 8 series after 50. (F,SP)

50. The Science and Practice of Computing. (5). Four hours of lecture and one hour of discussion and six hours of programming lab per week. Semester Prerequisites: Math 1A (may be taken concurrently) and previous experience or consent of instructor. Conceptual foundations of computing: properties of algorithms, Turing machines, Von Neumann machines, extended machines, production systems, and the Pascal language. An introduction to problem solving techniques (tree search, recursive search, dynamic programming, simulated annealing, and genetic algorithms); problem solving techniques like top-down modular decomposition and prototyping; construction and use of extended machines. (F,SP)

50P. Introduction to Computer Science for Programmers. (2). 50 and 50P may not both be taken for credit. May be repeated twice for credit. Two hours of discussion and two hours of programming lab per week. Semester Prerequisites: 8 or equivalent. Quarter Prerequisites: 3 or equivalent with grade B- or better, formerly 2 and 3. Intensive introduction to the conceptual foundations of computing, and to techniques of productive programming. Students will write at least one program over 500 lines in length. Students in 50P and 50 will take the same final exam. (F,SP)

ultis: 50 or SOP. Admission to 55 will be determined by grade on 50/50P final examination. Quarter Prerequisites: 2 and 3 with a grade of B- or better. The internal structure of the computer will be studied through assembly level language programming. Elementary Boolean logic and building blocks. Simplification of logic functions. Number and character representations. Arithmetic operations. Instruction formats and addressing modes. The relationship between software and hardware. Elementary language programming. Macros, Assemblers, compilers and interpreters. Linkers and loaders. Input-output devices. Traps and interrupts. (F,SP)


150D. Digital Design Lab. (2). Formerly laboratory portion of EECS 41. Three hours of lecture and three hours of labora-


184. Programming Languages and Compilers. (4). Formerly 164. Three hours lecture, 1-hour discussion and six hours of programming laboratory per week. Semester Prerequisites: 160. Quarter Prerequisites: 153. Survey of programming languages. The design of mod-

188. Introduction to Artificial Intelligence and Natural Language Processing. (4). Formerly 182. Three hours lecture and one hour discussion per week. Semester Prerequisites: 165 and 164. Quarter Prerequisites: A programming course or consent of instructor. Basic ideas and techniques underlying the design of intelligent computer systems. Topics include problem solving, knowledge representation, machine perception, natural language systems, computer society views. (F,SP)

189. Introduction to Language Processing and Query Languages. (3). Formerly 146. Three hours lecture per week. Semester Prerequisites: 160. Quarter Prerequisites: 153. Syntax and semantics of synthetic (formal and programming) languages, formal and attributed grammars; query languages and relational models of data. Question answering, inference, and information analysis. (F)

190. Programming Applications. (3). Formerly 106. Three hours lecture and four hours programming laboratory per week. Semester Prerequisites: 9 or equivalent, Statistics 20, and upper division standing. Quarter Prerequisites: High school algebra and some previous computer experience. A second course in computer programming using a high level language. Major emphasis on practical applications. (SP) Alternate years.

196. Honors Seminar for Computer Science Majors. (3). Formerly H198A-198B. Must be taken on a passed/not passed basis. Three hours lecture per week and project work. Semester Prerequisites: 150, 160, and 170, and consent of instructor or quarter program research. Extensive practice with available programming tools: graphic routines, statistics packages, assorted programming languages. Advanced use of the UNIX operating system. Design and implementation of a programming project in an area of the student's choice. Efficient use of computers. (F,SP)

197. Social and Economic Implications of Computer Technology. (2). New Course since Spring 1983. One and one-half hours of lecture per week and one and one-half hours of programming per week. Formerly 163. Three hours lecture per week. Semester Prerequisites: 153. Concept and techniques of computing that affect society. Formerly 153 and a portion of 150. Formerly 154, 155, and 153. Study in-depth of several topics in computer science to be chosen by the instructor. Students will assess current literature in the topics and present critical reviews of the class. Each student will carry out a project. (F,SP)

198. Directed Group Studies for Advanced Undergraduates. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. To vary with section. Semester Prerequisites: 2.0 GPA or better; 60 units completed. Group study of selected topics in Computer Sciences, usually relating to new developments. (F,SP)

199. Supervised Independent Study. (1-4). Formerly 199. Course may be repeated for a maximum of four units per semester. Must be taken on a passed/not passed basis. To vary with section. Semester Prerequisites: 2.0 GPA or better; 60 units completed. Group study of selected topics in Computer Sciences, usually relating to new developments. (F,SP)

Graduate Courses

250. VLSI System Design. (4). Formerly 248. Three hours lecture and four hours design laboratory per week. Semester Prerequisites: CS 150. Quarter Prerequisites: EECS 131B, 145, 147, or CS 152A. Unified top-down and bottom-up design of integrated circuits and systems concentrating on architectural and topological issues. VLSI architectures, systolic arrays, self-timed systems. Trends in VLSI development. Physical limits. Tool designs for custom-design, standard cells, gate arrays. VLSI design tools. (F)

252. Graduate Computer Architecture. (3). Formerly 253. Three hours lecture and one hour discussion per week. Semester Prerequisites: CS 152. Quarter Pre-
requisites: CS 152A and CS 153. Study of historical developments, including theory, instruction sets, control, processors, global information management, security, distributed systems, virtual machines, the relation of hardware and software systems. Testing methods. Functional testing. Students will carry out a performance evaluation project. (F) Alternate years.

256. Software Driven Computer Architecture. (2). Formerly 229F. Two lectures per week. Semester Prerequisites: CS 229. Introduction to compiler-compilers. (F)

257. Advanced Computer Architecture. (2). Formerly 229C. Two lectures per week. Semester Prerequisites: CS 229. An introduction to compiler-compilers. (F)

258. Parallel Processors. (2). Formerly 249B. Two lectures per week. Semester Prerequisites: CS 229. Parallelism, its representation; models and their properties; parallelism, scheduling, detection of parallel processes. Principle of pipeline computation, classification, scheduling; current trends in pipeline architectures. Computer network, deadlock, protocol, routing, global information management, security, distributed operating systems and databases. (F)

259. Fault Tolerant Systems. (2). Formerly 249A. Two lectures per week. Semester Prerequisites: CS 229. Fault detection, location, and correction in software and hardware systems. Testing methods. Functional testing and debugging; and estimation of static and dynamic redundancy. Examples of systems using several levels of fault tolerance and redundancy reconfiguration. Microdiagnostics. Software reliability models and their assessment. (F)


262. Advanced Topics in Operating Systems. (4). Formerly 256. Three lectures per week. Semester Prerequisites: 162. Quarter Prerequisites: CS 155. This course is a survey of operating systems at the graduate level. It is based on a large number of readings from the computer science literature, and covers the following areas: early operating systems, virtual memory system design, virtual memory system management, protection, privacy and security, synchronization, deadlock, process management, and protection of file systems, virtual machines, the relation of hardware and technology to operating systems, performance analysis. (F,SP)

263. Design of Programming Languages. (3). Formerly 254. Three lectures and one hour discussion per week. Semester Prerequisites: CS 162 and 164. Quarter Prerequisites: CS 154. Selected topics from: analysis, comparison, and design of programming languages, formal description of syntax and semantics, advanced programming techniques, structured programming, debugging, verification of programs and compilers, and proofs of correctness. (F)

264. Implementation of Programming Languages. (4). Formerly 257. Three lectures, one hour discussion, and six hours programming laboratory per week. Semester Prerequisites: CS 164. CS 263 recommended. Quarter Prerequisites: CS 154. Compiler construction. Lexical analysis, syntax analysis. Semantic analysis code generation and optimization. Storage management. Run-time organization. (SP)


266. Introduction to System Performance Analysis. (2). Formerly 259. Two lectures per week. Semester Prerequisites: CS 264. Quarter Prerequisites: CS 257. Table-driven and regatable code generators. Flow analysis and optimization methods. Code optimization for advanced languages and architectures. Optimization by program transformation. (F) Alternate years.


269. Machine-Based Complexity Theory. (2). Formerly 261A. Two lectures per week. Semester Prerequisites: CS 170. Quarter Prerequisites: CS 174 and either Mathematics 113A or 115A. The construction of BCH codes, RS codes, and other codes based on the theory of finite fields. Topics such as algebraic decoding, fire codes, weight enumeration, convolutional codes, applications to the design of disk memories, and deep space probes. (F) Alternate years.

270. Computer System Support for Scientific Computation. (2). Formerly 255. Two lectures per week. Semester Prerequisites: CS 170 and Mathematics 113A. Properties of abstract complexity measures; Determinism vs. nondeterminism; time vs. space complexity hierarchy; decidability of the P-NP question; relative power of various abstract machines. (F) Alternate years.

271. System Support for Scientific Computation. (2). Formerly 246. Two lectures per week. Semester Prerequisites: Engineering 119 or Mathematics 128: one of CS 170, Pascal, or 414A course. Quarter Prerequisites: Eng 119 or Math 128. 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. (F)
282. Algebraic Algorithms. (2). Formerly 2292. Two hours lecture per week. Semester Prerequisites: CS 164, Mathematics 133B, or permission of instructor. Quarter Prerequisites: CS 154, Math 113, or permission of instructor. Focus on the construction 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. (SP)

283. Programming Techniques for Artificial Intelligence. (3). Formerly 2295. Three hours lecture per week. Semester Prerequisites: CS 164. Quarter Prerequisites: CS 154. Advanced LISP programming, AI programming languages, indexing, discourse representation systems, pattern matching, constraint systems, predicate-calculus based systems, frame-based systems, representations for mathematical forms, symbolic and algebraic manipulation techniques. (F)

284. Computer-Aided Geometric Design and Modeling. (3). Three hours lectures per week. Semester Prerequisites: A course in numerical analysis or consent of instructor. Mathematical techniques for curve and surface representation, including: Hermite interpolation, interpolating splines, tension splines, Bezier curves and surfaces, B-splines, Beta-splines, Coons patches, tensor product forms, lofted patches, blending function methods, Boolean sum schemes. (SP)

285. Implementation of Data Base Systems. (3). Formerly 164. Two hours lecture per week. Semester Prerequisites: CS 162 and 186. Quarter Prerequisites: CS 155 and 181. Implementation of data base systems on modern hardware systems. Considerations concerning operating system design, including buffer, page size, prefetching, etc. Query processing algorithms, design of crash recovery and concurrency control systems. Implementation of distributed data bases and data base machines. (F)

286. User-Interfaces to Computer Systems. (2). Two hours lecture per week. Semester Prerequisites: CS 162 and 186, or consent of instructor. Quarter Prerequisites: CS 155 and 181. 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 studies of naive- and expert-user interfaces. (SP)

288. Artificial Intelligence Approach to Natural Language Processing. (3). Formerly 283. Two hours lecture and one hour of discussion per week. Semester Prerequisites: CS 164, Quarter Prerequisites: CS 40. Representation of conceptual structures, language analysis and production, models of inference and memory, high-level language processing, question answering and conversation, machine translation. (SP)

289. Artificial Intelligence, Knowledge Representation, and Expert Systems. (2). Formerly 282. Two hours of lecture per week. Semester Prerequisites: 188 or 189 or consent of instructor; Quarter Prerequisites: CS 54 or 189. An introduction to the field of Artificial Intelligence. Techniques for the construction of intelligent computer systems with an emphasis on knowledge representation and expert systems. Prolog and logic programming, frame representation, languages and common sense reasoning. (F)

292A. Creative Geometric Modeling. (2). One 1/2-hour lecture per week plus a project. Semester Prerequisites: Introductory graphics course and consent of instructor. Algorithms and techniques for the creation of interesting and artistic objects in two, three, or four dimensions. Creation of a library of generator routines. Rendering of such objects in different styles on different output devices (animation to be used, and extension of UNIGRAPHIX. (SP)

292C. Concurrent Programming. (2). New Course since Spring 1983. This course may be repeated for credit. Two 1-hour lectures per week. Semester Prerequisites: 182 or equivalent with 184 and 283 recommended. Concurrent programming languages, semantics, algorithms, and supporting architectures. Reasoning about concurrent programs: formal models and informal techniques. Comparison of concurrent programming languages and methods. Highly parallel algorithms and notations for expressing them. Implementation techniques: interaction of concurrent language design and hardware design. (SP)


298. Group Studies, Seminars, or Group Research. (1-4). Formerly 298. Course may be repeated for credit. Independent study. Involvement in seminars or study groups, such as those for special topics or in comprehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP)

299. Individual Research. (1-12). Formerly 299. Course may be repeated for credit. Independent study. Investigations of problems in computer science. (F,SP)

300. Teaching Practice. (1-6). Formerly 300. May be repeated for credit. Independent practice. Opportunity for qualified students to prepare themselves in comprehensive design problems, or group research on an appropriate topic. (F,SP)

301. Teaching Techniques for Computer Science. (1-3). Formerly 301. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour discussion per week. Semester Prerequisites: Consent of instructor. Discussion and practice of techniques for effective teaching. (F,SP)

Industrial Engineering and Operations Research

Upper Division Courses

110. Interactive Computer Programming and Modelling Applications. (3). Formerly 110. Two 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: Knowledge of a computer programming language and software design using the interactive APL language. Prior knowledge of APL is not required. Lecture topics include all machine-implemented APL mathematical functions, data manipulation operators, writing APL programs. Important user-designed recursive functions and operators are defined and their applications as applied to computer simulations, file search, and optimization. (F,SP)

115. Industrial and Commercial Data Systems. (3). Formerly 154. Two hours lecture and 1 hour of discussion per week. Semester Prerequisites: Computer Science 7 or consent of instructor. Quarter Prerequisites: Computer Science 1 or consent of instructor. Review of data system and data processing functions, technology, and organization, emphasizing industrial and commercial applications. Requirements and formulation criteria. Discussion of data system and data processing functions, technology, and organization, emphasizing industrial and commercial applications. Requirements and formulation criteria. Proposal writing project. Optimization of data systems. (F,SP)

120. Modeling and Simulation of Dynamic Systems. (3). Formerly 130. Three hours lecture per week. Semester Prerequisites: 110 (may be taken concurrently); Mathematics 50A-50B; Statistics 134. Previous Course: Mathematics 50A-50B; Statistics 134A. Concepts of dynamic control systems, including feedback and stability. Characteristics of linear and nonlinear systems. Design in modeling and analysis of control of time of systems of moderate complexity. Simulation of non-linear and stochastic systems. (SP)

140. Work Methods and Measurement. (3). Formerly 172. Two hours of lecture and two hours of laboratory per week. Semester Prerequisites: Statistical 132. Quarter Prerequisites: Statistical 132A. Process, operation, and work measurement. Analysis standards, job evaluation, work sampling, and process capability. (F)

150. Production Systems Analysis. (3). Formerly 150. Three hours of lecture per week. Semester Prerequisites: 131, Mathematics 162 and 181. Concepts of production systems; use of operations models and quantitative methods of operations research. (F)

153. Facilities Planning and Design. (3). Formerly 153. Two hours of lecture and two hours of discussion per week. Semester Prerequisites: Mathematics 13B. Quarter Prerequisites: Statistics 131A or equivalent. Design and control of automated warehousing and order-picking system simulation. (F,SP)


162. Linear Programming. (3). Formerly 162. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Mathematics 50A. Quarter Prerequisites: Mathematics 50B. Formulation to linear programs. Optimal location and control problems, assignment and transportation studies. Convex sets; properties of optimal solutions. The simplex method; theorems of duality; complementary slackness. Problems of post-optimization. Special structures; network problems. Digital computation. (F,SP)


164. Introduction to Inventory Control and Queueing Models. (3). Formerly 164. Three hours of lecture per week. Semester Prerequisites: Statistics 134 or 100A. Queueing theory, the mathematical representation of cumulative arrivals and departures, storage, and delays. Analysis of deterministic time-dependent demand. Pulsed arrivals and/or departures. Deterministic analysis of single queueing and inventory systems. Stochastic arrival and departure process, applications of Poisson process. (SP)

165. Forecasting and Quality Control. (3). Formerly 131. Two 1/2-hour lectures per week. Semester Prerequisites: 163 or Statistics 135. Quarter Prerequisites: Statistics 135. The design and use of simple forecasting
and quality control models. Forecasting levels and trends in data; forecast and control levels based on past observations, and new information; analysis of forecast errors using autocorrelations and partial autocorrelations; exponential smoothing techniques. (F,SP)

170. Human Performance Mechanism and Task Design. (3). Formerly 170. Two hours of lecture and two hours of laboratory per week. Semester Prerequisites: Psychology 78B; Chemistry 1A. Quarter Prerequisites: 172; Psychology 78A; Psychology 78B; Physical Education 75A; Psychological and physiological mechanisms and factors affecting individual human performance in production and service systems. Qualitative and quantitative techniques used in design of manned systems, equipment for human use, and the task environment. Laboratory exercises and design projects undertaken. (SP)

171. Introduction to Design of Human Work Systems and Organization. (3). Formerly 171. Three hours of lecture per week. Semester Prerequisites: 140 (may be taken concurrently) and Statistics 135. Qualitative and quantitative models and techniques for optimizing labor and organizational effectiveness and satisfaction in production and service systems. Labor requirements and task performance factors; extrinsic and intrinsic motivation; job design; formal and informal organization; leadership and supervision; sociotechnical systems. (F)

172. Industrial Safety and Health. (3). Formerly 178. Three hours of lecture per week. Semester Prerequisites: 170 or consent of instructor. Quarter Prerequisites: 170. An engineering-oriented introduction to safety and health problems and solutions encountered in industry and commerce. Coverage includes OSHA legislation, safety program development, systems and equipment, analytical approaches used in risk analysis, and fault tree models, human reliability, cost-benefit analysis, budgeting. (SP)

180. Synthesis and Design of Industrial Systems. (3). Formerly 180. Two hours of lecture and two hours of discussion per week. Semester Prerequisites: 150; 161; 130; 162 or ME 102A. Quarter Prerequisites: 150; one of CS 11B, CS 11R, or CS 13R (a single lecture course in computer science). Application of systems analysis and industrial engineering to the analysis, planning, and/or design of industrial or governmental systems. Consideration of technical and economic aspects of equipment and process design. Students work in teams under faculty supervision. Topics vary yearly. (SP)

186. Directed Group Studies for Advanced Undergraduates. (1-4). Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Consent of student and Engineering Group studies of selected topics. Topics vary. Semester course unit value and contact hours will have a one-to-one ratio. (F,SP)

199. Supervised Independent Study. (1-4). Formerly 199. May be repeated for a maximum of four units in total. Must be taken on a passed/not passed basis. Individual conferences. Semester Prerequisites: Consent of instructor and major adviser. Supervised independent study. Please see Key to Symbols section of the General Catalog for description and prerequisites. (F,SP)

Graduate Courses


220. Economics and Dynamics of Production. (4). Formerly 220 and 221. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 260A (may be taken concurrently). Statistics 134A. Quarter Prerequisites: 262A, Statistics 134A, Mathematics 104A recommended. Modelling and analysis of production-service systems and engineering projects. Engineering economics, including project evaluation and risk analysis. Econometric and programming models of production, dynamic systems and production networks for analyses of resource utilization and output possibilities. (F,SP)

231. Forecasting Model Analysis and Design. (4). Formerly 231. Two 1 1/2-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 263A (may be taken concurrently). Statistics 135. Quarter Prerequisites: 262A; Statistics 135A-135B or equivalent. Forecasting models for discrete time series in the time domain and cross correlation functions. Identification and estimation of parameters in autoregressive and moving average processes; linear stationary and nonstationary models; minimum mean square forecast; Kalman filters. Bayesian forecasting techniques and model Reference Adaptive Systems. Updating algorithms for on-line adaptive forecasting. (SP)

240. Policy-Level Problems in Industrial Engineering. (3). Formerly 240. Two hours of lecture and two hours of discussion per week. Semester Prerequisites: Graduating senior in industrial engineering or in an industrial engineering major. Past and current factors which influence policy-level problems and decisions in industrial engineering practice. Case studies arising from, and currently affecting, industrial engineering practice. (F)

251. Production Systems and Facilities. (3). Formerly 251. Two hours of lecture and two hours of discussion per week. Semester Prerequisites: Engineering management or equivalent. Analysis of production flow lines. Materials handling. Location and design of facilities. (F)

254. Process Planning and Scheduling. (3). Formerly 254. Three hours of lecture per week. Semester Prerequisites: 262A and 220. Quarter Prerequisites: 262A, 150 or equivalent. Mathematical and computer methods for production planning, scheduling, and control. Topics include: aggregate capacity planning, manufac- turing requirements, lot size models, job shop scheduling; hierarchical linkage of production planning and control. (SP)

25A. Mathematical Programming I. (4). Formerly 25A. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Mathematics 111. Basic graduate course in linear programming and introduction to network flow problems and non-linear programming. Formulation and model building. The simplex method and its variants. Duality theory. Sensitivity analysis, parametric programming, convergence (theoretical and practical). Special structures such as upper bounds and decomposition. (F)

25AB. Mathematical Programming II. (3). Three hours of lecture and two hours of discussion per week. Semester Prerequisites: Mathematics 104A. Methods, and batch means. Variance reduction. (SP)


265. Reliability Theory. (3). Formerly 265. Three hours of lecture per week. Semester Prerequisites: 263A (may be taken concurrently). Quarter Prerequisites: 262A. A first graduate course in system reliability analysis; coherent structures; fault tree analysis; efficient computational methods for calculating system reliability; properties and applications of life distributions with monotone failure rate; extreme value distributions; maintenance models and optimization of redundancy. (F)

266. Network Flows and Graphs. (3). Formerly 266. Three hours of lecture per week. Semester Prerequisites: 262A (may be taken concurrently). Quarter Prerequisites: 262A. Survey of solution techniques and problems that have formulations in terms of networks, Max-Flow Min-Cut theorem. Minimum cost flows. Multiterminal and multicommodity flows. Relations with linear programming, transportation problems, electrical networks and critical path scheduling. (SP)


271. Work Systems and Organization Design. (3). Formerly 271. Three hours of lecture per week. Semester Prerequisites: 171. Task design, work scheduling and intrinsic rewards as determinants of individual performance. Skill acquisition, optimum level of specialization. Job design, extrinsic rewards, job satisfaction, the Maslow-Herzberg model. The human relations and sociotechnical system. European and Japanese work systems. (SP)

280. Systems Analysis and Design Project. (3). Formerly 280P. Three hours of lecture per week. Semester Prerequisites: 254 and 25A. Quarter Prerequisites: 262A, 262B, and 263A. A project course for students interested in applications of 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)

290A. Dynamic Production Theory and Planning Models. (3). Formerly 290A. Three hours of lecture per week. Semester Prerequisites: 220 and 254. Quarter Prerequisites: 290A. Mathematical and dynamic activity analysis models for production planning and scheduling. Relationship to theory of production, inventory theory and hierarchical organization of production management. (F,SP)

290B. Dynamic Programming and Calculus of Variations. (3). Formerly 290B. Three hours of lecture per week. Semester Prerequisites: 262 and 264. The necessary conditions of optimal control theory will be derived and interpreted, using dynamic programming (SP)

290C. Statistical Aspects of Discrete Event Simulation. (2). Formerly 290C. Two hours of lecture per week. Semester Prerequisites: 267; Statistics 200B and knowledge of Fortran or an appropriate simulation lan- guage. Quarter Prerequisites: 200B. Statistical design and analysis of discrete event simulation of queues and other stochastic models. The initial transient and optimal starting conditions. Variance estimation techniques including the regenerative method, time series methods, and batch means. Variance reduction. (SP) Once every two years.

290D. Decision Analysis. (3). Formerly 290D. Three hours of lecture per week. Semester Prerequisites: 262A and 268. Study of decision analysis culminating in an application of the methodology. Discussion of behavioral validity of the methodology. (SP)

290E. Large-Scale Programming. (3). Formerly 290E. Three hours of lecture per week. Semester Prerequisites: 262A. Quarter Prerequisites: 262A and 260. Methods for exploiting the structure of large mathematical optimization problems to economize on computer time and/
Materials Science and Engineering

Upper Division Courses

100. Field Trips. (1) Formerly 100. One 4-hour field trip per week. Semester Prerequisites: Junior standing in materials science or consent of instructor. Visits to factories and industrial laboratories concerned with metallurgical, ceramic, or electronic products, with emphasis on the materials aspects. Lectures by engineers and managers from materials industries. Written trip reports. (F)


102. Bonding, Crystallography, and Crystal Defects. (3) Formerly 101. Two 1-hour lectures per week. Semester Prerequisites: E 45. Bonding in solids; classification 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. (SP)

103. Phase Transformations and Kinetics. (3) Formerly 103. Three 1-hour lectures per week. Semester Prerequisites: E 45 and one of Physics 17A-7B/C or Chemistry 14. The nature, mechanisms and kinetics of phase transformations and microstructural changes in the solid state. Atom diffusion in solids. Phase transformations through the nucleation and growth of new matrix or precipitate phases. Martensitic transformations, spinodal decomposition. The use of phase transformations to control microstructure. (F)


111. Electrical and Magnetic Properties of Materials. (3) Formerly 108. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Physics 7A-7B-C or Physics 7A-7B and consent of instructor. Understanding of electrical and magnetic properties of metals, semiconductors, and insulators on the basis of physical fundamentals. Materials used by processing. Materials for lasers and optical fibers, superconductivity. Examples of electronic, magnetic and optical device applications. (F)

112. Corrosion (Chemical Properties). (3) New Course since Spring 1983. Two 1-hour lectures per week. Electrochemical corrosion of materials and rates in relation to physicochemical and metallurgical factors. Stress corrosion and mechanical influences on corrosion. Corrosion protection by design, inhibition, cathodic protection and coatings. (SP)

113. Mechanical Behavior of Materials. (3) New Course since Spring 1983. Three 1-hour lectures per week. Semester Prerequisites: E 45. Study of microscopic aspects of deformation including ideal strength, elementary dislocation theory, dislocation glide and high temperature deformation. Macroscopic and microscopic aspects of fracture, fatigue, and environmentally-influenced failure using fracture mechanics. Analysis of engineering failures. (F)


121. Metals Processing. (3) New Course since Spring 1983. Three 1-hour lectures per week. The principles of metals processing with emphasis on the use of processing to establish microstructures which impart desirable engineering properties. The techniques discussed include solidification, thermal and mechanical processing, powder processing, welding and joining and surface treatments. (F)

122. Ceramic Processing. (3) Formerly 122. Three 1-hour lectures per week. Semester Prerequisites: 101 and E 45. Quarter Prerequisites: 141. Powder fabrication by grinding and chemical methods, rheological behavior of powder-fluid suspensions, forming methods, drying, sintering and grain growth. Relation of processing steps to microstructure development. (F)

123. Semiconductor Processing. (3) New Course since Spring 1983. Two 1-hour lectures and one hour discussion per week. Semester Prerequisites: 111 or Physics 7A-7B-C and consent of instructor. Quarter Prerequisites: 108 and Physics 5A-5B-5C. Semiconductors, purification and crystal growth techniques; impurity doping by diffusion, ion implantation and alloy regrowth; contact formation, mechanical and chemical processing; semiconductor analysis. (SP)

124. Glass and Crystalline Ceramic Materials. (3) Formerly 124. Three 1-hour lectures per week. Semester Prerequisites: 101 and E 45. Quarter Prerequisites: E 45. Introduction to non-crystalline ceramics, conditions for glass formation, atomic structure of glasses, phase separation mechanisms. Mechanical properties of glass, glass transition. Phase diagram of glasses and powder fabrication of crystalline ceramics. Mechanical behavior of crystalline ceramics relevant to structural applications. Ceramics for optical, magnetic, and electronic applications with emphasis on microstructure-property relationships. (F)

130. Materials Engineering. (4) New Course since Spring 1983. Three 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 111, 112, 113 and Engineering 45. Quarter Prerequisites: 108 and Engineering 45. Case studies course concerned with materials development, failure analysis, and corrosion. Examples relate to mechanical properties, electrical properties, and corrosion. (SP)

198. Directed Group Studies for Advanced Undergraduates. (1-4) New Course since Spring 1983. Must be taken on a pass/unsatisfactory basis. Semester Prerequisites: Upper division standing in Engineering. Group studies of selected topics. (F,SP)

199. Supervised Independent Study. (1-4) Formerly 199. Course may be repeated for a maximum of four units per semester. Must be taken on a pass/unsatisfactory basis. Individual conferences. Semester Prerequisites: Consent of instructor and major adviser. Supervised individual study. Course title and content to be approved in writing by instructor. Section of the General Catalog for description and prerequisites. (F,SP)

Graduate Courses

201. Thermodynamics. (3) New Course since Spring 1983. Four hours of lecture per week. The laws of thermodynamics. The conditions of equilibrium and stability. Application to model systems; phase diagrams; surface thermodynamics. Equilibrium and non-equilibrium thermodynamics. Kinetics of non-equilibrium processes. (F)

202. Crystal Structure and Bonding. (3) Formerly 102. Three 1-hour lectures per week. Regular and irregular arrays of points, spheres, lattices, direct, reciprocal, crystallographic point and space groups; atomic structure; bonding in molecules; bonding in solids; ionic (Pauling rules), covalent, metallic bonding; structure of elements, compounds, minerals, polymers. (F)

204A. Characterization of Materials. (3). Formerly 213A-213B. Three hours of lecture per week. Semester Prerequisites: 102, 103 or equivalent. Quarter Prerequisites: 101 or 200A or 214; 213B prerequisite to A. Advanced treatment of techniques used in the characterization of materials by electron diffraction, spectroscopy, and microscopy; emphasis on detailed analysis of defects responsible for materials properties. (SP)

204B. Characterization of Materials. (3). Two hours of lecture per week. Modern analytical, optical, and particle beam techniques for the characterization of semiconductor bulk single crystals and their crystalline and amorphous layers. Examples are Hall effect, Deep Level Transient Spectroscopy, IR-Spectroscopy, Secondary Ion Mass Spectroscopy, Rutherford Backscattering Spectroscopy, and others. (F)

204L. Electron Microscopy and Characterization of Materials Laboratory. (2). Formerly 213L. One 4-hour laboratory and one 2-hour demonstration/discussion per week. Formerly 2134. Electron microscopy; diffraction and spectroscopy methods in materials characterization. Application to metallic and ceramic alloys. (SP)

211. Deformation of Materials. (3). Formerly 207 and 208. Three hours of lecture per week. Semester Prerequisite: MSE 103 or equivalent. Quarter Prerequisite: MSE 207 or equivalent, or an intensive introduction to dislocation theory. Deformation concepts in terms of dislocation theory: yield, work hardening, solute and precipitate strengthening faults, statistics, recovery. Continuum aspects of plasticity. Deformation under fatigue, creep, and superplastic conditions. Premature failure associated with shear instabilities and crack and hole nucleation. Microstructure, property relations. (SP)


213. Environmental Effects On Materials Properties and Behavior. (3). Two 1 1/2-hour lectures per week. Semester Prerequisite: MSE 112 or equivalent. Review of electrochemical aspects of corrosion; pitting and crevice corrosion; active/passive transition; fracture mechanics approach to corrosion; stress corrosion cracking; hydrogen embrittlement; liquid metal embrittlement; corrosion fatigue; testing methods. (F)

221. Metals Processing. (3). Three hours of lecture per week. Semester Prerequisites: MSE 202, MSE 211. Treatment of common techniques in the processing of metals from the perspective that these involve the manipulation of phase transformations and defect interactions to establish desirable combinations of composition and microstructure. Control of composition, phase content, grain size and shape, and precipitate and defect type and distribution. (SP)

222. Powder Processing and Sintering. (3). Formerly 246 and 248. Three hours of lecture per week. Semester Prerequisites: MSE 101 or MSE 103 or equivalent. Introduction to surface and colloid chemistry, implications to ceramic forming, densification mechanisms, microstructural evolution, relationship to forming operations, grain boundary migration, grain growth. (SP)

223. Semiconductor Materials. (3). Formerly 250. Three hours of lecture per week. Semester Prerequisites: Physics 7C or consent of instructor. Quarter Prerequisites: Physics 5E. Semiconductor purification and crystal growth techniques. Doping, radiation damage, and annealing. Metal-semiconductor interfaces and reactions. Interaction between defects and impurities during processing of devices. Major electronic and optical methods for the analysis of semiconductors. (SP)

224. Solar Energy Materials. (2). Formerly 290G. Two hours of lecture per week. Semester Prerequisites: Graduate standing in engineering, physical science, or consent of instructor. Materials aspects of solar energy utilization. Photovoltaics, selective surfaces, thermal storage, reflective surfaces. Cost constraints. Limitations of existing materials. (SP)

230. X-ray and Neutron Diffraction. (3). Formerly 214. Two 1 1/2-hour lectures per week. Quarter Prerequisites: 101L or equivalent. Diffraction fundamentals; scattering by gases and liquids; the reciprocal lattice and the nature of diffraction effects; structure determination and absorption by x-rays and neutrons; dynamical theory; x-ray topography; crystal structure analysis; disordered crystals, stacking faults; small particulate systems; experimental techniques. (SP) Even-numbered years.

260A. High Temperature Oxidation and Corrosion. (2). Formerly 290K. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Thermodynamics of metal and alloy oxidation in single and mixed oxygen atmospheres and fused salts. Defects in oxides and effects on scale growth. Stress generation and relief in growing scales; scale breakdown. Design of oxidation resistant alloys; accelerated attack and hot corrosion in energy applications. (F)

290B. Small Angle Scattering. (2). Former Course since Spring 1983. One 2-hour lecture per week. Theory of small angle scattering; Guinier and Porod approximations; small angle invariant; applications of x-ray and neutron scattering to problems in materials science; binary and ternary systems; phase separations; critical phenomena and clustering; magnetic systems; defect studies, experimental techniques. (SP)

290C. Mechanical Behavior of Ceramics. (2). Formerly 290M. Two hours of lecture per week. Effects of microstructure on the mechanical properties of ceramic materials. Brittle fracture, stress corrosion cracking, creep, rupture, thermal shock, fracture statistics, erosion, wear in oxide and non-oxide ceramics and glasses. Failure prediction using non-destructive methods. (F)

290D. Advanced Topics in Phase Transformations. (2). Two hours of lecture per week. Semester Prerequisites: 103 or equivalent. Quarter Prerequisites: 103. Topics to be selected from the following: general thermodinamics for dielectrics, electromagnets, solid solutions, elastic substances; stability criteria; material tensors and representations; statics to ferroelectricity, piezoelectricity, ferromagnetism, multi-component compositional instabilities; introduction to continuum and irreversible thermodynamics; statistical mechanics of phase diagram calculations. (SP) Odd-numbered years.


290F. Fracture Mechanics and Fracture Control. (2). Two hours of lecture per week. Semester Prerequisites: 290C or equivalent. Second course in fracture mechanics. Linear elastic and plastic fracture mechanics as applied to brittle and ductile failure. Fatigue design using local strain and damage tolerance. Environmental effects. Fracture control. (F)

290S. Special Semiconductor Materials Problems. (2). One hour of lecture and one hour of discussion per week. Review of current research and development in semiconductor materials synthesis and analysis, semiconductor device problems. (SP)

298. Group Studies, Seminars, or Group Research. (1-12). Formerly 298. May be repeated for credit. Semester Prerequisites: Graduate standing in engineering. Individual investigation of advanced materials science problems. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing in engineering. Individual study for the comprehensive or language requirements 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)

**Mineral Engineering**

Upper Division Courses

100. Introduction to Mining Methods. (3). Formerly 111. Two 1 1/2-hour lectures per week. Semester Prerequisites: 106 or consent of instructor. Major methods of mining are given of all the important techniques used for extraction of minerals from the earth's crust. Surface and underground mining methods are outlined. The decision variables, that are involved in the selection of an optimum mining method are discussed. (F)

105. Mine Planning and Systems Engineering. (3). Formerly 290G. Two 1 1/2-hour lecture per week. Semester Prerequisites: 100 or consent of instructor. Quarter Prerequisites: 100. Concepts of engineering economics and basic techniques applicable in mine planning are introduced. The principles of mine design and the impact of the selection of mining method on the economics of the mining project are discussed. (F)

106. Mineral Economics. (3). Formerly 108. Two 1 1/2-hour lectures per week. Political and economic concepts of world, regional, and national mineral resources. Geographic concentration, production, uses and consumption. Exploration economics. The evolution of mining projects, financial appraisal methods, political risk assessment. Mining finance, capital sources, taxation, management accounts. (F)

110. Fundamentals of Rock Mechanics. (3). Formerly 112. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Upper division standing. Fundamental empirical and theoretical treatent of mechanical behavior of rock and application to practical problems of design of mine excavations and methods of rock breaking. (F)

116. Introduction to Fluid Flow in Rocks. (2). Formerly 116. Two 1-hour lectures per week. Semester Prerequisites: Mathematics 50B and Physics SC. Quarter Prerequisites: Civil Engineering 165A and Mechanical Engineering 100C and permission of instructor. Principles governing the movement and storage of fluids in soils and rocks. Methods of measuring fluid flow parameters. Applications to typical problems in hydrogeology and engineering. (SP)

118. Mine Ventilation Planning. (3). Formerly 115. Two 1 1/2-hour lectures per week. Semester Prerequisites: Civil Engineering 165 or consent of Instructor. Quarter Prerequisites: ME 105A and CE 165A or ME 106A. Incompressible, laminar, and turbulent flow. Airflow relations and instruments. Airflow systems in mines. Mine ventilation thermodynamics. Fluid network analysis. Mine ventilation thermodynamics. Fan characteristics. Students will undertake some laboratory work as part of this course and will conduct a ventilation planning project using computer techniques. (F)
130. Introduction to Mineral Exploration. (3) New Course since Spring 1983. Two 1½-hour lectures per week. Semester Prerequisites: Geology 100 or consent of instructor. This course introduces the student to the basic principles of mineral exploration, including regional geological setting and examples of typical deposits, including their mineralogy and physical properties. The course will cover exploration geophysics, chemistry, and geology, including the interpretation of exploratory drilling, logging, and deposit evaluation. (F)

150. Mineral Engineering Laboratory. (3) New Course since Spring 1983. Two hours of lecture and 3½ hours of laboratory per week. Consent of instructor. Four 1½-hour lectures per week. Previous course: M.1.01. Formerly M.1.02. Fundamental concepts and methods of mineral processing and recoveries are discussed using experimental techniques and equipment. Laboratory contact is mandatory for successful completion of the course. (SP)

200. Mining of Bedded Deposits. (2) Two 1½-hour lectures per week. Semester Prerequisites: M.1.06 or consent of instructor. Formerly M.106. The course covers the design of underground mining and recovery systems, including the selection of mining methods. (F)

230. Numerical Methods for Analyzing Fluid Flow in Soil and Rock Systems. (3) Formerly 230A. Two 1½-hour lectures per week. Semester Prerequisites: Mathematics 200A or equivalent. Formerly 210. Formerly Department of Civil Engineering. The course introduces numerical methods for solving partial differential equations that arise in the analysis of fluid flow in soils and rocks. Topics include finite difference methods, finite element methods, and boundary element methods. (SP)

240. Digital Data Processing. (3) Formerly Engineering Geoscience 240A-240B. Two 1½-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Computer science 241. Formerly Geosciences 240A-240B. Formerly Geosciences 240A-240B. Formerly Computer science 241. The course covers the application of digital signal processing techniques to geophysical data. Topics include spectral analysis, filtering, and time-frequency analysis. (SP)

322. Electromagnetic Methods in Applied Geophysics. (3) Formerly 222A-222B. Two 1½-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Formerly Geoscience 222A-222B. The course covers the theory and application of electromagnetic methods in geophysics. Topics include electromagnetic induction, electromagnetic diffraction, and electromagnetic tomography. (SP)

236. Seismic Methods in Applied Geophysics. (3) Formerly Engineering Geoscience 236. Two 1½-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Formerly Geosciences 236. The course covers the theory and application of seismic methods in geophysics. Topics include seismic reflection, refraction, and reflection profiling. (SP)

241. Nuclear Engineering. (3) Formerly Physics 241. Two 1½-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Formerly Physics 241. The course covers the principles of nuclear engineering, including nuclear reactors, nuclear fuels, and nuclear waste disposal. (SP)

242. Numerical Methods for Materials Science and Mineral Engineering. (3) Formerly 242. Two 1½-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Formerly Geosciences 242. The course covers the application of numerical methods to problems in materials science and mineral engineering. Topics include finite element analysis, computational fluid dynamics, and computational chemistry. (SP)

244. Inverse Theory. (3) Formerly 207. Two 1½-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Formerly Physics 207. The course covers the theory and application of inverse problems in geophysics and materials science. Topics include regularization, Bayesian statistics, and Markov chain Monte Carlo. (SP)

151. Field Trips. (1) New Course since Spring 1983. Course may be repeated for credit. Semester Prerequisites: Consent of instructor or consent of instructor. The course covers field studies in mineral engineering, including the study of mineral deposits and the design of mining operations. (SP)
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. (F)

261. Applied Colloidal Phenomena. (2). Formerly 221. One 2-hour lecture per week. The characterization of colloidal materials and the physical chemistry of colloid systems. Primary emphasis on the interaction of colloidal particles, particularly in aqueous environments; floc- culation, aggregation, and dispersion phenomena; selec- tive flocculation. (SP) Even-numbered years.

262. Surface Chemistry of Flotation. (2). Formerly 226. One 2-hour lecture per week. Application of surface and crystal chemistry to the separation of minerals by flotation; selective absorption of surfactants; natural floatability; flotation of fine particulates, precipitates, oil droplets. (SP) Odd-numbered years.

265. Modeling of Particulate Rate Processes. (3). Formerly 223. Two 1/2-hour lectures per week. Semester Prerequisites: Graduate standing in engineering. Funda- mental principles of process modeling; introduction to particulate systems in mineral, metallurgical, ceramic, and chemical industries; quantitative description of par- ticle systems; transport through reactors, development of population balance models and analysis of rate pro- cesses involved in particulate size changes, solid-liquid and solid-solid separations, and fluid-solid reactions. (SP)

266. Mineral Process Simulation. (2). Formerly 224. One 2-hour lecture per week. Semester Prerequisites: 265. Third hour of 220 and 221 emphasis on principles of process simulation, model validation and parameter es- timation in mineral and metallurgical systems; process analysis by computer simulation; detailed description of size reduction, size enlargement, size separation and hydrometallurgical processes. (SP) Odd-numbered years.


275. Metallurgical Transport and Rate Phenomena. (3). Formerly 222. Three hours of lecture per week. Semester Prerequisites: Graduate standing in engi- neering. Heat, mass, and momentum transport and reaction kinetics in systems relevant to extractive met- allurgy, mineral processing, and materials processing. (SP)

276. Advanced Extractive Metallurgy. (2). Formerly 228. One 2-hour lecture per week. Analysis of the major unit operations of extractive metallurgy. Emphasis on the design in which each unit operation is governed by fundamental rate phenomena. (F)

289. Group Studies, Seminars, or Group Research. (1-4). Formerly 289. May be repeated for credit. Section 1: S/U grading; all other sections: letter grading. Semester Prerequisites: Graduate standing in engineering. Ad- vanced study in various subjects through special sem- inars on topics to be selected each year, informal group studies of special projects, group participation in com- prehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP)

299. Individual Study or Research. (1-12). Formerly 299. Course may be repeated for credit. Individual in- vestigation of advanced mineral engineering problems. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a sat- isticatory unsatisfactory basis. Semester Prerequisites: Graduate standing in engineering. Individual study for the comprehensive or language requirements in con- sultation with the field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-4). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing in engineering. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D. (and other doctoral degrees). (F,SP)

Mechanical Engineering

Lower Division Courses

102. Introduction to Mechanical Engineering. (1). Two 3-hour lectures per week. Semester Prerequisites: 220 and 223. Formerly 224. Two 1-hour laboratory periods per week. Semester Prerequisites: 220A. Two hour lecture, one hour discussion. (SP)

102A. Mechanical Behavior and Processing of Ma- terials. (3). Formerly 223. Three hours of lecture per week. Semester Prerequisites: 102A, Engineering 45. Quarter Prereq- uisites: Chemical Engineering 45; Civil Engineering 130A. Elastic and plastic deformation under static and dynamic load conditions. Prediction and prevention of failure by yielding, buckling, fracture, fatigue, creep and wear. (F,SP)

102B. Mechanical Engineering Design. (3). Formerly 226. Two hours of lecture and three hours of laboratory per week. Semester Prerequisites: 102A. Quarter Prereq- uisites: 102A and 104B. Application of principles of mechanical engineering to design and choice of manufacturing pro- cesses to the design of components and complete ma- chines which must meet prescribed functional require- ments. Synthesis and analysis of a major design project. (F,SP)

104. Engineering Mechanics II. (3). Formerly 104A- 104B. Three hours of lecture and one hour of discussion per semester. Semester Prerequisites: Engineering 36 (recommended); Mathematics 50B. Quarter Prerequi- sites: Engineering 36. Principles of Newtonian Dynamics of a particle or system of particles. Conservation of energy in one-, two-, and three-dimensional motions. (F,SP)

105. Thermodynamics. (4). Formerly 105A-105B. Four hours of lecture per week. Semester Prerequisites: Thermodynamics 1A; Mathematics 50A; Physics 5A. Quarter Prerequi- sites: Chemistry 13B; Mathematics 51C, Physics 5B. First and second laws of thermodynamics, thermostat- ic systems, cycles, chemical and combustion processes, and non-equilibrium systems. (F,SP)

106. Fluid Mechanics. (3). Formerly 106A. Three hours of lecture per week. Semester Prerequisites: 104 and 105. Quarter Prerequisites: 106A. Quarter Prerequisite: Engineering 45. Fluid properties; hydromechanics; mass, momentum and energy balances on finite control volumes; analytical description of simple inviscid and viscous flows. Flow measurement. Empirical description of turbulent flow. Model laws. Ap- plications to flow around bodies and through conduits, meters and machines. (F,SP)

107A. Experimentation and Measurement. (3). For- merly 107A. Two hours of lecture and three hours of laboratory per week. Semester Prerequisites: 104, 105, 106A. May be taken by students ECS 100B. Quarter Prerequisites: ECS 100A. Methods and pro- cedures for experimental investigation of mechanical engineering phenomena and system. Experimental design and instrument system, data processing and data reduction. Modeling of mechanical and environmental systems. Technical communication skills. (F,SP)

107B. Mechanical Engineering Laboratory. (4). Formerly 107B-107C. Seven hours of laboratory per week. Semester Prerequisites: 107A. Quarter Prerequisites: 107A, 107B, 104A, 104A, 108A and 108B. Experimental investigation and analysis of engineering systems and phenomena of interest to mechanical engineers. Design and planning of experiments. Analysis of data and re- porting of experimental results. (F,SP)

109. Heat Transfer. (3). Formerly 109B. Three hours of lecture per week. Semester Prerequisites: 105 and 106. Quarter Prerequisites: 105A (or 103) and 106A. Conductive, convective and radiative transport of thermal energy, boiling and condensation heat transfer, heat exchangers. (F,SP)

110. Mechanical Engineering—Project Engineering. (3). Formerly 110. Three hours of lecture per week. Semester Prerequisites: 107A (which may be taken concurrently) and 102B. Quarter Prerequisites: 102B and 107A. To introduce concepts of project engineering systems having students complete preliminary designs of a realistic mechanical engineering system and by design seminars and conferences. (SP)

122. Processing of Materials in Manufacturing. (3). Formerly portions of 101, 121 and 123. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 102A; Civil Engineering 130. Quarter Prerequisites: 102A; Civil Engineering 130A. Funda- ments of manufacturing processes (metal forming, metal cutting, welding, and casting); selection of metals, plastics and other materials relevant to the design and choice of manufacturing processes. (SP)

128. Computer-Aided Mechanical Design. (3). Two hours of lecture and three hours of laboratory per week. Semester Prerequisites: Engineering 28, Civil Engi- neering 130, and Mathematics 51C. Quarter Prerequi- sites: 102B, Civil Engineering 130A, and Mathematics 51C. Introduction to interactive computer graphics and numerical methods for optimization in mechanical engi- neering design. (F,SP)


140. Combustion Processes. (3). Formerly 133. Three hours of lecture per week. Semester Prerequisites: 104. Quarter Prerequisites: 104A, 108. Introduction to the theory of mechanical vibrations including topics of harmonic motion, resonance, transient and random ex- citation, applications of Fourier analysis and convolution methods to the study of freedom discrete systems in- cluding principal mode, principal coordinates and Ray- leigh's principle. (SP)

143. Automatic Control Systems. (4). Formerly 134. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Mathematics 50B; Physics 5C, 5C; Computer Science 1. Formerly 108. Formulation of mathematical models of active and passive, linear and non-linear dynamic systems; State equations and system stability; Linear control systems- PID control; Controller design in the frequency and time domains; Discrete time and computer control of systems. (F)

146. Combustion Processes. (3). Two hours of lecture and one hour of discussion per week. Semester Prerequisites: 105, 106, and 109. Quarter Prerequisites: 105B, 106B. Formerly 108. Recommended. Fundamentals of combustion, flame structure, flame speed, flame stability, ignition, stirred reaction, kinetics and nonequilibrium
142. Heating, Air Conditioning and Refrigeration. (F).

148. Petroleum Engineering I. (3). Former sections of 146, 149 and 150. Three hours of lecture per week. Semester Prerequisites: Senior standing in engineering. Development and producing properties to maximize recovery; well drilling mechanics, subsurface evaluation, subsurface flow behavior. (F).

149. Petroleum Engineering II. (3). Former sections of 148, 149 and 150. Three hours of lecture per week. Semester Prerequisites: Senior standing in engineering. Production of oil and gas producing properties to maximize recovery; multiphase fluid flow, recovery mechanisms, enhanced recovery, economics. (SP).

151. Advanced Heat Transfer. (3). Formerly 151. Three hours of lecture per week. Semester Prerequisites: 105, 106A. Formerly sections of 162 and 164. Three hours of lecture per week. Semester Prerequisites: Graduate standing or permission of instructor. Engineering analysis, especially application of modern control theory, to problems in biophysical and chemical engineering evaluation of anatomical-physiological elements. Experimental methods applied to problems of practical interest. Not offered 1984-85.

181. Applied Fluid Mechanics. (3). Formerly 180. Three hours of lecture per week. Semester Prerequisites: 105 and 106; Quarter Prerequisites: 105B and 106A; Mathematics 51C and Engineering 116 recommended. Operating principles and characteristics of flow in conduits, lubrication systems, pumps, turbines and compressors will be described, and analyzed by application of concepts of potential flow, laminar viscous flow and turbulent flow. (F).

192. Engineering: Mechanical Engineering

207. Experimental Methods in Mechanical Engineering. (3). Formerly 204. Four and one-half hours of lecture per week; either 1 1/2 hours lecture and 3 hours laboratory or 3 hours laboratory and 1 hour lecture. Semester Prerequisites: Graduate standing. Principles of physical measurements; introduction to the fundamental aspects of mass, heat, and momentum transport governing corrosion in quiescent, laminar, and turbulent flow environments. Emphasis on aqueous and high temperature (particularly combustion) corrosion chemistry. Applications to problems of practical interest. Not offered 1984-85.


247. Subsurface Reservoir Characterization. (3). Formerly 247. Three hours of lecture per week. Semester Prerequisites: Basic geology and a course in mechanics of fluids. Fundamental concepts of rock behavior, strength, failure theories, fracture; rock behavior, under confining stress and pore pressure; thermal stresses, thermal-behavioral, hydraulic fracturing; well stimulation and rock drilling. (F).

251. Heat Conduction. (3). Formerly 251. Three hours of lecture per week. Semester Prerequisites: 151; Engineering 230A. Quarter Prerequisites: 151; Engineering 117. Analytical and numerical methods for the determination of the conduction of heat in solids. (F).

252. Heat Convection. (3). Formerly 252. Three hours of lecture per week. Semester Prerequisites: 151; Applied Mathematics 117, 258A; Engineering 230A. Quarter Prerequisites: 151; Engineering 117. The transport of heat in fluids in motion; free and forced convection in laminar and turbulent flow over surfaces and within ducts. (SP).

253. Thermal Radiation. (3). Formerly 253. Three hours of lecture per week. Semester Prerequisites: 151; Applied Mathematics 117; Engineering 230A. Quarter Prerequisites: 151; Engineering 117. Thermal radiation...
properties of gases, liquids, and solids; the calculation of radiant energy transfer. (F)


255. Thermodynamics II. (3). Formerly 255. Three hours of lecture per week. Semester Prerequisites: 254. Quarter Prerequisites: 254A. Equilibrium and non-equilibrium processes in high temperature gases applied to chemically reacting systems. Energy transfer, transport of radiant energy transfer. (F)

255A. Viscous Flow. (3). Formerly 255A. Three hours of lecture per week. Semester Prerequisites: 254A or equivalent. Quarter Prerequisites: 105A or 105B or equivalent. Graduate standing or consent of instructor. For fluid mechanics majors: 1 Kinematics. The Newtonian fluid. Conservation equations. Flows with nearly constant viscosity and density. Vorticity Blot-Savart law. Dimensional analysis and similarity. Exact solutions for thin layers; lubrication; laminar boundary layers. External creeping flows. Porous media. (F)


258. Heat Transfer and Phase Change. (3). Formerly 258. Three hours of lecture per week. Semester Prerequisites: 254A. Quarter Prerequisites: 151. Evaporation, sublimation, and condensation phenomena. Special topics including nucleation, bubble growth, and two-phase flow dryout phenomena. (SP)

260. Waves in Fluids. (3). Formerly 260. Three hours of lecture per week. Semester Prerequisites: 254A. Three hours of lecture per week. Autumn Prerequisites: 254A or equivalent. Graduate standing. Quarter Prerequisites: 162. Propagation of linear and non-linear waves in fluids. Wave interactions in gases, including reflections and diffractions. Shock dynamics. Dispersion and dissipation analogy with surface water waves. (SP)

265A. Viscous Flow. (3). Formerly 265A. Three hours of lecture per week. Semester Prerequisites: 105 or 261. Quarter Prerequisites: 104 or equivalent. Three hours of lecture per week. Autumn Prerequisites: 185 and 265A or equivalent. Three hours of lecture per week. Autumn Prerequisites: 104A or 104B, or equivalents. Random variables and random processes. Stationary, non-stationary, and ergodic processes. Analysis of linear and nonlinear, discrete and continuous, mechanical systems under stationary and non-stationary excitations. Vehicle dynamics. Applications to failure analysis, Stochastic estimation and control and their applications to vibratory systems. (SP) Not offered 1984-85.

271. Methods of the Calculus of Variations and Applications. (3). Formerly 271. Three hours of lecture per week. Quarter Prerequisites: 175 or Engineering 115. Course develops foundations of the finite element method for applications to solid and fluid mechanics, dynamics, heat transfer, and field problems. Variational and weighted residual methods are developed. Emphasis on the formulation of elements, element state equations, and computational challenges. Solution techniques for solid and fluid systems. (SP)


273. Advanced Dynamics. (3). Formerly 273. Three hours of lecture per week. Semester Prerequisites: 271 and 155. Three hours of lecture per week. Autumn Prerequisites: 225A or equivalent. Advanced concepts in Hamiltonian dynamics. Legendre transform and Hamilton's equations, cyclic coordinates, canonical transformations, Hamilton-Jacobi theory, integrability, Poisson brackets, normal form, KAM theory, chaotic dynamics. (SP)


280. Introduction to the Finite Element Method. (3). Formerly 280. Three hours of lecture per week. Quarter Prerequisites: Engineering 115 or 116, or Mathematics 51A. Course develops foundations of the finite element method for applications to solid and fluid mechanics, dynamics, heat transfer, and field problems. Variational and weighted residual methods are developed. Emphasis on the formulation of elements, element state equations, and on applications. Applications are required at a minimum level. (SP)

281. Methods of Tensor Calculus and Differential Geometry. (3). Formerly 281. Three hours of lecture per week. Semester Prerequisites: 185. Quarter Prerequisites: 185A or equivalent. Mathematical physics. Tensor calculus. Calculus of variations. Introduction to the finite element method for applications to solid and fluid mechanics, dynamics, heat transfer, and field problems. Variational and weighted residual methods are developed. Emphasis on the formulation of elements, element state equations, and on applications. Applications are required at a minimum level. (SP)

285. Geophysical Fluid Mechanics. (3). Formerly 290X. Three hours of lecture per week. Semester Prerequisites: 265A or equivalent. Quarter Prerequisites: Senior or graduate standing, knowledge of vector calculus, or consent of instructor. Analysis of the fluid mechanics and atmospheric motions of the Earth's interior (mantle and core), Buoyant creeping flow. Rotation inside a sphere. Modes of wave propagation in rotation and stratified flows. (F)

287. Foundations of the Theory of Continuous Media. (3). Formerly 287. Three hours of lecture per week. Semester Prerequisites: 185 and 281. Three hours of lecture per week. Semester Prerequisites: 185. A general development of the laws of the thermodynamics of deformable media, entropy production, and related entropy inequalities. Thermomechanical analysis of those systems including those with small deformations superposed on finite deformations. Nonlinear oscillations, shocks and acceleration waves, progressive waves and standing waves of finite amplitude, waves in pre-stressed solids. (F)


289. Theory of Shells. (3). Formerly 289C. Three hours of lecture per week. Quarter Prerequisites: 185 and 273. Course develops foundations of the finite element method for applications to solid and fluid mechanics, dynamics, heat transfer, and field problems. Variational and weighted residual methods are developed. Emphasis on the formulation of elements, element state equations, and on applications. Applications are required at a minimum level. (SP) Not offered 1984-85.

290. Topics in Nonlinear Oscillations. (2). Formerly 290C. Three hours of lecture per week. Quarter Prerequisites: 277. Three hours of lecture per week. Autumn Prerequisites: 185A or equivalent. Three hours of lecture per week. Autumn Prerequisites: 185A or equivalent. Further topics from recent developments in linear and nonlinear theories of continuum mechanics, e.g., a general theory of oriented (or directed) media, nonlinear theory of diffusion, theory of electrodynamics and magnetodynamics, and other special topics. (SP) Not offered 1984-85.

290B. Topics in Continuum Mechanics. (2). Formerly 290B-290I. Course may be repeated for credit. Two hours of lecture per week. Quarter Prerequisites: 185. Two hours of lecture per week. Quarter Prerequisites: 290A, 290C, 290D. A direct formulation of a general theory of shells and plates based on the concept of Cosserat (or Directed) surfaces. Applications to the study of thin and thick shells. Linear theory and a special nonlinear theory with small strain accompanied by large or moderately large rotation. Applications to plates. (SP)

prerequisites: consent of instructor. geometry of ship’s theory of gases with emphasis on computer based monte carlo methods for flow simulation. application to contemporary problems involving 1, 2, and 3 dimensional gravities and flows of gas mixtures will be discussed. (SP)

260. Automatic Control Laboratory. (2, formerly 260.) One 1-hour lecture and three hours of laboratory per week. Semester prerequisites: 233 (should be taken concurrently). Quarter prerequisites: 233. Applications of dynamic system modeling, system theory, and automatic control techniques to mechanical, electrical, mechanical, industrial, and other systems. investigations include computer simulation and analog and digital feedback control. (SP)

288. Group Studies, Seminars, or Group Research. (1-6). Formerly 288. Course may be repeated for credit. Sections 1-5: su grading; section 6-10: letter grading. semester prerequisites: graduate standing. advanced studies in various subjects through special seminars on topics to be selected each year. informal group study of current problems. participation in comprehensive design problems, or group research on complete problems for analysis and experimentation. (F,SP)

299. Individual Study or Research. (1-12). Formerly 299. course may be repeated for credit. must be taken on a satisfactory/unsatisfactory basis. semester 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. (and other doctoral degrees). (F,SP)

Professional Courses

301. Teaching of Mechanical Engineering at the University Level. (1-5). Formerly 301. course may be repeated for credit. must be taken on a satisfactory/unsatisfactory basis. one 1-hour seminar per week (for 1 unit). weekly seminars and discussions on effective teaching methods. educational objectives. theories of learning. the lecture and alternative approaches. use of audiovisuals. student evaluation. laboratory instruction. curricula in mechanical engineering. Practice teaching. More units for students appointed as ta’s in accordance with level of appointment. (F,SP)

Naval Architecture and Offshore Engineering

Lower Division Courses

10. Ship Systems. (3, formerly 10.) Two 1-1/2-hour lectures per week. Three 1-hour laboratory periods per week. semester prerequisites: mathematics 1A or 1B and mathematics 16A or 16B. Principles of design and operation of ships. Emphasis on description and analysis of ship geometry, strength, and stability in intact and damaged conditions. Principles of thermodynamic cycles, resistance, marine propulsion plants, both conventional and nuclear, and auxiliary machinery systems. Current developments in offshore engineering. A field trip. (SP)

Upper Division Courses

151. Statics of Naval Architecture. (4, formerly 151.) Three 2-hour lectures per week. semester prerequisites: consent of instructor. Geometry of ship’s form, conditions of static equilibrium, and stability of floating and submerged bodies. Effect of damage, subdivision, freeboard, launching of ships, stability, and upending of offshore platforms. Laboratory exercises in ship hydrostatics. An overview of numerical analysis used in naval architecture. Execution of large program- ming systems. (F)

152A. Ship Dynamics. (3, formerly 152A. Two 1-1/2-hour lectures per week. semester prerequisites: 151 (may be taken concurrently) and ME 106A. Quarter prerequisites: 151; ME 106A. Dimensional analysis and fundamentals of ship propulsion. Estimates of resistance from model tests and tabulated data. Theories of propulsion and of open water propellers. Interaction between propeller and ship. Selection of optimum propeller from series charts. Prediction of steering and maneuvering characteristics. Laboratory experiment for determination of stillwater resistance of a ship. (F)

152B. Ship Dynamics. (3, formerly 152B. Two 1-1/2-hour lectures and 4-hour lab per week. semester prerequisites: 152A. Elementary water-wave theory. Rigidity-body dynamics of ships and offshore platforms. Motions and loads in a seaway. Statistical description of seaway and resulting loads. Laboratory experiments of ship’s motions behavior in the ship model tank. (SP)

153. Marine Engineering. (2, formerly 153. Two 1-hour lectures per week. semester prerequisites: semester prerequisites: marine engineering 105B or consent of instructor. Quarter prerequisites: 153A and 153B. Analysis of the important characteristics of marine propulsion and auxiliary machinery systems, especially as they interact with the design of the ship as a whole. (F)

154. Ship Structures. (3, formerly 154. Two 1-1/2-hour lectures per week. semester prerequisites: 151. Introduction to the specialized features of ship structure theory and their design. Structural loads, hull girder and hull components analysis, laterally loaded girdles and cross-stiffened plates, plate buckling, modes of possible failure to be designed against, use of theory and classification society rules in combination in the design process. (F)

155. Ship Design. (4, formerly 155A-155B. Two 1-hour lectures and two 3-hour labs per week. semester prerequisites: 154, 152A. Quarter prerequisites: 155A, 155B, 152A. Preliminary design of a ship of the student’s own design, including weight and size estimates, preparation of a lines drawing, and a preliminary structural design. (SP)

198. Directed Group Studies for Advanced Undergraduates. (1-4). Formerly 198. Units for semester course awarded upon discretion of the advisor. May be repeated for credit. must be taken on a passed/not passed basis. To be arranged. semester prerequisites: Consent of instructor. Group studies of selected topics which will vary from year to year. (F,SP)

199. Supervised Independent Study. (1-4). Formerly 199. Use of the laboratories and equipment supervised by a faculty member to pursue a project of the student’s own design. May be repeated for credit. must be taken on a passed/not passed basis. Individual conferences. semester prerequisites: Consent of instructor and major advisor. Supervised independent study. Please see Key to Symbols section of the General Catalog for description and prerequisites. (F,SP)

Graduate Courses

240A-240B. Theory of Ship Structures. (3, formerly 240A-240B-240C. Three 1-hour lectures per week. semester prerequisites: 154 or consent of instructor. Quarter prerequisites: 152A-152B. Description of ocean wave and waves load acting on ships and ocean structures, the input-output relations, response in long- and short-crested seas, extreme-value statistics of wave loads, variability on hull-strength modes of failure, reliability concepts and design considerations. Hull response to primary vertical, horizontal, and torsional loads. Isotropic- and orthotropic-plate theories and their applications to ship hulls and ocean structures (F)


290B. Special Topics in Ship Hydrodynamics. (2, formerly 290B. course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour lectures per week. semester prerequisites: 152A-152B-152C. This is a new course with topics in 241A-241B, e.g., construction of Green functions, initial-value problems. Topics from current literature with intensive analysis of recent papers. Subjects change from year to year. (F,SP)

290C. Analysis of Ship Systems. (2, formerly 290C. Two 1-1/2-hour lectures per week. semester prerequisites: 154 or consent of instructor. Quarter prerequisites: 154A-154B. Introduction to ship systems analysis, including cost, reliability, and optimization. Applications of techniques to problems of ship routing, construction cost, fleet design, and cargo handling problems. (SP) Odd years only.

290D. Vehicles for Ocean Engineering. (3, formerly 290D. Two 1-1/2-hour lectures per week. semester prerequisites: graduate standing in engineering. The consideration of ocean waves and wave loads acting on ships and offshore platforms. Motions and loads in a seaway. Statistical description of seaway and resulting loads. Laboratory experiments of ship’s motions behavior in the ship model tank. (SP)

Nuclear Engineering

Upper Division Courses

101. Nuclear Reactions and Radiation. (4, formerly 101A-101B. Four 1-hour lectures per week. semester prerequisites: physics 7C. Quarter prerequisites: physics 7C. Energies and kinetics of nuclear reactions and radioactive decay, fission, fusion, and reactions of the energy neutrons; properties of the fission products and on targets, creep and fracture mechanics; probability of failure; interaction of radiation with matter. (F)

102. Nuclear Instrumentation Laboratory. (3, formerly 102. One 1-hour lecture and four hours laboratory per week. semester prerequisites: 101. Quarter prerequisites: 101A-101B. Use of the electronics and instrumentation involved in radiation detection and analysis. Study of the interactions of radiation with matter. (F)

103. Experimental Neutronics Laboratory. (2, formerly 103. One 1-hour lecture and three hours laboratory per week. semester prerequisites: 150. Quarter prerequisites: 150A-150B. Calibration of control rods, pre- operational checkout, reactor pulsing, axial flux measurements. Reactor parameters: core diameter, calibration, characteristics of compensated ion chambers and other neutron detectors, flux shape and relaxation length in an exponential pile. (F)

120. Nuclear Materials. (2, formerly 120. Two 1-1/2-hour lectures and a 1-hour discussion per week. semester prerequisites: 150A-150B. Engineering 45 and an upper division course in thermodynamics. Properties and description of crystalline solids ** radiation damage in metals; cavities in solids; dissociations; irradiation effects on nuclear and fracture properties; void swelling and irradiation creep; structural analysis of irradiated
nuclear reactor components. (2-unit version begins at the asterisks.) (F)

124. Nuclear Chemical Engineering. (3). Formerly 124. Three 1-hour lectures per week. Semester Pre- requisites: 101. Physical Chemistry 101-102. In thermodynamics. Uranium demand and availability; fuel cycles for various reactor types; uranium ores, milling, feed material preparation; fuel element fabrication; uranium enrichment by gas centrifuge; cascades and enrichment costs; fuel reprocessing by solvent extraction; radioactive waste management. (SP)

150. Introduction to Nuclear Reactor Theory. (4). Formerly 150A-150B. Two 1½-hour lectures and one hour discussion per week. Semester Prerequisites: 101; Mathematics 50C. Quarters Prerequisites: 101A-101B; Mathematics 350C. Neutron interactions, nuclear fission, and chain reaction systems in thermal and fast nuclear reactors. Diffusion and slowing down of neutrons. Criticality and feedback. Fuel cycles and fuel management. Production of radioisotopes in nuclear reactors. (SP)

160. Thermo-Fluid Processes In Nuclear Power. (4). Four hours of lecture per week. Semester Prerequisites: Mechanical Engineering 105. Quarter Prerequisites: Mechanical Engineering 101-102. Fundamentals of heat and momentum transport with application to nuclear power systems. (F)

161. Nuclear Power Engineering. (3). Formerly 160A- 160B. Two 1½-hour lectures per week. Semester Prerequisites: 450 and junior level courses in fluid mechanics and transport phenomena. Core course in nuclear engineering; introduction to reactor cores and plant components. Analysis of operational and accident transient sequences. Safety and power systems. (F)

162. Radiation Protection and Control. (3). Formerly 162. Three hour lecture per week. Semester Prerequisites: 101. Quarter Prerequisites: 101A-101B. Passage of ionizing radiation through matter and its effect on matter: measurement and effects of radiation on man. (SP)

167. Reliability and Risk Assessment In Nuclear Systems. (3). Formerly 167. Three hours lecture per week. Elements of probability theory; discrete and continuous probability distributions; lifetime models; sampling and confidence limits; Boolean algebra; event trees and fault trees for nuclear systems. (SP)

180. Introduction to Controlled Fusion. (3). Formerly 180. Three hour lecture per week. Semester Prerequisites: Physics 7C. Quarter Prerequisites: Physics 5C. Introduction by computer to the physics of plasma and mononuclear reactions. Nuclear fusion reactions, energy balances for fusion systems, survey of plasma physics; neutral beam injection; RF heating methods; vacuum systems; tritium handling. (SP)

198. Group Study for Advanced Undergraduates. (1-, 2-, 3-, 4-, 5-, 6-). Formerly 198. May be repeated for credit. Must be taken on a passed/not-paased basis. Various. Sections 1-15: S/U grading; sections 11-15: letter grading. One to eight hours of lecture per week. Section Prerequisites: Upper division standing. Group study Inselected topics. (F,SP)

250. Nuclear Reactor Theory. (4). Formerly 250A- 250B. Four 1-hour lectures per week. Semester Prerequisites: 101, 150; Engineering 117 recommended. Quarter Prerequisites: 101A-101B and Engineering 117. Kinetics; neutron chains; neutron transport and diffusion; reactor kinetics; multigroup methods; thermal and hydraulic analysis of nuclear reactor systems; fuel cycles, core reactivity feedback; stability analysis; space-time reactor dynamics. (F)


256. Dynamics of Nuclear Systems. (3). Formerly 256A-256B. Three hour lecture per week. Semester Prerequisites: 250; Mathematics 128A. Quarter Prerequisites: 250A-250B; Mathematics 120A-120B-120C recommended. Time dependent neutron balance and reactivity effects in nuclear reactor dynamics. Responses of reactor systems to time-varying sources and reactivity changes; reactor parameters from noise experiments; reactivity feedback; stability analysis; space-time reactor dynamics; optimality control. (F)

260. Thermal Aspects of Nuclear Reactors. (4). New Course; Spring. 1983. Four 1-hour lectures per week. Semester Prerequisites: 160. Fluid dynamics and heat transfer; thermal and hydraulic analysis of nuclear reactors; two-phase flow and boiling; compressible flow; stress analysis; energy conversion methods. (F)

265. Design Analysis of Nuclear Reactors. (3). Formerly 265. Quarter Prerequisites: 101A-101B. Semester Prerequisites: 160 and 151. Principles and techniques of economic analysis to determine capital and operating costs; fuel management and fuel cycle optimization; thermal limits on reactor performance, thermal converters, and fast breeders; control and transient problems; reactor safety and licensing; release of radioactivity from reactors and fuel processing plants. (F)

266. Two Phase Flow and Heat Transfer. (3). Formerly 266. Three 1-hour lectures per week. Semester Prerequisites: 160A-160B; Mechanical Engineering 105A-105B. Study of the hydrodynamics and heat transfer of two-phase flows and applications in nuclear power and propulsion systems. Emphasis is on analysis of the single and two-component gas liquid systems. Aspects of gas-solid and liquid-solid systems are also treated. (SP)

The College of Environmental Design is comprised of the departments of Architecture, City and Regional Planning, Landscape Architecture, and Environmental Design. Courses whose content, philosophy, and method provide a common base of knowledge for the different fields taught are designated as Environmental Design courses and are listed first on the following pages. Undergraduates entering the College will enroll in a four-year curriculum leading to the academic degree of Bachelor of Arts (B.A.) with a major in either architecture or landscape architecture. Individual majors are available for continuing students. On the graduate level the curriculum offers a core curriculum leading to the Master of Architecture, Master of Landscape Architecture, Master of City Planning, and Master of Arts in Design; and the Doctor of Philosophy in Architecture, Environmental Planning, and in City and Regional Planning. The Master of Architecture degree fulfills the first professional degree applicable to requirement for state licensing in architecture. The Master of Landscape Architecture degree is similarly applicable to the certification of landscape architects.

It is recommended that high school preparation for the College include four years of mathematics, one year of freehand drawing, one year of physics, and one year of biology or another natural science, physical or natural sciences. Transfer students who have completed 60 semester units should have completed coursework in satisfaction of the breadth requirement. Specific entrance requirements are given in the Announcement of the College of Environmental Design.

The A.B. degree programs in the College require the completion of 120 units distributed according to regulations which appear in the Announcement of the College of Environmental Design. These requirements include the completion of (1) a Major requirement, (2) an ED Core requirement, (3) a breadth requirement, (4) a senior residence requirement, (5) a scholarship requirement, as well as the general University requirements of Subject A, American History, and American Institutions.

Degree Requirements

Major Requirement. Requirements for the major are specified by the individual department or program and may not be less than 27 units.

ED Core Requirement. A minimum six courses (21 units) as specified in the Announcement of the College of Environmental Design.

Breadth Requirement. A minimum of 12 courses (40 units) taken outside the College of Environmental Design, of courses published by the College, including study in the following areas: (1) reading and composition, (2) natural science, physical science, and math, (3) social science, (4) humanities and arts. A more detailed distribution of these subject requirements may be found in the Announcement the College of Environmental Design.

Procedures for undergraduate admission, registration, and enrollment are identical to those of the University in general. Enrollment in the College beyond first year is subject to approval of the Dean. Consequently, a transfer student who has credit for more than 70 semester units, is not normally admitted to the undergraduate program. An undergraduate major in architecture or landscape architecture is not prerequisite for admission to graduate study in these fields. Students who are interested in graduate study should obtain from the Dean of the Graduate Division the Circular Admission to Graduate Study, which outlines general University requirements for admission. Application is made directly to the Graduate Division of the University.

For general information concerning the College of Environmental Design, see Index. Information on the degree programs can be found in the Architecture, City and Regional Planning, and Landscape Architecture sections of this catalog, as well as in the Announcement of the College of Environmental Design.

Environmental Design

Department Office, 234 Wurster Hall, 642-0832

Professors: 
Richard Bender, M.Arch. 
William Garnett (Landscape Architecture) 
Raymond Uftchne, M.S. (Chair)

Associate Professors: 
Jonathan Reich, M.Arch.

Assistant Professor: 
Marc Trel, M.Arch.

Visiting Lecturers: 
Zeynep Celik, Ph.D.

Lower Division Courses

1. Introduction to Environmental Design. (Formerly 1A). Two 1 1/2-hour lectures, one 2-hour discussion plus one 2-hour laboratory per week. Beginners' course, environmental awareness and environmental design. Berkeley campus used for case study. (Fall)

4. People and Environment. (Formerly 4). Two 1 1/2-hour lectures; one 1-hour discussion per week. Overview of energy systems, social and technological variables, and their relation to the built environment. (Spring)

5. Energy, Resources, and Environmental Design. (Formerly 5). Two 1-hour lectures; one 3-hour laboratory per week. Overview of energy systems, social and technological variables, and their relation to the built environment. (Fall)

11A. Environmental Design I. (Formerly 10A). Two 1 1/2-hour lectures and two 3-hour studios per week. Semester Prerequisites: High school chemistry 1, 2, or 3. Two 4-hour laboratory courses. (Formerly 104. Two 1/2-hour lectures, one 2-hour discussion plus one 2-hour laboratory per week. Beginners' course, environmental awareness and environmental design. Berkeley campus used for case study. (Fall)

11B. Environmental Design II. (Formerly 10B). Two 1 1/2-hour lectures and two 3-hour studios per week. Semester Prerequisites: 11A. Course Prerequisites: (Formerly 105. Two 1-hour lectures and two 2-hour studios per week. Semester Prerequisites: LA 101 or Arch 100A. Integration of landscape elements to be investigated include preparation of American landscapes—our everyday homes, highways, farms, stores, and recreation areas—with an emphasis on how to read the landscape as a record of social and cultural processes. (SP)

190. Photography As Creative Expression. (Formerly 169A). Three 1-hour lectures and two 3-hour studios per week. Semester Prerequisites: Limited to students with approved individual majors in the College of Environmental Design. Directed study leading to preparation of a Senior thesis. (SP)

Architecture

Department Office, 232 Wurster Hall, 642-4942

Professors: 
Christopher Alexander, Ph.D.

Assistant Professors: 
Roslyn Lindneim, B.Arch.

Graduate Study: Students who are undergraduates may take graduate courses with approval of the Associate Dean. Students with approved individual majors in the College of Environmental Design, see Index. Information on graduate study in these fields is subject to approval of the College of Environmental Design.

Credit calculation: A minimum of 27 units must be taken in residence. Students having credit for more than 70 semester units, is not normally admitted to the graduate program. An undergraduate major in architecture or landscape architecture is not prerequisite for admission to graduate study in these fields. Students who are interested in graduate study should obtain from the Dean of the Graduate Division the Circular Admission to Graduate Study, which outlines general University requirements for admission. Application is made directly to the Graduate Division of the University.

For general information concerning the College of Environmental Design, see Index. Information on the degree programs can be found in the Architecture, City and Regional Planning, and Landscape Architecture sections of this catalog, as well as in the Announcement of the College of Environmental Design.
only good architects, but also environmentally knowledgeable citizens.

Undergraduate Programs
The four-year program leading to the degree of Bachelor of Arts in Environmental Design with a major in architecture requires the completion of coursework in study areas ranging over a diversity of subjects. These may include mathematics, physics, engineering, courses in design, graphics and architectural history, in aspects of architecture as a profession and finally, in the social sciences and humanities.

Graduate Programs
The Department offers the professional degree Master of Architecture and the academic degree Doctor of Philosophy.

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 duration depending upon previous education and experience. The department makes no restriction as to undergraduate preparation. However, the length of the required residence period, the number of semester course units, and the specific list of required courses will vary depending upon undergraduate major, professional, and other work experience, and previous graduate study, if any.

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 Graduate Studies 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 persons holding the five-year, professional undergraduate degree. Bachelor of Architecture from an accredited school, or comparable five-year degrees from foreign universities and technical institutions.

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 pursuing graduate work in photography or involved with visual inquiry in the area of graphics may apply.

The present degree is offered under Plan 1 of the Graduate Division, which requires 20 semester units plus a thesis. The length of time required for completion varies with the individual, depending in part upon previous preparation. An 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 which all applicants for admission to the graduate program must submit. For additional information please consult the Announcement of the College of Environmental Design or the Graduate Secretary.

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 related to admission, the language requirement, candidacy, and the dissertation under Plan B apply (see Index). 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 information is available from the departmental graduate secretary.

Joint Program with the Department of City and Regional Planning. The two departments offer a joint program for exceptionally qualified students. Students must fulfill the course requirements for both departments, but are allowed to cross-credit some units of electives taken in one department toward the requirements of the other department, thus achieving a saving in time enrolled, varying from one semester to one year (depending on undergraduate preparation.) Some engineering courses are prerequisite to entering the program or may be taken during the first year of enrollment without credit toward the minimum course requirements. Applicants should seek admission to the Department of Architecture (M. Arch. Program) and indicate on their application interest in the joint program.

Architectural Design
100A-100B. Fundamentals of Architectural Design. (F,SP). Formerly 100A-100B-100C. Forty-five hours of lecture/seminar and 75 hours of studio/tutorial per semester. Semester 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. (F,SP)
100B stresses structures, materials, and energy considerations. Studio work is supplemented by lectures, discussions, and field trips. (F,SP)

101. Case Studies in Architecture. (F). Formerly 100D. Course may be repeated for credit as topic varies. Forty-five hours of lecture/seminar and 75 hours of studio/tutorial per semester. Semester Prerequisites: 100A-100B. Problems in design of buildings of intermediate complexity. Each section deals with a specific topic, such as housing, site planning, institutional buildings, community development, and interiors. Studio work is supplemented by lectures, discussions, and field trips. (F,SP)

102. Design Development in Architecture. (F,SP). Formerly 100E. Forty-five hours of lecture/seminar and 75 hours of studio/tutorial per semester. Semester Prerequisites: 100A-100B. The development of architectural concepts into detailed integration including the integration of structure, construction, and building systems, and the production of construction documents. Studio work is supplemented with lectures, discussions, and field trips. (F,SP)

105. Community Design Studio. (F). Formerly 120C. Forty-five hours of lecture/seminar and seventy-five hours of studio/tutorial per semester. Semester Prerequisites: 100A. Synthesis of social, political, and technological issues through architectural case studies. Not offered 1984-85.

109. Proseminar in Architectural Design. (F,SP). Formerly 109C. Course may be repeated for credit when topic changes. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: Varies with topic of section. Selections are announced at beginning of architectural design. For current section offerings see departmental announcement. (F,SP)

200A-200B. Fundamentals of Architectural Design. (F). Formerly 200A-200B. Forty-five hours of lecture/seminar and 120 hours of studio per semester. Introductory course in architectural design and theories for graduate students. Problems emphasize the major social, technological and environmental determinants of building form. Studio work is supplemented by lectures, discussions, readings, and field trips. (F,SP)

201. Case Studies in Architectural Design. (F). Formerly 201A. May be repeated for credit. Forty-five hours of lecture/tutorial and 75 hours of studio/tutorial per semester. Semester Prerequisites: 100A-100B or 200A-200B. Former Prerequisites: 100A-100B-100C or 200A-200B-200C. Special topics such as project development, project analysis and financing, analysis of community development issues. For current section offerings see departmental announcement. (F,SP)

202. Final Project in Architectural Design. (F,SP). Forty-five hours of lecture/tutorial and 75 hours of studio/tutorial per semester. Semester Prerequisites: Three sections of 201; 209 Thesis section. Course must be taken in last semester of residence for M. Arch degree. Each section deals with specific topics such as urban design, design development, energy issues, or with individual student-initiated problems. Projects in 202 frequently are presented in the form of a professional report or a thesis. (SP)

206. Seminar in Architectural Design. (1-4). Formerly 206E. May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: Second or third year graduate standing. Topics deal with major problems and current issues in architectural design. (F,SP)

Social and Cultural Factors in Design
110. Social and Cultural Factors in Design. (F). Formerly 110. Forty-five hours of lecture and 20 hours discussion per semester. A survey of the relations between social structure and architecture, and architectural response to individuals, groups, families, neighborhoods, and organizations. (F,SP)

210. Advanced Study in Social and Cultural Factors in Design. (SP). Formerly 210. Forty-five hours of lecture/seminar per semester. Semester Prerequisites: Second or third year graduate standing. Topics deal with major problems and current issues in architectural design. (F,SP)

211. Social and Cultural Factors in Design: Research Methods. (SP). Formerly 211. May be repeated for credit. Thirty hours of lecture/seminar per semester. Required for doctoral students and recommended for Master's students in the area of Social and Cultural Factors in Design. (F)

219. Seminar on Social and Cultural Factors in Design. (1-4). Course may be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: 210 or consent of instructor. Formerly 219A through 219G. Selected topics such as social policy and building form, environments for special populations, for birth and death, social forms and housing form, personal and societal values in design, participatory design and urban parks. For current section offerings see departmental announcement. (SP)

Practice of Design
120. Introduction to the Practice of Architecture. (SP). Formerly 131. Forty-five hours of lecture and 20 hours of discussion per semester. Architect, owner, developer, contractor relations, contract documents, and the ethics of the profession. (F)

122. Introduction to Community Development. (SP). Formerly 122A. Forty-five hours of lecture/tutorial and 180 hours of internship in Bay Area agencies and organizations Semester Prerequisites: 100A. (F)

129. Proseminar in the Practice of Design. (SP). Formerly 129B. May be repeated for credit. Forty-five hours of lecture/seminar per unit per semester. Special topics such as project development, project analysis and financing, analysis of community development issues. For current section offerings see departmental announcement. (F,SP)

220. Advanced Study in the Practice of Design. (SP). Formerly 220A. May be repeated for credit. Forty-five hours of lecture/seminar per semester. Special Pre-
Building Environments

140. Introduction to Energy and Environmental Management. (4). Formerly 140A-140B. Fifty hours of lecture and 30 hours of discussion per semester. Semester Prerequisites: Physics or equivalent, or consent of instructor. Special topics such as climatic design, HVAC systems, lighting and acoustics. For current section offerings see departmental announcement. (F,SP)

149. Seminar On the Physical Environment in Buildings. (1-4). May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Student Prerequisites: 140. The first part of this course covers thermal and solar design, the second lighting design. (F,SP)

240A-240B. Advanced Study of Energy and Environmental Issues in Design. (3A). Formerly 241A-241B-241C. Fifty hours of lecture/seminar per unit per semester. Semester Prerequisites: 140 or consent of instructor. The first part of this course covers environmental and urbanism. For current section offerings see departmental announcement. (F,SP)

241. Research On the Built Environment. (2). Formerly 245. May be repeated for credit. Thirty hours of lecture/seminar per semester. Semester Prerequisites: Ph.D. student in area of Environmental Physics. Required for doctoral students in the area of Environmental Physics. (F,SP)

249. Seminar On the Physical Environment in Buildings. (1-4). May be repeated for credit. Fifteen hours of seminar/discussion per unit per semester. Semester Prerequisites: 140. Selected topics such as climatic design, mechanical systems, natural lighting, solar design, technical aspects of design and development related fields. (SP)

Structures and Construction

150. Introduction to Structures. (3). Formerly 150. Thirty hours of lecture and 20 hours of discussion per semester. Semester Prerequisites: Physical 1A. Study of forces and structural constraints in the design of buildings. Structural concepts are explored in laboratory settings. (SP)

152. Introduction to Construction. (2). Formerly 160. Forty hours of lecture and 20 hours of discussion per semester. Study of typical building subsystems, types of construction, choice of materials and details of design. (F)

159. Seminar in Structures and Construction. (1-4). May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: Civil Engineering 128A-128B. Special topics such as structural design, mechanical systems, construction performance, production and materials. For current section offerings see departmental announcement. (F,SP)

250. Advanced Study of Structures. (3). Formerly 250. Forty-five hours of lecture/seminar per semester. Semester Prerequisites: Civil Engineering 128A-128B. Basic tools and methods of building construction. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations in the General Catalog. Studies developed to meet needs. (F,SP)

252. Advanced Study of Construction. (3). Formerly 260. Forty-five hours of lecture/seminar per semester. Student Prerequisites: 151 or consent of instructor. Processes and methods of building construction. Not offered 1984-85. (F,SP)

253. Architectural Design for Seismic Forces. (4). Formerly 251. Sixty hours of lecture/seminar per semester. Semester Prerequisites: Civil Engineering 128A-128B. Elements of seismic design concepts and processes, use of ground studies and design experience gained from recorded earthquakes. Basic risk concept/design consideration based on studies of similarly stable building forms. Urban technology of earthquake hazards mitigation. (SP)

259. Seminar On Structures and Construction. (1-4). May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: 250 or 251 or consent of instructor. Formerly 259A through 259G, 261A-261B, and 269A. Selected topics such as experimental structures, architectural preservation, construction management, and geologic hazards to construction. For current section offerings see departmental announcement. (F)

History of Architecture

170A-170B. An Historical Survey of Architecture. (4). Formerly 170A-170B. Forty-five hours of lecture and 15 hours of seminar/discussion per semester. Formerly 170 and 171. The first part of this sequence studies the ancient and medieval periods; the second part studies the period since 1400; the aim is to look at architecture and urbanism in their social and historical context. (F,SP)

172. Survey of Urban Design. (3-4). Formerly Environmental Design 177. Forty-five hours of lecture per semester; additional 15 hours of seminar for higher unit value. A study of urban form, civil design, and planning theory with emphasis on the development of the modern city. (SP)

173. Great Cities. (3-4). Formerly Environmental Design 175. Forty-five hours of lecture per semester; additional 15 hours of seminar for higher unit value. A study of the architectural fabric of a great city changing character through time. Not offered 1984-85. (SP)

177. Seminar in the Practice of Architecture. (1-4). May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: Restricted to undergraduate majors or by consent of instructor. Basic tools and methods of building construction and urbanism. Required for current section offerings see departmental announcement. (SP)

271. Methods of Historical Research and Criticism In Architecture. (4). Formerly 271. Sixty hours of lecture/seminar per semester. Semester Prerequisites: Doctoral candidate or consent of instructor. Not offered 1984-85. (SP)

279. Seminar in the History of Architecture. (1-4). May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Semester Prerequisites: Environmental Design 170A-170B or consent of instructor. Special topics, such as the architecture of Islam, Mesopotamia, Africa, modern architecture, American architecture. For current section offerings see departmental announcement. (F,SP)

Special Studies Courses

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

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations in the General Catalog. Studies developed to meet individual needs. (F,SP)

298. Special Group Study. (1-4). Formerly 298. May be repeated for credit. Studies developed to meet needs. (F,SP)

299. Individual Study and Research for Master's and Doctoral Students. (1-9). Formerly 299. Course may be repeated for credit. Individual studies including reading and individual research under the supervision of a qualified faculty advisor and dedicated to the development of an advanced student's research background in areas related to the proposed dissertation topic. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare...
themselves for the various examinations required of candidates for the Ph.D. This course may not be applied for units or residence requirements for the doctoral degree. (F,SP)

381. Seminar for Teaching Assistants in Social and Cultural Factors in Design, (1-2). New Course since Spring 1983. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Fifteen hours of seminar/discussion per unit per semester. Required course for all teaching assistants in this area. (F,SP)

382. Seminar for Teaching Assistants in Practice of Design, (1-2). New Course since Spring 1983. May be repeated twice for credit. Must be taken on a satisfactory/unsatisfactory basis. Fifteen hours of seminar/discussion per unit per semester. Required course for all teaching assistants in this area. (F,SP)

383. Seminar for Teaching Assistants in Design Theories and Methods, (1-2). New Course since Spring 1983. May be repeated twice for credit. Must be taken on a satisfactory/unsatisfactory basis. Fifteen hours of seminar/discussion per unit per semester. Required course for all teaching assistants in this area. (F,SP)

384. Seminar for Teaching Assistants in Building Environments, (1-2), New Course since Spring 1983. May be repeated twice for credit. Must be taken on a satisfactory/unsatisfactory basis. Fifteen hours of seminar/discussion per unit per semester. Required course for all teaching assistants in this area. (F,SP)

385. Seminar for Teaching Assistants in Structures and Construction, (1-2), New Course since Spring 1983. May be repeated twice for credit. Must be taken on a satisfactory/unsatisfactory basis. Fifteen hours of seminar/discussion per unit per semester. Required course for all teaching assistants in this area. (F,SP)

387. Seminar for Teaching Assistants in History of Architecture, (1-2). New Course since Spring 1983. May be repeated twice for credit. Must be taken on a satisfactory/unsatisfactory basis. Fifteen hours of seminar/discussion per unit per semester. Required course for all teaching assistants in this area. (F,SP)

Interdepartmental Studies Courses

IDS235. Community Scale Energy Systems, (3). Formerly 235. Two 1½-hour lectures/discussions per week. Semester Prerequisites: Consent of instructor. Energy supply at the community scale through development of locally available renewable energy resources (solar, wind, biomass). Architecture, site planning and urban development and environmental protection and apply technologies. For students in design, planning, energy, public policy, and related fields. Term project. Sponsoring departments: Architecture, Landscape Architecture and Environmental Design. Not offered 1984-85. (F,SP)

IDS238. Environmental Design: Stress and Health, (2-3). Formerly 238. One additional unit available for students doing special research projects—two additional hours of seminar per week. 1-hour lecture/discussion per week. Semester Prerequisites: Consent of instructor. Interdisciplinary course to explore the influence of selected aspects of the physical and social environment on health. Among topics to be discussed are density and crowding, and migration, urbanization, industrialization, and stress as they influence health and disease. Sponsoring Departments: Biomedical and Environmental Health Sciences and Architecture. (SP)

Visual Studies

180A-180B. Introduction to Visual Studies: Word and Image, (4-4). Formerly 181A-181B-181C. Thirty hours lecture and 90 hours studio per semester. Seminar Prerequisites: Environmental Design 11A-11B or consent of instructor. A is required to B. Projects in graphic form, color, and word/image relationships. (F,SP)

181. Introduction to Photography, (4). Formerly 183. Thirty hours lecture and 75 hours studio per semester. Assignments testing standard materials, equipment, and processes for optimum performance resulting in a completed portfolio. Preference will be given to students in the College of Environmental Design. (F,SP)

185. Selected Topics: Word and Image, (1-3). Formerly 182A-182B-182C. Course may be repeated for credit. Fifteen hours lecture/seminar or forty-five hours studio per unit per semester. Semester Prerequisites: Environmental Design 11A-11B. Studio sections in areas such as calligraphy, the history of letter forms, and typography. For current offerings see the departmental announcement. (F,SP)

186. Selected Topics in Photography, (1-4). Formerly 184A-184B-184C-184D. May be repeated for credit. Fifteen hours of lecture/seminar or 60 hours of studio/laboratory per unit per semester. Seminar Prerequisites: 183. Quarter Semester Prerequisites: 183. Studio Sections in Photography an Art Form, Documentary Photography, Light and Motion Studies, Artificial Lighting Photography. For current section offerings see departmental announcement. (SP)

187. Selected Topics: Drawing, (1-3). Formerly 184A-184B-184C-184D and 191G. May be repeated for credit. Forty-five hours studio/laboratory per unit per semester. Semester Prerequisites: Environmental Design 11A-11B. Studio sections in areas such as freehand drawing, life drawing, and drawing for architecture. (F,SP)

189. Seminar in Visual Studies, (1-3). Formerly 184A-184B-184C-184D. May be repeated for credit. Fifteen hours lecture/seminar per unit per semester. Semester Prerequisites: 184A-184B-184C-184D. Selected topics. For current section offerings see departmental announcement. (F,SP)

190. Proseminar in Visual Studies, (1-3). Formerly 184A-184B-184C-184D. May be repeated for credit. Fifteen hours of lecture/seminar per unit per semester. Seminar Prerequisites: 184A-184B-184C-184D. Selected topics. For current section offerings see departmental announcement. (F,SP)

197. Field Studies in Design, (1-4). Formerly 197. No more than 4 units are allowed in any one semester. May be repeated for credit. Must be taken on a passed/not passed basis. Supervised experience relevant to specific areas of design in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. See General Catalog regarding unit limitation toward the degree. (F,SP)

198. Special Group Study, (1-4). Formerly 198. No more than 4 units are allowed in any one semester. May be repeated for credit. Must be taken on a passed/not passed basis. Studies developed to meet needs. See General Catalog regarding unit limitation toward the degree. (F,SP)

199. Supervised Independent Study and Research, (1-4). Formerly 299. Course may be repeated for credit. Must be taken on a passed/not passed basis. Enrollment is restricted to regulations listed in General Catalog. Studies developed to meet individual needs. (F,SP)

200. Advanced Visual Studies, (1-3). Formerly 289A. Fifteen hours of lecture/seminar per unit per semester. Advanced work in visual studies and photography. For current section offerings see departmental announcement. (F,SP)

201. Seminar in Photography, (3). Formerly 289C-289D-289E. May be repeated for credit. Forty-five hours of lecture/seminar per semester. Semester Prerequisites: 181 and 186. Selected topics such as Seminar in Photography, Printmaking, Photography, or Environmental Photography. For current section offerings, see departmental announcement. (SP)

202. Seminar in Visual Studies, (2). Formerly 289. Course may be repeated for credit. Fifteen hours lecture/seminar per semester. Orientation seminar required of all graduate students in the M.A. program in Visual Studies. (F,SP)

208. Seminar for Teaching Assistants in Visual Studies, (1-2). Formerly 380. May be repeated for credit. Fifteen hours seminar/discussion per unit per semester. Required course for all Teaching Assistants in this area. (F,SP)

City and Regional Planning

Department Office, 228 Wurster Hall, 642-3256

Professors:

Edward Blakely, Ed.D.
Manuel Castells, J.L.L.B., Ph.D.
Stephen S. Cohen, Ph.D.
Leonard J. Duhl, M.D.
Peter Hall, Ph.D.
Ira Michael Heyman, J.D.
Allan B. Jacobs, M.C.R., Ph.D.
Richard L. Meier, Ph.D.
Roger Montgomery, M.Arch.
Michael B. Tetz, Ph.D.

Associate Professors:

Frederick C. Collignon, Ph.D. (Chair)
Judith C. Natvville, Ph.D.
Thomas G. Dicker, M.L.A., M.C.P.

Assistant Professors:

Robert B. Menacho, M.C.P., Ph.D.
Richard Cowart, M.C.P., J.D.

Visiting Lecturers:

Peter Bossellson, M.Arch.
Karen Cillen, Ph.D.
Louis Dunlap, Ph.D. (MIT)
Arthur Blaustein (Sociology)
Roger Montgomery, M.Arch.
Karen Christensen, Ph.D.
Michael Fischer (Coastal Geographer)
Francis Viollch, B.S.
David D. Dowall, M.I.R.P., M.C.P.
Janice E. Perlman, Ph.D.
Peter Bossellson, M.Arch.
Louis Dunlap, Ph.D. (MIT)
Paul Sedway, M.C.P., L.B.B.

Adjunct Lecturer:

Warren W. Jones, M.C.P.

The planning of cities is as old as urban civilization. The present-day planning profession has emerged in response to the rapid growth, changing character, and critical problems of the twentieth-century urban environment. Planning is an accepted function of government, both in overall terms and in connection with particular programs, while planning techniques are likewise employed by large scale private developers. Theorists and researchers in other disciplines have become increasingly interested in urban problems, and their work, often in partnership with urban planners, in contributing to greater knowledge and more sophisticated methods in planning practice.

City and regional planning claims 21,000 professionals in the United States most of them members of the American Planning Association.

Characteristically, city, county, and metropolitan regional planning agencies are responsible for recommending guidelines for channeling the urban physical development of their respective jurisdictions. City planners are also relied upon in other types of public agency—including local state and federal agencies dealing with highways, transportation, housing, urban renewal, community development public works, economic development, human and natural resources development, education, and health. A significant fraction of the profession engages in consulting, to city planning and other governmental agencies, and to private firms of various sorts.

The Department of City and Regional Planning offers a two-year graduate program of professional education in the field of city and regional planning leading to the degree, Master of City Planning. The department also offers a Ph.D. degree in city and regional planning. The departments of Architecture, Landscape Architecture, and City Planning have established concurrent programs in Urban Design enabling students to take two master's degrees in less time than is required in separate pursuit of those degrees. In addition, the department has established concurrent programs with the School of Law and the School of Public Health, and a program is pending with the Transportation Group of the Engineering School.
These programs reflect the expanding concern of city planners with a wide variety of urban and regional problems, and the search for the empirical and theoretical understanding necessary to attack those problems. Courses in planning theory and practice are supplemented both within and outside the department by courses in the basic structure and functioning of the urban system from many viewpoints. Some of these courses are open to qualified undergraduate and graduate students in related fields.

For more detailed information about these curricula, consult the Announcement of the College of Environmental Design, Department of City and Regional Planning, 228 Wurster Hall.

**Undergraduate Courses**

There is no undergraduate major offered in the Department of City and Regional Planning. All undergraduate courses in city and regional planning are included in the Letters and Science List of Courses. For regulations governing this list, see the Announcement of the College of Letters and Science.

**Upper Division Courses**

110. Introduction to City Planning. (Formerly 110.) Three hours of lecture and discussion per week. Semester Prerequisites: Open to majors in all fields. Survey of city planning as it has developed in the United States since 1800 with implications to physical, social, and economic problems; major concepts and procedures used by city planners and local governments to improve the urban environment. (F,SP)

111. Introduction to Housing. (Formerly 111.) Three hours of lecture per week. Semester Prerequisites: 110 or Economics 1 or consent of instructor; open to majors in all fields. Housing problems, government housing policy, and housing as a field of urban planning practice; emphasis on critical current issues in the U.S. Extensive research paper required in addition to midterm and final. (F)

112. The Idea of Planning. (Formerly 112.) Three hours of lecture and discussion per week. Semester Prerequisites: Open to majors in all fields. Introduction to economic concepts and thinking as used in planning. Both micro- and macro-economic theory are reviewed and critical issues explored. (F,SP)

113. Economic Analysis for Planning. (Formerly 207.) Three hours of lecture per week. Semester Prerequisites: 110 or Economics 1 consent of instructor; open to majors in all fields. A study of urban economic activity: the nature and criticisms of the planning idea, appropriateness of planning, sources of legitimacy for and justification of planning, and future directions of the planning idea are examined. (SP)

114. Economic Analysis for Planning. (Formerly 207.) Three hours of lecture per week. Semester Prerequisites: Open to majors in all fields. A study of urban economic activity: the nature and criticisms of the planning idea, appropriateness of planning, sources of legitimacy for and justification of planning, and future directions of the planning idea are examined. (SP)

115. Urbanization in Developing Countries. (Formerly 115.) Three hours of lecture and discussion per week. Lectures will cover the following topics: urbanization, urbanization, and international relations; process of rural-urban migration; urban marginality in the Third World; metropolitan policies; the case of transportation; the Third World energy problems. (SP)

116. Urban Planning Process. (Formerly 117.) Three hours of lecture and discussion per week. Semester Prerequisites: Open to majors in all fields. Introduction to economic concepts and thinking as used in planning. Both micro- and macro-economic theory are reviewed and critical issues explored. (F,SP)

127. Urbanism and the Future of Cities. (Formerly 127.) Three hours of lecture and discussion per week. Semester Prerequisites: Open to majors in all fields. Introduction to economic concepts and thinking as used in planning. Both micro- and macro-economic theory are reviewed and critical issues explored. (F,SP)

191A. Urban Economics and City Planning. (Formerly 191A.) Three hours of lecture and discussion per week. Semester Prerequisites: 113 or equivalent; open to majors in all fields. An introduction to the applications of urban economics to city planning issues of land use, urban development, housing, transportation, and municipal services. The practical uses and limitations of economic analysis for providing policy and planning guidance. Designed for students whose primary interest is urban problems, rather than economics per se. Not offered 1984-85.

191B. Planning for Urban Economic Development. (Formerly 191B.) Three hours of lecture and discussion per week. Semester Prerequisites: Upper division standing; 113 or equivalent; 110 or consent of instructor; open to majors in all fields. An introduction to urban economic and organizational planning in the public sector; government as a producer and supplier, revenue generation, pricing, market and nonmarket failures, resource allocating and budgeting. Not offered 1984-85.

191D. The Planning and Economics of Public Enterprises. (3.) New Course since Spring 1983. Three hours of lecture and discussion per week. Examination of how the physical development of cities and urban programs shape social and economic lives of women. Assessment of alternative future policies. (SP)

191E. Women and Urban Living—Implications for Planning. (3.) New Course since Spring 1983. Three hours of lecture and discussion per week. Examination of how the physical development of cities and urban programs shape social and economic lives of women. Assessment of alternative future policies. (SP)

191F. Special Group Study. (1-3.) Course may be repeated for credit. Must be taken on a pass/no pass basis. Three hours of lecture and discussion per week. Group studies developed to meet specific needs of students. Enrollment restricted by regulations in the General Catalog. (F,SP)

199. Special Study for Advanced Undergraduates. (1-4.) Formerly 199. Three times of course per week. Semester Prerequisites: Consent of instructor. Course may be repeated for credit. Must be taken on a pass/no pass basis. Flexible, at the discretion of the undergraduate faculty. Consent of instructor. Regular meetings with faculty overseer. (F,SP)

**Graduate Courses**

200. Evolution of Cities and Urban Planning. (1.5.) Formerly 201B. Three hours of lecture per week. A study of the development of the profession and practice of urban planning as a way of history and evolution of cities. (SP)

201. The Urban Planning Process. (Formerly 201.) Three hours of lecture and one hour of discussion per week. Semester Prerequisites: City Planning students only. Survey of the field of city planning—theory and process of planning, history of profession, in relation to the evolution of cities, introduction to specialties within planning practices. Core-required orientation course. (F)

202. Economics of Public Enterprise. (3.) Formerly 212. Three hours of lecture and discussion per week. Semester Prerequisites: 110 or Economics 100A or equivalent. Roles of governmental agencies as producers of urban services in nonmarket setting; local public finance, taxation, and budgeting; measurement of benefits and costs in the urban sector; and investment and decision making concerning types and qualities of services and facilities. Core-required course. (SP)

204. Analytic and Research Methods for Planners. (Formerly 204A-204B, 205 and 264.) Course may be repeated for credit as modules vary. A series of course modules covering research methodologies 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. A student may take sequentially two or three modules in one semester.

204A. Introduction to Urban Planning Methods. (4.) Formerly 204A-204B, 205 and 264. Consent of instructor. Course may be repeated for credit as modules vary. A series of course modules covering research methodologies 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. A student may take sequentially two or three modules in one semester.

204B. Research Design and Qualitative Methods. (2.) Four hours of lecture/discussion per week. Semester Prerequisites: Consent of instructor. Course may be repeated for credit as modules vary. A series of course modules covering research methodologies 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. A student may take sequentially two or three modules in one semester.

204C. Regression Analysis and Causal Modelling in Planning. (2.) Four hours of lecture/discussion per week. Semester Prerequisites: 204A or equivalent. Development of the general linear model. Quantitative specifications of causal linear models for use in planning. Topics include: multiple regression analysis, estimation techniques, residual analysis, advanced topics in regression analysis, and emphasis on conceptual development and computer applications. (F,SP)

204E. Time Series Analysis in Planning. (2.) Four hours of lecture/discussion per week. Semester Prerequisites: 204A or equivalent. Development of the general linear model. Quantitative specifications of causal linear models for use in planning. Topics include: autoregressive models, lagged equations, instrumental variable estimation, and simultaneous estimation of stochastic time series models, population forecasting. Focus on basic theory and computer applications to planning. (SP)

204F. Modelling and Measurement Methods. (2.) Four hours of lecture/discussion per week. Semester Prerequisites: 204A, 204B, 204C, 204D or equivalent. Methods of conceptualizing and modelling policy problems; defining policy problems, conceptual models, and choosing appropriate models. Application of economic concepts to policy problems, including econometric and policy outcomes. (SP)

205. Planning and the Legal Process. (3.) Formerly 205. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Duties and role of the legal planning agency in municipal and metropolitan government; relationship of long-range physical plan to urban development; relationships of local land-use regulations and access to housing. (F)

206. City Planning Legislation and Governmental Organization. (3.) Formerly 206. Three hours of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Duties and role of the physical planning agency in municipal and metropolitan government; major alternative definitions of city planning; relationship of long-range physical plan to urban development; relationships of local land-use regulations and access to housing. (F)

208. Citizen Involvement in the City Planning Process. (3.) Formerly 237. Three hours of lecture/seminars per week. An examination of the roles of the citizen 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. (SP)
210. Introduction to Studio Laboratory: Plan Preparation. (4). Formerly 202. Two hours of seminar and eight hours of studio per week. Semester Prerequisites: Corequisite: A and B Sections are not open to students concurrently enrolling in 202 and 233. Only. Urban ecological field studies. Gaming simulations and analysis of the urban, metropolitan, interregional and national economy. It will examine the contemporary, social, political and particularly economic issues that face these areas. Participants will work in teams to develop and analyze policy options for growth issues in urban places. (F)

211. Urban Land Economics. (3). Formerly 218. Three hours of lecture and discussion per week. Semester Prerequisites: 113 or Economics 100A 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 and regional theory, and urban history with economics. Not offered 1984-85.

212. Land Use Controls. (3). Formerly 214. Three hours of lecture/discussion per week. Focus on the theory, practice, and impacts of zoning, growth management, land banking, and other techniques of land use control; objective of the course is to acquaint the student with regulatory techniques, efficiency, and equity aspects of various control mechanisms. (SP)

213. Transportation and Land Use Planning. (3). Formerly 215. Three hours of lecture and discussion per week. Semester Prerequisites: 113 or Economics 100A or equivalent. Examination of the interaction between transportation and land use systems; historical perspectives on transportation; characteristics of travel and land use; development of system performance and design; transportation and public policy; transportation structure; empirical evidence of transportation-land use impacts; case study examinations. (F)

214. Urban and Regional Physical Infrastructure. (3). Formerly 291C. Three hours of lecture and seminar per week. Survey of basic knowledge and technology of urban transportation systems; water, gas, sewer, water supply, wastewater, storm water, solid waste management, community energy facilities, and urban public facilities. Environmental and energy impacts of infrastructure development; centralized vs. decentralized systems; case studies. (SP)

215. Planning and Analysis for Urban Development Projects. (3). Formerly 244. Three hours of lecture and discussion per week. Semester Prerequisites: 218 or equivalent. This course acquaints students with the techniques of project feasibility; analysis of project proposals and overall project compatibility assessment. Case studies will be based on a variety of public and private sector developments, in central city and small town locations. (SP)

217. Urban Transportation Policy and Planning. (3). Formerly 291A. Three hours of lecture and discussion per week. Semester Prerequisites: 213 or consent of instructor. Policy issues and dilemmas in urban transportation planning; examination of current transportation topics of policy import; e.g., financial, pricing, and subsidy issues; transportation impacts on energy and environment; transportation needs of the elderly and disabled; transit; performance and productivity trends; para-transit and innovative services. (SP)

218A-218B. Studio: Community General Plan and Development Studies. (4-4). Formerly 213. Course may be repeated for credit. Two hours of lecture/studio and four hours of studio per week. Semester Prerequisites: 210 or 215 or 212. Section A will focus on site development and land use planning. Section B will focus on General Plan development and review. Studio experience in analysis, policy advising, and project design and development for urban contexts undergoing development. A and B Sections are not sequential and can be taken independently. (F,SP)

219. Advanced Seminar On Land Use and General Plan Topics. (3). Formerly 255. Course may be repeated for credit. Three hours of seminar meetings per week. Semester Prerequisites: 206, 212, and at least one studio. Seminar exploring some current land use and environmental issues confronting California communities, with topics varying from year to year. Efforts to develop remedies are made; student papers are required. (SP)

220. The Urban and Regional Economy. (4). Formerly 219 and 233. Four hours of lecture and discussion per week. Semester Prerequisites: 113 or Economics 100A-100B or equivalent. Examination of the urban, metropolitan, and regional economy for planning. Economic base and other macro models; impact analysis and projection of changing labor force and industrial structure; economic-demographic issues in growth, income distribution, planning controls; international growth and population distribution impacts. (F)

221. Urban Area and Small Town Planning and Policy. (3). Formerly 221. One 3-hour seminar per week; one field session. Semester Prerequisites: Graduate standing. This seminar focuses on the role of rural places and small towns in the national economy. It will examine the contemporary, social, political and particularly economic issues that face these areas. Participants will work in teams to develop and analyze policy options for growth issues in rural places. (SP)

222. Urban Futures Laboratory. (1). Formerly 227. One 1-hour seminar per week. Semester Prerequisites: Concurrent enrollment in 127. For graduate students only. Urban ecological field studies. Gaming simulations and analysis. Simple computer models of urban dynamics. Will involve both individual and team work efforts; short reports required. (F)

223. Economic Development Planning. (3). Formerly 247. Three hours of lecture and discussion per week. Semester Prerequisites: Economics 100A or equivalent; 203A or 204A or 204B or 291A or 291C or 131 or equivalent. Quarter Prerequisites: 203 and 212, or consent of instructor. Strategy and tools for developing and employment and investment in regional, state, and local economies. Organization of economic development activities. Program and project analysis. (SP)

224. Location Theory and Spatial Interaction Models. (3). Formerly 211. Two hours of lecture per week. Semester Prerequisites: Economics 100A or equivalent; Calculus I. Analytical and interactive approaches to analysis of spatial distribution; ecological descriptive theories and economic behavioral theories of location and spatial structure; introduction to static and growth models of residential and industrial location; governmental influences on spatial distribution of urban activities. Not offered 1984-85.

225. Advanced Methods of Urban and Regional Analysis. (1-3). Formerly 233. Three hours of lecture per week per module. Semester Prerequisites: 204A-204B or consent of instructor. Covers regional accounting, economic base analysis, shift share techniques, input-output analysis, linear programming, regional econometric models, and qualitative sectoral studies. In some quarters, instructors may require students to undergo field research. In some quarters, several modules may be offered. Check department for modules at start of semester. (SP)

227. Studies in Regional Growth and Development. (3). Formerly 252. Three hours of seminar sessions per week. Semester Prerequisites: 220. Intermediate to advanced course focusing on theory and empirical evidence for regional growth and development, using reading and discussion, requiring short paper applying material to a region of the student's choice. (F)

228. Workshop Studio in Metropolitan and Regional Planning (4). Formerly 215. Three hours of lecture and four hours of field session. Semester Prerequisites: Relevant past coursework and consent of instructor. Field work in major phases of metropolitan or regional planning work. A collaborative student-group effort in formulating policy or plan recommendations within specific governmental framework. (SP)

229. Research Seminar in Regional Development. (3). Formerly 253. Three hours of seminar meetings per week. Semester Prerequisites: 220 and consent of instructor. A close examination of selected issues in regional planning policy, methodology, and regional development, through student/faculty research papers and class discussion. (SP)

230. Housing Markets and Planning. (3). Formerly 203A-203B. Three hours of lectures and discussion per week. Semester Prerequisites: 113 or an introductory course in microeconomics. Theory of housing markets and empirical methods for measuring market conditions and performance: housing consumption, housing supply and production, and market performance. Empirical analysis and applications to policy issues. (F)

231. Housing Finance and Policy. (3). Formerly 210 and 243. Three hours of lectures and discussion per week. Semester Prerequisites: 220. Survey of housing policy and programs at the local, state, and federal levels, emphasizing program design as well as methods and institutions of housing finance. Topics covered include mortgage structure, mortgage intermediaries, forms of ownership, federal subsidy programs, tax subsidies, and the use of tax-exempt mortgage revenue bonds. (SP)

232. Workshop in Housing and Community Development. (4). Formerly 217. Two hours of seminar and two hours of field session per week. Semester Prerequisites: 221. Directed field project or group research on selected issues, drawn from following: contemporary community development programs, redevelopment, neighborhood-level planning, preservation or construction of housing. Focus on neighborhoods in older central cities. (F)

233. Housing Policy Seminar. (3). Formerly 291B. Three hours of seminar and discussion per week. Semester Prerequisites: 230, 231, or consent of instructor. Discussion, readings, field sessions, and directed research on housing policies, their history, formulation, implementation, and evaluation. Not offered 1984-85.

240. Theories of Urban Form and Design. (3). Formerly 240. Three hours of lecture and discussion per week. Semester Prerequisites: Consent of Instructor: The history and theory of urban form and design and conservation; the implicit theories, ideologies, language, and methods of the major movements in the field. A conceptual model for evaluating these theories will be developed and applied to case studies of urban design and other environmental plans. (F)

IDS 241. See IDS courses at end of DCP course offerings.

248. Advanced Studio: Urban Design/Environmental Planning. (4). Formerly 208. Two hours of seminar and four hours of studio per week. Semester Prerequisites: 210 or 240. Advanced problems in urban design and land use and environmental planning. (F,SP)

IDS 249. See IDS courses at end of DCP course offerings.

250. Planning and Governing. (3). Formerly 203. Three hours of lecture and discussion per week. Semester Prerequisites: Consent of Instructor: Origins and evolution of the idea of planning. Values, choice, and purposive action. Theories of knowledge and planning. Planning as a governmental intervention in self-regulating social systems. Alternative planning strategies for conditions of uncertainty and in the absence of science-based knowledge. (SP)

251. Urban Politics and Planning. (3). Formerly 232. Three hours of lecture/seminar per week. Basic concepts of urban politics essential to planners and policy makers; power and influence; elitism versus pluralism; conflict and coalition; community mobilization and participation; urban political institutions; local and supra-local interrelationships; the politics of planning and the decision making process. Not offered 1984-85.

252. Theory and Practice of Implementation for Planners. (3). Formerly 248. Three hours of lecture and discussion per week. Planning and implementation within the context of governmental institutions; systems for choice change and control. Focus on organizational behavior and capacity for change, and processes of intergovernmental relations. Not offered 1984-85.

253. Political Economy and Planning. (3). Formerly 235. Three hours of seminar per week. A seminar for students involved in urban planning and development, focusing on the interaction of political-economic forces and social outputs in the planning 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. (SP)

259. Advanced Topics in Planning Theory. (3). Formerly 250. One 3-hour seminar meeting per week. Se-
master Prerequisites: 250, 253, 202 or equivalent; 252 or equivalent. Selected advanced topics in planning theory. Not offered 1984-85.

260. Introduction to Social Theory and Planning. (3). Formerly 260. Three hours of lecture and discussion per week. Semester Prerequisites: Graduate standing. Description, analysis, and evaluation of urban policies in a variety of social and spatial contexts, with references to different community types. Selected social planning theories and methods. Not offered 1984-85.

261. Techniques in Mediation, Group Process, and Community Relations. (1.5). Formerly 226. Course since Spring 1983. Two hours of lecture/discussion per week. Discussion in basic techniques increasingly being used in planning practice. Half-course. (SP)

262. Professional Writing. (1.5). Two hours of seminar/discussion per week plus individual meetings with students. Semester Prerequisites: Consent of instructor. Analysis of selected topics in city and metropolitan planning with emphasis on implications for planning practice and urban policy formation. In some semesters, optional 5-week, 1-unit modules may be offered. Check Department for modules at start of semester. (FSP)

266. Program Planning and Evaluation. (3). Formerly 266A and 267. Three hours of lecture per week. Semester Prerequisites: 202; 204; 262; or 252 or 214 or 230 or 220. Techniques and process of designing, simulating, and evaluating alternative sequences of actions to achieve objectives. Examination of broad range of methodologies using case studies. Organizational and political strategies for effective program planning. Cases drawn from social programs, municipal services, housing and urban development at federal and local levels. (F)

267. Workshop in Program and Social Planning. (4). Formerly a portion of 266B and 267. Two hours of seminar and four hours of studio per week. Semester Prerequisites: 262, or 260 or 265; 204A-204B or consent of instructor. Studio workshop in which students complete projects involving program and policy analysis relevant to a particular municipality. Application of program planning concepts and methods. Projects normally provide opportunity to work on one of several different program areas or management issues, not solely social programs or services. (SP)

268. Community Development Theory and Practice. (3). Formerly 268. Three hours of lecture-discussion and studio per week plus fieldwork. Semester Prerequisites: 260 or 210 or 230. Basic theories and method of community economic and social development. The course will examine neighborhood/community analysis as well as social change strategies. Requires a substantial amount of field work in local neighborhoods. (SP)

269. Seminar in Special Policy and Urban Services. (3). Formerly 266B. Course may be repeated for credit. One 3-hour seminar meeting per week. Semester Prerequisites: 262 or 239 or equivalent; 204A-204B or consent of instructor. A seminar on advanced topics in social and urban service planning, including an opportunity for students to gain intensive review of their individual research. Not offered 1984-85.

270. Regional and Urban Development Strategies in Third World Countries. (3). Formerly 226. Three hours of lecture per week. Studies and comparative theories of regional and urban distribution of nonextractive industries and populations. Effects of natural resource distribution, of governmental services and infrastructure, and of private investment. Alternative strategies for influencing regional planning. Review of experience to date in various nations. (SP)

271. Comparative Urbanization. (3). Formerly 220. One 3-hour lecture/seminar per week. Semester Prerequisites: Consent of instructor. Problems of urbanization in counter settlements and marginal groups in the Third World, the U.S., and the socialist countries. Historical, social, cultural, economic, and political dimensions of the problems are considered in relation to policy alternatives and future scenarios. (SP)

280. Professional Seminar. (2). Formerly 280. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Second year City Planning students only. Designed to give students skills in the development and execution of professional reports and products. Fall Semester focuses on client definition, research design, and work programming and scheduling. Spring Semester addresses report writing and structure, client-consultant dynamics, and presentation skills. Not offered 1984-85.

281. Regional and Metropolitan Development Strategies. (1). Formerly 231 A-231B-231C-231D-231E-231F. Course may be repeated for credit. Three hours of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Analysis of selected topics in city and metropolitan planning with emphasis on implications for planning practice and urban policy formulation. In some semesters, optional 5-week, 1-unit modules may be offered. Check Department for modules at start of semester. (FSP)

285. Seminar in Special Policy and Urban Services. (3). Formerly 266B. Course may be repeated for credit. One 3-hour seminar meeting per week. Semester Prerequisites: Consent of instructor. Advanced study in city and regional planning. Specific topics to be announced at the beginning of each semester. (SP)

291. Planning Theory. (1-3). The sequence may vary from year to year. This is a year-long seminar dealing with the following topics: theories of decision-making and planning; public choice theory; epistemological bases for research and practice; political economy and planning; alternative planning and processes roles and the functioning of various institutional frameworks for planning. Special additional topics will be taught from time to time as 291F. Course will be modular to permit students to enroll in sequence of course which will be, in general, sequential. (F,SP)

291A. Urban Services Planning and Financing. (3). New Course since Spring 1983. Three hours of lecture and discussion per week. A survey of planning issues in urban services, with special attention to planning policy and needs determination, including the financial planning of public service, projected need, programming service delivery, physical facility and manpower requirements, linkages of service planning to land use and social planning. Course complements 214 on Physical Infrastructure. Not offered 1984-85.


291C. Political Contexts of Planning. (1-2). Three hours of seminar per week for five weeks. The relationship of city planning institutions and practice to planning theory; alternative political theories on the role and legitimacy of planning; welfare economics and market failure rationales for planning; public choice theory; theories of equity. (F,SP)

291D. Knowledge and Action in Planning. (1-3). Four hours of seminar per week for ten weeks. This seminar deals with various models of planning action and the strategies for developing usable knowledge for both research and practice. Positivism, phenomenology, and critical theory will be discussed as ways to deal with conflicting values and uncertain environmental contexts. Implications of linking planning and implementation discussed. (SP)

291E. Political Economy and Planning. (1-3). Four hours of seminar per week for ten weeks. The interaction of political-economic forces and of social outputs in the process of planning. Three seminar meetings per week. Not offered 1984-85.

291F. Topics in Planning Theory. (2-4). New Course since Spring 1983. Course may be repeated for credit as topic varies. Two to four hours of seminar per week. The content of these seminar courses will vary from year to year, according to the interests of faculty and students. Not offered 1984-85.

295. Supervised Research in City and Regional Planning (295). Formerly 295. Topics may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Regular meeting with Faculty sponsor to be arranged. Semester Prerequisites: Graduate standing in department and consent of advisor and sponsor. Supervised experience relative to specific topics of practice in city or regional planning. Any combination of 295, 297, or 300 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)

296. Group Studies. (1-3). Formerly 298. Course may be repeated for credit. To be arranged by instructor. One to three hours of lecture per week. Semester Prerequisites: Consent of instructor. Topics may be repeated for credit. Ten modules of 296 can be used for 1 unit of 297. Course may be repeated for credit at beginning of each quarter. No more than 3 units may be taken in one section. (F,SP)

299. Individual Study or Research. (1-12). Formerly 299. Course may be repeated for credit. Regular meetings to be arranged with Faculty sponsor. Semester Prerequisites: Consent of instructor and graduate standing. 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, 300) counted toward the M.C.P. degree credits is 9. (F,SP)

302. Individual Study for Doctoral Students. (1-8). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Regular meetings to be arranged with Faculty Sponsor. Semester Prerequisites: Ph.D. students only. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

300. Supervised Teaching in City and Regional Planning. (2-2). Formerly 300. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Regular meetings to be arranged with Faculty Sponsor. Semester Prerequisites: Graduate standing in department and appointment as a teaching assistant. Supervised experience in courses related to planning. Any combination of 295, 297, or 300 course may be taken for a total of 6 units maximum toward the M.C.P. degree. (F,SP)
The Profession

Landscape Architecture plays an important role in solving environmental problems at the levels of urban design and planning. Professional practice includes planning for conservation of open space and natural amenities; land management and development; design of parks and recreation areas, schools, housing, and urban redevelopment projects. Landscape architects are involved in the assessment of the impact which projects and proposals may make on environmental quality, and in designing such projects to be compatible with the environment in which they are to be located.

Landscape design involves site planning of buildings and building complexes and the planning and detailed design of public and private exterior spaces and landscapes. This may include project planning and programming, incorporating natural and behavioral factors into open space design, and the design of landscape planning for visual, social, and ecological benefits. Landscape design also concerns with site construction technology and the conservation of soil, water, and energy.

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 open space and transportation systems.

Undergraduate Program

The four-year curriculum leading to the A.B. degree in Environmental Design with a major in Landscape Architecture can provide a general education in environmental design or serve as pre-professional preparation for subsequent education or entry-level work in the field. The Department's accredited professional degree is the Master of Landscape Architecture. Required core courses represent a minimum basic coverage in theory, design, and technology, but the program provides an opportunity to study more intensively all aspects of landscape architecture, including landscape analysis and planning, urban design, recreation, site design and development, graphics, construction, and planting design.

For more complete information, see the Announcement of the College of Environmental Design for landscape installations and maintenance including planting and early care, pruning, artificial soils, turfgrass, disease and pest management. Personalized Systems of Instruction-Course (SP)

Graduate Program

The Master of Landscape Architecture Degree.

The Master of Landscape Architecture degree is a professional degree accredited by the American Society of Landscape Architects. The program offers advanced work in landscape architecture from the scale of detailed form to that of regional landscape environments. All core courses in the Department are required of all students, emphasizing the relationship between the design and the environmental planning aspects of the field. This core program forms the minimum coursework in landscape design and environmental planning.

Current faculty research and professional involvement include: impact and planning analysis, human factors and design, environmental simulation, landscape design and visual assessment, ecology and plant succession, coastal zone planning, energy conservation in landscape and community design, urban forestry, and community participation in design and planning.

Joint Program in Urban Design. The departments of Landscape Architecture and City and Regional Planning jointly offer a program of studies in urban design or in environmental planning, leading to both the Master of Landscape Architecture and Master of City and Regional Planning. Admission must be separate by both the Department of Landscape Architecture and the Department of City and Regional Planning.

The usual procedure is for applicants to apply to either department, and then submit an application to the other department by January 1 of the first academic year in residence. Acceptance into a joint program is not automatic and is limited to outstanding applicants.

The Ph.D. Degree in Environmental Planning. The Doctor of Philosophy program in Environmental Planning has a core field of "environmental planning and design" with "natural" and "social" minor fields. It is aimed toward the education of teachers, researchers, and advanced professionals in the fields of landscape architecture and environmental planning. Applicants come from a variety of fields other than landscape architecture, including geography, forestry, earth science, environmental studies, city planning, architecture, and engineering. They must present outstanding academic records. It is anticipated that most applicants will have completed a professional degree or other master's degree before entering. Students alternates with 103. (1-12)

110. Regional Landscape Plants (Special Schedule Course). (2). Formerly 110. Two 1-hour field laboratories per week for seven weeks. Semester Prerequisites: 12 and 12L. Quarter Prerequisites: 11 or equivalent. Field observation and identification of native and introduced plants for landscape design; emphasis on water conservation, ecological adaptation and landscape plant management. Individual graphic exercises on selected topics. (SP)

112. Landscape Horticulture (Special Schedule Course). (2). Formerly 112. Two 3-hour workshops per week for seven weeks. Semester Prerequisites: 12 and 12L. Botany 10 or equivalent. Quarter Prerequisites: 11 and Botany 10, or equivalents. Horticultural techniques for landscape installations and maintenance including planting and early care, pruning, artificial soils, turfgrass, disease and pest management. Personalized Systems of Instruction-Course (SP)

120. Topographic Design. (2). Formerly 120. Two 1-hour lectures per week. Semester Prerequisites: Recommended: Civil Engineering 88 and concurrent enrollment in 120L. Quarter Prerequisites: Civil Engineering 21 recommended. Theory, methodology, graphics, and controls for topographic site alteration. Drainage and topography. Exercises and reading. (SP)

120L. Topographic Design Studio. (2). (2). Two 3-hour studios per week. Semester Prerequisites: 120 must be taken concurrently. Studio projects in the design and shaping of land forms and topography. Graphical and computational exercises on land forms to accommodate surface drainage. (SP)

121. Design of Landscape Structures. (2). Formerly 121. Two 1-hour lectures per week. Semester Prerequisites: 120 and 120L. Quarter Prerequisites: 120. Theory and constructional materials; design of landscape structures and utilities. (F)

121L. Studio: Landscape Structures and Utilities. (2). Formerly 121L. Three 1-hour workshops per week. Semester Prerequisites: 120 and 120L. Studio problems in details for structures and utilities; including decks, fountains, walls, and paving. (F)

130. Introduction to Landscape Architecture. (3). Formerly 130. Three 1-hour lectures per week. Survey of landscape architecture as it has evolved as an expression of people, place and time, including the garden, park, and public open spaces. Land use planning and environmental protection. Discussion of design process...
and planning methods, materials, and techniques of professional practice. (F)

131. Design Implications in Forestry and Resource Management. (F,SP) Formerly 133. One 1-hour lecture and one 3-hour studio per week. Semester Prerequisites: Upper division standing and consent of instructor. Quarter Prerequisites: Upper division standing and consent of instructor. An analysis of wildlands as a landscape resource, stressing visual composition as a base to which forestry and resource management decisions may be given form and relating them through design. (F)

134. Advanced Graphics for Landscape Architecture. (3). Formerly 134. Two 1-hour lectures per week. Semester Prerequisites: Environmental Design 11A or 11B and consent of instructor. Freethand and formal perspective approaches to graphic representation of design concepts. Pencil, ink, and color media. (SP)

140. Social and Psychological Factors in Open Space Design. (3). Formerly 140. Two 1-hour lectures and one 1-hour discussion per week. User-oriented approach to understanding use of designed open spaces. Design as a communication process. Environmental needs of vulnerable populations—children, elderly, disabled, low-income families. Personal and societal environmental values. (F)

170. History and Literature of Landscape Architecture. (3). Formerly 170. Two 1½-hour lectures per week. Development of landscape design processes; relationships to society, climate and topography. (SP)

191A. Advanced Landscape Photography. (3). Course may be repeated for credit. Must be taken on a passed/not passed basis. Two 3-hour laboratories per week. Semester Prerequisites: Consent of instructor: Advanced field techniques covering the use of exposure placement, lighting, filters and perspective, with a strong emphasis on aesthetic organization of graphic design elements within the image. Advanced darkroom techniques for fine print making, archival processing, and film contrast control methods. (SP)

197. Field Study in Landscape Architecture. (2-3). Formerly 197. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Upper division standing and consent of instructor and sponsor. See departmental information sheet for limitations. Supervised experience relative to specific aspects of landscape architecture. Regular individual meetings with faculty and outside sponsor. Reports required. (F,SP)

198. Directed Group Study. (1-4). Formerly 198. No more than four units in any one semester. Course may be repeated for credit. Must be taken on a passed/not passed basis. Consent of instructor. See rules on page of the General Catalog. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Consent of instructor: Enrollment restricted by regulations listed on page 50 of the General Catalog. (F,SP)

See Environmental Design course listings for description of required environmental design courses for landscape architecture major.

Graduate Courses

200A. Introduction to Landscape Design. (4). Formerly 200A. Two 4-hour studios per week. Semester Prerequisites: 201, 220, 230 or consent of instructor. Quarter Prerequisites: Consent of instructor. Introduction to the landscape development process and sources of form in Landscape Architecture. Investigation of spatial composition and use of landscape media in the solution of design problems. (F)

200B. Urban Landscape Design. (4). Formerly 200B. Two 4-hour studios per week. Semester Prerequisites: 220, 225. Quarter Prerequisites: 200A, 225. Principles and determinants of spatial composition as inspiration for three dimensional form in the design of landscape spaces. Investigation of spatial composition and arrangement of topography, construction materials, and plant materials in a variety of spaces as users relate to them. Introduction to community design, design by hypothesis, and use performance criteria. (SP)

201. Problems in Site and Environmental Planning. (4). Formerly 201. Two 4-hour studios per week. Semester Prerequisites: 220, 230. Problems in planning and design at the site and regional scale emphasizing the influence of natural, physical, and social factors. (SP)

202. Advanced Landscape Design. (4). Formerly 202A-202B. Two 4-hour studios per week. Semester Prerequisites: 205 or consent of instructor. Quarter Prerequisites: Consent of instructor. Advanced landscape design for a complex project through comprehensive analysis of program, user characteristics, region, and site. Technical and compositional refinement of project design, construction, and planting. (F)

203. Environmental Planning Studio. (3). Two 3-hour studios per week. Semester 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 in a complex institutional and political setting. Student teams will identify needed data, assess environmental and developmental problems, weigh competing uses, and prepare an environmental management plan. (SP)

212. Landscape Plants and Horticulture. (4). Formerly 211. Two 1-hour lectures and two 3-hour field laboratories. Fundamentals of plant growth nomenclature, classification, and use in landscape design; horticulture, and natural factors related to plant growth, use, and maintenance. Field observation and identification of common plants in a natural setting. (SP)

213. Landscape Planting Design. (4). Formerly 212. Two four-hour studios per week. Semester Prerequisites: 211. Quarter Prerequisites: 211 or 200C. Advanced problems in design investigated in terms of plant selection, planting design, and implementation on specific sites. (SP)

220. Natural Factors in Planning and Design. (3). Formerly 220. Two 1-hour lectures and two 2-hour laboratories per week. General interpretation of physical and natural processes in land planning; use of inventories in geology, soils, vegetation, hydrology, climate, and wildlife, linkage with visual aspects; synthesis for planning. (F)

221. Quantitative Methods in Environmental Planning. (3). Formerly 221. One 1½-hour lecture and one 3-hour laboratory per week. Discussion and critique of the application of quantitative methods to environmental assessment, analysis, and evaluation in environmental planning. Topics to include geographical information systems and data bases, remote sensing, and multi-variate analysis; the computer simulates complex applications and data analysis. (F)

222. Hydrology for Planners. (3). Formerly 222. Two 1-hour lectures and one 2-hour laboratory per week. Relation of rainfall to runoff, development of the storm hydrograph, effects of urbanization on flood potential; flood frequency; effect of man’s activities on runoff. (SP)

223. Introduction to California Landscapes. (1). Formerly 223. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour lecture/discussion per week plus two field trips (total of four days). Introduction to the ecology, visual characteristics, and use of landscape in the major landscapes regions in California. (SP)

224. Vegetation Analysis and Management. (3). Two 1-hour lectures and one 4-hour laboratory per week. The analysis and assessment of vegetation for landscape design and environmental planning. Management of vegetation in parks, nature reserves, and open space areas. (SP)

226. Landscape Design Construction. (3). Formerly 226. Two 3-hour studios per week. Semester Prerequisites: 225. Advanced problems in landscape design investigated in terms of construction, landscape form alteration, and implementation on specific sites. (SP)

230. Communications in Landscape Architecture. (3). Formerly 230. Two 3-hour studios per week. Discussion of the theory and practice of communication in landscape architecture with primary emphasis on graphic presentation, but also including photography, videocassette, workshops, the spoken and written word, reports, and models. (F)

232. The Landscape As a Visual Resource. (3). Formerly 232. Two 1½-hour lectures per week and two field trips (total of three days). Visual analysis of wildlands landscapes; inventory of survey and landscape evaluation, and design policy development, especially related to public wildlands. (SP)

233. Environmental Law and Resource Management. (3). Formerly IDS 233A. Two 1½-hour seminars per week. Semester Prerequisites: Consent of instructor: An introduction to the American legal system governing the utilization and management of natural resources; and an overview of the major techniques that have been developed by courts, legislatures, and administrative agencies for environmental protection. Topics will include: nuisance law, constitutional constraints, environmental impact assessment, permit systems for development control, pollution control, natural resources planning law. (SP)

234. Computer Graphics in Landscape Architecture. (3). Formerly 234. Two 1½-hour lectures and one 3-hour laboratory per week. Intermediate introduction to the application of computers in landscape design; covers applications in computer mapping and graphics; landscape instruction; planning, and case management; class problems using computer hardware and software in central campus and departmental computing facilities. (SP)

235. Environmental Simulation and Public Communication. (4). Formerly Interdepartmental Studies 235. Two hours of lecture and two 3-hour laboratories per week. Semester Prerequisites: Consent of instructor. Introduction to the theory of experimental simulation; criteria for a good presentation; case studies in the use of models and media in citizen participation and environmental design; instruction in model-making, slide photography, video-taping, use of the environmental simulation in film-making, script writing, and presentation design. Exercises and projects. (SP)

236. Advanced Seminar in Land Use and Environmental Planning. (3). Formerly Interdepartmental Studies 236. Course may be repeated for credit. Two 1½-hour seminars per week. An advanced investigation of current problems in land use and environmental management, with a focus on the development of proposed policy responses and implementation strategies. Topics will vary from year to year. Likely topics include: the regulation of sensitive lands; environmental impact assessment; the regulatory framework governing public use controls; water resources law and policy; public lands, coastal zone management; hazardous lands; resource extraction. (SP)

237. The Process of Environmental Planning. (3). Formerly IDS 233B. Two 1½-hour lectures/discussions per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: IDS 233A. A review of the techniques used in environmental planning, and evaluation of alternate means of implementation in varying environmental and political circumstances. The class will examine and critique a number of well-known environmental planning programs and plans. Lectures and discussion will address recurrent planning problems, such as the limitations of available data, legal and political constraints on plans, conflicts among specialists. (F)

238. Environmental Policy Planning. (3). Formerly 238. Two 1½-hour lectures per week. Collective interaction between the living environment. How is action taken? Effects upon quality of life measures. Advanced planning methods including risk analysis and models of preservation. Discusses approaches to steady state and resource-conserving lifestyles. Employs community ecology design compatible with conservation policies. (F)

250. Faculty Research Seminar. (1). Formerly 250. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour seminar per week. Examination of current status and future scope of professional practice and research in landscape architecture and environmental planning. (F)

251. History and Theories of Landscape Architecture & Environmental Planning. (3). Formerly 251. One
2-hour seminar per week. Investigation of the major ideas in landscape architecture and environmental planning. Review of history and theory from the classical and contemporary perspectives. Topics may include: methodological determinism, rationalism, ethics, social and economic values, limits, aesthetics, preservation/conservation, and the role of the professional. (F)

252. Thesis and Professional Project Research Seminar. (1) Formerly 252. Must be taken on a satisfactory/un satisfactory basis. One 11/2-hour seminar per week for seven weeks. Consideration of alternative methods and strategies for the development of research approach and prospectus for the thesis or professional project. (SP)

290. Professional Practice Seminar. (1) Formerly 290. Must be taken on a satisfactory/un satisfactory basis. One 2-hour seminar per week for eight weeks. Professional methods and approaches in the practice of Landscape Architecture. Contracts, specifications, agreements. Office management and organization. Contrast between practices in the private and public sectors. Visits to professional offices. (SP)

291A. The Urban Park. (2). Two hours of seminar and discussion per week. Review of the origins and development of the public park as a component of cities. Theoretical and practical aspects of the design of parks and public spaces. Policy relative to specific aspects of practice in land development. (F,SP)

291B. Group Study. (1-4). Formerly 298. May be repeated for credit. Hours to be arranged. Special group studies. Topics to be announced at the beginning of each semester. (F,SP)

292. Directed Dissertation Research. (1-8). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. Hours to be arranged. Semester Prerequisites: Graduate standing and consent of instructor. 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)

293. Supervised Research. (2). Formerly 293. Any combination of 293 or 297 may be taken for a total of six units toward the M.LA. degree. Must be taken on a satisfactory/un satisfactory basis. Hours to be arranged. Semester Prerequisites: Graduate standing and consent of instructor. 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)

295. Special Group Studies. (1-12). Formerly 295. May be repeated for credit. Hours to be arranged. Semester Prerequisites: Consent of instructor. Hours to be arranged. Semester Prerequisites: Consent of instructor. 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)

297. Supervised Field Study. (2-3). Formerly 297. Any combination of 295 or 297 may be taken for a total of six units maximum toward the M.LA. degree. Must be taken on a satisfactory/un satisfactory basis. Hours to be arranged. Semester Prerequisites: Graduate standing and consent of instructor and sponsor. Supervised experience relative 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)

298. Group Study. (1-4). Formerly 298. May be repeated for credit. Hours to be arranged. Special group studies. Topics to be announced at the beginning of each semester. (F,SP)

299. Individual Research. (1-6). Formerly 299. May be repeated for credit. Hours to be arranged. Semester 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 minimum of six units will be counted toward the M.LA 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)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a Master's degree. Must be taken on a satisfactory/un satisfactory basis. Hours to be arranged. Semester Prerequisites: Last semester of residence in M.LA. program. Individual study for final degree requirements in consultation with advisor. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctor's degree. May be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. Hours to be arranged. Semester Prerequisites: For candidates for doctor's degree. 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. (F,SP)

Professional Courses

292. Supervised Teaching in Landscape Architecture and Environmental Planning. (2). Formerly 292. May be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. Hours to be arranged. Semester 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)

Interdepartmental Studies Courses

Graduate Courses


IDS241. The Urban Environment. (3). Formerly 241. Two 1-hour seminars and one 3-hour laboratory per week. The components, structure, and meaning of the urban environment. Environmental problems, attitudes, and criteria. Environmental survey, analysis, and interpretive methods. Techniques of addressing environmental quality. Environmental simulation. Sponsoring Departments: City and Regional Planning and Landscape Architecture. (F,SP)

IDS249. Urban Design in Planning. (3). Formerly 130. Three hours of seminar and discussion per week. Semester Prerequisites: Consent of instructor. The seminar will focus on urban design in the planning process, the role of environmental surveys, methods of community involvement, problem identification, goal formulation and alternatives generation, environmental media and presentation, design guidelines and review, environmental evaluation and impact assessment. Case studies. Sponsoring Departments: City and Regional Planning and Landscape Architecture. (SP)

Related Courses in Other Departments

ENV DES 104. Site Planning. (3).

ENV DES 135. Photography As Creative Expression. (3).

ENV DES 169A. History of the U.S. Cultural Environment, 1783-1900. (3).


Doctoral School of Journalism

Office, 121 North Gate Hall, 642-3383


Lecturers:

James Benet, B.A. Richard Reinhardt, M.S. Cynthia Gorney, B.A. Stanford N. Sesser, M.A. Rosalie Stern, M.A. Lance Williams, M.J.

Senior Lecturers: Andrew A. Stern, B.A.

Graduate Advisers: Mr. Spaulding, Mr. Leonard, Mr. Taper, Mr. Littlejohn.

The Graduate School of Journalism offers a program leading to the degree of Master of Journalism (M.J.). The program seeks to provide training in the skills and techniques of journalism and a knowledge of the traditions and principles of the profession, combined with the study of other disciplines that constitute the discipline of journalism. The program is based upon the idea that the best possible preparation for a career in journalism is a sound liberal arts education, with specialized training in journalism at the graduate level.

Candidates for the M.J. degree are expected to complete their work for the degree in four semesters. They shall have completed 40 units in approved upper division and graduate courses, of which at least 30 must be in graduate courses in journalism, and have presented an acceptable thesis or reporting project. Students generally take about one-third of their courses in other disciplines than journalism.

An applicant for graduate study should hold a bachelor's degree comparable to that given by the University of California. Requirements and procedures are outlined in Graduate Application, Fellowship, and Financial Aid, available at the Office of the Dean, the Graduate Division, and in the Announcement of the Graduate School of Journalism.

The Graduate School of Journalism offers a variety of courses for undergraduates, ranging from small writing and reporting seminars to large lecture courses. Undergraduates with a special interest in journalism may also attend courses, with consent of the instructor, when there is room.

Further information, application requirements, and copies of the Announcement of the Graduate School of Journalism 1984-85 are available from the Office, North Gate Hall.

Upper Division Courses

100. Introduction to News Writing. (4). Formerly 100. Three hours lecture and discussion plus eight hours of field work per week. Survey of journalistic principles and practices, and study and practice of methods of gathering, writing, and editing news. Pre-enrollment required. (F,SP)

101. Advanced Writing for Journalists. (4). Formerly 101. May be repeated for credit under certain circumstances. Three hours lecture and discussion plus eight hours of field work per week. Sponsoring Departments: City and Regional Planning and Landscape Architecture. (SP)

110. Colloquium (Undergraduate). (1). Formerly 110. Course may be repeated for credit. Must be taken on a passed/not passed basis. One and one-half hours of lecture and discussion per week. Introduction to various branches of the journalism profession by means of weekly meetings and discussions with the faculty of the School of Journalism and visitors. (F,SP)

140. History of the American Press. (3). Formerly 140. Three hours of lecture and discussion per week. How "news" has been defined, discovered, and communicated from colonial times to the present. This survey includes journalism in the context of American political institutions and literature. The course studies changing attitudes about free speech, privacy and equality in America. Students will do research on the role of the press in a campaign for political or social reform. (F)

141. The Mass Media and Society. (3). Formerly 141. Three hours of lecture per week. Critical analysis of the structure and dynamics of contemporary mass media and their impact on society. (F,SP)
151. The Literature of Journalism. (3). Formerly 151. Three hours of lecture and discussion per week. Study of selected works of outstanding writers for the American and European press from the eighteenth century to the present. (SP)

153. Propaganda and the Mass Media. (3). Formerly 153. Three hours of lecture and discussion per week. A survey, beginning in the 18th century, of the origins and effects of attempts at mass persuasion. Shifting concepts of public opinion, propaganda and public relations will be discussed. There will be substantial reading and writing assignments on the flow of information to Americans during wartime. (SP)

165. Legal Aspects of the News Media. (3). Formerly 165. Three hours of lecture, discussion and field work per week. Analysis of legal rights and restrictions on the news media, including prior restraint, fair trial/free press, libel, invasion of privacy, subpoena of reporters, access to meetings and judicial proceedings, copyright and broadcast law. (F)

175. The Critical Review. (4). Formerly 175. Three hours of lecture, discussion and field work per week. Seminar Prerequisites: Consent of instructor. Weekly written assignments, readings and discussion in the field of critical reviewing (books, film, drama, music, art and architecture). (F)

180. Issues in Television Journalism. (3). Formerly 180. Three hours of lecture and discussion per week. An evaluation of television news and documentaries from 1950 to the present. Course will analyze local and network news programs, examine problems journalists face working with the broadcast industry, the role of the FCC and the future of public television. (SP)

184. Reporting of Public Affairs. (4). Formerly 184. Three hours of lecture and discussion plus eight hours of field work per week. Seminar Prerequisites: 100 or equivalent and consent of instructor. Quarter Prerequisites: 100. Study of the practice in reporting news of city, county and state government. (SP)

190. The Foreign Press. (3). Formerly 190. Seminar with three hours of lecture and discussion per week. Study and analysis of the foreign press and the way it works, with attention to contemporary problems, government restraints and its handling of news of the United States. (SP)

197. Field Study in Journalism. (1-2). Formerly 197. Course may be repeated for credit. Must be taken on a pass/No Pass basis. Supervised experience in the practice of journalism in off-campus organizations. Individual meetings with faculty sponsor and written reports required. See Additional Information, "Field Study and Internships." (F,SP)

198. Directed Group Study in Journalism. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a pass/No Pass basis. Supervised study with faculty sponsor. Individual Study and Research. Seminar Prerequisites: Total grade point average of not less than 3.0 and consent of instructor. Quarter Prerequisites: Total grade point average of not less than 3.0. (F,SP)

199. Supervised Individual Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a pass/No Pass basis. Supervised individual study and research. Individual Study and Research. Seminar Prerequisites: Total grade point average of not less than 3.0 and consent of instructor. Quarter Prerequisites: Total grade point average of not less than 3.0. See Additional Information, "Independent Study Courses." (F,SP)

Graduate Courses

200. Reporting the News. (4). Formerly 200. Four hours seminar; ten hours field work in news reporting per week; periodic tutorial sessions. Required as prerequisite to advanced reporting and broadcasting courses. (F)

201. Advanced News Writing. (4). Formerly 201. Three hours of seminar; eight hours of field work in news reporting per week; periodic tutorial sessions. Seminar Prerequisites: 200 or consent of instructor. Quarter Prerequisites: 200. Advanced study of reporting in more complex subject areas and more sophisticated writing styles. (SP)

205. News Editing. (2). Formerly 205A-205B. Must be taken on a satisfactory/unsatisfactory basis. Three hours of lecture and laboratory per week, plus outside assignments and reading. Study of the principles and practice of news editing, copyreading, headline writing, composition, and makeup, with later emphasis on creative editing and critiques of manuscripts. (F,SP)

210. News Photography. (2). Formerly 210 and 212. Must be taken on a satisfactory/unsatisfactory basis. Two hours of lecture and discussion plus four hours of laboratory per week. Semester Prerequisites: Priority to journalism graduate students. Fundamentals of photography and taking news photographs. Field assignments. (F,SP)

220. Editorial Writing. (4). Formerly 220. Three hours of lecture and discussion plus eight hours of field work per week. Semester Prerequisites: Prior secondary school of work or research experience. Study of and practice in writing editorials, columns, or other forms of statements of opinion. (SP)

225. Reporting On the American Community and Urban Affairs. (4). Formerly 225A-225B. Three hours lecture and discussion plus eight hours of field work per week. Semester Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Quarter Prerequisites: 200. Examination of the structure and the politics of the related community, and practice in reporting on urban problems such as education, health, welfare, housing and administrative governments. (F,SP)

228. Science Writing. (4). Formerly 228. Three hours lecture and discussion plus eight hours of field work per week. Quarter Prerequisites: 200. Study of and practice in writing science and technical articles for publication. (F,SP)

230. Reporting of Cultural Events. (4). Formerly 230. Three hours of lecture and discussion plus eight hours of field work per week. Quarter Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Quarter Prerequisites: 200. Advanced study of methods of reporting developments in such fields as science, drama, film, music, fine arts, literature, and architecture. (F)

238. Political Reporting. (4). Formerly 238. Three hours of lecture and discussion plus eight hours of field work per week. Semester Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Quarter Prerequisites: 200. Study and discussion of politics and the influence in reporting political events and campaigns. (SP)

239. Business Reporting. (4). Formerly 239. Three hours of lecture and discussion plus eight hours of field work per week. Semester Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Quarter Prerequisites: 200. Study and discussion of politics and the influence in reporting political events and campaigns. (SP)

240. History of American Journalism. (3). Formerly 240. Three hours lecture and discussion per week. Social and political conditions that have shaped the American press, and the press in America today. (SP)

243. Reporting International Affairs. (3). New Course since Spring 1983. Three hours of lecture and discussion per week. Study and analysis of techniques of reporting international affairs, and production of discussion papers and new reports. Enrollment limited to fifteen. (SP)

244. History of American Journalism. (3). Formerly 244. Three hours lecture and discussion per week. Social and political conditions that have shaped the American press, and the press in America today. (SP)

245. Advanced News Writing. (4). Formerly 245. Three hours of lecture and discussion per week. Critical evaluation of the mass media, discussion of problems of ethics and responsibility, and the production of several research papers. (SP)

248. Ethical Issues in Journalism. (3). Formerly 248. Three hours lecture and discussion per week. Study and research in the ethical problems of the working journalist, including conflict of interest, questions of privacy, confidentiality of sources, withholding of news, relationships with the community and with authorities. (F,SP)

250. Investigative Reporting. (4). Formerly 250. Three hours lecture and discussion plus eight hours of field work per week. Semester Prerequisites: Prior secondary school of work or research experience. Consent of instructor. Quarter Prerequisites: 200. Study of investigative reporting, analysis of its technique with outside reporting assignments. (F)

251. Literature of Journalism. (3). Formerly 251. Three hours of lecture and discussion per week. A study of outstanding examples of journalism. (SP)

252. Magazine Article Writing. (4). Formerly 252. Three hours lecture/discussion and eight hours of field work per week. Semester Prerequisites: For journalism students, 200 or equivalent; for others, consent of instructor. Quarter Prerequisites: 200. Study and analysis of the techniques of writing and editing of articles for publication (F,SP)

253. Public Opinion, Propaganda and the Mass Media. (3). Formerly 253 and 255. Three hours of discussion per week. Semester Prerequisites: Consent of instructor. Advanced study of public opinion and information techniques important to journalists from World War I to the present. Each student will do major research. (SP)

257. Law for Journalists. (3). Formerly 257. Four hours of lecture and discussion per week. Study of courts and procedure, legislative bills, criminal law, evidence, prior restraints, fair trial/free press, libel, privacy subpoena of reporters, access, copyright, broadcast law, relationships of reporter to publisher. (F,SP)

265. Law for Investigative, Legislative and Court Reporting. (3). Formerly 265. Four hours of lecture and discussion per week. What journalists should know about criminal procedure, fraud, conspiracy, bribery, government corruption, homicide, anti-trust, SEC, FDA, civil rights, FTC, corporations, organized crime and narcotics. Case examples of libel and privacy in large investigative stories. (SP)

275. Radio News Reporting. (3). Four hours of lecture and 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. (SP)

282. Introduction to Television News. (4). Four hours of lecture and discussion; fifteen hours laboratory per week and some field work. Study of the history and institutions of broadcast journalism (nine weeks), practice, techniques of reporting news for radio and television. (F)

283. Reporting for Television. (5). Six hours of lecture and discussion; twenty-four hours of field work and laboratory work per week. Semester Prerequisites: 292 and consent of instructor. Producing, directing, writing, and videotaping of live weekly television news program. (SP)

284. Documentary News Films. (3). Formerly 284. Twelve hours field work and laboratory per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: 200. Production and editing of documentary news programs. (F)

284. Thesis Seminar. (3). Formerly 284. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour seminar per week plus variable individual consultation. Seminar Prerequisites: Consent of instructor. Quarter Prerequisites: 200. Seminar in methods of research, organization, and preparation of master's thesis and professional thesis projects. Required of M.J. candidates working on theses and thesis projects. (F,SP)

287. Field Study in Journalism. (1-2). Formerly 287. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Field study. Supervised experience in the practice of journalism in off-campus organizations. Individual meeting with faculty sponsor and written reports required. See Additional Information, "Field Study and Internships." (F,SP)
The School of Law (Boalt Hall) has a three-year curriculum leading to the Juris Doctor (J.D.) degree. In addition to preparing its students to practice law, the School attempts to develop the study of law and legal institutions and to foster legal research. The School is a member of the Association of American Law Schools and is approved by the American Bar Association. Its graduates are qualified to become applicants for admission to practice in any state of the United States.

No single "pre-law" major is required or even recommended. However, these suggestions are made: students should learn to write by taking courses in which their work is vigorously edited; enroll in courses demanding analytical skills; obtain some breadth in humanities and social sciences that will help in understanding the social context within which legal problems arise; and acquire a general understanding of economic principles and the business world. However, prospective students should not be deterred from pursuing the law merely because their undergraduate education has not emphasized the social sciences and in course offerings are often necessary. After the first semester program is composed of four courses, the second and third years' courses are elective. The School also offers programs leading to the degree of Master of Laws (LL.M.) or the degree of Doctor of Jurisprudence (J.S.D.).

The Program in Jurisprudence and Social Policy is designed for students who are interested in the study of law and a variety of humanities and social science disciplines, including: economics, criminology, law, policy, philosophy, political science, and sociology. It is designed for students who are interested in careers in teaching, research, policy analysis, or public administration. Doctoral dissertations are currently being undertaken on such subjects as law and educational administration, the history and jurisprudence of natural resources, and modern European jurisprudence. Study for a degree in Jurisprudence may be combined with study for a J.D. degree. Further information on admissions procedures and special programs are numbered 295 to 299. The School of Law calendar differs from the regular campus, the calendar for the 1984-85 academic year is as follows:

Fall Semester
Instruction begins—August 20
Final Examinations—December 10-21
Semester Ends—December 21
Spring Semester
Instruction begins—January 14
Final Examinations—May 13-25
Semester Ends—May 25

Explanation of Course Numbering System

1. Courses are listed alphabetically, with two exceptions: Prescribed first-year courses are numbered 200 to 205, and special programs are numbered 295 to 299.

2. Courses that substantially are the same (though the emphasis or the number of units may differ) are given the same number, but a different identifying number following a hyphen.

3. Where no integral number is available in the place in the list at which a course belongs, the preceding number is assigned followed by a decimal point and another number.

4. Two-semester courses are identified by letters (e.g., 200A, 200B). Unless otherwise indicated, completion of the A part of the course is a prerequisite to taking the B part.

For further information and admission requirements of the School of Law, see the Announcement of the School of Law, available without charge from the Law School Admissions Office, 220 Boalt Hall, Berkeley, CA 94720.

First Year

The first semester program is composed of four prescribed courses. Three of the classes are in large sections with approximately 110 students in each. The fourth is a small section of 25 to 30 students. In the second semester, three courses are prescribed, and the student chooses one elective (or two electives). There are large sections and small sections in each of the first-year except courses 205 which is all small sections.

Graduate Courses

200A-200B. Civil Procedure. (3-3). Credit and grade to be awarded upon completion of the sequence. The principles of pleading under the code system and the federal rules; modern trial practice, including venue, process, the jury, sufficiency of evidence, instructions, verdicts, new trials, judgments; appellate procedure. (F)

201. Constitutional Law. (3). An introduction to the subject covering judicial review and jurisdiction, federalism, separation of powers and substantive due process. (SP)

202A-202B. Contracts. (3-3). The law of contracts, dealing with the problem of formation, operation, and termination. (F)

203. Criminal Law. (4). (F,SP)

204. Torts. (5). The law of civil injuries, including both intended and unintended interference with personal and property interests as well as liability without fault. (F)

205A. An Introduction to the Legal System and Legal Analysis. (2). Instruction in legal research and writing in the fall semester, and a moot court program in the spring. (SP)

205B. An Introduction to the Legal System and Legal Analysis. (1). Must be taken on a satisfactory/unsatisfactory basis. Instruction in legal research and writing in the fall semester, and a moot court program in the spring. (SP)
206. Administrative Law. (3). A study of administrative procedure and of agency rules, orders, and discretion (federal and state). Emphasizes the problems that lawyers encounter when they deal with government agencies and their innumerable officers and employees. (F,SP)

Second and Third Year

2055. Advanced Corporations Seminar. (2). New Course since Spring 1983. (SP)

2067. Advanced Criminal Law & Procedure Seminar. (2). New Course since Spring 1983. (F)

2068. Advanced Immigration Law and Clinic. (2). New Course since Spring 1983. (SP)

2069. Advanced Legal Policy Writing and Editing. (4). New Course since Spring 1983. (F)

20695. Advanced Legal Research. (2). New Course since Spring 1983. (SP)


2071. Advanced Topics in Intellectual Property. (2). New Course since Spring 1983. (SP)

20715. Advanced Torts and Environmental Law. (2). New Course since Spring 1983. (SP)

2075. American Federalism. Seminar. (3). Historical and jurisprudential perspectives on American federalism, with emphasis to "the original understanding" of 1787, nineteenth-century constitutional issues in light of governmental practice and law in the individual states, the modern phases of intergovernmental relations, and the federal, conservative, and technocratic critiques of contemporary federalism. A research paper is required which will satisfy the writing requirement. (F)

208. American Legal History. (3). New Course since Spring 1983. (SP)

2086. Ancient Law. (2). Discussion will focus on the ancient Orient (including the Bible) and Greece. It will deal with both what we find and how we find it: by the use of theology, myths, and narratives as well as legal materials. Source and form criticism, the nature of competition, and other methodological problems will receive attention. (F)

209. Antitrust Law. (3). This course is a one semester introduction to basic antitrust law and economics. Emphasis will be upon the law governing horizontal restraints including monopoly, cartel, oligopolistic interdependence, and exclusive cooperative activities among competitors and suppliers. Vertical restraints of trade between suppliers and customers (resale price maintenance, territorial and customer restrictions, tying arrangements, exclusive dealing, and requirement contracts), vertical mergers and (SP)

2095. Antitrust Seminar. (2). (SP)

210. Appellate Advocacy. (3). Must be taken on a satisfactory/unsatisfactory basis. Open to second-year students only. Combines evening lecture teaching by faculty, experienced practitioners and judges in the art of written and oral appellate argument, with exercises in that art under the supervision of members of the moot court faculty. Exercises in brief writing are subject to detailed critique and analysis by members of the Moot Court Board and, after revision by the student, by faculty. This is followed by the brief writing and argument of an actual case. (SP)

2107. Bible and Talmud, Law of the. (2). Historical survey of selected branches. No Hebrew or Arabic required. (F)

2107B. Bio-Medical Ethics Seminar. (2). This course will be an introductory survey covering a number of the problems in medicine and the life sciences which have important legal dimensions. Some of the topics covered will be: definitions of death, informed consent, death, the institution of the living will, organ and tissue donation by patients for the benefit of competent patients and for incompetent patients, research on human subjects, genetic counselling, care decisions involving defective newborns, and perhaps FDA regulation of medical drugs and foods. (SP)

2108. Bio-Medical Ethics Seminar. (2). This course will be an introductory survey covering a number of the problems in medicine and the life sciences which have important legal dimensions. Some of the topics covered will be: definitions of death, informed consent, death, the institution of the living will, organ and tissue donation by patients for the benefit of competent patients and for incompetent patients, research on human subjects, genetic counselling, care decisions involving defective newborns, and perhaps FDA regulation of medical drugs and foods. (SP)

212. Business Planning. Selected Problems in. (2). A detailed analysis of various stages in the life of a corporate enterprise, including incorporation and initial financing, recapitalization, and organization and dissolution. The course will focus on the interaction, at each of these stages, among principles of corporate law, corporate tax, and securities laws. (SP)

214. California Marital Property. (2). The study of California law governing the property rights of married couples. The course includes an analysis of the general principles governing classification of community property and separate property, the management and control of community property, liability of marital property for the debts of the spouses; division of community property on dissolution of marriage, and the property rights of putative spouses and person living in nonmarital cohabitation. (SP)

2145. Children and the Law. (2). (SP)

215. Chinese Legal System, the. (2). This course is designed to introduce the legal system of China, past and present, with special emphasis on traditional Chinese law. Attention will be given to informal and extrajudicial institutions, procedures, and sanctions as well as the formal system. For the Peoples Republic of China, an attempt will be made to study its criminal process, civil procedure, and family law, as well as its attitude toward international law. An effort will also be made to determine w(F)

2151. Church and State Seminar. (2). A research seminar. Introductory readings and discussion of assigned background material, followed by discussion of student work in progress. (F)

216. Civil Liberties, Civil Rights and Human Rights, Seminar On. (2). When people's liberties and rights are being violated, how can they be helped? And how might they be helped more effectively by lawyers, other activists, and organizations? How can lessons learned by international human rights lawyers be taught to U.S. civil liberties and civil rights lawyers and vice versa. (SP)

217. Class Actions Seminar. (2). (F)

218A. Commercial Law I (sales). (2). Provides substantial familiarity with the Uniform Commercial Code, specifically Article 2 on Sales, Article 5 on Letters of Credit, and Article 7 on Documents of Title, by examining Article 3 on Commercial Paper and Article 9 on secured transactions. (The latter are covered in Law 218B, Commercial Law II.) Its principle object is to explain commercial paper and those devices (credit cards, negotiable bills of lading, etc.), both in domestic and international settings. (SP)

218B. Commercial Law II (secured Transactions, Documents of Title, payment tran. (3). Law 218A not a prerequisite. Course covers topics governed by the Uniform Commercial Code outside the law of sales. Principal focus is on secured transactions with personal property as collateral, commercial paper, documents of title and other aspects of payment and security transactions. (SP)

218C. Commercial Transactions. (4). New Course since Spring 1983. (SP)

220. Comparative Law. (2). An introduction to modern civil law based on the codes and case laws of France and Germany. The course contrasts the intellectual outlook and techniques of civil and common law by examining a range of problems familiar to both, such as providing a fair trial, compensating accident victims, policing the fairness of contracts, and determining the obligatons of contracting parties. (F)

223. Conflict of Laws. (3). Jurisdiction, choice of law, and recognition of judgments in cases involving interstate and international aspects. Emphasis will be in the law of procedure, torts, workman's compensation, contracts, property, domestic relations, estates, and business associations. (SP)

2241. Constitutional Law I. (3). Introduction to the subject covering judicial review and justiciability, federalism, separation of powers and substantive due process. (SP)

2241S. Constitutional Law II. (2). (F)

22421. Constitutional Law II. (4). Constitutional provisions dealing with individual rights — including freedom of expression, association and religion, equal protection, right of privacy and other fundamental rights; international law and recognition of judgments in cases involving interstate and international aspects. Emphasis will be in the law of procedure, torts, workman's compensation, contracts, property, domestic relations, estates, and business associations. (SP)

2242. Constitutional Law IIa. (3). Constitutional provisions dealing with individual rights — including equal protection, right of privacy, and other fundamental rights; international law and recognition of judgments in cases involving interstate and international aspects. Emphasis will be in the law of procedure, torts, workman's compensation, contracts, property, domestic relations, estates, and business associations. (SP)

2243. Constitutional Law III. (2). New Course since Spring 1983. Constitutional provisions dealing with individual rights, including freedoms of expression, association and religion. (SP)

2244. Constitutional Law Seminar. (2). (SP)

2244A. Constitutional Law Seminar. (1). (F)

2244B. Constitutional Law Seminar. (1). New Course since Spring 1983. (SP)

2245. Construction Law Seminar. (2). The seminar will treat legal aspects of the design and construction process. (F)

226. Contemporary Legal Theory. (3). New Course since Spring 1983. (SP)

2263. Contract Writing and Analysis, (2). Seminar designed to develop the student's skills in writing contracts. Skill will be examined through model fact situations and will include the drafting of several agreements and leases through more complex provisions of partnership agreements and real estate purchase documents. (F,SP)

227. Copyright. (3). Statutory and common law protection of literary, musical, and artistic works, including the principles of unfair competition and trademark competition. (F,SP)

228A. Corporations I. (3). Course will cover the formation and operation of the corporation, the latter including the division of powers and responsibilities between shareholders, directors and officers. It will develop the distinction between the publicly-held corporation and the private, or close corporation, and the contractual flexibility of the latter form. It will provide only a rudimentary sketch of the financial structure of the corporation, and only a small coverage of the fiduciary constraints as is needed to put(F)

228B. Corporations II. (3). New Course since Spring 1983. Semester Prerequisites: 260 (Corporations I). Course will emphasize the relationships among the participants in the corporate venture with particular attention to the fiduciary principles governing those relationships in a detailed, transaction-specific context. This course also will deal with litigation concerning the corporation, particularly but not exclusively with derivative suits. It will not cover financial structure matters except to treat the fiduciary aspects of the basic financial issues covered in Corporations I. (SP)

228C. Corporations III. (2). New Course since Spring 1983. Semester Prerequisites: 260 (Corporations I). Course will cover capitalization of the corporation and distribution of profits (by way of dividends and of purchase of shares). It will also include enabling and other fiduciary aspects of corporate reorganization and other fundamental corporate structural changes. This course will include more than the others, with economic theory and policy materials, but also with more statutory and accounting materials. It will also involve substantial creditor-debtor law material. (SP)

230. Creditors' Remedies and Debtors' Protection. (3). Enforcement of judgments, exemptions, fraudulent conveyances, general assignments, creditors' agreements and bankruptcy arrangements and other forms of debtors' relief. (F)

2351. Criminal Procedure. (3). A survey of criminal trial and pretrial procedure. Topics include the law of arrest, search and seizure, electronic eavesdropping, interrogation, identification, entrapment, pretrial motions and hearings, plea bargaining, jury trial and double jeopardy. (F,SP)

2352. Criminal Procedure. (2). (F)
2391. Estate and Gift Taxation. (1). A basic study of the federal estate and gift taxes through text, code, regulations, and a few cases. Coverage will be less detailed and the treatment of planning less than in 2393-3 but provides adequate background for those who later decide to practice in the field. The course is geared to students with little or uncertain interests in the field, but who recognize the importance of some exposure to the subject. (F)

2393. Estate Taxation and Planning. (3). Semester Prerequisites: 250A. A basic study of the federal estate and gift tax laws, and how they operate on, and affect planning for, gratuitous inter vivos and testamentary transfers. (SP)

2411. Estates and Trusts. (3). The law of inter vivos and testamentary trusts; the nature, creation, and termination of trusts; problems of construction; administration of trust and decedents' estates. (F,SP)

2412A-2411B. Evidence I and II. (2,2). The basic problems of evidence law through analysis of the common law and the Federal Rules of Evidence. Reference will also be made to the legal doctrines governing the admission of evidence, including theories of proof, relevancy, testimonial and real evidence, judicial notice, and presumptions. The second semester will focus on policies governing the exclusion of relevant evidence, including the hearsay and conditional protections. Throughout the year, selected problems as well.


2422. Evidence Advocacy (workshops). (4,6). New Course since Spring 1983. (SP)

2441. Federal Courts. (3). New Course since Spring 1983. (SP)

2442. Federal Courts. (3). The jurisdiction and function of federal courts, the distribution of power between the federal and state systems, and the roles of substantive and procedural law in the two systems. (F)

2456. Financial Instruments and Financial Institutions. (3). (F)

2458. Freedom and Politics. (3). New Course since Spring 1983. (SP)

2459. Freedom of Speech. (2). A research seminar on current free speech issues. Each student will present a paper on a topic such as "absolutes" approaches, "the public forum," right of access, libel, obscenity, privacy, free speech, fair trial, symbolic speech, or commercial speech.

2471. Gender and the Law. (3). (F)

2489. Immigration Law & Practice. (2). Semester Prerequisites: 206, 224-1 or 224-2A-224-2B. Immigration law is an introduction to immigration law and policy, seen as an instrument of the achievement of policy objectives, and lawyers. Within that framework it will (F,SP)

2511. International Business Transactions Seminar. (2). The focus is the attorney for a United States business enterprise with interests abroad, but occasionally on a host government facing foreign investment. Topics to be covered include the United States treatment of foreign commerce, technology transfer, and foreign transfer. (F)


2514. Labor Law. (3). The basic rules governing the international community, including the rules of customary law as well as the Law of the Sea of international commerce, technology transfer, and foreign transfer. (F)

2515. Labor Law. (3). The basic rules governing the international community, including the rules of customary law as well as the Law of the Sea of international commerce, technology transfer, and foreign transfer. (F)

2522. International Human Rights: Problems of Law and Policy. (2). The problems studied will be based on those set out in the Lillich-Newman coursebook, published in 1979. Account will be taken of significant developments since 1979 that include (1) markedly increasing use of international human rights laws in state and federal courts, (2) markedly more militant concerns in the United Nations and other transnational forums (SP)

2527. International Trade: Legal Structure, Strategies & Current Conflicts. (2). Selected aspects of the private law of international commerce the sales contract, the shipping contract, and sales financing), as well as some international and national basic laws aspects (GATT and UN organizational activity in commerce; US law on antidumping, countervailing duties, adjustment assistance and export subsidies). (F,SP)

2528. International Tax. (2). (F)

2531. International Tax Seminar. (2). Semester Prerequisites: 250A-250B. A study of the tax problems of international transfers, including those faced by the U.S. citizens and residents doing business in foreign countries, with emphasis on the U.S. taxation of income earned by U.S. taxpayers in foreign countries. (SP)

2538. Judges: Biographies & Opinions. (2). (SP)


2542A-2542B. Jurisprudence and Social Policy Seminar. (3,3). A two-semester seminar required for all students in the Graduate Program in Jurisprudence and Social Policy. Through intensive reading and discussion the seminar will establish the scope of the field of jurisprudence and social policy for degree candidates, will provide them with a common core of theoretical and empirical materials and will acquaint them with options for specialization. The course will be held every two weeks. Enrollment is limited to students in the Jurisprudence and

2543A. Jap: Readings in the Literature Seminar. (3). (F)

2543B. Jap: Readings in the Literature Seminar. (3). New Course since Spring 1983. (SP)

2551. Labor Law. (3). The law governing relations between employer and employee in the US and the impact of state and federal legislation in the area of collective agreement, the strike, the boycott, and picketing. (F)

2552. Labor Law. (4). New Course since Spring 1983. (SP)

2556. Land Financing Transactions, Seminar On. (2). Semester Prerequisites: 250A. Credit and grade to be awarded upon completion of the course. (F,SP)

2568. Legal Education Seminar. (2). An introduction to the methods of legal education and the aims of the legal profession, the nature of legal education, and the role of law in the academic marketplace. (F)

2577. Legal Education Seminar. (2). An examination of the purposes and content of legal education, and the role of law in the academic marketplace. (F)

2586. Legal Education Seminar. (2). An examination of the purposes and content of legal education, and the role of law in the academic marketplace. (F)

2588. Legal Education Seminar. (2). An examination of the purposes and content of legal education, and the role of law in the academic marketplace. (F)
2571. Land Use Law and Real Estate Development. (2). New Course since Spring 1983. (SP)
2572. Land Use Planning and Control. (3). Federal, state, local efforts to influence and manage land use. Topics will include land development planning and zoning; development incentives and disincentives through taxation; state and local regulation of land; disposition of public lands; public limits on private technical issues; issues of federalism and constitutional problems. (F)
2573. Law and Social Policy. (3). New Course since Spring 1983. (SP)
2575. Legal Accounting. (2). (F,SP)
258. Legal History, English. (2). A topical introduction to legal development, both common law and equity, in our society. Among the issues considered will be the technique of prospective overruling, alternative modes of making rules and settling disputes in our society. (F,SP)
260. Legal History, English. (3). (F)
261. Legislative and Administrative Processes. (3). An introduction to non-judicial law-making institutions, especially the legislative control of development. One person, one vote, the function and regulation of lobbying, legislative organization and the budgetary process, public record and open meeting laws, conflict of interest restrictions, and executive and legislative control of administrative agencies. Primarily federal and California materials with occasional reference to local government. (F,SP)
264. Litigation of White Collar Crime Seminar. (2). New Course since Spring 1983. (SP)
265. Marx and Law. (3). An inquiry into the Marxist approach to state and law in the capitalist order, and its meaning for legal practice. Specific attention to problems of corporate capitalism (The New Industrial State). Topics include: Marx's and Lenin's original analyses; the problem of the State in contemporary Marxism; classical Liberalism and the dialectics of legal repression, changing function and control of capitalist law as command law (Marx), law as technique (Ellul). Critique of American reform legal thinking. (F)
264. Media Law. (2). The law of mass media. Topics include the theories underlying the First Amendment's protection of speech and press, legal problems of regulating, restrictions on the content of communications (e.g., political campaign laws, access theory, prior restraint, commercial speech), legal problems associated with business aspects of the mass media, and broadcast law. (F)
265. Native American Law. (3). (SP)
2651. Negotiations. (2). (F)
2653. Nuclear Non-Proliferation Seminar. (2). (F)
2655. Occupational Safety and Health. (2). (F)
2656. Oliver Wendell Holmes and American Law. (2). New Course since Spring 1983. (SP)
2657. Police Practices. (2). (F)
2658. Pre-Trial Litigation Practice: Civil. (2). Must be taken on a satisfactory/unsatisfactory basis. (F)
266. Practical Aspects of the Law. (3). This seminar for second and third year students is an introduction to the practice of law. Subjects covered include the techniques and strategies of pleading, settlement, discovery, motion practice, witness examination, and how to get paid for doing all these things. Other classes will cover business development and client relations; federal business development law, setting up an office, and the psychology of persuading a judge.
2575. Professional Responsibility. (2). A study of the legal profession and of many of the ethical decision-making problems which the lawyer is likely to encounter in all phases of practice. Emphasis is given to the origins and organization of the practice, to the right of the citizenry to competent counsel, duty to counsel, the limits of the adversary system and to the differing roles of the lawyer: counselor, negotiator, advocate, judge, and teacher. (F,SP)
2676. Professional Responsibility in a Practical Setting. (2). New Course since Spring 1983. (SP)
268. Property. (4). This is a required course. An introduction to the law of real property, including estates and other interests in land, real property marketing and conveyancing, land-use control, and landlord-tenant problems. (F,SP)
2681. Psychiatry and the Law. (2). Legal, philosophical and behavioral science aspects of criminal responsibility; historical development of the concept of mens rea; the psychology of punting, guilt, and guilt; principles of the criminal responsibility of the demented. (F,SP)
2683. Public Interest Practice. (3). A course on the use and limits of law as an instrument for social change. Legal problems arising from the representation of underrepresented, poor and minority group communities are emphasized. Selected issues are covered in the following fields: prison reform, housing, problems of the urban poor, rights of the elderly, rights of the disabled, children's rights, education, and community organization. The lectures and materials stress tactics and the practical methods to be employed. (SP)
2685. Punishment. (3). (F)
2687. Quantitative Methods in Law. (3). New Course since Spring 1983. (SP)
2686. Race & American Law. (2). (F)
2691. Religious Sources of American Law. (2). (F)
270. Remedies. (2). The function of awarding remedies, the varying types of remedies that can be awarded and their usefulness, and the extent to which legal rules established by legislatures are increasingly regulatory remedies. The types of remedies which will be discussed include money damages, including expectation damages, and specific performance. These remedies will be discussed in the context of the substantive areas of torts, contract, and property. (F,SP)
2701. Remedies. (3). (F,SP)
271. Roman Law. (2). Introductory course on Roman law. Survey of history and sources, persons, property, obligations succession, and a few general topics. (F)
2713. The Scope of Legitimate Power: the Boundaries of Criminal Law. (2). Criminal law is the area of the most brutal confrontation between the individual and the state. It regulates the imposition of the formidable power of the state over the individual and the state. To explore the contours of the criminal law is therefore equivalent to investigating the scope of the use of legitimate power by the state. Some fundamental and interrelated questions that arise in attempting to delineate the boundaries of criminal law: What is the basis of the state's right to punish? Is it (SP)
2715. Secured Land Transactions. (3). Real property secured transactions, including the procedural, remedial, and economic attributes of various security devices; deficiency and substitution problems; priority; redemption; transfer; and allocation of ultimate loss. (F)
272. Securities Regulation. (2). (Semester Prerequisites: 211-3A-211-3B, 211-5B, or 211-6. The regulation of the distribution of securities under the Securities Act of 1933 and under state Blue Sky laws. Some attention also given to the development of the international capital markets and the regulation of the distribution of new issues of securities in other countries. (F)
272B. Securities Regulation. (2). Semester Prerequisites: 211-3A-211-3B, 211-5B, or 211-6. 272B is not a prerequisite. The regulation of trading of securities on stock exchanges and the inter-related market; broker-dealer regulations; insider trading under state and federal law; civil liabilities under federal and state securities acts; and regulation of investment companies and investment advisers. (SP)
273. Sex-Based Discrimination. (3). The legal issues raised by legal and social discrimination between men and women and explores a range of potential remedies including those drawn from state and federal constitutional law, statutory enactments, and common law doctrines. Subjects include gender discrimination in family law, employment law (including Title VII, the Equal Pay Act, and Executive orders), educational opportunity, and criminal law. (F)
2737. Social Welfare Legislation. (3). New Course since Spring 1983. The study of American income maintenance-social insurance (Social Security and unemployment compensation) and public assistance (welfare), public policy, statutory and constitutional analysis, and legal procedures will be covered. (SP)
2745A-2745B. Socio-Legal Research Methods Seminar. (2,2).
275. State and Local Government. (3). Power allocation among governmental units: between state and local government, among local governmental units, methods of governmental restructuring in metropolitan areas. Limitations to make government responsive to the people. Operational problems: personnel, financing, contracting, torts, and resource allocation. (F)
276. State and Local Taxation. (3). A study of substantive provisions and procedure relating to property tax, and corporation and personal income taxes, use and severance taxes, inheritance and gift taxes, and other local taxes. Attention given to interstate tax problems, such as allocation of income among the states, jurisdiction to tax, and commerce clause restrictions. (F)
281. Tax Policy Seminar. (2). Semester Prerequisites: 250,4. A research, selected readings, and paper discussion seminar examining important issues of federal and state tax policy and theory. Illustrative topics include: consumption vs. income taxation; indexing for inflation; integrating the corporate and personal income taxes; inheritance and gift taxes; incentives for saving, work, and investment; tradeoffs among equity, social policy, and efficiency. (F)
286. Trial Practice. (1). One-semester series of lectures and demonstrations providing a general introduction to trial practice, procedures, and strategies. (F)
287. Unfair Competition. (3). This course deals with a wide range of legal materials that influence competitive behavior. Subject to time constraints, the subjects covered will include statutory restrictions on entry; misleading practices (false advertising; disparagement); predatory practices (interference with business relations; appropriation of trade secrets); trade marks; patents; regulation of franchise relationships. (F)
2874. Urban Development Law Seminar. (3). Research seminar examining legal problems relating to cities. Begins with historical survey of federal housing, urban renewal, and community development programs; continues with student topic presentations. (F)
2878. Trial Practice. (3,2). Credit and grade to be awarded upon completion of the sequence. Preparation and presentation of a civil case for jury trial, including discovery and depositions, law and motion, pre-trial conference and presiding judge, and the filing of all appropriate pleadings. A one-year course involving lectures in the fall and practice trials in the spring. (F,SP)
288. Water Resources Law. (3). Water taken as research and examine allocation, conservation, pollution and waste discharge and its economic consequences; alternative methods of promoting efficiency; intergovernmental conflicts; and decision-making concepts for public investment in resource development and for distribution. (SP)
The College of Letters and Science offers the undergraduate student a variety of programs leading to the Bachelor of Arts degree in four academic years of full-time study.

For the student, the first two years are a time of exploration, experimentation, and decision. The last two years are a period of confirmation and of the acquisition and refinement of specialized knowledge. They are usually in connection with a department. The College's departments are devoted to instruction and research in the several academic subjects. Each department faculty members share the role of educator between the practicing and the academic world. (F,SP)

298. Legal Dissertation. (8-13). Must be taken on a satisfactory/unsatisfactory basis. Open to third-year students who have completed a qualifying seminar in the second year. Research and writing looking toward a major piece of legal scholarship under the supervision of an individual faculty member pursuant to faculty consent. (F,SP)

297. Self-Tutorial Seminar. (1-4). Must be taken on a satisfactory/unsatisfactory basis. Full-time clerkships for one semester with Justices of the California Supreme Court, California Courts of Appeal, and with judges of California Superior Courts and U.S. Circuit and District Courts. (F,SP)

296. Legal Externship. (1-10). Must be taken on a satisfactory/unsatisfactory basis. Open to students who have completed the first-year curriculum. A program to enable individual self-instruction, primarily in subject matter areas not covered by the regular curriculum. Requires the consent of a member of the faculty to serve as supervisor and approval of the Dean. (F,SP)

295. Group Research Project. (1-4). Must be taken on a satisfactory/unsatisfactory basis. Open to students who have completed the first-year curriculum. A program to enable groups of students to study or research special topics in a major piece of legal scholarship under the supervision of a member of the facuity with a goal of producing an original paper to enable individual study and research in depth of selected topics under the supervision of a member of individual faculty member pursuant to faculty consent. (F,SP)

294. Judicial Externship. (1-10). Must be taken on a satisfactory/unsatisfactory basis. Full-time clerkships for one semester with Justices of the California Supreme Court, California Courts of Appeal, and with judges of California Superior Courts and U.S. Circuit and District Courts. (F,SP)

293. Clinical Semester. (5-10). Must be taken on a satisfactory/unsatisfactory basis. Students placed in selected law offices (e.g., law firms, governmental agencies, legal staffs of various programs). Students engage in ongoing work of the office under the supervision of an attorney. Interested to share the role of educator between the practicing and the academic world. (F,SP)

292. Legal Externship. (1-10). Must be taken on a satisfactory/unsatisfactory basis. Open to students who have completed the first-year curriculum. A program to enable individual self-instruction, primarily in subject matter areas not covered by the regular curriculum. Requires the consent of a member of the faculty to serve as supervisor and approval of the Dean. (F,SP)

291. Clinical Semester. (5-10). Must be taken on a satisfactory/unsatisfactory basis. Students placed in selected law offices (e.g., law firms, governmental agencies, legal staffs of various programs). Students engage in ongoing work of the office under the supervision of an attorney. Interested to share the role of educator between the practicing and the academic world. (F,SP)

290. Individual Research Project. (1-4). Must be taken on a satisfactory/unsatisfactory basis. Open to students who have completed the first-year curriculum. A program to enable individual study and research in depth of selected topics under the supervision of a member of the faculty, including producing an original paper or report. Requires the consent of a member of the faculty to serve as supervisor and approval of the Dean. (F,SP)

289A. Research-Individual Project. (1-8). Credit and grade to be awarded upon completion of the sequence. (F)

289B. Research-Individual Project. (1-8). Credit and grade to be awarded upon completion of the sequence. (SP)

289. Jsp Research Assistant. (1-10). Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

601. Individual Study, Jsp Masters. (1-10). Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

602. Individual Study, Jsp Doctorate. (1-10). Must be taken on a satisfactory/unsatisfactory basis. (F,SP)
breadth requirement under the quarter system. (4) Six Courses (minimum total of 16 semester units) Outside the Field of the Student's Major. The student must follow specific College guidelines in the selection of courses. The student's completion may be spread over the four years of college attendance. The fields of knowledge are defined as the humanities, the natural sciences, and the social sciences. See the Announcement of the College of Letters and Science for details.

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 over 60 departmental major programs, ranging from art to zoology. In addition, there are group majors in Asian studies, development studies, Dutch studies, environmental sciences, Ethnic studies, film, genetics, Latin American studies, legal studies, mass communications, Middle Eastern studies, neurobiology, political economy of industrial societies, religious studies, social welfare, and women's studies. There are also field majors in the humanities, social sciences, and social movements. Moreover, a student who has completed at least 60 semester units and at least one semester of enrollment at the Berkeley campus, and whose grade point average has been at least 3.0 overall, may, with the permission of the Dean and support and supervision of a College faculty member and a second faculty member who acts as a primary advisor and the leader of the individual major thesis, pursue an individual major designed to satisfy specific academic goals. Students currently enrolled in individual majors have developed major programs ranging from unit planning policy to the history of physics. Thus the options available to students outside traditional disciplines are many and varied.

Special Programs

The Division of Special Programs develops and administers innovative and interdisciplinary courses and programs in the College of Letters and Science that do not belong to a single department. Currently, it offers individual majors, the two majors in the humanities and the social sciences and the group majors in environmental sciences, film, genetics, mass communications, Middle Eastern studies, neurobiology, political economy of industrial societies, religious studies, social welfare, and women's studies. In addition to these majors, it offers a special interdisciplinary course in Western Civilization. For complete descriptions of the Special Programs majors and major concentrations, please see the entries listed alphabetically by major.

The Division of Freshman and Sophomore Studies

The Division of Freshman and Sophomore Studies is designed to introduce lower division students to academic life by bringing them into contact with faculty, college staff, and fellow students as early as possible in their first term of attendance in the College. The Division has revived and strengthened a program of lower division seminars and developed a system of faculty and student peer advising. Information about the Division and its programs may be obtained from the Division Office, 257 Campbell Hall, or by calling 642-8363.

Afro-American Studies

| Department Office, 3335 Dwinelle Hall, 642-7084 |
| Professors: Walter W. Banks, III, Ed.D. Reginald Jones, Ph.D. |
| Associate Professors: Barbara Christian, Ph.D. Erskine Peters, Ph.D. Margaret Wilson, Ph.D. |
| Assistant Professors: Charles Henry, Ph.D. Merry Luttrell, Ph.D. |

Overview of Curriculum

The curriculum is intended to offer students, both majors and non-majors, a balanced variety of courses in the humanities and social sciences about major contributions and issues. There are six basic courses. 1A and 1B are freshman composition courses which use Afro-American literature and issues in the black community. 1A and 1B courses offer students a general background in African History and Culture from pre-colonial times to the present. The 5A and 5B courses offer students a general multi-disciplinary background in Afro-American life and culture from a humanities and social science perspective.

The social science portion of the curriculum is built on a study of specific methodological and interdisciplinary approaches to Afro-American life (100-119), a historically oriented study of black social institutions (120-129) and a more in-depth study of social science disciplines from an Afro-American perspective (130-139).

The humanities portion of the curriculum is divided into two sections: the performing arts (140-149) and the literature and philosophical thought of America and Africa (150-159). In the literature sections, survey courses, genre courses, and courses on pervasive themes in Afro-American literature are offered.

The 160 series of the curriculum is especially devoted to the application of social policy as it affects contemporary African Americans. The 160 series is especially important to students who are preparing for professions in Social Welfare, Mental Health, etc. The 160 series is focused on individual and group practice in social work with the goal of improving the quality of life for African Americans. In each of the number series, the course ending with 9, (e.g., 159) is designed for Selected Topics. This arrangement allows teachers and students to investigate a specific topic of importance, which may not be essential to the curriculum and may not be permanently included in it.

Requirements for Major: Social Science Concentration

I. Lower Division.
A. AAS 44-45B Africa: History and Culture
B. AAS 5A-5B Black Life and Culture in the United States

II. Upper Division.
A. AAS 101A-101B Research Methods in Afro-American Studies
B. AAS 120 Introduction to Black Social Institutions

C. Any one of the following comparative courses:
   (1) AAS 111: Race, Class and Gender: Comparative Social Change in the United States
   (2) AAS 112A: Political Economic Development in the Third World
   (3) AAS 113: Race, Ideology and Economics: A Comparative Approach

D. Any three of the following topical or discipline-oriented courses:
   (1) AAS 110A-110B: Afro-American History (formerly 110)
   (2) AAS 121: Black Political Life
   (3) AAS 122: Black Family
   (4) AAS 123: Black Church
   (5) AAS 126: Education and Inequality
   (6) AAS 127: Psychology and Black People
   (7) AAS 137: Urban Afro-America

E. History 125A-125B: History of Black People and Race Relations in the U.S.
F. History 125A-125B: History of Black People and Race Relations in the U.S.

Requirements for Major: Humanities Concentration

I. Lower Division.
A. AAS 4A-4B Africa: History and Culture
B. AAS 5A and 5B: Black Life and Culture in the United States

II. Upper Division.
A. History 125A-125B: History of Black People and Race Relations in the U.S.
B. Any two of the following: (1) AAS 150A: Survey of Black American Literature 1746-1920; (2) AAS 150B: Survey of Black American Literature 1920-Present; (3) AAS 151: Black American Plays 1859-1965.
C. Any one of the following sequence: (1) AAS 152A: Black American Essays; The Nature and Tradition (formerly 152C); (2) AAS 152B: Black American Essays; The Culture and Philosophy of African American Literature (formerly 152D); (3) AAS 152C: Black American Dramatic Literature; Forms and Styles; (4) AAS 152D: Black American Short Stories; (5) AAS 152E: Black American Novels and Narratives.
D. Any one of the following area courses: (1) AAS 153A: History of Black People Around the World Through Literature; (2) AAS 155: Literature of the Caribbean (formerly 153); (3) AAS 156: Literature of Black Africa (formerly 158).
E. Any one of the following: (1) AAS 123: Afro-American Religion: Historical Perspectives; (2) AAS 144A: Religion and Culture in Black America; (3) AAS 131: Caribbean Societies and Cultures.
F. Any one of the following area courses: (1) AAS 141: Black Art in the New World (formerly 163); (2) Music 130: Afro-American Music.

G. Majors must complete one of the Afro-American Studies Literature courses with a limited or specialized focus, i.e., concentrating on a basic theme, or a study of not more than two authors simultaneously.

Honor Program. To be eligible for admission to the honors program, a student must have completed at least two semesters at UC Berkeley and have attained senior standing with a GPA of 3.0 or higher in Afro-American Studies. Students in the program must complete two consecutive semesters of Afro-American Studies 192A-192B under the supervision of a faculty member, culminating in the completion of a senior honors thesis or equivalent project.

Lower Division Courses

1A. Freshman Composition. (4) Formerly 1A. Three hours of lecture, plus one hour discussion per week. Emphasis on social context, class, and other forms of writing. The assignments will focus on themes and issues in Afro-American life and culture. (F,SP)

1B. Freshman Composition. (4) Formerly 1B. Three hours of lecture, plus one hour discussion per week. Emphasis on social context, class, and other forms of writing. The assignments will focus on themes and issues in Afro-American life and culture. (F,SP)

4A. History and Culture. (4) Formerly 4A. Three hours of lecture, plus one hour discussion per week. Emphasis on social context, class, and other forms of writing. The assignments will focus on themes and issues in Afro-American life and culture. (F,SP)

4B. History and Culture. (4) Formerly 4B. Three hours of lecture, plus one hour discussion per week. Emphasis on social context, class, and other forms of writing. The assignments will focus on themes and issues in Afro-American life and culture. (F,SP)

5A. Black Life and Culture in the United States. (4) Formerly 5A. Three hours of lecture, plus one hour discussion per week. Emphasis on social context, class, and other forms of writing. The assignments will focus on themes and issues in Afro-American life and culture. (F,SP)

5B. Black Life and Culture in the United States. (4) Formerly 5B. Three hours of lecture, plus one hour discussion per week. Emphasis on social context, class, and other forms of writing. The assignments will focus on themes and issues in Afro-American life and culture. (F,SP)

20. Introduction to Afro-American Social Institutions. (3) Formerly 20. Three hours of lecture per week. Emphasis on the benefits of Afro-American, an interdisciplinary approach, designed to help students understand the forces and ideas that are influencing the individual and collective black experience. (SP)

21. African American Studies. (3) Formerly 21. Three hours of lecture per week. Emphasis on the benefits of Afro-American, an interdisciplinary approach, designed to help students understand the forces and ideas that are influencing the individual and collective black experience. (SP)
39. Seminar for Lower Division Students. (4). New Course since Spring 1983. Course may be repeated once for credit with different instructor. One 3-hour lecture and one hour conference per week. Semester Prerequisites: Consent of instructor. This course in Afro-American Studies designed to introduce beginning undergraduates to the methods and approaches of the discipline. Work in the course will typically include class reports and a research paper. (F,SP)

Upper Division Courses

101A. Research Methods for Afro-American Studies. (3). Formerly 101A. Three hours of lecture per week. An introduction to the various aspects of social science research methods, their application and misapplication, using the study of race relations in the U.S.A. as a backdrop. A primary, but not exclusive, focus on qualitative methods. Five mini-research projects. (F)

101B. Research Methods for Afro-American Studies. (3). Formerly 101B. Three hours of lecture per week. Semester Prerequisites: 101A or introductory statistics. Introduction to quantitative research methods with a special emphasis on survey research techniques and procedures. Introduction to punchcard data processing using S.P.S.S. computer package program. (SP)

109. Special Topics: The Sociology of Communal Politics. (3). Formerly 139. Course may be repeated for credit. This course examines the social and political conditions under which communal groups become politically mobilized. A comparative emphasis is on socio-political organization in industrial vs. non-industrial societies. Even-numbered years.

110A. Afro-American Economic History. (3). Formerly 110A. Three hours lecture per week. Semester Prerequisites: Afro-American history and/or introductory economic history are strongly recommended. Emphasis on issues influencing the development of a black economic base in the United States from 1619-1918. Even-numbered years.

110B. Afro-American Economic History. (3). Formerly 110B. Three hours lecture per week. Semester Prerequisites: Afro-American history and/or introductory economics are strongly recommended. Emphasis on issues influencing the development of a black economic base in the United States from 1819 to present. (SP) Odd-numbered years.

111. Race, Class, and Gender in the United States. (3). Formerly 111. Three hours of lecture per week. Semester Prerequisites: Reading and composition requirement. Emphasis on social history and comparative analysis of race, class, and gender relations in American society. Examines both similarities and differences, and highlights gender politics. (F)

112A. Political and Economic Development in the Third World. (3). Formerly 112A. Three hours lecture per week. An examination of the structural and actual manifestations 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) Even-numbered years.

112B. Political and Economic Development in the Third World. (3). Formerly 112B. Three hours lecture per week. A critical appraisal of the theoretically based policies employed by Third World nations in their attempts at transition and development. Development and economic systems and an examination of the international and intra-national impediments to Third World development. The focus will be on actual examples that represent the diversity of developing countries. (SP) Odd-numbered years.

113. Race, Ideology, and Economics in Africa and Afro-America. (3). Formerly 113. Three hours of lecture per week. Semester Prerequisites: Lower division course in economics. Emphasis on the relationship of the rise of racism and the rehabilitation ideology in the eighteenth and nineteenth century colonial and slave economies in Africa and the New World; including quantitative analysis. (SP) Odd-numbered years.

114. African Liberation Movements. (3). Formerly 114. Three hours of lecture per week. Semester Prerequisites: 4 or African history. An overview of the philosophies, strategies, and tactics of liberation movements in selected areas of Africa; with additional emphasis in political systems. (F)

115. Pan-Africanism: Past and Present. (3). Formerly 115. Three hours of lecture per week. Semester Prerequisites: 4 or African history. Examination of the concept of Pan-Africanism, its development and impact. Development of Pan-Africanism may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Determined by offering. (SP)

121. Black Political Life in the United States. (3). Formerly 121. Three hours of lecture per week. Semester Prerequisites: 5B or 120 or History 125A-125B. Quarter Prerequisites: 5B or 120 or History 169A-169B. Analysis of the theoretical and historical development of Afro-Americans' political forms and expression. Examination of local, state and federal political processes and activities, and the development of black political ideologies, organizations, and movements. (F)

122. Black Families in American Society. (3). Formerly 122. Three hours of lecture per week. Semester Prerequisites: 5B or 120 or introductory course in sociology. Issues related to history and functions of families in the development of black people in America from slavery to the present. (F)

123. African-American Religion: Historical Perspectives. (3). Formerly 123. Three hours of lecture per week. Survey of the religious life of Afro-Americans from the transmission of African religious beliefs during slavery to the present day Black church. Topics include: religion in the slave community, the rise of independent black denominations, the role of demography, and the church in political and social struggles. (F)

124. Black Community Organization. (3). Formerly 124. Three hours of lecture per week. Examines the historical conditions responsible for structuring black community behavior. A focus on the spatial and social organization of the black masses with some attention to current strategies of economic and political development. (F) Even-numbered years.

125. Law and the Black Community in the United States. (3). Formerly 125. Three hours of lecture per week. Semester Prerequisites: 5B or 120 or History 125A-125B. Quarter Prerequisites: 5B or 120 or History 169A-169B. Examination of the legal decisions and processes that have affected the status of blacks in America. Attention given to the criminal process, including the police, district attorney, trial courts, and Grand Jury. (F)

126. Education and Inequality in American Society. (3). Formerly 126. Three hours of lecture per week. Examination of the evolution and function of public schools as an American institution. Focus on the policies and the practices which have affected the educational experiences of black Americans and other racial minorities and the relationship between education and inequality. (SP)

127. Topics in Black Human Development. (2). Formerly 127. One two-hour seminar per week. Special topics in black human development. (F,SP)

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

132. Psychology and Black People: Current Issues. (3). Formerly 132. Three hours of lecture per week. Semester Prerequisites: 5B or 101A or upper division course in psychology. Analysis of theoretical and empirical research and theory pertaining to black people. Emphasis on understanding the concepts, methods, and conclusions regarding Afro-Americans offered by American psychology from its origins to the present. (SP)

133. Black Children and Youth: Psychological Development. (3). Formerly 133. Three hours of lecture per week. Semester Prerequisites: 132 or upper division course in psychology. Quarter Prerequisites: 132A-132B. Three hours of lecture per week. Semester Prerequisites: 5A or 5B or introductory course in linguistics. Considerations of the structure and development of Afro-American linguistic forms, with emphasis on the historical, descriptive, and comparative dimensions; with special attention given to philosophical and educational innovations of “Black English.” (SP)

135. Caribbean Ethnohistory. (3). Formerly 135. Three hours of lecture per week. An ecological study of Caribbean slave quarters and maroon communities. Examination of the impact of the plantation system on the formation and functioning of slave and maroon institutions. Categorization process and development of Afro-Caribbean creole cultures. (F)

136. Health, Medicine, and Culture. (3). New Course since Spring 1983. Three hours of lecture per week... Examination of theoretical issues in medical anthropology. Comparative analysis of the evolution of Afro-American health care. Emphasis on ethno-medicine, ethnopsychiatry, ethnopharmacology, ethnicity, and medical care. (F)

137. Urban Afro-America. (3). New Course since Spring 1983. One three-hour seminar per week. Examination of theoretical issues in urban anthropology. Comparative analysis of the ecology and social structure of Caribbean urban communities with special emphasis on urban history, social class, urban marginality, urban ethnicity, and urban cultures. (F)

138. Black Nationalism. (3). Formerly 138. Three hours of lecture per week. Semester Prerequisites: 5B. Examines the concept of Black Nationalism and its historical and intellectual development. Special attention will be given to the role of black religion and the attempt to develop "black socialism." (SP)

139. Selected Topics of Afro-American Social Organization and Institutions. (3). Formerly 139. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Determined by offering. (F,SP)

140. African Dance and Rhythms. (3). Formerly 140. Three one-half hour lectures and one two-hour seminar per week. Study of the dance and rhythms of Africa and the role of dance in African culture. Performance and demonstration required. (SP)

141. Black Art in New World. (3). Formerly 141. Three hours of lecture per week. Study of the visual art forms developed by black people in the New World with special attention given to African influences. (SP)

142A. Third World Cinema. (3). Formerly 142A. Two 1½-hour lectures, plus two hours viewing/discussion per week. Semester 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, with particular emphasis given to major works from Asia, Africa, and Latin America. Films shown in the evening from abroad are presented for critical assessment. (F)

142B. Black Americans in the World of Cinema. (3). Formerly 142B. Three hours of lecture, plus two hours viewing/discussion per week. Semester Prerequisites: Reading and composition requirement. A critical, historical approach to the international cinema. Concentrates on American cinema, from 1915 to the present. The early work of Black film producers and directors, and the gradual shift from the boundaries of censorship to the development of a body of cinema of quality and excellence are examined. Film makers and artists are sometimes present for discussion. (SP)

142C. Scenario and Film Criticism. (3). Formerly 142C. Three hours of lecture and discussion per week. Semester Prerequisites: Completion of reading and—
position requirement, plus 142B or equivalent. The de-
volved. (BP) matter concemed with ethnic groups in the United States.

discussion per week. Semester Prerequisites: 5. An-
the early literary creations and thought of black America

150B. Black American Literature 1920 to Present.
(F) Emphasis on predominant writers, premises. (SP)

151. Black American Plays 1858-1955. (3). Formerly
plays by black playwrights which portray the experience of
black people in America. Emphasis on predominant themes, structural tendencies, socio-historical context. (F)

152A. Black American Essays: The Nature and Tra-
dition. (3). Formerly 152A. Three hours of lecture per week.

152B. Black American Poetry: The Nature and Tra-
dition. (3). Formerly 152B. Three hours of lecture per week.

152D. Black American Short Stories. (3). Formerly
152D. Three hours of lecture per week. Semester Pre-
requiF, requirement. Analysis and discussion of styles and
forms in poetry by Black Americans. (F)

152C. Black American Dramatic Literature: Forms and Styles. (3). Formerly 152C. Three hours of lecture or
laboratory sessions per week. Introduction to play anal-
ysis with emphasis on the primary theatrical form of styles chosen by black playwrights and the thematic conten-
tions of those choices. Plays will be analyzed both as literature and as theatrical production; e.g., lab-
ombre will include attendance at plays and per-
formances of plays. (SP)

153A. Images of Black Women in Literature: Slavery
before the 20TH Century. (3). Formerly 153A. Three hours lecture or two discussion sessions per week. Semester Pre-
quisites: Reading and composition requirement. Analysis of the cultural and social assumptions that contribute to the various images of the black women in Western literature and black American writing. (F)

153B. Contemporary Images of Black Women in Literature. (4). Formerly 153B. Three hours of lecture and one hour discussion per week. Semester Pre-
quites: Reading and composition requirement. Analysis of the cultural and social assumptions and dynamics that shape the image of the black woman in contemporary Western black American writing. (SP)

154. A History of Black People Around the World Through Literature. (3). Formerly 154. Three hours of lecture per week. Semester Prerequisites: Reading and composition requirement. A historical survey of inter-
lectual, social, spiritual, and cultural concerns that de-
lineate a common bond between black people throughout the world. Selections from stories, novels, epics, essays, etc. (SP)

155. Literature of the Caribbean: Significant Themes. (3). Formerly 155. Three hours of lecture per week.
Semester Prerequisites: Reading and composition re-
quirement. A survey of literary works produced by West Indian authors. Attention will be given to their aesthetic interests and achievements as well as to their general thematic concerns. (SP)

156. Literature of Black Africa: Significant Themes. (3). Formerly 156. Three hours of lecture per week.
Semester Prerequisites: Reading and composition re-
quirement. A survey of literary works produced by native authors of Africa. Attention will be given to their aesthetic interests and achievements as well as to their general thematic concerns. (F)

157. Creative Writing. (3). Formerly 157. Course may be repeated once for credit. Three hours of lecture per week. Semester Prerequisites: Reading and composition requirement and consent of instructor: Provides intensive study of the craft of writing in relation to the various genres. Course changes frequently based upon a specific genre. (F)

159. Special Topics in Black Literature. (3). Formerly
159. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Reading and composition requirement, plus those set by instructor. Topic will vary from year to year. (F, SP)

160. Program Evaluation and Research in the Black Community. (3). Formerly 160. Three hours of lecture per week, plus field evaluation. Semester Prerequisites: 101A or equivalent introduction to social science research methods. Introduction to methods of evaluating social programs and policies that directly affect the community. Topics include evaluation research design, relationships among advocacy, policy, and evaluation; action-oriented research. (SP)

161. Health Status and Health Delivery Systems and Minority Community. (3). Formerly 161. Three hours of lecture per week. Semester Prerequisites: 160 or consent of instructor. Examines the relationship between health delivery systems and the health status of black Americans. Emphasis on programs and practices that particularly affect black and other minority communities. (F)

162. Mental Health in the Black Community. (3).
Formerly 162. Three hours of lecture per week. Semester Prerequisites: 160 or consent of instructor. A comprehensive analysis of the concept of "mental health" as it relates to the black American. Emphasis on programs and practices that particularly affect black and other minority communities. (F)

192A-192B. Senior Thesis. (3,3). New Course since
1983. Three hours tutorial per semester. Semester Prerequisites: Senior standing and two-thirds of the courses required in the major. Three units awarded for each semester's work. For departmental credit, student must attend a C grade or better in each must of the sequence. Applications and details at Departmental Advisor's Office. This sequence is required for the major. (F,SP)

197. Field Study in Afro-American Life. (1-4). Formerly
197. Must be taken on a passed/not passed basis. Supervised field work in off-campus organizations. Regular interaction with both faculty sponsor and written reports required. (F,SP)

(1-4). Formerly 198. Must be taken on a passed/not passed basis. Supervised research on a specific topic. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Must be taken on a passed/not passed basis. Enrollment is restricted by regulations listed in the General Catalog. (F,SP)
examinations, both written and oral, which test competence in the major and minor subjects. Upon successful completion of these requirements and when advanced to candidacy, the student proceeds to research and writing of a dissertation under the guidance of a three-person committee. The dissertation must be approved by the committee and be in a final form before the student is recommended for the Ph.D. degree.

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

Anthropology

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James Deetz, Ph.D.
George Fenollosa, Ph.D.
Phyllis Dolinhow, Ph.D.
Alice Jaffe, Ph.D.

Ph.D. candidates are normally required to complete the dissertation under the supervision of a three-person committee in charge of research and dissertation. The dissertation customarily requires an additional year. On completion of the research and approval of the dissertation by the committee, the student is awarded the Ph.D. degree.

Courses and Seminars

Courses and seminars are listed below. Instructor listings, seminar offerings, course descriptions, and prerequisites are available in the Berkeley Guide.

Lower Division Courses

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

2. Introduction to Archaeology. (4.) Formerly 2. Three hours of lecture and one hour of section per week. Prehistoric and cultural growth. (F,SP)

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

11A-11B. The Human Condition and its Origin. (4/4). Three hours of lecture and two hours of laboratory per week. The human condition and how we got to be that way. A two-semester investigation into ourselves and our environment integrating archaeology and physical, social, cultural, and linguistic anthropology plus general evolutionary biology. (F,SP)

15. Seminar in Physical Anthropology. (1-3). Formerly 15. Seminar. Semester Prerequisites: Consent of instructor. Limited to freshmen. Topics in physical anthropology, with an emphasis on integrated and comparative human adaptation, the fossil record, genetic components of human behavior. (F)

16. Seminar in Archaeology. (1-3). Semester Prerequisites: Consent of instructor. Limited to freshmen. Topics in anthropology such as the structure and dynamics of human cultures, institutions, and societies. (F,SP)

17. Seminar in Social and Cultural Anthropology. (2-3). Semester Prerequisites: Consent of instructor. Limited to freshmen. Topics in social and cultural anthropology such as the structure and dynamics of human cultures, institutions, and societies. (F,SP)

18. Seminar in Special Topics in Anthropology. (1-3). New Course since Spring 1983. Course may be repeated for credit. Semester Prerequisites: Consent of instructor. Limited to freshmen. Special topics in anthropology with an emphasis on integrated and interdisciplinary research. (F,SP)

71. Pros. Seminar in Physical Anthropology. (3). New Course since Spring 1983. One hour of lecture, one hour of seminar and one hour of section per week. Semester Prerequisites: 1 or 11A-11B. Quarter Prerequisites: 1. Physical and behavioral adaptations of humans and their prehistoric and living relatives.
72. Proseminar in Archaeology. (3), New Course since Spring 1983. One hour of lecture, one hour of seminar and one hour of section per week. Semester Prerequisites: 11A-11B. Quarter Prerequisites: 2. Prehistory and cultural growth.

73. Proseminor in Social and Cultural Anthropology. (3). New Course since Spring 1983. One hour of lecture, one hour of seminar and one hour of section per week. Semester Prerequisites: 3 or 11A-11B. Quarter Prerequisites: 1. The structure and dynamics of human culture and social institutions. (SP)

74. Proseminor in Anthropological Topics. (3), New Course since Spring 1983. Course may be repeated for credit. One hour of lecture, one hour of seminar and one hour of section per week. Semester Prerequisites: Consent of instructor. Topics in anthropological theory and method. (F)

Physical Anthropology Courses

Upper Division Courses

100. Human Paleontology. (4), Formerly 100. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 1 or 11A-11B. Quarter Prerequisites: 1 or equivalent. Origin and relationships of the extinct forms of mankind. (SP)

101. Human Variation in an Evolutionary Perspective. (4), Formerly 102. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 1 or 11A-11B. Quarter Prerequisites: 1 or equivalent. Human variation in both a racial and non-racial context; basic genetics (both molecular and populational); theories of racial origins, selective bases of human variation. (SP)

102L. Physical Anthropology Laboratory, (1-2). Formerly 104L. Three to six hours of laboratory per week. Semester Prerequisites: 100 or 101 or 105. Quarter Prerequisites: 100 or 102 or 108. Descriptive and analytical techniques and methods applicable to the study of intra- and inter-group resemblances and differences. (SP)

103. Introduction to Human Osteology. (4), Formerly 105. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 1, 11A-11B, or consent of instructor. Quarter Prerequisites: 1. 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 osteological analysis. (F)

104L. Advanced Human Osteology Laboratory, (1-3). Formerly 106. Three to six hours of laboratory per week. Semester Prerequisites: 103 and consent of instructor. Quarter Prerequisites: 105 with an "A" on the final or an "A" in the course. Laboratory analysis of human remains including original research in paleodemography, paleopathology, metrical and metric analyses, dental anthropology, curation, and computerization of Lowie Museum skeletal collections. (SP)

105. Primate Evolution. (4), Formerly 108. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 1 or 11A-11B. Quarter Prerequisites: 1 or equivalent. A consideration of the major groups of primates with an emphasis on the evolution of behavior. (F)

106. Primate Social Behavior. (3), Formerly 110. Three hours of lecture and six hours of independent study. Quarter Prerequisites: 1 or equivalent. Survey of the social behavior and ecology of monkeys and apes; their relevance to the evolution of human behavior and social groups. (F)

107L. Primate Social Behavior Laboratory. (1-3). Formerly 110L. Course may be repeated for credit. One hour of lecture and three or more hours (depending upon units) of lab. Semester Prerequisites: 106. Quarter Prerequisites: 110. The student will be required to prepare a written laboratory report in consultation with the instructor. A laboratory manual will be provided and this will include an introduction to computer analysis of behavior. Additional units for credit may be arranged for computer analysis of data. (SP)

108. Problems in Primate Behavior and Ecology. (3), Formerly 111. Three hours of lecture per week. Quarter Prerequisites: 110. Special problems in primate behavior and ecology, such as ecological adaptation, socialization, and the biological bases of behavior. (SP)

109. Dietary Anthropology of Humans and Non-Human Primates. (3), New Course since Spring 1983. Three hours of lecture and one hour of field work per week. This course is focused on the dietary behavior of human and non-human primates, seeking insights into factors underlying patterns of food selection, diet breadth, food availabilities and unusual behaviors with respect to food. Gut anatomy, nutritional requirements and energetics are also considered. (SP)

110. Theory and Method in Physical Anthropology. (4), Formerly 117. Three hours of lecture and one hour of required section per week. Semester Prerequisites: 1 or 11A-11B. Quarter Prerequisites: 1. A course in physical anthropology. A unitary view of past history and current trends in the field of Physical Anthropology, emphasizing schools of thought, important figures and major areas of research. (SP)

Medical Anthropology Courses

115. Introduction to Medical Anthropology. (4), Formerly 153. Three hours of lecture and one hour of discussion or laboratory per week. Semester Prerequisites: 2 or 11A-11B, or consent of instructor. April: biological and cultural aspects of the definitions, causes, symptoms, and treatment of illness. Comparative study of medical systems, practitioners, and patients. (F)

116. Environmental Effects On Human Health and Disease. (4), Formerly 169A-169B. Three hours of lecture and one hour of discussion or laboratory per week. Semester Prerequisites: 1, 3, or 11A-11B, plus a course in general biology or consent of instructor. Quarter Prerequisites: 1 and 3, plus a course in general biology. Examination of major diseases related ecological constraints of diverse eco-systems and the biological response of human populations to these stresses: arctic, high-altitude, and zones, grasslands, humid tropics, urban.

117. Nutrition and Genetics in Medical Anthropology. (4), New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Consent of instructor. Comparative study of the interaction of diet, genetics, and evolutionary selection in human populations. (SP)

118. Socio-Psychological Aspects of Medical Anthropology. (4), New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Consent of instructor. Comparative study of mental illness and socially generated disease; psychiatric treatment, practitioners, and institutions. (SP)

Archaeology Courses

120. Culture Growth. (3), Formerly 120. Three hours of lecture per week. Archaeological theory and cultural processes illustrated by the origin and development of civilization in the old world and the new. (SP)

121. American Material Culture. (3), Formerly 121. Three hours of lecture per week. Semester Prerequisites: 2 or 11A-11B. Quarter Prerequisites: 2. Patterns in material culture as it reflects behavioral and psychological aspects of life in the 17th Century. Topics include architecture, domestic artifacts, mortuary art, foodways, and trash disposal. Euro-American, Afro-American, and Native-American examples are considered. (SP)

122. Archaeology of North America. (3), Formerly 122. Three hours of lecture per week. Semester Prerequisites: 2 or 11A-11B. Quarter Prerequisites: 2. The history of North American Indians; prehistoric cultural areas; relations with historic Indians. (SP)

123. Ancient Civilization of Mexico and Central America. (3), Formerly 123. Three hours of lecture per week. A study of the development, form, and history of pre-Columbian Indian civilization, surveying the achievements of the Maya, the Aztec, and their neighbors. (F)

124. The World of the Ancient Maya. (3), Formerly 124. Three hours of lecture per week. A comprehensive study of the development and culture history of the longest sustained tradition of aboriginal New World civilization. (SP)

125. Peoples of the Andes. (3), Formerly 125. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Inca culture and its antecedents; a survey from the earliest times to the present. (F)

126. Old World Prehistory: Africa. (3), Formerly 126A. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. (F)

127. Old World Prehistory: Eurasia. (3), Formerly 126B. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Archaeology of Europe and Asia. (F)

128. Special Topics in Old World Prehistory. (4), Formerly 128D. Course may be repeated for credit with consent of instructor. Three hours of lecture and one hour of discussion/demonstration per week. Semester Prerequisites: Consent of instructor. Prehistory of Australia, Iron age cultures of Africa, population growth, and environmental change in Old World Prehistory. (SP)

128L. Prehistory Laboratory. (3), Formerly 128L. Course may be repeated for credit with consent of instructor. Five hours of class meetings in laboratory per week. Semester Prerequisites: Consent of instructor. Laboratory in analyzing the materials of prehistory (e.g., stone tools, ceramics, and/or metals). (SP)

130. Invention and Technology. (3), Formerly 130. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: 2. A survey of the application of techniques deriving from the physical and life sciences to the interpretation of archaeological materials. (SP)

133. Field Course in Archaeological Method. (3), Formerly 133. Course may be repeated for credit. One hour of lecture and six hours of field work per week. Semester Prerequisites: 2 or 11A-11B, 136 (may be taken concurrently). Quarter Prerequisites: 2. Advanced field investigation and guidance in preparation of materials for publication. (SP)

134. Archaeological Method. (3), Formerly 134. Course may be repeated for credit with consent of instructor. One 3-hour laboratory and three hours of independent study per week. Semester Prerequisites: 136 or consent of instructor. Quarter Prerequisites: 133. Advanced field investigation and guidance in preparation of materials for publication. (SP)

135. Field Practice in Archaeology. (3), Formerly 135. Course may be repeated for credit. Forty hours of laboratory per week. Semester Prerequisites: Consent of instructor. Practical experience in the field study of archaeological sites and materials. Coverage may include reconnaissance, mapping, recording, and excavation. (SP)

136. History and Theory of Archaeology. (3), Formerly 136. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. An exploration of the historical background and philosophical premises of past and present anthropological theory with respect to its concepts of time and change. (SP)

Social and Cultural Anthropology Courses

140. The Nature of Culture: An Introduction to Cultural Anthropology. (3), Formerly 140. Three hours of lecture per week. Advanced level introduction to cultural anthropology for non-majors. Not open to students who have taken 3 or 11A-11B. (F)

141. Comparative Society. (4), Formerly 141. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 3, 11A-11B, or 140 or consent of instructor. Quarter Prerequisites: 3 or 140. Theories of social structure, functional inter-relationships of social institutions. Primary emphasis on non-Western societies. (F)
142. Kinship and Social Structure. (3). Formerly 142. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B. Comparison of kinship and family types throughout the world; techniques of kinship and structural analysis. (SP)

143. Plural Societies. (3). Formerly 143. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B. Quarter Prerequisites: 3. A critical examination of the theories of plural societies with ethnographic analysis of various parts of the world. (SP)

144. Social and Cultural Change. (3). Formerly 144. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B or consent of instructor. Quarter Prerequisites: 3. Theories of social and cultural change: social evolution, diffusion, acculturation, pattern dynamics, modernization, and change in economic development. (SP)

156. Politics and Anthropology. (3). Formerly 156. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B. Quarter Prerequisites: 3. Anthropological concepts relevant to the comparative analysis of political, economic, cultural, and social-political change. Particular attention will be given to the interrelations of culture and politics. (F)

157. Law and Anthropology. (3). Formerly 157. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B or consent of instructor. Quarter Prerequisites: 3. A critical examination of the comparative analysis of the forms and functions of law; methods and concepts relevant to the anthropological study of the forms and functions of law. (F)

158. Religion and Anthropology. (3). Formerly 158. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B or consent of instructor. Quarter Prerequisites: 3. A consideration of the interplay between religious beliefs and institutions and other aspects of culture. (SP)

159. Ethnic Interaction: Contemporary Issues. (4). New Course since Spring 1983. Three hours of lecture and one hour required section per week. This interdisciplinary course will focus on topics in ethnic groups, ethnicity and ethnic identity. The approaches considered will be those of contemporary history, political science, cultural anthropology and comparative psychology. Special topics in ethnic conflicts and accommodations. Readings required cover both literary and social science. (SP)

Folklore Courses

160. Forms of Folklore. (3). Formerly 159. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B or consent of instructor. Quarter Prerequisites: 3. Survey of the sociology, social and cultural factors in folklore behavior; comparative study of folkloric systems; cultural and social traditions. (SP)

161. Narrative Folklore. (3). Formerly 160. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B or consent of instructor. Quarter Prerequisites: 3. The study of folktales, myths, legends, and other forms of oral art; methods and theories of folklore. (SP)

162. Topics in Folklore. (3). Formerly 161C. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 3 or 11A-11B or consent of instructor. Quarter Prerequisites: 3. Special topics in folklore or ethnomusicology. (SP)

Linguistic Anthropology Courses

164. Man's View of Nature. (3). Formerly 164. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Comparative study of man's conceptual organization of his natural universe, especially his views of the biological environment. Implications of folk cosmology in pre-literary societies for general principles of language, thought, and culture. (SP)

165. Language in Culture. (3). Formerly 165A. Three 1-hour lectures per week. Semester Prerequisites: Linguistics 20 or equivalent. Quarter Prerequisites: 3 or equivalent. Three hours of lecture per week. Course may be repeated for credit. Language in human evolution, linguistic change, culture, cognition, meaning and interpretation. Literacy and culture. Communication and learning in complex societies. (SP)

166. Language in Society. (3). Formerly 165B. Three 1-hour lectures per week. Semester Prerequisites: One course in linguistics or linguistic anthropology. Quarter Prerequisites: 4 or equivalent. Social and linguistic aspects of normal behavior, speech communities, language and social stratification, language, nation, and state. (SP)

Theory and Method Courses

167. Advanced Survey of Social and Cultural Anthropology. (3). Formerly 166. Three 1-hour lectures per week. Semester Prerequisites: 3 or 11A-11B and senior standing or consent of instructor. Quarter Prerequisites: 3. Historical survey of anthropological theories, methods, and findings. Intended for majors and pre-honors students. (SP)

168. Research Theory and Methods in Socio-Cultural Anthropology. (4). Formerly 167A-167B. Three 1-hour lectures and one hour of required section per week. Semester Prerequisites: 3 or 11A and 11B. Introduction to research problems and research design techniques. Will involve local field research on the collection, analysis, and presentation of data. This course requires 12 hours of work per week including class time, outside work and preparation. One section meeting per week will be required. (SP)

Area Studies Courses

170. China. (3). Formerly 170A-170B. Three hours of lecture per week. Chinese culture and society with an emphasis on the village level. (SP)

171. Japan. (3). Formerly 171I. Three hours of lecture per week. Ethnological treatment of historic and modern Japanese culture. (SP)

172. United States Culture and Society. (3). Formerly 172E. Three hours of lecture per week. Anthropological theory and research on American culture and society. (SP)

173. North American Indians. (3). Formerly 175. Three hours of lecture per week. Historical survey of the cultures of the native peoples of the United States and Canada. (SP)

174. Indians of California. (3). Formerly 176. Three hours of lecture per week. Survey of the cultures of the native people of California. Tribal divisions, arts, customs, archaeology. (SP)

175. Native Peoples of South America. (3). Formerly 178. Three hours of lecture per week. Anthropology, ethnohistory, and ethnography. (SP)

176. Contemporary Latin America. (3). Formerly 179. Course may be repeated for credit. Three hours of lecture per week. Emphasis on Iberian-Indian assimilation of local Indian cultural and social traits and the concept of national cultures. Discussion of contemporary issues will also be covered. (F)

177. Mexico and Central America. (3). Formerly 180. Three hours of lecture per week. Ethnography of Mexico and Latin American culture with special emphasis on comparative organization, belief systems, law, economics, kinship, language, and communication. (SP)

178. Oceania. (3). Formerly 181. Three hours of lecture per week. Ethnography of Oceania: Polygenesis, Micronesia, Melanesia, New Guinea, and Australia. (SP)

179. Afro-American Ethnography. (3). Formerly 184. Three hours of lecture per week. A comparative survey of African and Afro-American peoples in the Caribbean, North, Central, and South America and the United States in both historical and contemporary perspective. (SP)

180. European Society. (3). Formerly 183. Three hours of lecture per week. Representative groups in historical and modern perspective. Rural-urban relationships and the dynamics of change. (SP)

181. The Near East. (3). Formerly 185. Three hours of lecture per week. Cultures of the contemporary Near East with special emphasis on the study of Semitic, Muslim, and Jewish peoples. (SP)

182. Circumpolar Peoples. (3). Formerly 182. Three hours of lecture per week. Arctic and sub-arctic peoples of Europe, Asia, and North America; traditional cultures and present status in national societies. (SP)

183. Sub-Saharan Africa. (3). Formerly 186. Three hours of lecture per week. Cultures and social institutions of sub-Saharan Africa. (SP)

184. South Asia. (3). Formerly 189A-189B. Three hours of lecture per week. Traditional cultures, social organization, and social change, with an emphasis on India and Pakistan. (SP)

185. Mainland Southeast Asia. (3). Formerly 189A. Three hours of lecture per week. Peoples and cultures of mainland Southeast Asia with emphasis on Burma, Thailand, and Vietnam. (SP)

186. Insular Southeast Asia. (3). Formerly 189B. Three hours of lecture per week. Peoples and cultures of...
insular Southeast Asia with an emphasis on Indonesia, Malaysia, and the Philippines.

187. Topics in Area Studies. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture per week. Special topics in cultural areas not otherwise covered.

188. Peoples and Cultures of the Himalayas. (3). New Course since Spring 1983. Three 1-hour lectures per week. This course deals with ethno-ecological and change among the peoples and cultures of the Himalayan region of India, Pakistan, Bhutan, and less centrally, Afghanistan and China (Tibet). (SP)

Application of Quantitative and Computer Methods to Anthropology

Upper Division Courses

190A. Quantitative Methods in Anthropology I. (4). Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 193 and lab. Techniques of quantitative analysis appropriate to Anthropology and other social and behavioral sciences. Emphasis on practical work on handling large data sets, statistical analysis, and computer usage. A grade will be generated after completion of the course. (F)

190B. Quantitative Methods in Anthropology II. (4). Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 193 and lab. Techniques of quantitative analysis appropriate to Anthropology and other social and behavioral sciences. Emphasis on practical work on handling large data sets, statistical analysis, and computer usage. A grade will be generated after completion of the course. (SP)

193. Practical Computer Use and Laboratory. (2). Must be taken on a passed/not passed basis. One hour of lecture and a minimum of three hours of laboratory per week. Seminar and tutorial with computer utilization: data entry, editing data; sorting and categorizing data; word-processing; exploratory data analysis. Must be taken concurrently with laboratory. (F)

General Courses

Upper Division Courses

191A. Recent Developments in Anthropology. (3). Formerly 191A. Course may be repeated for credit. Three hours of lecture per week. Special topics.

192. Research Design. (3). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 169 and 190A. Quarter Prerequisites: 193, 190B, and 190M. Research design for ethnographic field work.

193A-E. Senior Honors. (3-3). Formerly 194A-194E. C. Credit and grade to be awarded upon completion of the sequence. Three hours of tutorial per week. Semester Prerequisites: Open only to honors students. Systematic readings in history and modern theory, collection and analysis of research materials, and the preparation of an honors thesis. Group or individual tutorials. (F,SP)

196. Undergraduate Seminar. (3). Formerly 195. Course may be repeated for credit. Two hours of seminar and two hours of consultation per week. Semester 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. (3-9). Formerly 196. Course may be repeated for credit. Must be taken on a passed/not passed basis. Three to nine hours of tutorial per week. Semester Prerequisites: Consent of instructor. Individual fieldwork experience sponsored by a faculty member; written reports required. (F,SP)

199. Supervised Independent Study. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. One to three hours of tutorial per week. Semester Prerequisites: Consent of instructor: Supervised independent study and research. (F,SP)

Graduate Courses

200. Human Evolution. (3). Formerly 200A. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

201. Genetic Anthropology. (3). Formerly 200B. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

202. Primate Behavior. (3). Formerly 200C. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

203. Primate Socialization. (3). Formerly 200D. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

204. Primate Evolution. (3). Formerly 200E. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

205. Comparative Anatomy. (3). Formerly 200F. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

206. Fossil Man. (3). Formerly 200G. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

207. Molecular Anthropology. (3). Formerly 200H. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

208. Biochemical Anthropology. (3). Formerly 201L. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

209. Human Adaptation. (3). Formerly 201M. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

210. Special Topics in Physical Anthropology. (3). New Course since Spring 1983. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

211. Primate Ecology. (3). Formerly 200L. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

212. Osteology. (3). Formerly 200M. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

Archaeology Seminars

220. Western North America. (3). New Course since Spring 1983. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

221. Mesoamerica. (3). Formerly 220B. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F,SP)

222. Archaeology of South America. (3). Formerly 220C. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

223. African Prehistory. (3). Formerly 220D. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

224. African Protohistoric Archaeology. (3). Formerly 220E. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

225. European and Near Eastern Prehistory. (3). Formerly 220F. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

226. Method. (3). Formerly 220G. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

227. Historical Archaeology Research. (3). Formerly 220H. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Graduate standing with some background in archaeology, or undergraduates who have taken 2, or consent of instructor. Quarter Prerequisites: Graduate standing with some background in archaeology, or undergraduates who have taken 2. Historical Archaeology seminar. Subject matter will vary from year to year. (F)

230. Special Topics in Archaeology. (3). Formerly 220I. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

240A-240B. Fundamentals of Anthropological Theory. (4,4,4). Formerly a portion of the 240A-240B-240C series. Two hours of lecture and two hours of discussion per week. Semester 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. (F,SP,SP)

245. History and Theory of Anthropology. (3). Formerly 295. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

250. Seminars in Social and Cultural Anthropology. (3). Course may be repeated for credit. Two hours of seminar per week.

250A. Culture and Personality. (3). Formerly 250A.

250B. Deviance. (3). Formerly 250B.

250C. Applied Anthropology. (3). Formerly 250C. (SP)

250D. Economic Anthropology. (3). Formerly 250D.

250E. Political Anthropology. (3). Formerly 250E.

250F. Religion. (3). Formerly 250F.

250G. Social Issues. (3). Formerly 250G. (F)

250H. Art and Culture. (3). Formerly 250H.

250I. Anthropology of Law. (3). Formerly 250I. 251P and 250L.

250J. Ethnological Field Methods. (3). Formerly 250J. (SP)

250K. Social Stratification. (3). Formerly 250K.

250L. Urban Anthropology. (3). Formerly 250L.

250M. Ecological Anthropology. (3). Formerly 250M. (F)

250N. Education and Culture. (3). Formerly 251S, 251T, and 250Q.

250O. Social Interaction. (3). Formerly 251C-251D.

250P. Social Change and Development. (3). Formerly 251C. (F,SP)

250Q. Peasant Societies. (3). Formerly 251i-251J. (SP)

250R. Analysis of Field Data. (3). Formerly 250Q-250R. (SP)

250S. Special Topics. (3). Formerly 250R, 251Y and 251Z. (F,SP)
251. Research Design. (3). Formerly 251U-251V. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: 192. (SP)

Folklore Seminars

260. Problems in Folklore. (3). Formerly 260A. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

261. Psychology and Folklore. (3). Formerly 260B. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

262. North American Indian Folklore. (3). Formerly 260C. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

263. Special Topics in Folklore. (3). Formerly 260D. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor.

Linguistic Anthropology Seminars

270. Seminars in Linguistic Anthropology. (3). Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Courses will vary from year to year. See Departmental Internal Catalogue for detailed descriptions of course offerings for each semester.


270F. Ethnolinguistics. (3). Formerly 270K and 271K-271L.

270G. Color Categorization. (3). Formerly 270M and 271M-271N.

270L. Ethnolinguistics. (3). Formerly 270Q and 271Q-271P.

270M. Decision Making. (3). Formerly 270Q and 271Q-271F.

270X. Special Topics in Linguistic Anthropology. (3). Formerly 270S and 271S-271T. Two hours of seminar per week.

Area Studies Seminars

280. Seminars in Area Studies. (3). Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Courses will vary from year to year. See Departmental Internal Catalogue for detailed descriptions of course offerings for each semester.

280A. Latin America. (3). Formerly 280A.

280B. Sub-Saharan Africa. (3). Formerly 280B.

280C. South Asia. (3). Formerly 280C. (SP)

280D. China. (3). Formerly 280D.

280E. Japan. (3). Formerly 280E.

280F. Southeast Asia. (3). Formerly 280F.

280G. Oceania. (3). Formerly 280G.

280H. European Society. (3). New Course since Spring 1983. (F)

280I. United States Culture and Society. (3). Formerly 281A-281B-281C.


280X. Special Topics in Area Studies. (3). Formerly 280H.

290. Survey of Anthropological Research. (5). New Course since fall 1983. Course may be repeated for credit. Variable units for field research per week. Semester 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. (F,SP)

296B. Supervised Research. (2). Formerly 296B. Course may be repeated for credit. Two hours of consultation per week. Semester Prerequisites: Consent of instructor. Analysis and write-up of field materials. (F,SP)

296C. Directed Research. (1-8). Formerly 296C. Course may be repeated for credit. Two to eight hours of consultation per week. Semester Prerequisites: Consent of instructor. Individual conferences intended to provide directed reading in subject matter not covered by available seminar offerings. (F,SP)

299. Directed Research. (2-8). Formerly 299. Course may be repeated for credit. Two to eight hours of consultation per week. Semester Prerequisites: Consent of instructor. 

602. Individual Study for Doctoral Students. (1-4). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Eight hours of consultation per week. In preparation for Ph.D. examinations. Individual study in consultation with adviser. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the Ph.D. degree. (F,SP)

Professional Courses

301. Professional Training: Teaching. (6). Formerly 301. Course may be repeated for credit. Two to six hours of consultation per week. Semester Prerequisites: Consent of instructor. Individual conferences to provide supervision in the preparation of an original research paper or dissertation. (F,SP)

Interdepartmental Studies Courses

Course offerings are variable. Spring 1983. They can be found in the course catalog.

IDS215. Faunal Analysis in Archaeology. (4). Formerly 215A-215B. One hour lecture, one hour discussion, and two 2-hour laboratories per week. 
Semester Prerequisites: Paleontology 126 or a course in comparative anatomy. Introduction to systems of animals commonly found in archeological contexts, principles and procedures in faunal analysis of archeological sites, practical training in osteology and research methods, and preparation of a faunal analysis of an archeological site. Sponsoring Departments: Anthropology and Paleontology. (F,SP)

IDS228. Human Evolution, Prehistory and Paleoenvironments. (2). Formerly 228. Course may be repeated for credit. Three hours of consultation per week. Must be taken on a satisfactory/unsatisfactory basis. Eight hours of consultation per week. In preparation for Ph.D. examinations. Individual study in consultation with adviser. Supervised training with instructor on teaching undergraduates. (F,SP)

Art and History of Art

Practice of Art

Department Office, 238 Kroeber Hall, 642-2582

Professors:

Emer Ne Blachoff, M.A., (emeritus)
Joan Brown, M.F.A., (emeritus)
Sidney Gordon, M.A., (emeritus)
Robert Hartman, M.A., (emeritus)
James F. Milliken, M.A., (emeritus)
David Simpson, M.A., (emeritus)
Peter H. Voitko, M.F.A., (emeritus)
Brian Wall, M.A.
John C. Hailley, M.A., (emeritus)

Associate Professors:

Boyd G. Allen, M.A.
Jerold Balaine, M.F.A.

Assistant Professors:

Christopher Brown, M.F.A.

Four courses 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 non-traditional methods of artmaking.

4. To help students develop a creative intelligence through practicing a visual arts discipline.

To the extent that artmaking is a means for rendering the unknown knowable, it can be regarded as complementary to scientific investigation.

While the undergraduate major is largely made up of studio courses, it also requires at least three courses in art history and one in the analysis of artworks (Art 150). An art student should be familiar with ways in which visual ideas have been manifested and developed in the past and how specific notions have affected the perception that human beings have of themselves and their circumstances.

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

Major Program

Lower Division: Art 10, 12, and 14, which may be taken in any order, and Art 16.

Upper Division: Art 159 and 171, and five additional upper division courses in Practice of Art. Three of the studio courses must be taken with three different members of the regular faculty.

History of Art: A minimum of three courses, at least one of which must be upper division.

With the consent of the Major Adviser, a student may be given credit toward the major for up to two art-related courses taken outside the Department, e.g., Set Design (Dramatic Art), Photography (College of Environmental Design), etc.

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

Graduate Program

The Department of Art offers a program of graduate study leading to the M.A. degree and the M.F.A. degree in Practice of Art.

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

For the M.A., the student must complete four graduate seminars and five studio courses over a minimum time of three semesters. We also require a comprehensive project of creative work.

For the M.F.A. the student must complete two M.F.A. seminars and 18 units of independent study and produce a comprehensive body of creative work. This is intended to be a two semester program.

Further information about these programs may be obtained from the Art Office.

Lower Division Courses

10. Color and Composition. (3). Formerly 2A-2B. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Introduction to drawing, composition, and color theory. Charcoal, pastel, acrylic and other medium on paper. (F,SP)

12. Figure Drawing and Painting. (3). Formerly 3. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10. Introduction to the use of the human figure in painting and drawing composition. (F,SP)
14. Introduction to Sculpture. (3). Formerly 14A. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Projects introduce ways of improving with raw materials and physical space to create aesthetic structures. Field trips and illustrated lectures will offer practical insights on the historical areas of ideas that sculptors have explored in the 20th century. (F,SP)

16. Materials and Methods. (3). Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10. Traditional as well as modern approaches to the materials and methods used in painting, and to some extent, in sculpture. Recommended for Art History students interested in historical techniques. (F,SP)

39. Lower Division Seminar. (3). Two 1½-hour instructional periods per week. Weekly discussions will introduce students to visual thinking and to the ideas both in art and other disciplines that artists have investigated and developed in historical and contemporary times. Assigned reading and field trips will provide the basis for discussions. (F,SP)

No undergraduate students may take graduate seminars for credit. An M.A. student may not enroll in more than two seminars per semester.

Upper Division Courses

102. Approaches to Painting. (3). Formerly 102. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open laboratory period per week. Semester Prerequisites: 10, 12, 14, 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Inquiry into concepts of order, process, and content as related to human experience. While faculty contact with students is highly individualized, the course involves group critique and lectures as well as assigned field trips.

A. Mr. Hartman
B. Mr. Hecht
C. Mr. Bischoff
D. Mr. Miyasaka
E. Mr. Simpson
F. Mr. Bellaine
G. Ms. Brown
H. Ms. O'Neal
I. Ms. Lark
J. Mr. Brown
V. Visitation (F,SP)

117. Drawing and Composition. (3). Formerly 103. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Advanced drawing and composition, color and techniques. General studio paper. Art 117 or 118 is required of all art majors. (F,SP)

118. Figure Drawing. (3). Formerly 104. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Emphasis on drawing the human figure seen in the context of pictorial space, dark and light color. Various mediums. Art 118 or 117 is required of all art majors. (F,SP)

120. Intaglio. (3). Formerly 106. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Emphasis on intaglio printmaking. Various mediums. (F,SP)

122. Lithography. (3). Formerly 107. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Printmaking, utilizing the lithographic printing process. Emphasis on development of individual aesthetic direction and technical skill in the lithographic medium (stone and metal plate). Photographic and darkroom facilities are available for advanced students. (F,SP)

124. Advanced Projects in Printmaking. (3). May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, plus 6 units of either 122 or 124, and 12, 3A, 14A, and either 4 or 14B and: 8 units of 106 or 8 units of 107 or 4 units of 106 and 4 or Non-traditional projects in printmaking. (SP)

130. Fabricated Metal Sculpture. (3). Formerly 114G. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. The construction of metal sculpture using welding, brazing, and soldering techniques. (F,SP)

131. Cast Metal Sculpture. (3). Formerly 114D. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. The formation of metal sculpture using liquid wax and other traditional techniques. (SP)

132. Ceramic Sculpture. (3). Formerly 146. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Students will learn how to use the basic tools and methods for developing images in fired clay. These include throwing forms on the wheel. Some work will be done with glazes and other means for enriching surfaces. (F,SP)

133. Wood Sculpture. (3). Formerly 114B. May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Techniques are taught using wood-working equipment for constructing sculpture. Use of color and media such as wood, metal, and plastic is encouraged. (F)

138. Environmental Sculpture and Sitework. (3). May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. The focus of the course will be on ways of inventing narrative connections among images through the format of the book and other mediums. (SP)

140. Linear Structures: Artists’ Books and Narrative Art. (3). May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Focus of the course will be on ways of inventing narrative connections among images through the format of the book and other mediums. (SP)

141. Temporal Structures: Video and Performance Art. (3). May be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open lab period per week. Semester Prerequisites: 10, 12, 14, and 16, or equivalents. Quarter Prerequisites: 2A, 2B, 3, 14A, and either 4 or 14B. Emphasis on the human figure seen in the context of pictorial space, dark and light color. Various mediums. (F,SP)

200. Advanced Problems in Drawing. (3). New Course Autumn 1983. Course may be repeated for credit. Two 3-hour instructional studio periods and one 3-hour open laboratory period per week. Semester Prerequisites: Graduate standing and consent of instructor. Open only to M.A. students. (F,SP)

210. Seminar for M.A. Students. (3). Formerly 295. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: Graduate standing and consent of instructor. Emphasis on original works, group discussion and criticism. Related topics of a contemporary and historical nature will be introduced. (F,SP)

216. Seminar Issues and Ideas. (3). New Course since Spring 1983. Course may be repeated for credit. One three-hour meeting per week. Semester Prerequisites: Graduate standing and consent of instructor. Open to graduate students in History of Art. Students will be required to attend lectures given at the University or elsewhere on the Bay Area by artists, critics, and other art professionals. The scheduled weekly seminar session will provide a forum for addressing issues raised in these presentations. (F,SP)

294. Seminar for M.F.A. Students. (3). Formerly 294. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One three-hour meeting per week. Semester Prerequisites: Admission to the M.F.A. program. Studio work stressing various aspects of form. Group criticism. Intended especially for M.F.A. candidates. (F,SP)

295. Independent Study for M.F.A. Students. (3-9). Formerly 295. Course may be repeated for credit. Individual hours to be arranged. Semester Prerequisites: Admission to the M.F.A. program. M.F.A. candidates, special study—M.F.A. Committee members as well as other faculty. (F,SP)

299. Supervised Independent Study for Graduate Students. (1-3). Formerly 299. Course may be repeated for credit. Individual hours to be arranged. Semester Prerequisites: Admission to the M.F.A. program. M.F.A. candidates, special study—M.F.A. Committee members as well as other faculty. (F,SP)
History of Art
Office, 405 Doe Library, 642-5510

Professors: Svetlana Alpers, Ph.D.; Jacques de Code, Ph.D.; James Marrow, Ph.D.; Peter H. Selz, Ph.D., D.P.A. (Hon.)

Assistant Professors: James Cahili, Ph.D.; Herschel B. Chipp, Ph.D.; Danielle A. Amyn, Ph.D.; David H. Wright, Ph.D.; Walter W. Horn, Ph.D.

Associate Professors: Svetlana Alpers, Ph.D.; Herschel B. Chipp, Ph.D.; Darrell A. Amyx, Ph.D.; Jean V. Bony, Agreg (Emeritus); Margaretta Lovell, Ph.D.

Major Program

The major provides an introduction to the history of the visual arts in all major periods for Western and Asian culture as well as the opportunity to do specialized study in areas of student's choice. Essentially a humanistic inquiry and often multidisciplinary in approach, the History of Art major provides majors with solid training in those perceptual and historical, research and critical skills fundamental to a liberal arts education. Majors frequently go on to careers in business, law, or the arts as well as to graduate study in the History of Art and careers in teaching, museum work, and conservation.

Undergraduate Curriculum. The major in History of Art will consist of not fewer than 12 courses, and shall include the following:

1. One course in the practice of art; 2. Two lower division survey courses in the history of art (10A: Ancient to Medieval; and 10B: Renaissance to Modern); 3. One course in Asian art (either a lower division survey or an upper division course; 4. Three upper division lecture courses in three of four areas of western art: Ancient, Medieval, Renaissance-Ba roque, and Modern; 5. Two seminars, with different faculty members; 6. One upper division course in history relating to the student's major focus of interest (may substitute an upper division seminar in consultation with prior consent of adviser); 7. Two more upper division courses, which may be chosen from the following range of possibilities: (a) additional art history courses, including upper division lecture courses and courses in the form of acceptable standing; (b) additional courses in related disciplines—beyond the requirement in part (6) above; (c) additional courses in the practice of art; (d) courses that deal primarily with art or architectural history but that are taught in other departments, such as Near Eastern Studies, Environmental Design, Classics, etc..

Honors Program. Students with an overall Berkeley GPA of at least 3.3 and a GPA of 3.3 in all upper division courses completed in the major are eligible for admission to the honors program. Candidates for Honors in the History of Art are required to complete satisfactorily, within their senior year, an honors project, normally a thesis, consisting of at least two semesters of course work under the supervision of one regular member of the faculty in the History of Art. The first semester of the project will normally be taken as History of Art 193 or 199, with permission of the instructor and the undergraduate major adviser. Work done in History of Art 192 or in another upper division course requiring an acceptable research paper may also be counted as the first semester of the project. The second semester of the project will be taken as History of Art H195. Applications, which require the signature of the project director and undergraduate major adviser, are available in the History of Art office.

Graduate Study

The Department offers a program of doctoral study and two programs leading to the M.A. degree. The requirements for the M.A. programs and the M.A. portion of the doctoral program are generally similar, but there are significant differences in application procedures, the sequence and timing of courses, and the expectation of continued study. The degree programs are:


2. M.A. program. A terminal master's program for students who wish to undertake two years of intensive study in the general field of the History of Art, to combine the study of the History of Art with another area of intellectual inquiry or academic specialization, or to receive graduate training in the History of Art to enroll in with specialized careers.

3. M.A./LL.M.S. program. A concurrent program with the School of Library and Information Studies to prepare students for careers in art librarianship.

M.A. Programs

Preparation and Application for Admission

1. Undergraduate Training. Applicants for admission must hold a Bachelor of Arts degree or its equivalent. Students with a special bibliography course (L 299) be taken con

2. Statement of Purpose. All students should be as precise as possible in describing their intellectual background and interests in the History of Art and the expectations they have for graduate study in the Berkeley program. Students who expect to continue for the Ph.D. should apply for the M.A./Ph.D. program.

3. Languages. Because all students are expected to prepare for careers in art librarianship, normally Chinese, Japanese, or Sanskrit.

4. Length of Program. Full-time students of western art who enter with the necessary language preparation are expected to complete the program in two years. Students in the concurrent M.A./LL.M.S. program in art librarianship normally require three years to complete the program.

5. M.A./LL.M.S. program. The History of Art component of this concurrent degree program is nearly identical to the regular M.A. program except that one less upper division course may be taken. Students in the concurrent M.A./LL.M.S. program may substitute an upper division seminar in consultation with the faculty of the School of Library and Information Studies, but must include Cataloguing and Classification (L 210) and one of the following management courses—Information Services in Organizations (L 261), Public Libraries (L 262), Work with Children and Young Adults in School and Public Libraries (L 264), or College and University Libraries (L 266). Two library service courses can be combined with on-site activities in the History of Art: Organization of the Non-Biblical Book Material (L 224) in the side and photographic archive, and Evaluation of Reference Services (L 257) in the History of Art/Classics Graduate Service.

Ph.D. Degree Requirements

1. Admission. (a) Students already in the M.A./Ph.D. program at Berkeley. Students in post-classical western art will be reviewed at the end of their fourth semester of study, and three additional seminars are required. One course may be taken in connection with teaching (History of Art 500 and another to prepare the qualifi- cations for the Ph.D. minimum (History of Art 290). The remaining electives are upper division courses or additional graduate seminars in the History of Art or related fields, or special study (History of Art 290) involving individual study on selected topics. Special study courses may permit students to address specific career and interdisciplinary interests and may involve study off campus, for example in a museum or special collection.

2. Languages. Two are required. At the time of admission students are expected to have an adequate knowledge of one language and a good general in the second (which must not be taken no later than the beginning of the third semester).

(a) Students of western art. German; and French, Italian, Dutch, Latin, or Greek.

(b) Students of Asian art. One European language, French or German, and one major Asian language, normally Chinese, Japanese, or Sanskrit.

4. Qualifying Paper or M.A. Thesis. The qualifying paper should be perfected within fifty pages

3. M.A. degree. It must be submitted in accordance with the regulations of the Graduate Division and be approved by a committee of three members, including the faculty member from another department. Students enrolled in the M.A./Ph.D. program who have been advanced to doctoral candidacy (see below) may submit the qualifying paper in this way if they wish to receive an M.A. degree, but it is not required.

For M.A. students with special interests who do not intend to proceed to doctoral study, the M.A. thesis may be submitted by students whose major interest is, for example, as an exhibition catalog. M.A. students with interdisciplinary interests may elect to do a special paper under the joint supervision of the History of Art and other graduate departments.

5. M.A./LL.M.S. program. The History of Art component of this concurrent degree program is nearly identical to the regular M.A. program except that one less upper division course may be taken. Students in the concurrent M.A./LL.M.S. program may substitute an upper division seminar in consultation with the faculty of the School of Library and Information Studies, but must include Cataloguing and Classification (L 210) and one of the following management courses—Information Services in Organizations (L 261), Public Libraries (L 262), Work with Children and Young Adults in School and Public Libraries (L 264), or College and University Libraries (L 266). Two library service courses can be combined with on-site activities in the History of Art: Organization of the Non-Biblical Book Material (L 224) in the side and photographic archive, and Evaluation of Reference Services (L 257) in the History of Art/Classics Graduate Service.
The M.A. thesis should be submitted with the application for admission. Students who expect to continue their advanced course work should submit the thesis as soon as it is completed; final action on the application, however, cannot be taken until the thesis is received. Students taking an M.A. without a thesis should submit written research papers instead. After one year of coursework, including two seminars and other courses with regular faculty, post-M.A. transfer students apply for final permission to proceed toward the Ph.D.

2. Course of Study. Each student selects a general field of specialization and a related outside subject which together provide the appropriate background for dissertation research. A guidance committee appointed for each student determines the areas and courses in other fields, such as history and literature. The requirements normally include courses and seminars and extensive independent reading and research. On the average this phase of the program requires two years to complete.

3. Languages. More than two languages are often required for research in a student's general field. Language requirements are determined by the graduate adviser in consultation with the student and the Department of History of Art. For students of Eastern or Medieval Art, Latin and/or Greek are required.

4. Dissertation Prospectus. Before taking the qualifying examination, a student prepares a written proposal that defines the scope, approach, and rationale of the dissertation. It is presented to the guidance committee for review and suggestions.

5. Qualifying Examination. The examination is conducted by an interdepartmental committee appointed by the Dean of the Graduate Division on behalf of the Graduate Council. It consists of two or three written parts followed by an oral examination. The examination tests the student's basic knowledge of a general field, detailed knowledge of a special area or areas within it, and the ability to integrate studies in the appropriate outside field with work in the History of Art.

6. 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 chair of the graduate adviser following consultation with the student, and is to be composed of three Academic Senate members from the Berkeley campus, one of whom must be from a department other than the History of Art. The candidate is reviewed annually to ensure completion of the dissertation in a reasonable number of years, normally two or three.

7. Normative Time. Normative time is defined as the elapsed calendar time in semesters that under normal circumstances would be needed to complete all requirements for the doctoral degree, assuming that the student is engaged in full-time, uninterrupted study and is making satisfactory progress toward the degree. The normative time for the Department of History of Art is 14 semesters or seven years. Further information concerning these programs may be obtained from the Graduate Secretary, History of Art, Doe Library, University of California, Berkeley; Berkeley, CA 94720.

Lower Division Courses

10. History of Western Art. (4). Three hours of lecture and one hour discussion per week. Semester Prerequisites: If possible the two courses should be taken consecutively, fall before spring. An historical survey of selected works of painting, sculpture, and architecture from the Romanesque to the present. The two semesters form an introduction to the major artistic movements in western art as well as to the study of history of art. Stress is placed on the acquisition of perceptual and critical skills, the analysis and interpretation of style and meaning, and the ability to relate work to a broader historical and historical context.

10A. Ancient to Medieval. (4). (F)
10B. Renaissance to Modern. (4). (SP)

14. Colloquia for Lower Division Students. (3). Course may be repeated once with a different instructor. Two hours of lecture and one hour of discussion per week. Colloquia are small seminars involving substantial discussion and focusing on selected topics, such as a single artist, theme, medium, or problem. In most cases previous coursework in the history of art is not required. May be offered in conjunction with other courses, e.g. 10A-10B, or independently. For descriptions of course offerings, consult the Departmental listing in 405 Doe.

30. The Arts of Asia: India, China, and Japan. (4). Formerly 30 and 37. Three hours of lecture and one hour discussion per week. A survey of selected works of architecture, sculpture, and painting of India, Southeast Asia, China, and Japan. The course is intended to serve as an introduction to basic art-historical issues and methodology as well as to provide a cultural and historical perspective for understanding the great monuments of Asian art. (SP)

61. Introduction to the History of Art: Sculpture. (4). Formerly 61. One 2-hour lecture and one 2-hour discussion per week. Students are exposed to a variety of examples of sculpture emphasizing the human figure, including portraits and narrative reliefs, from ancient Egypt to modern America. (SP)

82. Introduction to Italian Renaissance Art. (4). Formerly 62. Three hours of lecture and one hour discussion per week. An introduction to a limited number of fourteenth, fifteenth, and sixteenth-century masterpieces of Italian Renaissance painting, sculpture, and architecture created in Florence, Rome, Venice, and the Italian courts. (F,SP) Not offered 1984-85.


134A. The Arts of Japan: the Medieval Periods (c 1600-c 1900). (4). Three hours of lecture and one hour discussion per week. Three major themes: decorative screenpainting (in its architectural context); genre painting and ukiyo-e; and literati painting (bunjin-ga). (SP) Not offered 1984-85.

136A. The Art of India, Sculpture and Architecture. (4). Formerly 1364. Three hours of lecture and one hour discussion per week. To focus on the period ca. 300 B.C.—ca. 1300 A.D. Not offered 1984-85.

136B. The Art of India, Painting. (4). Formerly 1368. Three hours of lecture and one hour discussion per week. To focus on the period ca. 1000 A.D.—ca. 1900. Not offered 1984-85.

137. The Art of Southeast Asia. (4). Formerly 137. Three hours of lecture and one hour discussion per week. The art of Cambodia, 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. (F)

140. Aegean Art. (4). Formerly 140. Three hours of lecture and one hour discussion per week. The art of Crete and Greece in the Bronze age, with attention to connections with neighboring cultures. Not offered 1984-85.

141. Greek Sculpture and Painting. (4). Formerly 141A- 141B. Three hours of lecture and one hour discussion per week. An introduction to the history of Greek art, with particular emphasis upon their cultural context and upon key issues such as narrative strategies, modes of address in sculpture and painting, political propaganda in art and the creative artist. Wherever possible, newly-discovered work will be included and paid special attention.

141B. Late Classical and Hellenistic. (c. 400-31 B.C.). (4). (SP)

145. Roman Art. (4). Formerly 145. Two 2-hour lectures 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. Not offered 1984-85.


151. Late Antique Art. (4). Formerly 151. Two 2-hour lectures per week. Designed for students with a particular interest in the history and culture of the later Roman world from Constantine to the Iconoclastic controversy. Not offered 1984-85.

152. Insular and Carolingian Art. (4). Formerly 152. Two 2-hour lectures per week. Designed for students with a particular interest in the history and culture of Europe from the seventh to the eleventh centuries. Connections with contemporary Italian and Byzantine art will also be discussed. Not offered 1984-85.

154. Byzantine Art. (4). Formerly 154. Three hours of lecture and one hour discussion per week. A survey of the visual arts in Europe from the ninth to the fifteenth century with emphasis upon the evolution of painting in fresco, mosaic, and manuscript illumination and upon the influence of Byzantine art in western Europe. (SP) Not offered 1984-85.

155A. Romanesque Art. (4). Formerly 155A. Three hours of lecture and one hour of discussion per week. A survey of the visual arts in Europe from about 1000 to 1150 A.D. Emphasis is placed upon the character and development of the major regional schools and upon the broad artistic currents of pilgrimage, and crusading movements. The elaboration of new iconographic themes and the influence of small
scale precious works will receive special attention. Not offered 1984-85.

155B. Early Gothic Art. (4). Formerly 155B. Three hours of lecture and one hour of discussion per week. Gothic art and architecture from its origins in the thirteenth century. The related development of architecture, sculpture, and stained glass at the major cathedrals are closely examined, as well as the evolution of the Gothic narrative styles in religious and secular illustration. (SP)

157. The Illuminated Book in Northern Europe: 13th-16th Centuries. (4). Formerly 157B. Three hours of lecture and one hour of discussion per week. Late Gothic manuscripts of Northern Europe, chiefly in France and the Low Countries. Topics include types of illuminated books and their traditions of illustration, relations of book illustration to other media, and changing aesthetics within the medium itself. Not offered 1984-85.

160. Italian Renaissance Art. (4). Formerly 160A-160B. Three hours of lecture and one hour of discussion per week. Each course covers all media—painting, sculpture, architecture—and is organized topically: urbanism, fortesque, domestic interiors, palaces, villas, altarpieces, portraits, fresco decoration, tombs, public sculpture, festival decoration, etc. The works of art are interpreted in terms of style, iconography, function, setting, patronage and cultural context.

160A. The Fourteenth Century. (4).
160B. The Italian Courts, 15th and 16th Centuries. (4).
160D. Florence and Tuscany, 16th Century. (4).
160F. Rome and Central Italy, 16th Century. (4).
160I. Venice and the Veneto, 16th Century. (4).

166. Early Netherlandish Painting. (4). Formerly 166A. Three hours of lecture and one hour of discussion per week. Survey of Franco-Flemish and Early Netherlandish painting from ca. 1250-1532. Major artists treated monographically (e.g. Jean Fouquet, the Limbourgs, Robert Campin, Jan van Eyck, Rogier van der Weyden, Hugo van der Goes, Hieronymus Bosch, and others) but emphasis is also placed on the changing functions of art during the transition from the late medieval to the early Renaissance periods in the North. (F)

168. German Painting, 1350-1550. (4). Formerly 168B. Three hours of lecture and one hour of discussion per week. Survey of the evolution of German painting in the late Middle Ages and the Early Renaissance. Major artists treated monographically (e.g., Lochner, Witz, Schwenter, Dürer, Grunewald, Altdorfer, Cranach). Not offered 1984-85.

170. Southern Baroque Art. (4). Formerly 170. Three hours of lecture and one hour of discussion per week. The major artists (among them Caravaggio, Bernini, Velasquez, and Poussin) and the major concerns (including genres such as history painting, landscape, low-life, and notions of imitation and illusionism) of the seventeenth century art in Italy, France, and Spain. Not offered 1984-85.

174. Types of Dutch and Flemish Painting in the 17th Century. (4). Formerly 174. Three hours of lecture and one hour of discussion per week. A general study of Netherlandish painting of the seventeenth century organized according to the genres or types of painting done at the time. The historical and social as well as the artistic trends that developed in the Netherlands of such genres as history painting, portraiture, landscapes, still-life, and the kinds of manners with which they were endowed. Not offered 1984-85.

175. Rubens, Rembrandt, and Vermeer. (4). Formerly 175. Three hours of lecture and one hour of discussion per week. The works of these three leading painters in the north will be contrasted and used to introduce the major concerns of northern artists of the time. Not offered 1984-85.


180B. Rodin and His Time. (4). Formerly 180A. Three hours of lecture and one hour of discussion per week. A study of the art of Rodin from 1870 to 1914, with reference to the sculpture and art of the Symbolist and Art Nouveau periods. Monuments and other works considered in the context of the development of sculpture and artistic criticism. Not offered 1984-85.

181. Contemporary Art. (4). Formerly 181. Three hours of lecture and one hour of discussion per week. Painting and sculpture in America and Europe from World War II to the present. (SP)

182A. Modern Art: Fra Angelico to 1590 (4). Formerly 182A. Three hours of lecture and one hour of discussion per week. French art, especially its avant-gardes, as they concern themselves with ideas of modern life in both the country and the city. From the beginning of Manet's career to the death of Van Gogh.

182B. Modern Art: Modernist Values, 1890-1925. (4). Formerly 182B. Three hours of lecture and one hour of discussion per week. Centering on Paris, the course will begin with Gauguin and the Nabis and cover the major modern movements which follow—Art Nouveau, Fauvism, Expressionism, Cubism, Futurism, Dadaism, Constructivism, and Surrealism—considering them as practices. Special attention will be paid to the changing forms of artistic production, emphasizing the role of the applied, commercial arts in the strategies and coordination of the international avant-gardes.

183A. American and British Art (1550-1800). Survey I. (4). Formerly 183A. Three hours of lecture and one hour of discussion per week. Survey of the architecture, painting, and decorative arts of colonial and early Federal periods. Focus on specifics of technology, quality, and style as well as on a chronological overview. (SP)

183B. American Art Survey II (1800-Present). (4). Formerly 183B. Three hours of lecture and one hour of discussion per week. A survey of the major developments in architecture, decorative arts, photography and painting from Romanticism to modernism, focusing on the academic and vernacular traditions and introducing issues of patronage and audience. Not offered 1984-85.


186. Twentieth-Century Sculpture. (4). Formerly 186. Three hours of lecture and one hour of discussion per week. A general study of the evolution of sculpture in this century, covering modern and high-style architectural forms studied from the perspectives of the history of style, of technology, and of social use. Some field trips. Not offered 1984-85.

188. Photography As a Visual Art. (4). Formerly 188. Two 2-hour lectures per week, plus additional time for viewing movies. The development of photography, both still and motion picture, from 1839 to the present. Emphasis on questions of style studied in the perspective of developments in technique, in the other visual arts, and in society. Not offered 1984-85.

189A. American Art: 20th Century. (4). Formerly 189B. Three hours of lecture and one hour of discussion per week. From Thomas Eakins to the present. Emphasis on questions of style studied in the perspective of developments in technique, in the other visual arts, and in society. Not offered 1984-85.

189B. American and Bay Area Architecture. (4). Formerly 189C. Three hours of lecture and one 2-hour field trip per week. The lectures will trace the major trends in the history of American architecture from the colonial period to the present. Both in the fields of individual buildings and the urban development of the Bay Area will be studied and related to the nationwide developments. Not offered 1984-85.

190. Special Topics in Various Fields of Art History. (4). Course may be repeated for credit. Three hours of lecture and one hour of discussion per week. Prerequisites: Permission of instructor. Concentration on specific problems or works in a particular area of History of Art. Assigned readings, discussion and a substantial paper. Not offered 1984-85.

192A. Asian. (4). (F,SP)
192B. Ancient. (4). (F,SP)
192C. Medieval. (4). (SP)
192D. Renaissance - Baroque. (4). (F,SP)
192E. Modern. (4). (F,SP)
192F. Museum Studies. (4). (SP)

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

194. Museum Internship. (4). Course may be repeated for credit. Ten hours of fieldwork per week plus conferences. Semester Prerequisites: Approval of under-graduate adviser and departmental advisor. 192F recommended. Study and practical professional experience, usually for no less than ten 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. Internships must ordinarily be arranged well in advance; for further information, inquire at 405 Doe. (F,SP)

H195. Special Study for Honors Candidates in the History of Art. (1-4). Formerly H195. Individual conferences. Semester Prerequisites: Senior standing and qualifying scholastic record (3.3 GPA overall and 3.3 GPA in courses completed in major). Directed study leading to the preparation of the honors thesis. Consult the description of Honors Program: Art History, (F,SP)

196. Undergraduate Prospect Seminar. (4). Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Junior or Senior with major status or consent of instructor. A seminar intended to introduce majors to (1) the tools and methodology required for basic research in History of Art and (2) the history of the discipline and varied approaches to its study. Sign-up outside of 405 Doe. (F,SP)

199. Supervised Independent Study. (1-4). Formerly 199Z. Course may be repeated for credit. Must be taken on a pass/failed basis. Individual conferences. Semester Prerequisites: Consent of instructor, major adviser and department chairman. 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. (F,SP)

General Prerequisites: Undergraduate standing and consent of the instructor, including courses in the history of art and reading knowledge of languages as may be required.

Graduate Courses

200. Graduate Prospectus in Methodology. (4). May be repeated for credit. Must be taken on a satisfactory/
unsatisfactory basis. Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Graduate standing and consent of instructor. (F)

281 Seminar in 19th French Art. (4). Formerly 281A-281B. May be repeated for credit. Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Graduate standing and consent of instructor. (SP)

283 Seminar in World Art. (4). Formerly 283A-283B. May be repeated for credit. Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Graduate standing and consent of instructor. (SP)

285 Seminar in 20th Century Art. (4). Formerly 285A-285B. May be repeated for credit. Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Graduate standing and consent of instructor. (F)

288 Seminar in 20th Century Painting and Sculpture. (4). Formerly 288A-288B. May be repeated for credit. Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Graduate standing and consent of instructor. (SP)

289 Seminar in American Art. (4). May be repeated for credit. Three hours of seminar per week plus extensive outside work. Semester Prerequisites: Graduate standing and consent of instructor. Not offered 1984-85.

290 Special Study for Graduate Students in the History of Art. (1-12). Formerly 290A-290B. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for master's degree. Individual study in consultation with the graduate adviser. (F,SP)

291 Individual Study for Master's Students in the History of Art. (1-12). Formerly 291A-291B. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for master's degree. Individual study in consultation with the graduate adviser. (F,SP)

292 Individual Study for Doctoral Students in the History of Art. (1-12). Formerly 292A-292B. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for doctoral degree. Individual study, in consultation with the graduate 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)

University Art Museum

The University Art Museum plays an active role in instruction and research, giving students an opportunity for experience in connoisseurship and organization of exhibitions. (See University Art Museum in Index for further information.)

Professional Courses

300 Teaching the History of Art. (1-5). Formerly 300A. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing and concurrent appointment as a teaching assistant or associate, or consent of instructor. (SP)

Asian American Studies

The Asian American Studies Program will provide a program leading to the A.B. degree with honors. A student will be recommended for honors if he or she has completed at least 30 units with a GPA of at least 3.3 for all work undertaken in the Asian American Studies Program and has been approved specifically for honors by the Ethnic Studies Department Chairperson and the Asian American Studies Coordinator upon the recommendation by the faculty adviser for the major. The honors student will be required to complete the Asian American Studies Major (H195) or the Group Major in Asian American Studies Majors. In order to graduate with a A.B. degree with honors, a student must obtain at least a 3.3 GPA for all coursework undertaken at the University.

Asian Studies

Group Major Office, 460 Stephens Hall, 642-0333

Advisers: Herbert P. Phillips (Department of Anthropology) head adviser; Thomas Gold (Department of Sociology); Eugene Winsch (Department of History); Elizabeth Berry (Department of History).

Group Major in Asian Studies

The undergraduate group major in Asian Studies is a rigorous but flexible interdisciplinary program designed to provide students with a workload in an Asian language, a broad range of interdisciplinary area-related coursework, and at least a minimal familiarity with the methods and aims of the discipline relevant to their area studies. The major program assists students by organizing the rich course offerings in the Asian field at the University in such a way as to permit them to focus on a single geographic area and the use of a wide range of disciplines.

Asian American Studies

Group Major Office, 460 Stephens Hall, 642-0333

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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, Area II: Japan, Area III: Southeast Asia), a disciplinary focus within that area, and is required to complete the following coursework:

1. One year (two semesters) of a language appropriate to the area of regional specialization. Further study of the language is encouraged and will count toward the major unit requirement as indicated below.

2. At least two courses drawn from the following:

   - Economics 1, Principles of Economics;
   - Geography 1, Introduction to Physical Geography;
   - Geography 4, Introduction to Cultural Geography;
   - Geography 7, The Geography of Human Economic Activity;
   - History 9A-9B-9C, Asian History;
   - History of Art 30, The Arts of Asia: India, China, Japan;
   - Political Science 2, Introduction to Comparative Politics;
   - Political Science 3, Introduction to Empirical Analysis and Quantitative Methods;
   - Political Science 4, Introduction to Political Theory;
   - Sociology 1, Introduction to Sociology.

Area I: China

A. The student must complete one additional year of Chinese (Mandarin). Further study of the language is encouraged, and will count toward the major unit requirement as indicated below.

B. The student must select one of the following disciplinary foci and complete at least 12 units of work from the courses listed there (see item 3 under "Additional Major Requirements" above).

   - Anthropology 3, Introduction to Social and Cultural Anthropology;
   - Anthropology 170, China (3);
   - Anthropology 171, Japan (3);
   - Anthropology 172, Japan (4,4);

   - History of Art
     - History of Art 192A, Undergraduate Seminar: Problems in the Research and Interpretation in the Several Areas of the History of Art (4);
     - Two courses from among the following: History of Art 130A, 130B, Early Chinese Art (4,4); History of Art 131A, Early Chinese Painting (4), 131 B, Later Chinese Painting (4).

   - Economics
     - Economics 106, The Economics of Man (4).

   - Political Science
     - Political Science 128, The American Role in Asia (4);
     - Two courses from among the following: Political Science 143A, 143B, Northeast Asian Politics (5,5) in Political Science 143A, 143B, Northeast Asian Politics (4,4); Political Science 128, The American Role in Asia (4).

   - Sociology
     - Sociology 173, Development and Modernization (3);
     - Sociology 192, Agricultural Oriental Societies (3);
     - Sociology 193, Contemporary Chinese Society (3);
     - Sociology 181, Folklore and Society (3).

   C. Additional units necessary to complete the unit requirement of the major may be selected from among the courses listed under other disciplinary foci above and from the following:

      - Comparative Literature 160, Western Literary Currents in Twentieth Century China (3);

D. Up to 16 units of the major requirement may be elected from the following language and literature courses offered by the Department of Oriental Languages:

   - Oriental Languages (Chinese) 100A-100B, Advanced Chinese (5-5);
   - Oriental Languages (Chinese) 154, Readings in Chinese Vernacular Literature (3);
   - Oriental Languages 155B, Readings in Later Medieval Poetry (3);
   - Oriental Languages (Chinese) 140A-140B, Readings in Chinese Buddhist Texts (3-3);
   - Oriental Languages (Chinese) 158, Modern Chinese Literature (3).

Area II: Japan

A. The student must complete one additional year of Japanese. Further study of the language is encouraged, and will count toward the major unit requirement as indicated below.

B. The student must select one of the following disciplinary foci and complete at least 12 units of work from the courses listed there (see item 3 under "Additional Major Requirements" above).

   - Anthropology 3, Introduction to Social and Cultural Anthropology;
   - Anthropology 170, China (3);
   - Anthropology 171, Japan (3);
   - Anthropology 172, Japan (4,4);

   - History of Art
     - History of Art 192A, Undergraduate Seminar: Problems in the Research and Interpretation in the Several Areas of the History of Art (4);

   - Economics
     - Economics 106, The Economics of Man (4).

   - Political Science
     - Political Science 128, The American Role in Asia (4);
     - Two courses from among the following: Political Science 143A, 143B, Northeast Asian Politics (5,5) in Political Science 143A, 143B, Northeast Asian Politics (4,4); Political Science 128, The American Role in Asia (4).

   - Sociology
     - Sociology 173, Development and Modernization (3);
     - Sociology 192, Agricultural Oriental Societies (3);
     - Sociology 193, Contemporary Chinese Society (3);
     - Sociology 181, Folklore and Society (3).

   C. Additional units necessary to complete the unit requirement of the major may be selected from among the courses listed under other disciplinary foci above and from the following:

      - Comparative Literature 160, Western Literary Currents in Twentieth Century China (3);

D. Up to 16 units of the major requirement may be elected from the following language and literature courses offered by the Department of Oriental Languages:

   - Oriental Languages 100A-100B, Advanced Japanese (5-5);
   - Oriental Languages 129A, Readings in Classical Japanese Literature (3);
   - Oriental Languages 129B, Readings in Classical Japanese Literature (2);
   - Oriental Languages 129C, Readings in Classical Japanese Literature (5-5);
   - Oriental Languages 129D, Japanese Literature (3);
   - Oriental Languages 163, Japanese Grammar (3);
   - Oriental Languages 179, Japanese Documents (3);
   - Oriental Languages 135, History of Japanese Literature (3);
   - Oriental Languages 137, Modern Japanese Literature in Translation (3).
course requirements for valid academic reasons will be considered with the approval of the major adviser.

Area III: Southeast Asia
A. The student must complete one additional year of Malay/Indonesian or Thai, or a second year of Dutch or French in the case that a relevant Asian language is not offered. It is to be noted that, in the case of Dutch, Thai, and Malay/Indonesian, all or a part of the first two years' work carries upper division credit. In these two instances the first two years' work will satisfy the language requirement but will not count toward the major unit requirement.
B. The student must select one of the following disciplinary foci and complete at least 12 units of work from the courses listed there (see item 3 under "Additional Major Requirements" above).

Anthropology
1. One course treating the theories and/or methods appropriate to the discipline, chosen with the consent of the major adviser;
2. Anthropology 185, Mainland Southeast Asia (3); Anthropology 186, Insular Southeast Asia (3);
3. One course from among the following: Anthropology 143, Plural Societies (3); Anthropology 146, Comparative Peasant Societies (3); Anthropology 148, Man's Ecological Relationships (3).

Geography
1. One course treating the theories and/or methods appropriate to the discipline, chosen with the consent of the major adviser;
2. Geography 163, Southeast Asia (2);
3. One course from among the following: Geography 104, The City in the Third World (3); Geography 116, Economic Geography of the Non-Industrial World (3).

Political Science
1. One course treating the theories and/or methods appropriate to the discipline, chosen with the consent of the major adviser;
2. Political Science 143C, Southeast Asian Politics (3); Political Science 143D, Policy Problems of Southeast Asia (5); Political Science 128, The American Role in Asia (5).
3. Additional units necessary to complete the unit requirement may be selected from among the courses listed under the other disciplinary foci above and from the following:
   - History of Art 137, Art of Southeast Asia (4);
   - Music 133A, Music of the Southeast Asia Tradition (4);
   - South and Southeast Asian Studies (Malay/Indonesian) 132. Readings in Modern Indonesian and Malaysian Literature (3);


Astronomy
Department of Astronomy, 601 Campbell Hall, 642-5275

Professors:
Jonathan Arons, Ph.D.
C. Stuart Bowyer, Ph.D.
Carl E. Heiles, Ph.D.
Ivan R. King, Ph.D.
V. Kuhl, Ph.D.
Christopher McKeel, Ph.D.
John G. Phillips, Ph.D.
Frank H. Shu, Ph.D. (Chair)
Tony Davis, Ph.D.
Hymon Spinrad, Ph.D.
Harold F. Weaver, Ph.D.
Olilliam J. Welsh, Ph.D.
Leland E. Cunningham, Ph.D.

Lecturer:
David D. Cuttsback, Ph.D.

Adjunct Professor:
Bernard Oliver, Ph.D.

Adjunct Associate Professor:
Donald G. Becker, Ph.D.

Adjunct Assistant Professor:
Richard Klein, Ph.D.

Assistant Professors:
Giora Basil, Ph.D.
Impe De Pater, Ph.D.

Graduate Program

Although the group is authorized to award the degree of Doctor of Philosophy in Asian Studies, the degree program is intended for those applicants who wish to take an interdisciplinary M.A. degree rather than those who wish ultimately to do research in a Ph.D. program. Interested applicants should contact the group in Asian Studies for additional information.

The Department of Astronomy offers undergraduate and graduate instruction in a wide variety of fields, including celestial and observational astrophysics; infrared, X-ray, 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 Sciences Laboratory and the Physics Department. Various professors in the Chemistry, Mathematics, Statistics, and Electrical 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), a 120-inch telescope at Lick Observatory, an 85-foot radio telescope and three 20-foot dishes at Hat Creek Observatory. Laboratories are available for the development of radio, infrared, and X-ray instruments, and for the precise measurement of optical images and spectra.

The Major

During the first two undergraduate years students must, in addition to fulfilling certain specific requirements of the College of Letters and Science, pursue studies that will prepare them for future work in astronomy. Specifically, the Department requires that during the first two years students take courses that provide a thorough understanding of:

Honors Program

For honors in astronomy a student must fulfill the following requirements: (1) 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 3.0; (2) if Astronomy 127A-127B-127C is taken, a minimum of two As and one B; if Astronomy 127A-127B and two graduate courses are taken, a minimum of two As and one B is required; (3) an individual project of research or study, involving at least three units of Astronomy 195. The student's project is chosen in consultation with the Departmental Adviser and the written report is judged by the Adviser and one faculty member.

Graduate Programs

The graduate program is aimed at the Ph.D. degree. Entering students need not have majored in astronomy, although some background in astronomy is desirable. A strong background in physics is essential, however. In order to facilitate reading of research papers in general, each entering student must pass a qualifying examination in general physics and a second qualifying examination in a field of special interest, such as part of their graduate work, entering students are urged to study at least one of these languages as undergraduates.

In addition to the qualifying examination required by the University, the Department requires students to pass a preliminary examination in general physics and three specialized research areas chosen by the student from a list of about 10. Students choose, with the aid of their adviser, courses in the Department which are useful in preparing for the preliminary and qualifying examinations. In addition, students must pass a modest number of graduate courses taken outside the Department and must write a one-year thesis. A tutorial program is designed to maintain regular contact with the faculty. The program normally takes
four to five 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 and upper division undergraduate courses, 12 of them in graduate courses) and the preliminary examination.

Lower Division Courses

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

4. The Solar System and Beyond. (2) Formerly 4. Two hours of lecture per week. Semester Prerequisites: 10 or consent of instructor. Quarter Prerequisites: 10. A discussion of the history and evolution of the solar system, including results from recent space-probe exploration. Some facility in high school mathematics expected. (F)

5. Ancient and Modern Astronomy. (2) Formerly 5. Two hours of lecture per week. Semester Prerequisites: 10 or consent of instructor. Primarily devoted to a non-mathematical discussion of ancient or primitive astronomers, their theories, and their instruments. (F)

6. Breakthrough Discoveries in Modern Astronomy. (2) Formerly 6. Two hours of lecture per week. Semester Prerequisites: 10 or consent of instructor. Quarter Prerequisites: 10 or 7. Considers the major breakthrough discoveries that have, from time to time, dramatically changed the astronomer's understanding of the universe; it describes the state of astronomical knowledge when each breakthrough occurred and analyzes how the breakthrough changed that state. (F)

7. Introduction to Modern Astronomy and Astrophysics. (4) Formerly 7. Three hours of lecture and up to two hours of laboratory per week. Semester Prerequisites: A good facility in high school physics and mathematics. Not open to students who have had 10. Description and interpretation of astronomical phenomena using the laws of modern physics. Modern astronomical instrumentation. (F,SP)

75. Self-Paced Introduction to Modern Astronomy and Astrophysics. (1-4) Formerly 75. May be repeated for credit up to a total of 4 units. One to four hours tutorial discussion per week. Semester Prerequisites: Good facility in high school physics and mathematics. Not open to students who have had 10. Description and interpretation of astronomical phenomena using the laws of modern physics. Modern astronomical instrumentation. (F,SP)

79. The Universe Through Radio Eyes. (2) Formerly 8. Two hours of lecture per week, plus an occasional field trip. Semester Prerequisites: 10, 10S, 7, or 75, or consent of instructor. Topics vary and may include modern instrumentation, the three degree cosmic radiation, radio galaxies and quasars, pulsars, interstellar atoms and molecules, interstellar masers, and radio studies of the solar system. Emphasis on physical understanding with occasional use of mathematics. (F)

9. Selected Topics in Astronomy. (2,3,4,5) Formerly 9, 10. Mathematics of life, different sections (A, B, C, etc.). Two or three hours per week, depending on course. Semester Prerequisites: 10, 10S, 7, or 75, or consent of instructor. Quarter Prerequisites: 10, 10S, 7, or 75. Seminars in a variety of topics offered each semester. Topics explored in greater depth than in introductory courses. Classes taught by graduate students. Discussion and class participation encouraged. (F,SP)


9B. Relativity and Cosmology. (2,3). Evolution and origin of the Universe. Quasars. Curved spacetime, gravitation, observational tests.

9C. Stellar Systems. (2,3). May be repeated for credit, taking different sections (A, B, C, etc.). Star clusters, galaxies, and clusters of galaxies. Formation dynamics and evolution.

9D. Solar System. (2,3). Sun, planets, spacecraft exploration. Formation dynamics and evolution of the solar system.

9E. Interstellar Media. (2,3). Gas and dust between the stars, remnants of star formation, structure of the galaxy, chemical composition.

9F. Observational Astronomy. (2,3). Telescopes, instruments, astronomical photography, and observing techniques.


9H. High Energy Astrophysics. (2,3). Study of a selection of unusual astronomical objects, such as Gamma ray, x-ray, and ultraviolet sources, from an observational viewpoint.

9I. History of Astronomy. (2,3). Astronomical concepts which influenced development of subfields of astronomy: determination of distance on all scales in the universe; instrumentation, planetary astronomy, nova and supernovae, and galaxy evolution.

10. Introduction to General Astronomy. (4) Formerly 10. Two hours of lecture per week. Semester Prerequisites: No credit to students who have completed 7. 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. (F,SP)

10S. Self-Paced Introduction to General Astronomy. (1-4) Formerly 10S. May be repeated for credit, up to a total of 4 units. One to four hours of discussion per week. Semester Prerequisites: Not open to students who have completed 7. 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. (F,SP)

105. Stellar Structure, Evolution, and Stellar Systems. (3). Three hours of lecture per week; occasional laboratories or observing time. Semester Prerequisites: Physics 5 series, Mathematics 50A-50B-50C, Quarter Prerequisites: Physics 5 series, Mathematics 51A-51B-51C. Instruments in modern astronomy and physical discussion of stars—the observations, theory of stellar evolution. Stellar systems—clusters, the galaxy, external galaxies, and clusters of galaxies. Cosmological observations and theories. (F,SP)

127B. Stellar Structure and Evolution. (3) Formerly 127D. Three hours lecture per week; occasional laboratory or observing time. Semester Prerequisites: 127A. The transfer of radiation, stellar atmosphere analysis, planetary atmospheres; stellar structure and evolution. (SP)

127C. Interstellar Matter and High Energy Astrophysics. (3) Formerly 127C. Three hours lecture per week; occasional laboratories or observing time. Semester Prerequisites: 127A; 127B recommended. Interstellar matter, high energy astrophysics, condensed systems. (F)

150. Undergraduate Seminar. (2,3) may be repeated for credit. Two 1-hour seminars per week. Semester Prerequisites: Upper division standing. Seminar format discussion of selection of current problems in astronomy.

This course meets for two hours per week in an informal setting where group discussions or student presentations will take place, focusing on all aspects of astronomy. The focus will be not only on the formal subject matter, but also on the nature of scientific inquiry itself. Students should learn by experience how to recognize scientific problems and resolve them. (F,SP)

H195. Special Study for Honors Candidates. (2-4) Formerly 195. Individual project of research or study. (F,SP)

199. Supervised Independent Study and Research. (2-4) Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Independent study. Semester Prerequisites: 127A-127B. Enrollment is restricted by regulations in the General Catalog. (F,SP)

Graduate Courses

201. Physical Processes in Astronomy. (4) Formerly 214 and IDS 253. Three hours of lecture per week. Semester Prerequisites: Physics 105, 110A, 110B concurrently; open to advanced undergraduates with GPA of 3.70. A basic "core" course in astrophysics of fluids, plasma physics and spectroscopy. It is a prerequisite for 215, 217, and 254. (F)

215. Interstellar Matter. (3) Formerly 216. Three hours of lecture per week. Semester Prerequisites: 201. A survey of the observational data and theoretical ideas on the interstellar medium, with emphasis on the inferred physical conditions. (SP)

217. Stellar Atmospheres. (3) Formerly 217. Three hours of lecture per week. Semester Prerequisites: 10, 10S, 7, or 75. 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. (SP)

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

228. Extragalactic Astronomy and Cosmology. (3) Formerly 228 and 229. Three hours of lecture per week. A survey of the field of extragalactic astronomy. Classification and morphology of galaxies, the distance scale, galaxy dynamics and masses, the stellar population of galaxies, clusters of galaxies, galaxy evolution and active galactic nuclei (including QSOs). Cosmological models, and the early universe. (SP)

236. Radio Astronomy. (3) Formerly 236. Three hours of lecture per week. Semester Prerequisites: 218 recommended. Comparison of radio and optical instrumentation and techniques. Detection and application of radiation and physics to objects observed in the radio range, including emission nebulae, gas clouds, and relativistic plasmas. (SP)

238. Special Topics in Astronomy. (3) Formerly 238. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Topics will vary from semester to semester. See department for announcements. (F,SP)

249. Solar System Astrophysics. (3) Formerly 219. Three hours of lecture per week. Semester Prerequisites: 10, 10S, 7, or 75. Formerly 127 series or equivalent. The physical foundations of solar system astronomy. The study of planetary atmospheres and surfaces. Meteor, comets, and the interplanetary medium. Observational techniques and models. (SP)

250. Special Topics in Astrophysics. (3) Formerly 250. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Topics will vary from semester to semester. See department for announcements. (F,SP)

258. Advanced Stellar Dynamics. (3) Formerly 258. Three hours of lecture per week. Semester Prerequisites: 218. Galactic orbits, integrals, and pseudointegrals; local galactic dynamics, galactic mass models; spiral structure, density waves, and resonance. Stellar encounter theory;
dynamics of star clusters; simulation techniques. Dynamics of elliptical galaxies; dynamics of disks; galaxy interactions. (Fall, 287)

267. Plasma Astrophysics. (3). Formerly 267. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Advanced instruction in observational and reduction techniques making use of the observing facilities of the Leuschner, Hat Creek, and Palomar Observatories and the facilities of the Department of Astronomy and the Computer Center. (F,SP)

268. Advanced X-Ray Astrophysics. (3). Formerly 268. Course may be repeated for credit. Two hours of lecture per week. Semester Prerequisites: Consent of instructor. Advanced topics in X-ray astronomy and high energy astrophysics. (F)

287. Techniques of Instrumentation in High Energy Astrophysics. (3). Formerly 287. Course may be repeated for credit. Two hours of lecture per week. Semester Prerequisites: Consent of instructor. Intrinsic limitations of existing instrumentation in high energy astrophysics and current methods of data retrieval will be discussed. Basic physical limitations of existing and potential future instrumentation will be analyzed. (SP)

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

290B. Directed Group Study. (1-4). Formerly 298. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Consent of instructor. Survey of research currently being performed in the Department or the University. (F,SP)

299. Advanced Study and Research. (2-12). Formerly 299. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four 1-hour meetings per week. Semester Prerequisites: Consent of instructor. Survey of research currently being performed in the Department or the University. (F,SP)

Biochemistry

Department Office, 401 Biochemistry Building, 642-5252

Professors:
Bruce N. Ames, Ph.D.
Vittorio Ferro-Luzzi Ames, Ph.D.
Dottore in Biologia

IDS252. Stellar Structure and Evolution. (3). Formerly 252. Three hours of lecture per week. Semester Prerequisites: Physics 137A-137B-137C, 112, 110A-110B. Quarter Prerequisites: Physics 137A-137B-137C, 112, 110A-110B. 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. Sponsoring Departments: Physics and Astronomy. (F,SP)

IDS254. High Energy Astrophysics. (3). Formerly 254. Three hours of lecture per week. Semester Prerequisites: 201 or consent of instructor. Quarter Prerequisites: Physics 137A-137B-137C, 112, 110A-110B. 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. Sponsoring Departments: Physics and Astronomy. (F,SP)

IDS285. Theoretical Astrophysics Seminar. (2). Formerly 285. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. The study of theoretical astrophysics. Sponsoring Departments: Astronomy and Physics. (F,SP)

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IDS254. High Energy Astrophysics. (3). Formerly 254. Three hours of lecture per week. Semester Prerequisites: 201 or consent of instructor. Quarter Prerequisites: Physics 137A-137B-137C, 112, 110A-110B. 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. Sponsoring Departments: Physics and Astronomy. (F,SP)

IDS285. Theoretical Astrophysics Seminar. (2). Formerly 285. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. The study of theoretical astrophysics. Sponsoring Departments: Astronomy and Physics. (F,SP)

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Professors:
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IDS285. Theoretical Astrophysics Seminar. (2). Formerly 285. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. The study of theoretical astrophysics. Sponsoring Departments: Astronomy and Physics. (F,SP)
202. Biochemistry of Carbohydrates. (2). Formerly 202. Two 1-hour lectures per week. Semester Prerequisites: Course in biochemistry or consent of instructor. Course Prerequisites: Course in biochemistry. The role of complex carbohydrates in cell recognition, agglutination, and adhesion, with examples drawn from bacterial, viral, and structural analysis of cellular and viral genes by transposable genetic elements. (F,SP)

203. Structure and Function of Eukaryotic Cellular Membranes. (3). Formerly 203. Two 1-hour lectures per week. Semester Prerequisites: 100A-100B or consent of instructor. Course Prerequisites: 100A-100B or consent of instructor. The arrangement and biogenesis of eukaryotic membranes and peroxisomes in yeast. The structure and function of the cell surface in various cell cycle events. (E) Even-numbered years.

205. Biochemistry of Nucleic Acids. (2). Formerly 205. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Course Prerequisites: 100A-100B-100C. The chemistry and biochemistry of the nucleic acids and their constituents. (SP)

207. Comparative Biochemistry. (1). Formerly 207. One 1-hour lecture per week. Semester Prerequisites: Graduate standing or an upper division course in biochemistry or molecular biology. Contributions of comparative biochemistry to knowledge of the molecular basis for organismal diversity, the mechanism of evolution, and the phylogenetic relationships of species. (SP)

211. Introduction to Research in Biochemistry. (2-8). Formerly 211. May be repeated for credit. Variable laboratory arrangements. Semester Prerequisites: Graduate standing in the Department or an allied field or consent of instructor. An introduction to the research laboratory for first year graduate students. Individual research will be conducted in the laboratory of a member of the staff. (F,SP)

213. Enzyme Synthesis and Control. (2). Formerly 213. Two 1-hour lectures per week. Semester Prerequisites: 102 or 100A-100B and a course in genetics, or consent of instructor. Course Prerequisites: 102 or 100A-100B. Chemistry of the pathway of genetic expression with an emphasis on prokaryotic cells. Regulation of transcription and translation. Not offered 1984-85.

231. Seminar on Carbohydrate Research. (2). Formerly 231. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Reports and discussion of original research. (F,SP)

233. Seminar on Enzyme Mechanisms. (2). Formerly 233. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting per week. Semester Prerequisites: Graduate standing and consent of instructor. Discussion of original research and current literature. (F,SP)

234. Seminar on Regulatory Enzymes. (2). Formerly 234. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1½-hour meetings per week. Semester Prerequisites: 100A-100B and consent of instructor. Course Prerequisites: 100A-100B-100C. Review of biosynthesis, structure, activity, assembly, and interactions of allosteric proteins. (F,SP)

235. Seminar on Human Enzymes. (2). Formerly 235. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting per week. Semester Prerequisites: Course in biochemistry and consent of instructor. Ribonucleases of human body fluids and tissues: detection and quantitation; isolation and characterization; structural and immunological inter-relationships of intra- and inter-tissue enzymes significance of elevated levels in certain pathological and non-pathological conditions. (F,SP)

240. Seminar on DNA Enzymology. (2). Formerly 240. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Consent of instructor. Review of original research and recent literature on the enzymology of DNA repair, replication, restriction, recombination, and methylation. (F,SP)

242. Seminar in the Regulation of Gene Transcription. (2). Formerly 242. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Course in biochemistry and consent of instructor. Discussion of original research and critical evaluation of current research in the mechanism of gene regulation, primarily at the level of genetic transcription. (F,SP)

243. Seminar in Eukaryotic Protein Synthesis and Its Regulation. (2). Formerly 243. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour meetings per week. Semester Prerequisites: Course in basic biochemistry and consent of instructor. Student participation will involve the preparation and presentation of original research. Topics will focus on the role of transfer RNA in regulation and the control of glycolytic enzyme synthesis. (F,SP)

244. Seminar on the Molecular Genetics of Drosophila. (2). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Consent of instructor. Presentation and discussion of original research and current literature in mutagenesis and carcinogenesis. (F,SP)

247. Seminar on Carcinogenic Potency. (2). Formerly 247. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour meetings per week. Semester Prerequisites: Course in biochemistry and consent of instructor. Review of current literature and discussion of original research on proteins involved in the structure and dynamics of chromosomes. The material will vary from one semester to the next. (F,SP)

249. Seminar on Evolution and Speciation. (2). Formerly 249. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour meetings per week. Semester Prerequisites: Consent of instructor. Review of current literature and discussion of original research. (F,SP)

251. Seminar on Microbial Protein Synthesis and Regulation of One-Carbon Met. (2). Formerly 251. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1½-hour discussions per week. Semester Prerequisites: 100A-100B and consent of instructor. Course Prerequisites: 100A-100B-100C. Review of current literature and discussion of original research. (F,SP)

252. Research Seminar in Microbial Iron Metabolism. (2). Formerly 252. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of discussion per week. Semester Prerequisites: Consent of instructor. Discussion, reports and discussion of current research conducted in the laboratory of a member of the staff. (F,SP)

254. Seminar on Regulatory Substances in Bacteria. (2). Formerly 254. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting per week. Semester Prerequisites: Biochemistry courses and consent of instructor. Presentation and discussion of current research literature in bacterial regulation. (F,SP)

255. Seminar on Chemotaxis. (2). Formerly 255. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: 100A-100B and consent of instructor. Course Prerequisites: 100A-100B-100C. Critical discussion of modern literature and laboratory experiments in bacterial chemotaxis as a model sensory system. (F,SP)

266. Seminar on Secretion and Membrane Assembly. (2). Formerly 266. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Consent of instructor. Current enrollment in 296 or 299, or consent of instructor. Discussion of modern literature and laboratory experiments in protein synthesis and growth with emphasis on the unicellular eukaryote S. cerevisiae. (F,SP)
270. Seminar on Mechanisms of Genetic Regulation in Yeast. (2). Formerly 257. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of discussion per week. Semester Prerequisites: Graduate standing in the Department. Seminar presentation of student research projects and discussion. Intended for first year graduate students. (F)

285. Research Seminar. (2). Formerly 285. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour or two 1.5-hour seminars per week. Semester Prerequisites: 602 or 296, taken concurrently. Seminar presentation and evaluation of results in the area of the student's current research. (F,SP)

290. Seminar. (1). Formerly 260. May be repeated for credit. One 1-hour seminar per week. Semester Prerequisites: Graduate standing in the Department or consent of instructor. Graduate student seminar in biochemistry, dealing with various topics which differ from year to year. The program will include three sections each semester, each emphasizing a different subject. (F,SP)

294A-294B-294C-294D. Selected Topics. (1-11). Formerly 294. May be repeated for credit. Three 1-hour lectures per week for five weeks. Semester Prerequisites: Graduate standing. Recent advances. Topics changed each year. 294A, 294B, 294C and 294D are three sections of five weeks each. The sections are taught in tandem. They may be taken individually. 294D is a term paper related to the lecture sections. (SP)

295. Biochemistry Seminar. (1). Formerly 285. May be repeated for credit. One 1-hour seminar per week. Semester Prerequisites: Graduate standing in the Department or consent of instructor. Graduate student seminar in biochemistry, dealing with various topics which differ from year to year. The program will include three sections each semester, each emphasizing a different subject. (F,SP)

299. Seminar. (1). Formerly 299. May be repeated for credit. One 1-hour seminar per week. Semester Prerequisites: Graduate standing in the Department or consent of instructor. Graduate student seminar in biochemistry, dealing with various topics which differ from year to year. The program will include three sections each semester, each emphasizing a different subject. (F,SP)

Field Major in Biological Sciences

Field Major Office, 4583 Life Sciences Building, 462-1611

Professors:
- Herbert G. Baker, Ph.D. (Botany)
- Howard A. Bern, Ph.D. (Zoology)
- William B. Brown, Ph.D. (Paleontology)
- David C. Coss, Ph.D. (Microbiology and Immunology)
- Melvin D. Feuer, Ph.D. (Zoology)
- Charles H. Hand Jr., Ph.D. (Zoology)
- John Gerhart, Ph.D. (Botany)
- Carole Hickman, Ph.D. (Plant Pathology)
- Dennis Ohman, Ph.D. (Plant Pathology)
- Kevin Padian, Ph.D. (Plant Pathology)
- Paul Licht, Ph.D. (Zoology)
- David C. Coss, Ph.D. (Microbiology and Immunology)
- Ronald J. Smith, Ph.D. (Zoology)
- Richard A. Steinhardt, Ph.D. (Botany)
- Gunther S. Stent, Ph.D. (Biology)
- Marcella W. Wake, Ph.D. (Zoology and Immunology)
- Thelma Rowell, Ph.D. (Zoology)
- Wayne S. Musil, Ph.D. (Zoology)

Lecturers:
- Lloyd F. Austin, Ph.D. (Evolutionary Biology)
- Elizabeth Blackburn (Molecular Biology)
- Beth Burnside (Physiology and Anatomy)
- Alvin Clark (Molecular Biology)
- Fields Cobb (Plant Pathology)
- Lewis Feldman (Botany)
- William Jensen (Botany)
- Dennis Ohman (Microbiology and Immunology)
- Jeremy Taylor (Microbiology and Immunology)
- Pat Wilson (Plant Pathology)
- Carol Hickman (Plant Pathology)

Assistant Professors:
- Marjorie Schiwa, Ph.D. (Botany)
- John Taylor, Ph.D. (Botany)
- John Gerhart, Ph.D. (Botany)
- Carole Hickman, Ph.D. (Plant Pathology)
- Dennis Ohman, Ph.D. (Plant Pathology)

Field Major Office, 4583 Life Sciences Building, 462-1611

Lower Division Courses. Required of all students in the major: Chemistry 1A-1B (4-4 units); Chemistry 2A-2B (3-3 units); Mathematics 16A (3 units); Physics 6A (4 units); Physics 8B is recommended; Biology 1A-1B (4-4 units). Chemistry 1A-1B and Biology 1A-1B are required for admission to the field major.

Upper Division Courses. Required of all students in the major: Genetics 102 (3 units) or 105 (3 units) or 110 (3 units) or Molecular Biology 100A (4 units) or Molecular Biology 100B (4 units). At least one upper division course in Botany. A course in the history or philosophy of biological sciences is recommended.

Other courses as follows:

Plan A (specialization in the area of functional biology as evidenced by a study of the physiological and biochemical aspects of living things):

Option I. Cellular Emphasis: Chemistry 130A-130B (4-4 units); Biochemistry 102 (4 units) and 102L (2 units); Physics 100A (4 units) or Zoology 104 (4 units) or 110 (3 units) or Botany 130 (3.5 units) or Genetics 170 (2 units) or Microbiology 150 (3 units).

Option II. Organismal Emphasis: Biochemistry 102 (4 units) or Botany 145 (3.5 units); Physiology 100B (4 units) or Physiology 109 (3 units) or Entomology 103-103L (2-2 units) or Zoology 128 (2 units) or Microbiology 100 (3 units) or Zoology 107 (4 units) or 108 (5 units) or Entomology 103-103L (2-2 units) or Zoology 107 (5 units) or 108 (5 units) or Entomology 104 (4 units) or Zoology 109 (3 units).

Additional upper division courses in biological sciences to complete a minimum of 30 semester units of upper division work in the major.

Plan B (specialization in the area of ecology and evolutionary biology; study of the structure, classification and evolution of living things):

- Botany 100 (3.5 units) or 120 (3.5 units) or Zoology 107 (5 units) or 108 (5 units) or 157 (5 units) or Biology 100 (10 units) or Entomology 100 (10 units) or Physics 115 (3 units) or Zoology 107 (5 units) or 108 (5 units) or Zoology 109 (4 units) or Botany 154 (2 units).

Additional upper division courses in biological sciences to complete 30 semester units of upper division work in the major. At least one course in statistics is strongly recommended (BEHS 130A).

Plan D (specialization in the area of marine biology):

- Biology 160 (2 units) or Zoology 143 (2 units) or Palaeontology 112 (4 units) or Zoology 108 (5 units) or 157 (7 units) or Biology 100 (10 units) or Botany 102 (3.5 units).

One semester course or summer course (4 units minimum) at a marine laboratory area; additional upper division courses in biological sciences to complete 30 semester units of upper division work in the major.

Honors Program. The honors program consists of completion of Biology H196, Proseminar in Biology (1 unit) and Biology H195, Special Study for Honors Candidates (3 units), followed by a written report. Lower Division Courses

1A. General Biology. (4). Formerly 1A and a portion of 1B. Three-hour lectures, one 3-hour laboratory, and one one-hour discussion per week. Semester Prerequisites: Chemistry IA-IB. Chemistry 8A recommended concurrently. General introduction to cell structure and function, molecular and organism genetics, animal development, form and function; laboratory designed for students majoring in the biological sciences, but open to all qualified students. (F)

1B. General Biology. (4). Formerly 1C and 1 of 1B. Three-hour lectures, one 3-hour laboratory, and one one-hour discussion per week. Semester Prerequisites: Chemistry IA-IB. Biology 1A or equivalent. Chemistry 8B recommended concurrently. General introduction to plant development, form and function; population genetics, ecology and evolution. Intended for students majoring in the biological sciences, but open to all qualified students. (SP)

Q1B1. General Biology. (1.7). Three 1-hour lectures, one 3-hour laboratory and one 1-hour discussion per week. Semester Prerequisites: Chemistry IA-IB. This course is designed for students who passed Biology 1A on the quarter system, but did not complete Biology 1A. May not be used for unit or residence credit.

Q1B2. General Biology. (1.6). Three 1-hour lectures, one 3-hour laboratory, and one 1-hour discussion per week. Semester Prerequisites: Biology Q1B-1. This course is designed for students who passed Biology 1A on the quarter system, but did not complete Biology 1B. General introduction to plant development, form and function. (SP)
Q1C. General Biology. (2,4). Three 1-hour lectures, one 3-hour laboratory and one 1-hour discussion per week. Semester Prerequisites: Chemistry 1A-1B; Chemistry (may be taken concurrently). This course is designed for students who passed Biology 1B on the quarter system, but did not complete Biology 1C. General introduction to population genetics, ecology, and evolution. (SP)

2. Topics in Biology. (1). Formerly 2. Course may be repeated with consent of instructor. Sections 1-8 letter grading; sections 9-12 passed/not passed. GTopics One 2-hour discussion per week. Semester Prerequisites: Preferentially open to freshmen, consent of instructor required. Reading and discussion of the literature on particular topics in the field of biology. (F,SP)

7. Biology, Evolution and Race. (3). New Course since Spring 1983. Two 1-hour lectures and one 2-hour demonstration/discussion per week. This course emphasizes basic principles of biology, including heredity and evolution. Further, in the context of biological principles, historical and current views on race will be examined. (SP)

11. Introduction to the Science of Living Organisms. (4). Formerly 11A-11B. Students may not receive credit for this course if they have credit for both Zoology 10 and Botany 10. Three 1-hour lectures and one 1-hour laboratory per week. Semester Prerequisites: For student not majoring in Biological Science and for non-science majors. Principles of biological organization and function using the cell as a basic unit. Study of cell processes with emphasis on scope to Biology 1 except that knowledge of physical sciences is neither required nor assumed. (F)

12. Molds and Mushrooms. (3). Formerly 12. Two 1-hour lectures and one 2-hour demonstration discussion per week. Study of the fungi with special emphasis on their role in nature and on their practical uses. Topics will include fungal reproduction, identification and edibility of mushrooms, commercial mushroom growing, industrial production of antibiotics, vitamins and enzymes, symbiosis with plants and insects, chemical decomposition of dead plant material, diseases of plants and animals. Field trips to collect wild mushrooms and visit industries will highlight the semesters schedule. (SP)

Upper Division Courses

100. Problems in Marine Biology. (10). Formerly 100. Full-time study at Bodega Marine Laboratory for 10 weeks beginning approximately April 1. Semester Prerequisites: 1 or 11 and consent of the instructor. Pre-enrollment required. Contact department for details. Lectures, laboratories, and field work, and directed study on selected topics, stressing original research in marine biology. This course is taught in conjunction with other campuses. (SP)

101. Principles of Paleontology. (3). Formerly Paleontology 100. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: A course in paleontology or in a related science. An introduction to principles and methods in paleontology and paleobiology. Topics include the nature of fossil data; approaches and problems in the various branches of paleontology; fossil populations, species, and clades; macroevolution; and functional morphology, and paleoecology. (SP)

139. Cell Motility. (2). Formerly 139. Two 1-hour lecture demonstrations per week. Semester Prerequisites: Consent of instructor. Course in cell biology or biochemistry or consent of instructor. Introduce and discuss mechanism of cell movement and contractility in plant and animal cells. Consider mechanisms of muscle contraction, flagellar beat and less well characterized phenomena such as cytoplasmic streaming, mitosis, cytokinesis and cell shape determination. (SP)

150. General Ecology. (3). Formerly 150. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 11 or equivalent. Introduction to syllabus and syllabus in general. (F,SP)

250. Tropical Biology—An Ecological Approach. (8). Formerly 250. Two 1-hour lectures per week for 10 weeks. Two 1½-hour seminars per week for 5 weeks. Semester Prerequisites: Microbiology 100-100L or Molecular Biology 200A or equivalent, or consent of instructor. Course in Ecological Epidemiology and Ecology. (F,SP)

285. Genetics of Bacteria. (3). Formerly Molecular Biology 200B. Two 1½-hour lectures per week for 10 weeks. Two 1½-hour seminars per week for 5 weeks. Semester Prerequisites: Microbiology 100-100L or Molecular Biology 200A or equivalent, or consent of Instructor. Current topics in the genetics of bacteria with emphasis on plasmids, recombination, and the cytoplasmic and morphological aspects of gene function. Related course on the genetics of yeast is planned for alternate years. (F)

289. Cell Motility Research and Reviews. (1). Formerly 289. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour lecture per week. Semester Prerequisites: Consent of instructor. Reviews and reports of current research in vertebrate endocrinology and physiology. (F,SP)

299. Comparative Physiology and Endocrinology Seminar. (1). Formerly 299. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Consent of instructor. Reviews and reports of current research in vertebrate endocrinology and physiology. (F,SP)

301. Professional Preparation: Teaching of Biology. (1). Formerly 301. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour lecture per week. Semester Prerequisites: Graduate status and appointment as a teaching assistant or consent of instructor. Principles of teaching biology at the college level. Weekly seminars on topics in teaching methods, evaluation, and analysis of current problems in general biology. (F)

499. Individual Training in Biological Electron Microscopy. (1-5). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a passed/not passed basis. Tutorial. Semester Prerequisites: Consent of instructor and graduation as a member of the laboratory. Individualized laboratory instruction in techniques of scanning and transmission electron microscopy and preparation of specimens. (F,SP)

Interdepartmental Studies Courses

1. Professional Preparation: Teaching of Biology. (1). Formerly 301. Course may be repeated for credit. Must be taken on a passed/not passed basis. Tutorial. Semester Prerequisites: Consent of instructor and graduation as a member of the laboratory. Individualized laboratory instruction in techniques of scanning and transmission electron microscopy and preparation of specimens. (F,SP)

Related Courses in Other Departments


MOBOLI 10. Introduction to Molecular Biology. (2).

NUTRSCI 10. Survey of Nutritional Sciences. (3)

Biophysics and Medical Physics

Department Office, 103 Donner Laboratory, 442-4031


Assistant Professors: W. Geoffrey Owen, Ph.D.

Professors: Thomas L. Hayes, Ph.D., (Adjunct), Thomas H. Jukes, Ph.D., (D.S. in residence) (Emeritus)

Assistant Professors: John C. Owicki, Ph.D.

Professors: John W. Gofman, M.D., W. Geoffrey Owen, Ph.D., John H. Ross, Ph.D., Sc.D., L.L.D. (Emeritus)

Major Advisers: Mr. Alpen, Mr. Bremermann, Mr. Glasser, Mr. Metz, Mr. Mortimer, Mr. Nichols, Mr. Owen, Mr. Owicki, Mr. Tobias.

The courses of the Department are designed to meet several objectives: (1) to prepare students for advanced work in biophysics, medical physics, and allied fields; (2) to offer for physical science and engineering students selected topics, and concepts of biological sciences; (3) and to provide students from biological departments with an introduction to some of the quantitative physical problems and approaches in biology and medicine. Courses 10 and
12 are designed to provide background and perspective in their specified fields.

The Major

The biophysics major is designed to serve as preparation for graduate study in biophysics and related disciplines, and is also appropriate preparation for students interested in the health and medical sciences. The program consists of a comprehensive background in physics, mathematics, chemistry, and biology, coupled with core courses in biophysical subject areas which include genetic information and control, biochemical structure and function, biomembranes and neural networks, and biological energy flow and transduction. The biophysics major includes a medical physics option to provide biomedically-oriented students with a framework for evaluating biomedical and physical fields. Provides liberal arts as well as science students with a foundation in physical science, biological science, or related courses, as approved by the academic adviser.

Medical Physics Option


Upper Division. Biochemistry 102 and 103; one course from the following: Physics 110-110B, 112, 124, 137A-137B, or 141A-141B; Biochemistry 101, 102, and 103; one course from the following: Biology 111, 123, 131, or any graduate course in Biophysics; recommended are also one upper division course in genetics and additional upper division courses in molecular biology, physical chemistry, biophysical science, or mathematics, or other related courses, as approved by the academic adviser.

Course Substitutions. Under exceptional circumstances and with the permission of the department chair, a student may be allowed to make not more than two substitutions in the required courses if such changes are deemed necessary and advisable.

Honor Program. Admission to the honors program in biophysics or the medical physics option is contingent upon a student's attaining senior standing with a grade-point average of 3.3 or better on all University work and a 3.3 grade-point average or better in the courses in the major. In addition to completing the normal requirements of the major, the honors student is required to participate in the Honors Journal Club for at least one semester and to write a thesis on research performed in Biophysics.

Graduate Program

Graduate degrees available under the supervision of faculty of the department are the Ph.D. in biophysics, the Ph.D. in medical physics, and master's degrees. The latter two programs are intended for students who have already completed a bachelor's degree in a physical science, biological science, or related area. The master's degrees are designed to allow students to pursue graduate study in the fields of biophysics or medical physics while earning a degree in a discipline other than biophysics or medical physics.

Lower Division Courses

10. Atoms, Radiation, and Life. (3). Formerly 10. Three hours of lecture and one hour of discussion per week. Basic aspects of atomic radiations with examples from biomedical and physical fields. Provides liberal arts as well as science students with a framework for evaluating the complex changes associated with the atomic age. (F)

12. Origin and Evolution of Life. (2). Formerly 12. Two 1½-hour lectures and one hour of discussion per week. High school biology and physics or chemistry. Formation and evolution of the universe; chemical and physical conditions of the early Earth; current thinking on origins of life; development of living organisms. (SP)

Upper Division Courses

101. Biophysical Information and Control. (4). Formerly 101. Three hours lecture and one hour discussion per week. Semester Prerequisites: Biology 1A-1B, Chemistry 14 or 130A, Physics 7C, and Mathematics 50A-50B. Formerly 101. Three hours lecture and one hour discussion per week. Semester Prerequisites: Biology 1A-1B, Chemistry 14 or 130A, Physics 7C, and Mathematics 50A-50B. Genes as coded information; physical limits on information storage; X-ray crystallography and molecular structure of nucleic acids; biophysics of replication, transcription, and translation; processing of genetic information; fidelity and proof-reading; regulation of cellular structure, growth, and differentiation. (F)

102. Biophysics of Protein and Membrane Structure and Function. (4). Three hours lecture and one hour of discussion per week. Semester Prerequisites: Biology 1A-1B, Chemistry 14 or 130A, Physics 7C, and Mathematics 50A-50B. Quarter Prerequisites: Biology 1A-1B, Chemistry 14 or 130A, Physics 5E, and Mathematics 50A-50B. Determination of protein structure by crystallographic and spectroscopic methods; protein functions in cell biology; regulation of enzyme and enzyme-complex activity and the control of protein assembly; mathematical models of feedback-regulation and cooperation; structure of biological membranes; membrane-lipid interactions; proteins in biomembranes and cell structures. (SP)

103. Biophysics of Cellular Processes. (4). Formerly 104 and part of 103. Three hours lecture and one hour discussion per week. Semester Prerequisites: Biology 1A-1B, Chemistry 14 or 130A, Physics 7C, and Mathematics 50A-50B. Quarter Prerequisites: Biology 1A-1B, Chemistry 14 or 130A, Physics 5E, and Mathematics 50A-50B. Passive and active transport through biomembranes; membrane potentials; synaptic transmission; molecular mechanisms of cell bioenergetics; photosynthesis, phosphorylation, muscle contraction; cell proliferation and motility; vision. (F)

111. Biophysical Laboratory. (4). Formerly 111. Two 1½-hour lectures and 1 hour discussion per week. Semester Prerequisites: Junior or senior standing or consent of instructor. Advanced laboratory in biophysics emphasizing the applications of physics and physical methods to problems in biophysics. Experiments are drawn from a wide range of biophysical phenomena. (F,SP)

123. Biophysical Energetics. (3). Formerly 123. Three hours of lecture per week. Semester Prerequisites: A foundation in thermodynamics, and introduction to statistical mechanics. Discussions will substitute for up to two discussions per week. (SP)

130. Basic aspects of atomic radiations with examples from biomedical and physical fields. Provides liberal arts as well as science students with a framework for evaluating the complex changes associated with the atomic age. (F)

131. Radiation Biophysics. (4). Formerly 131. Three hours lecture and four hours laboratory per week. Semester Prerequisites: Physics 8B or 7C, Chemistry 1B, Biology 1A-1B. Quarter Prerequisites: Physics 6C or 5E, Chemistry 1B, Biology 1A-1B. Mathematical and physical basis of biophysical phenomena; mass and energy flow in living systems; biomechanics of motion; fluid dynamics and blood flow; feedback and control of biological processes; electrical behavior of excitable cells; the biophysics of sensory processes; vision and auditory detection and response. (F)

199. Supervised Independent Study and Research. (1-4). Formerly 199. May be repeated for credit. Must be taken on a pass/no pass basis. Individual conferences and research. (SP)

201. Membrane and Lipoprotein Structure and Dynamics. (3). Formerly 201. Two upper division courses per week. Semester Prerequisites: Upper division courses in molecular physics and physical chemistry, or consent of instructor. Characterization of cell membranes and lipoproteins by physical methods. Systems to be studied include: myelin, erythrocyte, thyrocyte, and purple membranes; serum lipoproteins; model biological membranes. Analytical methods include: electron microscopy, diffraction techniques, magnetic resonance, fluorescence photobleaching, and /statistical mechanics. Discussions will substitute for up to six lectures and will involve presentation of papers from the research literature by the student(s).

204A-204B. Advanced Laboratory in Biophysical Research. (4B). Formerly 204A-204B. Two hours lecture and 6 hours laboratory per week. Physical properties of biological systems at the atomic, molecular, cellular, and organellar level. Enrollment limited. 204A is not prerequisite for 204B. (F,SP)

211. Molecular Cellular and Radiobiology. (4). Formerly 211. Two 1½-hour lectures and 1 hour discussion per week. Actions of electromagnetic radiations and charged particles with matter; radiation chemistry; molecular lesions induced by radiation; actions of radiations on viruses, bacteria and microorganisms. (F)


225. Mathematical Modeling of Biological Systems. (3). Formerly 225. May be repeated for credit. Three hours lecture per week. Semester Prerequisites: Mathematics 50A-50B and Biology 1A-1B. Mathematical models of biological systems in mathematical language. Topics include morphogenesis at the cell and tissue level, circadian rhythms, biomechanics, and evolution. Other
topics according to student interest. Emphasis is on biologically realistic models. (F) Even-numbered years.

232. Carcinogenesis and Atherosclerosis. (2). Formerly 2234-2262. Two hours lecture per week. An integrated description of current data, theoretical models, and critical review of the disease processes in carcinogenesis and atherosclerosis; discussion of the epidemiological, physiological, and biological aspects, with special attention to integration of current findings on the development of these diseases.

280. Topics in Mathematical Biology. (1-3). Formerly 280L. 280 may be repeated for credit. One to three hours seminar per week. Seminars on topics of student interest; biorythms, biomechanics, population and evolutionary biology, morphogenesis, etc. (F,SP)

285L. Biophysics Group Proseminar Laboratory. (F,SP). Formerly 285L. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Eight hours of laboratory per week. Introduction to research programs that are actively in progress in laboratories of the Faculty of the Graduate Group in Biophysics and Medical Physics. (F,SP)

290. Seminar. (1-3). Formerly 290L. May be repeated for credit. One to three hours seminar per week. One to three hours of seminar per week (one unit per hour per week) providing more intensive coverage of selected subjects in biophysics than in regular lecture courses. Requires graduate student along with faculty participation in presenting seminar material. Several sections are offered each year covering different topics. Enrollment in more than one section is permitted. List of offerings to be announced each semester. (F,SP)

295. Special Topics in Biophysics and Medical Physics. (1-3). Formerly 295L. May be repeated for credit. One to three hours of lecture per week. Lecture courses at advanced level offered as result of current interests of faculty and graduate students. Recent topics have included: electron spin resonance of biomolecules, tumor biology-diagnosis therapy, biological energy conversion processes, scanning electron microscope in biology, chemotaxis, three-dimensional image reconstruction, views of cancer. (F,SP)

298. Research Seminars. (1-3). Formerly 298L. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One to three hours seminar per week. Research group seminars in fields of biophysical research currently being investigated by departmental faculty members. Listing of current and new offerings to be announced each semester. (F,SP)

299. Individual Research: Biophysics and Medical Physics. (1-12). Formerly 299L. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual research. (F,SP)

610. Individual Study for Master's Students. (1-6). Formerly 610L. 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 field adviser. (F,SP)

620. Individual Study for Doctoral Students. (1-6). Formerly 620L. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser. Intended to provide an opportunity for qualified students to prepare themselves for the various research examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

300. Professional Preparation: Supervised Teaching of Biophysics. (2). Formerly 300L. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Senior standing and appropriate teaching assistant. Discussion, counseling, development, class observation, and practice teaching in biophysics. (F,SP)

Interdepartmental Studies Courses

Graduate Courses

Ph.D. in Biostatistics

Group Major Office, 101 Haviland Hall, 642-3242 (Mailing Address: 140 Warren Hall)

Professors: Leo Breiman, Ph.D.; David R. Brillinger, Ph.D.; Chin Long Chiang, Ph.D. (Co-chair); Kjell A. Doksum, Ph.D.; David T. Oakes, Ph.D.; Alan R. Smith, Ph.D. (Co-chair); Mary-Claire King, Ph.D. (Adjunct)

Associate Professors: Richard J. Brand, Ph.D.; Nicholas P. Jewell, Ph.D.; Susan T. Sacks, Ph.D.; Donald J. Gilmour, Ph.D.; Joseph L. Hodges, Jr., Ph.D.; Robert Meade, Ph.D.; Thomas O. Duncan, Ph.D.

Associate Specialist: Barbara J. van den Berg, M.D., Dr. P.H. (Adjunct)

Lecturer: Carol A. Langhauser, M.A.

Graduate Advisers: Mr. Brand, Mr. Chiang, Ms. Scott.

Group Major in Biostatistics

The phenomena studied in the health, medical, and biological sciences, as in all sciences, involve chance mechanisms. To understand such mechanisms and their relation to the phenomena requires competence in probability and statistics, and to apply these concepts to any field of science requires a basic knowledge of the subject matter of the field. Biostatistics is concerned with development of statistical principles and methods and their application to problems in the health, medical, and biological sciences. As a discipline, biostatistics is essential to research and contributes to the understanding in these scientific areas.

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 great interest in the biological sciences, or degrees in the biological sciences with a major interest in mathematics and statistics. For further information, consult the graduate advisers.

The M.A. degree can be obtained under Plan I or Plan II; but students may proceed directly to the Ph.D. program without obtaining the M.A. degree. The Ph.D. dissertation is administered according to Plan B; one foreign language is required.

Preparation for Graduate Study

It is realized that few of the entering students will be prepared in mathematics, statistics, and the subject matter areas. Some prerequisites, however, can be made up during the first year of graduate study. Minimum entrance requirements consist of two full year courses in calculus, one-year courses in mathematical statistics or biostatistics, and some knowledge in biology, zoology, or physiology.

Research Facilities

Graduate students in the group have direct access to a variety of specialized electronic computers as well as the services of the University Computer Center. A unique facility available to students is the Child Health and Development Studies, conducted by the Program in Biostatistics of the School of Public Health. Financed by the National Institutes of Health, this facility provides opportunities for both practical experience and individual research.

Research in the Statistical Laboratory and cooperation with other departments allow the possibility of unusually broad and effective training in both theoretical and applied directions. Research activity of the faculty currently includes stochastic models and applications in stages of disease, carcinogenesis, competition of species, cell division, theory of epidemics, and population dynamics.

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. degrees, giving both programs considerable flexibility. Such flexibility allows students in consultation with the major professor and graduate adviser to arrange their own program. See Public Health and Statistics for some of the course listings.

Botany

Department Office, 2017 Life Sciences Building, 642-6799


Associate Professors: Robert H. Robichaux, Ph.D.; William M. Laetsch, Ph.D.; Rudolf Schmid, Ph.D.; Robert H. Robichaux, Ph.D.; Thomas O. Duncan, Ph.D.

Lecturers: Robert Ornduff, Ph.D.; Rudolf Schmid, Ph.D.; Donald L. Mason, Ph.D.; Robert H. Robichaux, Ph.D.

Specialists: James C. Hickman, Ph.D.; Isabelle Tavares, Ph.D.

Undergraduate Major Advisers: Mr. Kaplan, Mr. Feldman, Mr. Robichaux, Mr. Schmid, Mr. Taylor.
The major in botany is designed to acquaint undergraduates with the fundamental aspects of plant sciences with the opportunity to pursue detailed study of areas of special interest. At the lower division level, undergraduates are expected to acquire a broad foundation in the physical and biological sciences both as a basis for advanced study at the upper division level and as a reasonable introduction to the breadth of the field. At the upper division level, the department offers courses in the areas of structural, systematic, ecological, physiological, cellular and molecular botany. These courses introduce a variety of approaches to the study of plants utilizing concepts from the molecular through the organismal to the community level of organization. Knowledge of each of these areas is essential for understanding the development of a broad perspective of botany that undergraduate majors are required to take in each. On the basis of these required courses, students have the opportunity to pursue one or two of these areas in more depth through elective courses from the departmental curriculum or through courses offered in other departments or colleges.

The Major

Lower Division. Biology 1A-1B; Chemistry 1A-1B, 8A; Physics 8A; Mathematics—one semester. (One year recommended with calculus for those contemplating graduate school.)

Upper Division. Biochemistry 102, Genetics 102 or 105; Botany 100 (recommended that this course be taken during Fall Semester of Junior year); Botany 101, or 102; Botany 105, or 110, or 112; Botany 145; Botany 154, 154L, electives as needed to obtain 30 upper division units.

Honors Program. With the consent of the major adviser, students with an overall grade-point average of 3.3 or higher and a grade-point average of 3.3 or higher in courses in the major may arrange an individual program of special study, to begin no later than the fall semester of their junior year. Students in the honors program must pass an oral comprehensive examination. For detailed requirements on the program, see the department Undergraduate Studies.

Preparation for Graduate Study

Students planning to study for the Doctor of Philosophy under the faculty of the Department of Botany at Berkeley are encouraged to include in their undergraduate programs the following subjects: general botany and zoology or biology, comparative morphology of lower and higher plants, plant taxonomy, plant biology, genetics, general and organic chemistry, biochemistry, calculus, general physics, and a firm foundation in at least one language (German, French, or Russian). Those students anticipating graduate work in the physiological aspects of plant science should include, in addition to the above, a grounding in thermodynamics and physical chemistry. Minor deficiencies in the above subject areas may be filled after admission to the Graduate Division.

Detailed information on the graduate program in botany will be sent upon request. Address inquiries to the Graduate Admissions Officer, Department of Botany, University of California, Berkeley, Berkeley, CA 94720.

Graduate Program

The purpose of the graduate program in botany is to train students as professional botanists to act as instructors and investigators in basic areas of plant science. This is accomplished in four ways. First, each student acquires a basic botanical background equivalent to that required of undergraduates at Berkeley. This includes training in structural, systematic, ecological, physiological, and cellular aspects of botany. Each student will take courses and seminars in botany and related fields at the graduate level in their area of specialization in the Botany Department or related departments as determined by consultations with departmental advisers. Third, each student will develop a program of research in the areas of expertise under the direction of a faculty member in the department. Fourth, each student is required to develop teaching skills through two semesters of teaching as a teaching assistant in courses in the Botany or Biology Department. Student progress toward these goals will be determined by yearly reviews of progress in research and teaching and toward the completion of the doctoral thesis.

Students should note that faculty of the Department of Botany are members of several graduate groups described in appropriate bulletins of the Graduate Division. Students may enroll in such program groups with a faculty member of Botany as their major professor.

For further details on the requirements for the M.A. and the Ph.D. degrees, as well as facilities available for graduate study in botany, please consult the graduate advisers and the Guide for All New and Continuing Graduate Students available through the Graduate Secretary.

The Botanical Garden in Strawberry Canyon provides opportunities for research with living plants, supplies teaching material for classes on campus, and serves as pollinators for field collecting. Its collections are especially rich in succulents, South American, South African, European, and Australian plants. The combined University and Jepson Herbaria offer a world-wide, floristic, reference-research collection and library that form a foundation for basic research in systematic botany, ecology, phytogeography, and evolution, not only for faculty, staff, and students but also for visiting scholars and for biologists throughout the United States and other countries. For further information on the Botanical Garden, see Index.

Prerequisites: For cogent reasons, instructors will consider accepting in courses students who do not have all of the prerequisites stated in terms of Berkeley courses but equivalent courses taken elsewhere will be acceptable.

Lower Division Courses

3. Practical Botany. (2). Formerly 3. Must be taken on a passed/not passed basis. One 4-hour lecture workshop per week. Semester Prerequisites: Consent of instructor. The fundamentals of plant physiology, taxononmy, and morphology as related to the principles and practice of ornamental horticulture. (F)

10. Plant Biology. (3). Formerly 10. Two 1-hour lectures and three hours of demonstration per week. Semester Prerequisites: Open without prerequisite to all students and designed for those specializing in the biological sciences. Emphasis of the course is placed on the fundamental concepts of biology as illustrated by the structure and function of plants. (F,SP)

Upper Division Courses

100. Plant Diversity. (3.5). Formerly 1. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Biology 1A-1B. An integrated treatment of the biology and evolution of the major groups in the plant kingdom. (F)

101. Survey of Mycology. (3.5). Formerly 101. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Consent of instructor. Selected aspects of fungi: their structure, reproduction, physiology, ecology and genetics; their role in plant disease, human welfare, and industry. (F)

102. General Mycology. (3.5). Formerly 102. Two 1-hour lectures and one 4-hour laboratory per week plus two or three ½ hour discussion periods. Semester Prerequisites: Biology 1A-1B; 100 recommended. General biology of fresh-water and marine algae including both phycology and benthos. Emphasis is on morphology, phylogeny, and systematic. Laboratories include study of representative types, identification of field-collected specimens, techniques for culture, simple experiments on development and reproduction, and economic uses of algae. (SP)

105. Principles of Plant Morphology. (3.5). Formerly 105. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Biology 1A-1B; 100 recommended. An analysis of the structural diversity of multicellular plants, particularly the higher forms, with emphasis on the developmental mechanisms responsible for this variation in form and the significance of this diversity in relation to the environments in which the plants grow. (SP)

110. Evolutionary Morphology of Land Plants. (3.5). Formerly 110. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Biology 1A-1B; 100 and 105 recommended. An analysis of the evolution and comparative morphology of bryophytes and vascular plants studied from the viewpoint of both fossil and living representatives. (SP)

112. Anatomy of Vascular Plants. (3.5). Formerly 112. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Biology 1A-1B; 100 recommended. A consideration of the functional and developmental aspects of cell, tissue, and organ structure, including their adaptations to ecological factors such as pollination, dispersal, and water availability. (F)

115. Plants and Civilization. (3). Formerly 115. Students who have taken Botany 15 will receive no credit for 115. Two 1-hour lectures and two 2-hour demonstrations per week. Semester Prerequisites: A course of high school chemistry or biology, selection of an area of plant use, and use of plants for his own purposes and the interaction between the evolution of domesticated plants and the cultural evolution of man. (F)

117. Chocolate. (2). Two 1-hour lectures and one 1-hour discussion per week. Two 1-day field trips per semester. Semester Prerequisites: Major in Biological Sciences or related fields or consent of instructor. The history, botany, agriculture, technology, economics, nutrition and culinary aspects of chocolate. (F)

120. Systematics of Vascular Plants. (3.5). Formerly 120. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Biology 1A-1B; 100 recommended. Lectures on philosophy, principles, techniques, and history of botanical systematic and the major classes of vascular plants with emphasis on general evolution. Laboratories devoted to a survey of seed plant families and an introduction to techniques used in systematic study. (SP)

125. Introduction to California Plant Life. (3.5). Formerly 125. Two 1-hour lectures and two 2-hour laboratories per week. The relation of California plants and plant communities to soils, climate and the geologic history and recent history. The use of keys and examination and identification of the native and introduced members of the California flora. (SP)

130. Plant Cell Biology. (3.5). Formerly 130. Two 1-hour lectures and one 4-hour laboratory per week. Semester Prerequisites: Biology 1A-1B. A synthesis of morphological, biochemical, and genetic information on cell function, structure, and development with special emphasis on the plant cell. (F)

138. Plant Molecular Biology. (4). Two 1-hour and two 3-hour laboratories per week. Semester Prerequisites: Biology 1A-1B. The molecular biology of prokaryotic and eukaryotic plant cells with emphasis on structure and function of nucleic acids, and the expression of the plant genome. (SP)

145. Plant Physiology. (3.5). Two 1-hour lectures and one 4-hour laboratory per week. Semester Prerequisites: Biology 1A-1B and Chemistry 8A-8B. A study of the physiology of higher plants, with emphasis on water relations, ion uptake, and developmental physiology. (F)

147. Problems in Plant Physiology. (2). New Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 145 or consent of instructor. A discussion of current topics and applications relating to the biochemistry and physiology of plants. Emphasis will be placed on the exploration of current research in the field of plant physiology and biochemistry. (F)

154. Plant Ecology. (2). Formerly 154. Two 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B. A general consideration of the principles of plant ecology at the level of organisms, populations, and
212. Topics in Plant Morphology and Anatomy. (1). Formerly 290. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Consent of instructor. Advanced study in developmental, comparative, and evolutionary areas of plant morphology and anatomy. Topics will be announced in advance of each semester. (F,SP)

221. Advanced Systematics. (4). Formerly 221. Two 1-hour lectures and 3-hour laboratories per week. Semester Prerequisites: 120 or equivalent and permission of instructor. Lectures will consider the morphological, cytological, biochemical, and experimental foundations of plant systematics, the variation patterns that exist in nature, the taxonomic problems that these patterns pose, and methods for the solution of these problems. Laboratories will emphasize techniques of data gathering and data analysis. (F,SP)

222. Pteridology. (3). Formerly 210. May be repeated for credit. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 105, 110, or consent of instructor. An advanced treatment of the biology of ferns. (SP)

223. Computer Assisted Methods in Systematics and Ecology. (4). Formerly 123. Two 1-hour lectures and one 2-hour discussion, and one 4-hour open laboratory per week. Semester Prerequisites: One course in systematic or taxonomic biology and one course in ecology. An examination of the theoretical background and application of computer-assisted methods in systematics and ecology, including measures of similarity and difference, cluster analysis, ordination techniques, evolutionary and ecological processes, and information retrieval. A project and a term paper will be conducted by each student. (SP)

224. Seminar in Plant Nomenclature. (1). One 1-hour lecture per week. Semester Prerequisites: Consent of instructor: Principles, articles, recommendations of current International Code of Botanical Nomenclature; analysis of Code through application to examples, nomenclatural resources; comparison with Zoological Code. (SP)

225. Topics in Systematic Botany. (1). Formerly 290. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Consent of instructor. Advanced study in various topics in plant systematics. Topics will be announced in advance of each semester. (F,SP)

231. Plant Embryology. (2). Formerly 290. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor: Sexual reproduction in flowering plants, including microsporogenesis, megasporogenesis, meiosis, megagametogenesis, the mature embryo sac, pollen, and the development of the embryo and endosperm. (SP)

232. Topics in Cell Biology. (1). Formerly 290. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Consent of instructor. Specific topic to be announced in advance each semester. These may include the morphology, physiology, development, or molecular biology of the plant cell. (F,SP)

233. Theory and Practice of Electron Microscopy. (2). Formerly 431. May be taken without Botany 233L. Two 1-hour lectures per week. Semester Prerequisites: Graduate standing, approval of major professor, and consent of instructor. Principles and current concepts of biological specimen preparation, examination, and analysis for transmission electron microscopy. (SP)

233L. Laboratory On Theory and Practice of Electron Microscopy. (2). Formerly 431L. Botany 233L must be taken concurrently with Botany 233. Two 3-hour laboratories per week. Semester Prerequisites: Graduate standing, approval of major professor, and consent of instructor. The purpose of this course is to prepare graduate students in the biological sciences to use electron microscopy in their research. (SP)

241. Topics in Hormone Physiology. (1). Formerly 290. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Consent of instructor. The course will emphasize the biochemical and molecular basis of the action of plant growth hormones. (F,SP)

244. Tissue Culture. (3). One 1-hour lecture, one 1-hour discussion, and one 4-hour laboratory per week. Semester Prerequisites: Consent of instructor. Survey of current and technique in plant tissue culture, including consideration of the establishment and maintenance of tissue cultures, protoplast manipulation, and whole plant regeneration from single cells. (F,SP)

248. Regulation of Plant Development. (3). Formerly 294C. One 3-hour meeting every two or three weeks. Students read for approximately 20 hours per week. Semester Prerequisites: Consent of Instructor: Intensive reading and analysis of the literature in plant growth and development. Designates candidates for the Ph.D. in the area of plant physiology. (F)

251. Evolutionary Ecology. (3.5). Formerly 224. Two 1-hour lectures and one 4-hour laboratories per week, plus 3 whole day field trips. Semester Prerequisites: One 1-hour meeting per week. Semester Prerequisites: Consent of instructor. Analysis of the primary literature in ecology and evolutionary biology. Topics vary from semester to semester. (F,SP)

280. Botany Colloquium. (). No credit. One 1-hour meeting per week. Meetings for the presentation of original work by the faculty, visiting lecturers, and graduate students. (F,SP)

290. Seminar. (1). Formerly 290. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Consent of instructor. Advanced study in various fields of botany. Topics will be announced in advance of each semester. Enrollment in more than one seminar is permitted. (F,SP)

299. Graduate Research. (1-12). Formerly 299. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing. Graduate student research. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or resident requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Graduate standing. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Interdepartmental Studies Courses

Provincial Courses

IDS407. Introduction to Scientific Diving. (4). Formerly 407. Two 1-hour lectures and 3½-hour pool lab plus one 7-hour ocean laboratory per week. Semester Prerequisites: Swimming test, free diving test, and Medical exam, CPR and basic first aid as prescribed by the Diving Control Board and consent of the instructor. Diving physics, physiology, medicine, rescue, first aid, re- compression, air tables, waves, currents, navigation, physical fitness, psychology, environment, subtidal ma terials, orientation techniques, government regulations, and University regulations. Leading to University certification to use underwater life support apparatus for study or research under University auspices. Sponsoring Dept.: Zoology, Botany, and Biology. (SP)
Buddhist Studies

Group Major Office, 1203 Dwinelle Hall, 642-4564

Professors:
Robert H. Belach, Ph.D. (Sociology and Comparative Studies)
Lewis R. Lancaster, M.T.H., Ph.D. (Oriental Languages)
Robert Goldberg, Ph.D. (South and Southeast Asian Studies)
Padminabah S. Jani, Ph.D. (South and Southeast Asian Studies)

Associate Professors:
Barend A. van Nooten, Ph.D. (South and Southeast Asian Studies)
Joanna Williams, Ph.D. (History of Art)

Graduate Adviser: L. Lancaster.

Group in Buddhist Studies

The Group in Buddhist Studies offers an interdisciplinary program of study and research leading to the Ph.D. degree in Buddhist Studies. The Group, which cooperates closely with the Department of South and Southeast Asian Studies and the Department of Oriental Languages, emphasizes the close ties of religion with the linguistic background and the surrounding civilizations. Students who wish to join the program may choose either an emphasis in Sanskrit or in an East Asian language, i.e., Chinese or Japanese. For those who choose the Sanskrit emphasis, the required secondary language will be Chinese or Tibetan; for the Chinese/Japanese emphasis, the required secondary language will be Sanskrit.

Preparation. For admission to the graduate program the student shall have completed an M.A. in one of the appropriate Asian languages or have equivalent language preparation. Early in the student’s doctoral career, written examinations in two modern languages must be passed. These languages must be relevant to the student’s program and have the approval of the graduate adviser.

Further information about the program, including a full statement of the requirements for advancement to candidacy, is available upon request from the Group Office.

Graduate Courses

200. Sources and Scholarship. (3). May be repeated for credit. One 3-hour seminar per week. Systematic introduction to primary and secondary materials. History of Buddhist Studies in Europe and East Asia. There is at present no comparable course or seminar anywhere in the U.S. The unified field of Buddhist Studies represents a considerable portion of the social, intellectual, economic, literary, and artistic history of South, Southeast, Central, and East Asia. Moreover, the history of the discipline involves fields as diverse as 19th century philosophy and 20th century symbolic anth(F)

212. Advanced Seminar in Buddhist Studies. (3). Formerly 212. May be repeated for credit with consent of instructor. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Specialized topics in Buddhist Studies, involving the use of Sanskrit, Tibetan, and Chinese texts. (F.SP)

295. Serindica. (3). Formerly 295. May be repeated for credit. One 3-hour seminar per week. Comparative study of Indian and Chinese thought and institutions, in the context of Buddhism. Sinic-Indian synthesis in Central and Southeast Asia. (SP)

Chemistry

Major Office, 420 Latimer Hall, 642-0473

Staff and courses are listed under the College of Chemistry.

Choice of College

A student can complete a major in Chemistry in either the College of Letters and Science (A.B. degree) or the College of Chemistry (B.S. degree). Both curricula are approved by the American Chemical Society, if the student includes certain courses in the total program, and either is a satisfactory foundation for a career in chemical industry, for the teaching of chemistry, or, if completed with high academic standing, for graduate work in chemistry.

Chemistry Major in the College of Letters and Science

Major Requirements

Mathematics: 1A, 1B. Physics: 7A, 7B, 7C. Chemistry: 1A, 1B, 5 (or 4A, 4B); 14, 104, 112A, 112B, 120A, 120B, and a choice of 105, 108, 125. (For students who wish to be certified to the American Chemical Society, this must be 125.)

Honors Program. In addition to completing the requirements for the major in chemistry, students in the honors program must (a) earn a grade-point average of at least 3.3 in upper division courses in the major and major in the University; and (b) be recommended by the major adviser—this would normally be based upon passing 113 or 122 with a grade of B- or higher and receiving a B+ or higher in at least 3 units of H194. Students interested in the honors program should consult with their major adviser during the junior year.

Field Major in Physical Sciences

Students interested in this major should see Physical Science for the description of the major program.

California Teaching Credential

For information concerning the California Teaching Credential (Single or Multiple Subject), see the Announcement of the School of Education.

Graduate Study in Chemistry

Students interested in graduate study are referred to the Chair of the Department of Chemistry, 419 Latimer Hall, for information.

Chicano Studies

Major Office, 3410 Dwinelle Hall, 642-0240

Undergraduate Major Adviser: Ms. Oropesa

Choice of Program

A student can complete the major in Chicano Studies in the College of Letters and Science (A.B. degree) or in the Department of Ethnic Studies (A.B. degree). Students in each program are subject to the requirements of the respective College or Department. Staff and courses in Chicano Studies are listed in the section entitled Special Studies: Ethnic Studies (Chicano Studies).

Major in Chicano Studies

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, the Chicano Studies Major curriculum includes the study of particular aspects of Mexican history, culture, and politics as they bear upon the Chicano community, past and present. Emphasis is given in the major to the student developing a broad knowledge of the Chicano experience. The major stresses the analysis of relationships 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 interface 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 a wide range of advanced graduate work and/or professional training in various fields.

Major Requirements

Lower Division. (1) Completion of three core courses from 20, 40, 50, 70, or 80; (2) Demonstrate proficiency in Chicano Spanish; (3) Completion of 6A and 6B, Chicano Spanish (or by passing a proficiency examination given at the beginning of each semester); (3) Completion of at least 6 units of courses (may include upper division) outside of the Ethnic Studies Department such as Political Science, Social Welfare, Comparative Literature, etc. (determined upon consultation with the Chicano Studies Adviser).

Upper Division. (1) Completion of 10A and 10B; (2) Completion of four additional upper division courses in Chicano Studies to include: (a) one course from 160, 170, or 174; (b) one course from 142, 143, 150A, 150B, or 155; (c) two electives. It is recommended that majors take at least one upper division course in Spanish; (3) One course in Ethnic Studies; (4) Four units of Senior Thesis work will be optional for all majors: 195.

Honors Program

The Chicano Studies Program provides a program leading to the A.B. degree with honors. A student must have junior standing, a 3.3 University GPA, and a 3.3 GPA in the major. The honors thesis will consist of a 6-unit research project. The faculty will establish criteria and grade the project. For more information, see the Chicano Studies Adviser in 340 Aiwne Hall.

Classics

Department Office, 5303 Dwinelle Hall, 642-4218

Professors:
John K. Anderson, M.A., F.S.A. (Graduate Adviser) (Classical Archaeology)
William S. Anderson, Ph.D. (Graduate Adviser) (Latin)
Richard Brown, B.A. (Greek)
Crawford H. Greenwell, Ph.D. (Classics)
Mark Griffith, Ph.D. (Italian)
Anthony A. Long, Ph.D. (Graduate Adviser) (Classics)
Stephen G. Miller, Ph.D. (On leave 1982-1987)

Associate Professors:
Charles E. Murgia, Ph.D. (Graduate Adviser) (Greek, Latin, Classical Languages, Classical Civilization)
Thomas G. Rosenmeyer, Ph.D. (Greek, Latin, Classical Languages, Classical Civilization)
Ronald S. Shroud, Ph.D. (Greek, Latin, Classical Languages, Classical Civilization)
Leslie L. Threlk, Ph.D. (Classics) (Chair)

Visiting Fohnsors:
Florence Verducci, Ph.D. (Emeritus)

Visiting Assistant Professor:
Wendy Kendick Pritchett, Ph.D. (Emeritus)

Major Advisers: (Greek, Latin, Classical Languages, Classical Civilization) Mr. Anderson, Mr. Bulloch.

Major Graduate Advisers: (Classics) Mr. Griffith, (Classical Archaeology) Mr. Anderson.

The Department of Classics offers a complete undergraduate and graduate program in Greek and Latin languages, literatures, and civilizations. It offers 8 courses of instruction under the headings of Greek, Latin, and Classics. The object of the
Greeks and Latin courses is to teach students how to read the great works of ancient literature in the original languages, and to acquaint students with the achievements of classical civilization. The purpose of the undergraduate courses called Classics is to give the student a good introduction in Greek or Roman civilization in all its phases—literature (read in translation), mythology, religion, government, and archaeology. The latter courses require no knowledge of Greek or 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 Civilization.

Major in Greek. Elementary Greek (either Greek 1-2 or Greek 10 or the Greek Workshop, offered during Summer Session); Greek 40A-40B (to be completed as early as possible; may be taken concurrently with upper division courses); Greek 101; Greek 102; Greek 103; Greek 115; Greek 120. Any two or three additional courses chosen from any upper division courses (Gen. Elect. or Elect. for Classics 190.

Major in Latin. Elementary Latin (either Latin 1-2 or Latin 10 or the Latin Workshop, offered during Summer Session); Latin 40A-40B (to be completed as early as possible; may be taken concurrently with upper division courses); Latin 101; Latin 102; Latin 103; Latin 115; Latin 120; any two or three upper division courses chosen from Latin 115 to 120. If all required courses taken on the recommendation of the Classics department.

Major in Classics. Elementary Greek (either Greek 1-2 or Greek 10 or the Greek Workshop, offered during Summer Session); Elementary Latin (either Latin 1-2 or Latin 10 or the Latin Workshop, offered during Summer Session); either Greek 40A-40B or Latin 40A-40B (to be completed as early as possible; may be taken concurrently with upper division courses); Greek 101; either Greek 102 or 103; four courses chosen from Greek 115 and 120; any two or three upper division courses chosen from Greek 115 and 120. Four additional courses chosen from Greek 115 to 120. Any two or three upper division courses chosen from Greek 115 to 120.

Upper Division Courses

Classics

Courses that do not require a knowledge of Greek or Latin. This group of courses is designed Classics 10A, 10B, etc.

Lower Division Courses

10A. The Golden Age of Greece. (F). Formerly 10A- 40B. Three 1-hour lectures per week. The historical, political, and intellectual development of Classical Greece, viewed as a whole. Translations of the Greek classics studied in their social and political settings will illustrate the achievements of the Greeks in literature, philosophy, history, and art. (F)

10B. The Golden Age of Rome. (F). Formerly 11A- 11B. Three 1-hour lectures per week. The social, political, and intellectual development of the Romans, viewed as a whole. Translations of the Latin classics studied in their social and political settings will illustrate the achievements of the Romans in literature, history, and art. (SP)

17A-17B. Elementary Course in Classical Archaeology. (SP). Formerly part of 17A-17B-17C series. Three 1-hour lectures per week. A. The Bronze Age to Ca. 350 B.C. (F) B. Ca. 350 B.C. to the Antonine Age. (SP)

28. The Classical Myths. (F). Formerly 28. Three 1-hour lectures per week. A study of Greek and Roman myths with emphasis on the universal meanings of myths. The interaction of myths, religion and philosophy as a source of understanding of ancient and present cultures. (F)

34. Epic Poetry: Homer and Virgil. (F). Formerly 34. Three hours of lecture per week. Greek and Roman epics with emphasis on the universal meanings of myths. (F)

35. Greek Tragedy. (F). Formerly 35. Three hours of lecture per week. Greek tragedy with readings of Aeschylus, Sophocles, and Euripides. (SP)

36. Ancient Philosophy. (F). Formerly 36. Three hours of lecture per week. The form and content of Plato's dialogues; readings in Aristotle. (SP)

96. Freshman Seminar: Tragedy and Tragic Theory. (SP). New Course since Spring 1983. Two 1-hour classes per week. An introduction to freshman or Sophomore status and permission of instructor. Intensive study of a major area or theme of classical literature or of a major aspect of classical civilization, including the influence and interpretation of the classics in later traditions. Topic for 1984-85: Tragedy and Tragic Theory. (readings in Greek tragedy, Aristophanes, Seneca, Racine, Goethe, Sartre, Aristotle, Hegel, and Nietzsche). (SP)

Upper Division Courses

Greek Literature. (SP). Formerly part of 100A- 100B-100C series. Three hours of lecture per week. Readings in Greek writers at the upper division level; enrollment limited. (SP)

100B. Latin Literature. (SP). Formerly part of 100A- 100B-100C series. Three hours of lecture per week. Readings in Latin writers at the upper division level; enrollment limited. (F)

101. Ancient Metaphysics. (F). Formerly 110A-110B. Two 1-hour lectures per week. Semester Prerequisites: Greek 2 or 10. Quarter Prerequisites: Greek 2-1, AA-1B-1C or equivalent. The principles of ancient metre of all types. (F)

120. Greek and Roman Historians. (SP). Formerly 138A- 138B. Three hours of lecture per week. Readings in the major Greek and Roman historians. (F)

121. Greek and Roman Religion. (F). Formerly 176A- 176B. Three hours of lecture per week. The worship
of the gods in Greece and Rome. Will be offered 1985-
130. Undergraduate Seminar, (3). New Course since
Spring 1983. One 3-hour or two 11/2-hour seminars per
week. Semester Prerequisites: Upper division status.
Topic to vary from year to year. Extensive readings and
written assignments. Enrollment limited. Will be offered
1985-86.
155A-155B. Late Antiquity. (3). Formerly 155A-155B.
Three hours of lecture per week. A. Society and the
Supernatural from Marcus Aurelius to Symeon Stylites.
B. The strains of empire. The Roman world 200-550
A.D.
170. Classical Archaeology, (3). Three hours of class
per week.
170A. Greek Vase Painting, (3). Will be offered 1985-
170B. Greek Sculpture to 400 B.C., (3). Will be offered
1986-87.
170C. Greek Architecture. (3). Formerly 170E. (F)
170D. Roman Art and Architecture. (3). Formerly 170F.
(SP)
175. Topography and Monuments, (3). Formerly 175A-
175B-175C-175D. Course may be repeated for credit
as topic varies. Three hours of lecture per week.
175A. Athens, (3).(SP)
175B. Rome, (3). Will be offered 1985-86.
175C. Sanctuaries of Greece, (3). Will be offered 1985-
175D. Pompeii and Herculaneum, (3). (F,SP)
175E. The Western Roman Provinces, (3). To be offered
1985-86.
178. Mythology. (3). Formerly 178. Three hours of
lecture per week. Investigations into the significance of
myth, based on Greek myths and selected Near Eastern
and Indo-European parallels. (SP)
190. Seminar for Majors, (2). New Course since Spring
1983. Two 1-hour seminars per week. Semester Pre-
requisites: Major status. Weekly meetings to discuss
significance of Greek and Roman civilization. (SP)
198. Directed Group Study for Advanced Under-
graduates, (1-4). Formerly 198. Course may be repeated
for credit. Must be taken on a passed/not passed basis.
Semester Prerequisites: Restricted to senior honor stu-
dents. (F,SP)
199. Supervised Independent Study and Research.
(1-4). Formerly 199. Course may be repeated for credit.
May be taken on a passed/not passed basis. Semester
Prerequisites: Restricted to senior honor students. (F,SP)
Graduate Courses
290. Myth and Narrative in Greek Art, (4). New Course
since Spring 1983. Three hours of class meetings per
week. Semester Prerequisites: Graduate standing.
Seminar treating myth and narrative in Greek art. To
be taught by Sather Professor of Classical Literature,
A. M. Snodgrass. (F) 1984 Only.

Greek
Courses in this group are designated Greek 1, 2, etc.
Lower Division Courses
1. Elementary Greek, (4). Formerly 1A and a portion of
1B. Three 1-hour lectures per week. Beginners' course.
Extensive reading. (F)
2. Elementary Greek, (4). Formerly a portion of 1B
and 1C. Three 1-hour lectures per week. Beginners' course.
Extensive reading. (SP)
Five 1-hour classes and one hour discussion per week.
Beginners' course (intensive); equivalent to Greek 1-2.

Latin
Courses in this group are designated Latin 1, 2, 40,
etc.
Lower Division Courses
1. Elementary Latin, (4). Formerly 1 and a portion of
2. Three 1-hour lectures per week. Beginners' course.
Extensive reading. (F,SP)
2. Elementary Latin, (4). Formerly a portion of 2 and
20. Three 1-hour lectures per week. Beginners' course.
Extensive reading. (F,SP)
1-hour classes and one hour of discussion per week.
Beginners' course (intensive); equivalent to Latin 1-2.
(F,SP)
14A and a portion of 1B. Self-paced. Material covered
in self-paced is same as that of Latin 1A-1B.
155A-155B. Intermediate Latin. Composition, Grammar,
and Sign Reading, (3). Formerly 40A-40B-40C.
Two one-hour classes per week. Semester Prerequisites:
2 or 10. Quarters Prerequisites: 1-2 or 1A-1B-1C. De-
velopment of skills in writing Attic prose and sight-reading;
review of grammar. (F,SP) 40A: Fall, 40B: Spring.
Upper Division Courses
100. Xenophas and Attic Prose, (3). Formerly 100.
Three hours of lecture per week. Semester Prerequisites:
2 or 10. Quarters Prerequisites: 1-2 or 1A-1B-1C. Selected
readings from Xenophon's Anabasis; some review of
grammar. (F)
101. Homer, (3). Formerly 101. Three hours of lecture
per week. Semester Prerequisites: 100. Selected readings in
the Iliad or Odyssey, (F)
102. Plato, (3). Formerly 102. Three hours of lecture
per week. Semester Prerequisites: 100. The Apology
and other readings in Plato. (SP)
103. Greek Drama, (3). Formerly 103. Three hours of
lecture per week. Semester Prerequisites: 100. Readings in
Euripides and/or other dramatists. (SP)
115. Senior Course in Greek Poetry, (4). Formerly
115A-G. Course may be repeated for credit with consent of
instructor. Three hours of lecture per week. Semester
Prerequisites: 101. Quarter Prerequisites: 103. Extensive
reading. (F)
115A. Archaic Poetry, (4). (SP)
115B. Greek Drama, (4). Will be offered 1985-86.
115C. Hellenistic Poets, (4). (F)
120. Senior Course in Greek Prose, (4). Formerly
120A-120B-120C-120D-120E-120F. Course may be
repeated for credit with consent of instructor. Three hours
of lecture per week. Semester Prerequisites: 101 or
102. Quarter Prerequisites: 103. Extensive reading.
120A. Thucydides, (4). To be offered 1985-86.
120B. Attic Oratory, (4). (SP)
120C. Herodotus, (4). Will be offered 1985-86.
120D. Plato and Aristotle, (4). (F)
Three 1-hour lectures per week. Semester Prerequisites:
100. Readings in the Gospels and Epistles in Greek.
1985A-H198SB. Honors Course in Greek, (3-14,4).
Formerly H1985A-198SB-198SC. Credit and grade to be
awarded upon completion of the sequence. Semester
Prerequisites: Appropriate language preparation and
eligibility for admission to the honors program. Largely
independent study over two semesters, including the
writing of a thesis, to be evaluated by an Honors Com-
mittee of three members. Written thesis due Monday of
the 13th week of the second semester. (F,SP)
198. Directed Group Study for Advanced Under-
graduates, (1-4). Formerly 198. Course may be repeated
for credit. Must be taken on a passed/not passed basis.
Semester Prerequisites: Restricted to senior honor stu-
dents. (F,SP)
199. Supervised Independent Study and Research.
(1-4). Formerly 199. Course may be repeated for credit.
Must be taken on a passed/not passed basis. Semester
Prerequisites: Restricted to senior honor students. (F,SP)
1-hour classes and one hour of discussion per week.
Beginners' course (intensive); equivalent to Latin 1-2.
(F,SP)
Graduate Courses

Classics

One semester of Proseminar (either Classics 200A or 200B) is prerequisite to all graduate seminars; this requirement does not apply to graduate courses that are not seminars proper (namely 210A-210B, 220A-220B, 222A-222B, 250A-250B, 260A-260B), 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 alternating years.

Graduate Courses

200. Pro-Seminar. (4). Formerly 200A-200B. Two 1½-hour or one 3-hour class per week. An introduction to the general literature of classical philology, to methods of research, and to textual criticism. (F)


210. Greek Poetry. (4). Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

210A. Homer. (4). Formerly 210A

210B. Hesiod. (4). Formerly 211B

210C. Earlier Lyric Poetry. (4). Formerly 212A

210D. Later Lyric Poetry. (4). Formerly 212B.

210E. Hellenistic Poetry. (4). Formerly 220E. (SP)

215. Greek Dramatists. (4). Formerly 213. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

215A. Aeschylus. (4).

215B. Sophocles. (4).

215C. Euripides. (4).

215D. Aristophanes. (4).

215E. Menander. (4).

216. Greek Historians. (4). Formerly 215. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

216A. Herodotus. (4).

216B. Thucydides. (4).

216C. Aristotle's Constitution of Athens. (4).

216D. Topography and Monuments. (4). Formerly 175A-175B-175C. Course may be repeated for credit as topic varies. Three hours of lecture per week.

216E. Polybius. (4).

216F. Plutarch. (4).

217. Greek Oratory. (4). Formerly 217. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B. Greek oratory.

218. Greek Philosophers. (4). Formerly 216. Course may be repeated for credit as topic varies. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B. Formerly 216A-216B-216C-216D.

218A. Pre-Socratics. (4). (F)

218B. Plato. (4).

218C. Aristotle. (4).

218D. Post-Aristotelian Philosophy. (4).

219. Greek and Latin Romance. (4). Formerly 218. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B. Study of the Greek romances.

220A-220B. Greek and Latin Epigraphy. (4). Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

221. Greek Psychology. (4). Formerly 225. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B. An interplay of Greek proverbs, reflections on the soul, consciousness, and various aspects of mental life, especially constructs of the self.

222A-222B. Comparative Grammar of Greek and Latin. (2). Formerly 222A-222B. One 2-hour class per week. Semester Prerequisites: Greek 103 and Latin 103. Open to undergraduates. Quarter Prerequisites: Greek 103 and Latin 106, 107. Open to undergraduates.

A. Phonology

B. Morphology and syntax

230. Latin Poetry. (4). Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

230A. Lucretius. (4). Formerly 231A. (F)

230B. Vergil. (4). Formerly 231B.

230C. Post-Vergilian Epic Poets. (4).

230D. Catullus. (4). Formerly 234A.

230E. Horace. (4). Formerly 234B.

230F. Tibullus, Propertius, and Ovid. (4). Formerly 235B.

230G. Persius and Juvenal. (4). Formerly 235B.

235. Roman Dramatists. (4). Formerly 230A-230B-230C. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

235A. Plautus. (4).

235B. Terence. (4).

235C. Seneca. (4).

236. Roman Historians. (4). Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

236A. Sallust. (4). Formerly 237A.

236B. Caesar. (4). Formerly 237B.

236C. Livy. (4). Formerly 237C.

236D. Tacitus. (4). Formerly 237D. (SP)

236E. Suetonius. (4). Formerly 237E.

237. Roman Prose Writers. (4). Course may be repeated for credit as topic varies. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.


237B. Pliny the Younger. (4). Formerly 237F.

237C. Petronius. (4). Formerly 236C.

237D. Apuleius. (4).

238. Roman Society and Law. (4). Formerly 246. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

239. Roman Politics and Administration. (4). Formerly 247. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

240A. Topics in Late Antique and Byzantine Literature. (4). Formerly 253. Course may be repeated for credit as topic varies. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: 200. Quarter Prerequisites: 200A-200B.

A. Latin literature 500-900 A.D.

B. Latin literature 950-1300 A.D. (SP)

250. Advanced Greek Composition. (4). Formerly 250A-250B. Course may be repeated for credit. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: Greek 408 or equivalent. Quarter Prerequisites: Greek 404-405-406. Advanced instruction in the writing of Greek prose. (F)

260. Advanced Latin Composition. (4). Formerly 260A-260B. Course may be repeated for credit. Two 1½-hour or one 3-hour class per week. Semester Prerequisites: Latin 408 or equivalent. Quarter Prerequisites: Latin 404-405-406. Advanced instruction in the writing of Latin prose. (SP)

270. Seminar in Classical Archaeology. (4). Formerly 270A-270B-270C. Course may be repeated for credit as topic varies. Two 1½-hour or one 3-hour class per week. Advanced study of ancient Greek art objects and sites. (F,SP)

275. Pan-Hellenism and Nemea. (4). Formerly 271. Course may be repeated for credit as topic varies. Two 1½-hour or one 3-hour class per week. Study of the Pan-Hellenic centers with particular emphasis on Nemea.

279. Field Study in Archaeology. (2-12). Formerly 277. Course may be repeated for credit up to a maximum of fifteen units. Supervised study in archaeology. (F,SP)

279. Special Study. (2-4). Formerly 276. 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 advisor or personal adviser. Units may not be used to meet either unit or residence requirements for a master's degree. (F,SP)

279. Special Study. (1-4). Formerly 279. Course may be repeated for credit. Special individual study for qualified graduate students. (F,SP)

601. Individual Study for Master's Candidates. (1-12). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the graduate adviser or personal adviser, intended to provide an opportunity for qualified students to prepare themselves for the comprehensive examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

300. Teaching of Classics: Methods and Problems. (3). Formerly 300. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four 2-hour seminars per term plus individual conferences. Semester Prerequisites: Graduate standing or TA status. Seminar in problems of teaching. Required for all new teaching assistants. (F,SP)

302. Teaching Practicum. (2-6). Formerly 302. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. For qualified graduate students. (F,SP)

Related Courses in Other Departments

For courses in Sanskrit, see Department of South and Southeast Asian Studies.
Comparative Literature

Department Office, 4408 Dwinelle Hall, 642-1202

Professors: Paul J. Alpers, Ph.D. (English)
Robert Alter, Ph.D. (Hebrew)
William S. Anderson, Ph.D. (Latin)
Cyril Birch, Ph.D. (Chinese)
Louis C. G. Duh, Ph.D. (Italian)
Phillip J. Damon, Ph.D. (English)
Joseph J. Duggan, Ph.D. (Philosophy)
Marie-Helene Hue, Doctorate

Associate Professors: Paul M. Bertrand Augst, Ph.D. (Italian)
Michael Andre Bernstein, Ph.D. (English)
Carol J. Glover, Ph.D. (Scandinavian)
Michael N. Nagler, Ph.D. (Classical)
Francia R. Masiello, Ph.D. (Spanish)

Assistant Professor: Anthony J. Cascardi, Ph.D. (Spanish)

The Department of Comparative Literature offers students an opportunity to develop their ability to read in a wide spectrum of activities; to study one literature in depth and another selectively: to acquire a broader sense of literary history and of literary traditions than the study of a single literature could furnish; to explore the contacts between writing and other cultures; to acquaint themselves with some of the significant writings in the theory of literature, and to prepare themselves for methodical investigation of issues involving more than one literature. Students must have fulfilled the requirement in Subject A listing in the Index. For further information, see Subject A listing in the Index.

The Major

The emphasis of the undergraduate major is on a broad understanding of literary phenomena rather than on specialized skills, although some specialized courses are offered with the options open to students. Recent graduates have entered graduate programs in a variety of disciplines, including medicine, law, and the social sciences. Others have gone on to jobs requiring a broad language spectrum and critical and theoretical approaches, and to encourage them to formulate their own standards and responses. The senior course (CL 190) is designed to help students apply the information and the principles acquired in earlier courses, to acquaint themselves with some of the significant writings in the theory of literature, and to prepare themselves for methodical investigation of issues involving more than one literature. Students must have fulfilled the requirement in Subject A listing in the Index. For further information, see Subject A listing in the Index.

The Graduate Program

The M.A. program normally prepares students for doctoral work at Berkeley or, when taken in conjunction with the appropriate teaching credential, leads to teaching at the high school or junior college level. The Ph.D. program prepares students for teaching and research in English and the ancient and modern foreign languages and literatures; it is especially designed to encourage research involving the study of literary documents in more than one language. Additional information should be sought from the University Graduate Division in the Department of Comparative Literature.

Undergraduate Preparation. Students interested in the graduate program in Comparative Literature at Berkeley are advised that strong undergraduate preparation in at least two foreign languages will speed up their work at the graduate level. A reading knowledge of four foreign languages (including both Greek or Latin and French or German or Russian) is required for the Ph.D.

Requirements for the M.A. Degree. A minimum of 24 approved graduate and upper division units is required, including (1) at least 12 graduate units, (2) at least two introductory graduate courses in Comparative Literature, (3) at least one undergraduate seminar in Comparative Literature, or an additional introductory graduate course, and (4) work in at least two separate literatures if the examination covers the development of one literature with heavy emphasis on one period of specialization or on one period each. After consultation with the adviser, students may request to be examined on only two literatures if the examination covers the development of one literature in depth and another selectively; to acquire a broader sense of literary history and of literary traditions than the study of a single literature could furnish; to explore the contacts between writing and other cultures; to acquaint themselves with some of the significant writings in the theory of literature, and to prepare themselves for methodical investigation of issues involving more than one literature. Students must have fulfilled the requirement in Subject A listing in the Index. For further information, see Subject A listing in the Index.

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Lower Division Courses

1A-1B. English Composition in Connection with the Reading of World Literature. (4,4) Formerly 1A. Three 1-hour lectures per week plus individual conferences. Semester Prerequisites: Two 1, 2, or 3 years of high school English. (b) A 3.5 grade point average in high school English, (c) a reading knowledge of an ancient or modern foreign language, and (d) permission of the instructor. Expository writing based on analysis of selected masterpieces of ancient and modern literature. Limited to 10 qualified freshmen who meet for round-table discussions and attend weekly tutorial sessions. Individual assignments provide each student with the opportunity to exploit his or her linguistic and literary training.

2A-2B. English Composition in Connection with the Reading of World Literature. (4,4) Formerly 2A-2B. Five 1-hour meetings per week. Semester Prerequisites: Two 1, 2, or 3 years of high school English, (b) a 3.5 grade point average in high school English, (c) a reading knowledge of an ancient or modern foreign language, and (d) permission of the instructor. Expository writing based on analysis of selected masterpieces of ancient and modern literature. Limited to 10 qualified freshmen who meet for round-table discussions and attend weekly tutorial sessions. Individual assignments provide each student with the opportunity to exploit his or her linguistic and literary training.

30A-30B. Seminar in World Literature. (3,3) Formerly 30A-30B. Two 1-hour discussions per week. Semester Prerequisites: Consent of the instructor. Exploration, in seminar format, of a topic in World Literature with roundtable discussions and individual assignments. Limited to 15 students with freshman standing.

40A and 40B. Women and Literature. (3,3) Formerly 40A and 40B. May be repeated once for credit as topic varies. Three 1-hour lectures 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 technique and the problems raised by the issue. Formerly 41A. (SP)

40A-40B. Women and Literature. (3,3) Formerly 40A and 40B. Five 1-hour lectures 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 technique and the problems raised by the issue. Formerly 41A. (SP)

410. Introduction to Comparative Literature. (3) Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

41A. Forms of the Epic. (3) Formerly 41A. (F)
41B. Forms of the Lyric. (3) Formerly 41B. (F)
41C. Forms of the Novel. (3) Formerly 41C. (SP)
41D. Forms of the Drama. (3) Formerly 41D. (F)
41E. Forms of the Cinema. (3) Formerly 41E. (SP)
42. Introduction to Comparative Literature. (3) Formerly 42A or 42B. Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

43. Studies in World Literature. (3) Formerly 43. Three 1-hour lectures per week. A study of a particular topic in World Literature with roundtable discussions and individual assignments. Limited to 15 students with freshman standing.

44A. and 44B. Introduction to Comparative Literature. (3) Formerly 44A and 44B. Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

44A. The Epic Tradition. (3) Formerly 44A. (F)
44B. The Lyric Tradition. (3) Formerly 44B. (F)
44C. The Novel Tradition. (3) Formerly 44C. (SP)
44D. The Drama Tradition. (3) Formerly 44D. (F)
44E. The Cinema Tradition. (3) Formerly 44E. (SP)
44F. The Essay Tradition. (3) Formerly 44F. (F)

45. Seminar in World Literature. (3) Formerly 45. Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

45A. and 45B. Seminar in World Literature. (3,3) Formerly 45A and 45B. Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

45A. The Epic Tradition. (3) Formerly 45A. (F)
45B. The Lyric Tradition. (3) Formerly 45B. (F)
45C. The Novel Tradition. (3) Formerly 45C. (SP)
45D. The Drama Tradition. (3) Formerly 45D. (F)
45E. The Cinema Tradition. (3) Formerly 45E. (SP)
45F. The Essay Tradition. (3) Formerly 45F. (F)

46. Seminar in World Literature. (3) Formerly 46. Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

46A. and 46B. Seminar in World Literature. (3,3) Formerly 46A and 46B. Three 1-hour lectures per week. Comparative study of masterpieces of world literature. (F,SP)

46A. The Epic Tradition. (3) Formerly 46A. (F)
46B. The Lyric Tradition. (3) Formerly 46B. (F)
46C. The Novel Tradition. (3) Formerly 46C. (SP)
46D. The Drama Tradition. (3) Formerly 46D. (F)
46E. The Cinema Tradition. (3) Formerly 46E. (SP)
46F. The Essay Tradition. (3) Formerly 46F. (F)
ent, read in English and one foreign language. Emphasis on principles of comparative methods and analysis. (F,SP)

112A-112B. Modern Greek Language and Literature. (4,4) Formerly 112A-112B-112C. Three 1-hour lectures and one 1-hour discussion period per week. Semester Prerequisites: Two years of college-level classical Greek, including a course on Homer and a course on either Plato or a dramatist. Modern Greek pronunciation, vocabulary, and grammar studied in comparison with Attic Greek. The forms of writing (prose, poetry, drama). Compositional skills. Reading of literary texts. (F,SP)

113A-113B. Welsh Language and Literature. (4,4) Formerly 113A-113B-113C. Three 1-hour lectures and one 1-hour discussion period per week. Welsh pronunciation, vocabulary, forms, and syntax, studied in conjunction with the reading and analysis of prose texts (including the Mabinogion) supplemented by poetry and drama. (F,SP)

120. The Biblical Tradition in Western Literature. (3) Formerly 120. Three 1-hour lectures per week. Examination of selected aspects of the Biblical tradition and their relevance to the study of later literature.

125. The Mystical Tradition in Literature. (3) Formerly 125. Two 1/2-hour lectures per week. A survey of the major concepts in the philosophy of mysticism and their expression in literature in examples drawn from at least one Eastern and one Western tradition; on problems such as love and sex, social justice and individual fulfillment.

141L. The History of Cinema. (5) Formerly 141L. Two 2-hour lectures and one 2-hour lab per week. The development of cinema as a dominant form of representation. Comprehensive survey of the major periods and cinematographic genres: introduction to film analysis and film theory. Laboratory open from 1880 to the coming of sound in the later 1920's. (F)

141M. The History of Cinema. (5) Formerly 141M. Two 2-hour lectures and one 2-hour lab per week. The development of cinema as a dominant form of representation. Comprehensive survey of the major periods and cinematographic genres: introduction to film analysis and film theory. (F)

151. Readings in Modern Chinese. (3) Formerly 151A-151B. Must be taken on a passed/not passed basis. Three 1-hour meetings per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of major themes in Eastern literature between 1840 and the beginning of the contemporary period. (F)

159. Modern Literature and the Arts. (4) Formerly 159A-159B. Three 1-hour lecture and discussion and three 1-hour laboratory periods per week. Semester Prerequisites: Preparation in a foreign language and two semesters of lower or upper division literature. Quarter Prerequisites: Four quarters of one foreign language and two quarters of lower or upper division literature. Comparative investigation of the relationships between modern poetry and fiction and modern painting, sculpture, music, and film, with particular emphasis on the period from 1865 to the present. Discussion of the methods and problems of comparative analysis. (F,SP)

160. Western Literary Cross-Currents in Twentieth-Century China. (3) Formerly 160-Three 1-hour lectures per week. The impact of Western literature on modern China and China's response in literary theory, movements, and creation. When not given see Oriental Languages 206.

165. Myth and Literature. (3) Formerly 165. Two 1/2-hour lecture and discussion periods per week. Study of the earliest myths and of the progressive growth of literature out of myth to the present day. Myth and oral composition. Emphasis on the meanings of myth as reflected in varying idioms. (F)

166. Literature of War and Peace. (3) Formerly 166. Two 1/2-hour lectures and discussion periods per week. Exploration of important literary works which neither glorify war nor sentimentalize peace but illuminate the problems. Works include fiction and non-fiction, from Western and Eastern traditions will be canvassed. (F)

170. Special Topics in Comparative Literature. (1-3) Formerly 170. May be repeated for credit when topic changes. To be arranged. Semester Prerequisites: Re-stricted to students majoring in Comparative Literature. 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. (F,SP)

180. Mannerism in Art and Literature. (3) Formerly 180. Two 1/2-hours of lecture and discussion per week. The phenomenon of mannerism, both as a literary and artistic constant as well as an historical developmental period, will be studied by means of examples drawn from the art and literature of Italy, France, and Germany. An attempt will be made to define and illustrate modern mannerism. (F)

185. Women's Perspective in Literature. (3) Formerly 185. May be repeated for credit with the consent of the instructor. Two 1/2-hours of lecture and discussion per week. Comparative study of women writers or the portrayal of women in the literature of various national cultures. Topics will vary from year to year. (F,SP)

190. Comparison of Authors. (3) Formerly 190-190A-190B-190C-190D-190E Three 1-hour lectures per week. Semester Prerequisites: 100 or equivalent and at least three semesters in upper division literature, including at least one course in a language other than English. Comparison of three major authors written in three different languages. One foreign language must be read in the original language. Examination and substantial comparative paper required. (F,SP)

195. Honors Course. (1-3) Formerly H195. Course may be repeated for credit. To be arranged. Semester Prerequisites: Honors standing, 8 units in upper division literature courses, including 100 or the equivalent, and knowledge of a vernacular language and either Greek or Latin and proficiency in a foreign language. 12 units in upper division literature courses, including 100 or the equivalent, and Preparation and writing of an honors thesis under the supervision of a member of the faculty. (F,SP)(SP)

199. Supervised Independent Study and Research. (1-4) Formerly 199 Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Enrollment is restricted to regulations listed on page 900. (F,SP)

200. Introduction to Comparative Literature. (4) Formerly 200A-200B. One 3-hour lecture and discussion period per week. Semester Prerequisites: Admission to graduate standing in Comparative Literature. Required of B.C. candidates for the M.A. degree, to be taken during the first year of residence. Lectures on literary theory, on the history of criticism, and on the methods of comparative literary study. (F,SP)

202. Approaches to Genre. (4) Two 1/2-hour lectures and discussion periods per week. Semester 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) Formerly 202A.

202B. Lyric Poetry. (4) Formerly 202B.

202C. The Novel. (4) Formerly 202C. (SP)

202D. Dramatic Literature. (4) Formerly 202D. (F)

208. The Disciplines of Comparative Literature. (4) One 3-hour lecture and discussion period per week. Semester Prerequisites: Completion of 200 and one semester of 202, and admission to the Ph.D. program. The methods and subject matter of Comparative Literature. Readings and discussion of representative theoretical and analytical works. Survey of bibliographical resources.

210. Studies in Ancient Literature. (4) Formerly 210. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in ancient literature between the eighth century B.C. and the fourth century A.D. with some attention to subsequent developments. (SP)

212. Studies in Medieval Literature. (4) Formerly 212. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two medieval languages. Comparative investigation of a topic in Western literature between the fifth century and the fourteenth. (SP)

215. Studies in Renaissance Literature. (4) Formerly 215. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in Western literature between the end of the Renaissance and the beginning of the eighteenth century. (SP)

220. Studies in Neoclassical Literature. (4) Formerly 220. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in Western literature between the nineteenth century and the twentieth. (SP)

222. Studies in Romanticism. (4) Formerly 223. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of major themes in European Romanticism.

224. Studies in Realism. (4) Formerly 224. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in nineteenth and early twentieth-century European Realism, with attention to historical, theoretical, and methodological problems.

225. Studies in Symbolist and Modern Literature. (4) Formerly 225. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in European literature between 1840 and the beginning of the contemporary period. (F)

227. Studies in Contemporary Literature. (4) Formerly 227. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign lan-
guages. Comparative investigation of a topic in con-
temporary Western literature. (SP)
230. Studies in Oriental-Western Literary Relations. (4). Formerly 230. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in an Oriental and one other foreign language. Comparative investigation of a literary topic requiring the study of both Oriental and Western literary documents. When not given see Oriental Languages 206. (SP)

232. Studies in Near Eastern-Western Literary Relations. (4). Formerly 232. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in Near Eastern or European language. Undergraduates may be admitted with consent of the instructor. Comparative investigation of a literary topic requiring the study of both Near Eastern and Western documents. (F)

235. Studies in the Relations Between Classical and Later Literatures. (4). Formerly 255. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages, at least one of which must be either Greek or Latin. Comparative investigation of a topic in Western literary history involving the study of classical and post-classical documents.

240. Studies in the Relations Between Literature and the Other Arts. (4). Formerly 240. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the historical and systematic relations between literature and other arts such as the visual arts, music, and film.

250. Studies in Literary Theory. (4). Formerly 250. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the theory of literature. (F)


258. Studies in Philosophy and Literature. (4). For-
mersly 258. One 3-hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages. Comparative investigation of a topic in the relationship between philosophy and literature.

250. Problems in Literary Translation. (4). One 3-
hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages or permission of the instructor. Theory and practice of translation. Students will complete a project in literary translation.

270. Problems in Literary Translation. (4). One 3-
hour lecture and discussion period per week. Semester Prerequisites: Preparation in two foreign languages or permission of the instructor. Theory and practice of translation. Students will complete a project in literary translation.

271. Continuing Seminars: Medieval Period. (2). Formerly 271. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-
hour discussion period per week. Semester Prerequisites: Restricted to students who have completed the M.A. and are studying for their Qualifying Examination in Comparative Literature. Discussion on problems of the literature of the period.

272. Continuing Seminars: Renaissance. (2). Formerly 272. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion period per week. Semester Prerequisites: Restricted to students who have completed the M.A. and are studying for their Qualifying Examination in Comparative Literature. Discussion on problems of the literature of the period.

273. Continuing Seminars: Enlightenment and Romanticism. (2). Formerly 273. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion period per week. Semester Prerequisites: Restricted to students who have completed the M.A. and are studying for their Qualifying Examination in Comparative Literature. Discussion on problems of the literature of the period.

274. Continuing Seminars: Modern Period. (2). For-
mery 274. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion period per week. Semester Prerequisites: Restricted to students who have completed the M.A. and are studying for their Qualifying Examination in Comparative Literature. Discussion on problems of the literature of the period.

278. Special Study. (1-4). Formerly 278. Course may be repeated for credit. To be arranged. Semester Prerequisites: Graduate standing. Primarily for students engaged in preliminary exploration of a restricted field, involving the writing of a report. May not be substituted for available seminars. (F,SP)

299. Directed Research. (4). Formerly 299. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Satisfactory completion of the Qualifying Examination. Writing of the doctoral dissertation. (F,SP)

601. Individual Study for Master's Students. (1-5). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Graduate standing. Individual study for the comprehensive or language requirements in consultation with the Graduate Adviser. Units may not be counted to meet either unit or residence requirements for the master's degree. (F,SP)

602. Individual Study for Doctoral Students. (1-4). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Satisfactory completion of the Master's examination. Individual study in consultation with the Graduate Adviser intended to provide opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D. May not be utilized for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

360A-360B. Methods of Teaching Literature and English Composition. (4). Formerly 360A-360B-360C. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour discussion and one 3-hour laboratory sessions per week. Semester Prerequisites: Appointment as a teaching assistant or consent of the instructor. Discussion of approaches to teaching composition at the college level in relation to the reading of masterpieces of literature. Designed primarily for instructors in the freshman composition course. (F,SP)

361A-361B. Pedagogical Practice. (4,4). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: 'Teaching assignment Supervised classroom teaching. (F,SP)

Computer Science

Computer Science Division Office, 573 Evans Hall

Faculty and Courses

Computer Science Faculty and Courses are listed under College of Engineering (see Index).

Choice of College

Undergraduates who wish to major in computer science may do so either through the College of Letters and Science (A.B. degree) or through the College of Engineering (B.S. degree). Details of the computer science and engineering program in the Department of Electrical Engineering and Computer Sciences may be found in the Engineering section of the catalog.

Computer Science Major in the College of Letters and Science

The major in computer science offers the undergraduate a background in software, computer architecture, and theoretical computer science suitable either for employment or for further study in computer science.

Unfortunately, because of the large and increasing enrollments and the limited resources available, it has proved necessary to restrict the number of computer science majors. Berkeley students should make application at the Computer Science Advising Office, 436 Evans Hall. Further information, including deadlines for applications, is available from that office or by phoning 642-7214. Applications will be considered only from students who have completed the lower division requirements, including the College's reading and composition requirement, and who have not accumulated more than 92 semester units of credit. A grade-point average of at least 3.0 on the lower division technical requirements is normally necessary, but not sufficient, for admission to the major. An admission quota has been established.

The Division's overenrollment problems have also necessitated a curtailment of admission of transfer students into the major. Transfer to Berkeley, even with the expressed intention of majoring in computer science, does not guarantee admission to the major. Freshmen and sophomore transfer students are subject to the same admission procedures as regular Berkeley students. Junior transfers must receive approval of their provisional acceptance to the major before arriving at Berkeley, and must then satisfactorily complete lower division requirements before being admitted to the major. Students who transferred to Berkeley as juniors without provisional acceptance will not be accepted into the major.

Requirements for the Major

Lower Division Requirements: The following lower division courses are required for entry into the Letters & Science major in CS. All of these courses must be graded (none may be taken P/N):

1. One year of college-level calculus and one course in linear algebra (Math 1A, 1B, 50A; or Math 2A, 2B);
2. One course in discrete mathematics (Math 55);
3. One course in probability theory and statistics (Statistics 20 or 25);
4. One course in electronics (EECS 40 or 40I).
5. Completion of the lower division sequence in computer science (CS 50 and CS 55; CS 50P may be substituted for CS 50);

Upper Division Requirements: Students are required to complete 27 units of upper division courses in the major. The following courses are required:

1. Three "core" courses:
   a. Hardware (CS 150 and 150L)
   b. Software (CS 160)
   c. Theory (CS 170)
2. "Breadth" courses from two different areas, one of which must be software:
   a. Hardware (either CS 152 or 154)
   b. Software (either CS 162 or CS 164)
   c. Theory (either CS 172 or 174)
3. One upper division mathematics or statistics course (Engineering 118 may be used to satisfy this requirement).
The remaining upper division courses applied toward the 27 unit requirement are subject to the approval of a faculty adviser. A list of technical electives for which approval will be routinely granted is available at the advisers' office (438 Evans Hall). This list includes all upper division CS and EECs courses except CS 160. It also includes courses from the fields of engineering, mathematics, statistics, linguistics, and business administration.

Minimum Scholarship: A GPA of 2.0 in the upper division major 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: In order to graduate with honors a student must:
1. Attain a 3.5 GPA in all courses applied toward the major
2. Attain a 3.5 GPA overall
3. Take one course from each of the three areas
   a. Hardware (either CS 152 or CS 154)
   b. Software (either CS 162 or 164)
   c. Theory (either CS 172 or 174)
4. Complete one term of CS H196 in the senior year. This requirement includes completion of a one semester project chosen by the student with the approval of a faculty member who will supervise the work in coordination with the instructor of H196. Admission to H196 may be limited; only students who have a 3.5 GPA will be admitted to the course.

For graduation with high honors or highest honors, see the Announcement of the College of Letters and Sciences.

Graduate Program
Graduate degree programs are available as a preparation for research and teaching (Master of Science and Doctor of Philosophy in Computer Science or Engineering), and for careers in design, development, and management (Master of Engineering and Doctor of Engineering). For details on graduate programs and procedures see the Engineering section of this Catalog.

Dance
Office, Dramatic Art Department, 101 Dwainelle Annex, 642-1877

For information about Dance courses and curricula, see information listed under the Department of Dramatic Art.

Development Studies
Group Major Office, Institute of International Studies, 209 Moses Hall, 642-4466

Major Advisers: Jyotindra Das Gupta (Political Science, Head Adviser); Irma Adelman (Agricultural Economics); Alain de Janvry (Agricultural Economics); James Anderson (Anthropology); John J. Gumperz (Anthropology); K. Basbun (Economics); R. Barhan (Economics); Lovel Jarvis (Economics); Robert R. Reed (Geography); Michael Watts (Geography); Ira M. Lapidus (History); Thomas R. Metcalfe (History); Carl G. Rosberg (Director, ILI); David Collier (Political Science); Lowell Dittmer (Political Science); David Leonard (Political Science).

Group Major in Development Studies

The program in development studies offers an opportunity for a systematic study of the problems and processes, and prospects of the developing areas of the world. The problems of development are urgent and enormously complex, and they transcend the boundaries of conventional academic disciplines. To study development problems adequately requires an analysis which draws upon several disciplines and includes a balanced understanding of historical and contemporary perspectives. The study of development as social transformation further necessitates a blending of knowledge and perspectives from political science, economics, sociology, psychology, anthropology, geography, history, and the resource and environmental sciences.

Through the program in development studies, a coordinated and comprehensive plan for interdisciplinary study of political, economic, and social development issues can be devised by setting up a schedule of relevant courses from the various academic departments at the University of California, Berkeley. The courses available are listed and described briefly in the brochure available at the Group Major Office. From the rich variety of offerings within and across departments, there is a wide range of potential programs of study to suit the interests of students within terms of appropriately selected criteria. Students are aided in combining courses in a systematic way by members of the faculty committee, consisting of representatives from several academic departments, and, on a more regular basis, by the major adviser, also a member of the faculty committee. The program is under the supervision of an interdepartmental committee of faculty members organized through the Institute of International Studies.

Students participating in the program follow a plan of study organized as an interdisciplinary major leading to a B.A. in Development Studies. They are required to take courses in two or more disciplines and to pursue detailed study of at least one specific area. In the procedural aspects of organizing an undergraduate plan of study, students in the program are assisted by the staff in the Group Major Office, participating faculty members, the student's faculty adviser, and teaching associates working in the program.

Lower Division Courses. Anthropology 3; Political Science 2; Economics 1. Recommended Courses. Sociology 1; Geography 4; 18; Environmental Design 4; Statistics 2.

Upper Division Courses. A total of 36 units of upper division (1) core courses, (2) research methods, and (3) area courses. Course additions and deletions are frequently made within fields. Please consult the program brochure for updated information.

Core Courses. Four courses (minimum 18 units) in two or more disciplines: Anthropology 144, 150, 154; City and Regional Planning 110, 116; Conservation and Resource Studies 169; Development Studies 100; Economics 171, 172; Geography 130, 131; History 159B, 160; PENR 100, 101, 102, 151; Political Science 139A, 139B, 182; Public Policy 140; Sociology 172.

Research Methods: Two courses, one from the following list and one selected in consultation with an adviser. Anthropology 193A or 193B or Development Studies 105. Note: Those students wishing to complete the research methods in the Department of Economics must also take Economics 100A-100B and Statistics 2 before entering. Students should check with the Anthropology Department for current prerequisites.

Area Courses. Three courses. These are to be selected with the approval of the major adviser. For the entire course list and descriptions, please obtain a Development Studies brochure available in the Group Major Office. Students will be encouraged to take area courses in more than one discipline. Related language training will be recommended but not required.

Up to two substitutions of courses may be permitted in the major with the approval of a major adviser.

A maximum of three courses outside the College of Letters and Science may be included in the major, e.g., courses in Forestry, Visual and Environmental Sciences, Genetics, Engineering, Journalism, Social Welfare, Public Health, City and Regional Planning.

Honors Program. Students accepted into the honors program will enroll in Development Studies H195A-H195B. Senior Honors Seminar (4-4), the topic of which will be expressly designed for the students in the group major. The topic may change from year to year. Honors students will write a thesis under the supervision of the seminar instructor. Please consult with the Group Major Office concerning current eligibility requirements.

Upper Division Courses

100. History of Development and Underdevelopment. (4). Formerly 100. Two 2-hour lectures 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 background against which to understand and assess theoretical interpretations of development and underdevelopment. (F)

194. Readings in Modern Chinese. (3). Formerly 194A-194B. Must be taken on a passed/not passed basis. Three 1-hour meetings per week. Semester Prerequisites: 106B. Quarter Prerequisites: 100C. Reading of current political and similar materials and discussion, in Chinese, of contents. (F)

H195A-H195B. Senior Honors Thesis. (4-4). Formerly 195A-195B. Credit and grade to be awarded upon completion of the sequence. Two 2-hour seminars per week. Semester Prerequisites: Approval by the Group Major Office for current requirements. To be conducted by an instructor who will also supervise the thesis projects of our honors students. The honors student is required to write a thesis on research performed in the H195A-H195B course. The thesis will be reviewed by a member of the faculty committee and approved by a selected group of the same committee. (F,SP)

197. Field Studies. (1-4). Formerly 197. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual meetings. Semester Prerequisites: Upper division standing and consent of instructor. Supervised experience relevant to specific aspects of Development Studies in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Group meetings to be announced. Semester 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). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual meetings. Semester Prerequisites: Written proposal must be approved by a faculty advisor. Enrollment is restricted by regulations of the College. (F,SP)

Dramatic Art

Department Office, 101 Dwainelle Annex, 642-1877


Associate Professors: George S. House, I.B.A. Dunbar H. Ogden, III, Ph.D.

Assistant Professor: James H. Gage, M.F.A.

The Majors

Dramatic Art

Lower Division. Dramatic Art 10, 20A-20B, 45A or 45B.

Upper Division. Thirty units of upper division courses in the Department of Dramatic Art including 120, 129; six units chosen from courses 122, 123, 124,

Dramatic Art—Dance

(Student are required to take a dance technique course each semester.)

Lower Division. Dramatic Art 10, 40A-40B, 41, 45A or 45B.

Upper Division. Thirty units of upper division courses in the Department of Dramatic Art including 144, 145, 146A-146B, 147A-147B, individually the work of each student, not later than the end of the student's junior year. Students accepted in the honors program will include in their program courses H195A, intensive critical study of programs of dramatic art, acting, playwriting, directing, dance or design; and H195B, development of studies begun in H195A, either under circumstances of actual theatrical production or as a senior thesis.

Graduate Programs

Preparation for Graduate Study. The background of a student seeking work toward an advanced degree should approximate that of an undergraduate major student in the Department of Dramatic Art at Berkeley. Applicants for admission who need extensive preparatory work either in dramatic literature or in performance may be required to take the necessary courses while enrolling for two or three semesters as students in limited status in the College of Letters and Science. Admission to the Limited Status program, however, is not automatic, or for coursework in the Graduate Division. In some instances a one-year course of study for a second bachelor's degree in order to (admission of the Second Bachelor's Degree Program, however, is not automatic). Students who seek admission to the Limited Status program or to the Second Bachelor's program in the College of Letters and Science may obtain information on these programs from the College Office (113 Campbell Hall).

Advising and Evaluation of Student Program. From year to year a team of two faculty advisers will assist each graduate student in developing a program. At the end of each academic year the faculty of the Department of Dramatic Art evaluates the work of each student. This analysis augments the regular indications of course grades and of the comments from instructors and advisers. With these evaluations the faculty seeks to ensure, as far as such assurance is possible, that each student is working at maximum capacity toward a degree objective and a professional goal.

Requirements for the M.A. Degree. Students enrolled in the graduate program in Dramatic Art are generally expected to be trained as stage directors and working toward the Ph.D. degree. They will become eligible to apply for the M.A. degree upon completion of the Ph.D. qualifying examination. In exceptional cases, students may be allowed to design, playwriting, and dance may be accepted for work toward the M.A. degree only. Admission is by special arrangement, including, in the cases of actors and dancers, an audition, and in the cases of designers and playwrights, submission of portfolios of designs or manuscripts of original plays.

Requirements for the Ph.D. Degree. Graduate study including graduate and upper division work in the Department of Dramatic Art. During the first year, two of the 15-week seminars (222, 223, 224); the year-long course in Critical Approaches to Theatre (226A-226B); the year-long course in Directing (260A-260B); and a language examination in either French or German. During the second year, two of the 15-week seminars (222, 223, 224, 225); the year-long course in Directing (261A-261B); a course in Special Studies in each semester; and the second language examination. During the third year, courses in seminar as developed in conference, with advisers; the Ph.D. Written Preliminary Examination; and the Ph.D. Oral Qualifying Examination. During the fourth year, completion of the Ph.D. dissertation.

For further details on the requirements for advanced degrees, consult the Graduate Division section of this Catalog, and the department office in 101 Dwinelle Annex.

The University Theatre

Under the direction of the Department of Dramatic Art, the University Theatre offers a major and work shop series of play productions, extending into the laboratory stage productions, and the second year, the year-long seminar be activated through structural improvisation. (F,SP)

141A-141B. Intermediate Modern Dance Technique. (1,1). Formerly 141A-141B-141C. Course may be repeated for credit. Seven and one-half hours of studio per week. Semester Prerequisites: 140A-140B, audition, or consent of instructor. Development of physical control through off-center movement and its utilization in spatial exploration. (F,SP)

142A-142B. Advanced Modern Dance Technique. (1,1). Formerly 142A-142B-142C. Course may be repeated for credit. Must be taken on a passed/not passed basis. Seven and one-half hours of studio per week. Semester Prerequisites: 142A-142B, audition, or consent of instructor. Requirements of movement techniques and qualitative analysis of movement with regard to rhythm, dynamics, and style. (F,SP)

143A-143B. Company Class. (1,1). Formerly 143A-143B-143C. Course may be repeated for credit. Seven and one-half hours of studio per week. Semester Prerequisites: 142A-142B, audition, or consent of instructor. Exploration of existing styles and forms of dance and their musical relationship using both individual and group awareness. (F,SP)

145. Music Resources for Dancers. (2). Formerly 145. Three hours of lecture and studio per week. Semester Prerequisites: 144, or consent of instructor. An historical overview of different periods of music in specific dance traditions. Methods of research, analysis of choroegraphic values of music, and experimentation in their usage. (F)

146A-146B. Choreography. (3,3). Formerly 146A-146B-146C. Four and one-half hours of lecture and studio per week. Semester Prerequisites: 144, or consent of instructor. Analysis of theories of form and structure and their practical application in relation to content. (F)

147A-147B. Dance Analyses. (3,3). Formerly 147A-147B. Four and one-half hours of lecture and studio per week. Semester Prerequisites: 144, or consent of instructor. Instruction in the methods and principles of class construction with emphasis placed on movement development. (F,SP)

148. Introduction to Movement Improvisation. (1). Formerly 148A-148B-148C. Must be taken on a passed/not passed basis. Seven and one-half hours of study per week. Semester Prerequisites: Consent of instructor. Study and analysis of stage movement through non-verbal approaches. (F)

149. Repertory and Production. (3). Formerly 149. Course may be repeated for credit. Three hours of lecture, seven one-half hours of studio per week. Semester Prerequisites: Consent of instructor. Studio to be arranged. Study of History of Dance as it developed from prehistoric cultures to the present. A. Pre-Renaissance B. Post-Renaissance (F,SP)

189. History of Dance Criticism and Aesthetics. (3). Three hours lecture per week, plus conference to be arranged. Semester Prerequisites: Consent of instructor. A survey of dance criticism from Theophile Gautier to the present day. Critical writings will be studied in conjunction with the history of the aesthetics of dance from the Renaissance to the present. (SP)

Graduate Courses

246A-246B. Advanced Choreography. (4,4). Formerly 246A-246B-246C. Seven and one-half hours of lecture and studio sessions per week. Semester Prerequisites: 143A-143B, 143A-143B, and one year of graduate work in dance. In-depth study and presentation of choreography and styles of theatre (Opera, drama, musical, environmental, avant-garde, post-modern.) (F,SP)

249. Dance Repertory and Production. (4). Formerly 249. Course may be repeated for credit. Seven and one-half hours of lecture and studio per week. Semester Prerequisites: Consent of instructor. Advanced students will 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. (F,SP)
Dramatic Art

Undergraduate Studies

Acting and Speech

Lower Division Courses

10. Introduction to Acting. (3). Formerly 10. Five hours of studio sessions per week plus preparation and rehearsals to be arranged. Semester Prerequisites: Audition and consent of instructor. Instruction of elementary acting. (F,SP)

11. Scene Study and Voice Work. (3). Formerly 11A-11B. Six hours of studio sessions per week plus preparation and rehearsals to be arranged. Semester Prerequisites: Audition and consent of instructor. Instruction in study of scenes and training in voice. (F,SP)

12. Beginning Study of Voice and Speech. (2). Formerly 12A-12B-12C. Two 2-hour studio sessions per week. Semester Prerequisites: Consent of instructor. Beginning study of voice and speech in the interpretation of dramatic literature. (F,SP)

Upper Division Courses

110A-110B. Intermediate Acting. (3,3). Formerly 110A-110B-110C. Course may be repeated for credit. Six hours of studio sessions per week plus preparation and rehearsals to be arranged. Semester Prerequisites: Audition, one year of undergraduate work in acting, or consent of instructor. (F,SP)

111A-111B. Advanced Acting. (3,3). Formerly 111A-111B-111C. Course may be repeated for credit. Three 1-hour studio sessions per week plus preparation and rehearsals to be arranged. Semester Prerequisites: Audition, two years of undergraduate work in acting or consent of instructor. (F,SP)

Graduate Courses

210A-210B. Advanced Acting: Company Class. (3,3). Formerly 210A-210B-210C. Course may be repeated for credit. Six hours of studio sessions per week; plus preparation and rehearsals to be arranged. Semester Prerequisites: Audition, three years of undergraduate work in acting; voice and speech training; or consent of instructor. Advanced work in acting. (F,SP)

Directing

Upper Division Courses

162. Fundamentals of Stage Directing and Scenography for Directors. (3). Formerly 162 and 163. Three hours of lecture per week. Semester Prerequisites: Junior standing. 162. 2 years of acting, or consent of instructor. (SP)

Hons Class for Directors. (3). Formerly 164. Three hours of lecture and discussion per week. Semester Prerequisites: Junior standing. 164. 2 years of acting, or consent of instructor. (SP)

Honors Courses

Upper Division Courses

H195A. Honors Course. (4). Formerly H195A. To be arranged. Semester Prerequisites: Honors status in the Department of Dramatic Art. Independent study and conferences with faculty sponsor leading to the preparation of a major research paper on a single aspect of dramatic art or dance. (F,SP)

H195B. Honors Course. (4). Formerly H195B. To be arranged. Semester Prerequisites: Honors status in the Department of Dramatic Art; successful completion of H195A and consent of production chairman if performance is involved. 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)

Literature

Lower Division Courses

1A-1B. Introduction to Dramatic Literature. (4,4). Formerly 1A-1B. Three hours of lecture and discussion per week. Semester Prerequisites: Subject A, examination or course. Dramatic Art 1A or its equivalent is prerequisite to 1B. Reading and composition in connection with the study of dramatic literature. (F,SP)

Upper Division Courses

120. Dramatic Theory. (3). Formerly 120. Three hours of lecture per week. Semester Prerequisites: 1A-1B and 20A-20B, or consent of instructor. Study of major documents in dramatic theory and criticism, to focus on: Aristotle, Cornelle, Lessing, Artaud, Brecht, and modern performance analysis and theory. (F)

122. Drama and Theatre in Ancient Greece and Rome. (3). Formerly 122. Three hours of lecture per week. Semester Prerequisites: 1A-1B and 20A-20B, or consent of instructor. Drama and the theatre of ancient Greece and Rome. (SP)

123. Drama and Theatre in Europe: Middle Ages to 1600; British to 1642. (3,3). Formerly 123A-123B. Three hours of lecture per week. Semester Prerequisites: 1A-1B and 20A-20B, or consent of instructor. Dramatic literature of England and Europe from church drama to the High Renaissance. (SP)

124. Drama and Theatre in 17th Century Europe: Including Spanish Golden Age. (3). Formerly 124. Three 1-hour lectures per week. Semester Prerequisites: Dramatic Art 1A-1B, 20A-20B, or consent of instructor. English and continental drama, 1600-1700. (F)

125. Drama and Theatre in Europe: 1700-1850. (3). Formerly 125A-125B. Three hours of lecture per week. Semester Prerequisites: Dramatic Art 1A-1B, 20A-20B, or consent of instructor. Drama and Theatre in Europe: 1700-1850. (SP)

126. Drama and Theatre in Europe and United States: 1850-1918. (3,3). Formerly 126. Three 1-hour lectures per week. Semester Prerequisites: Dramatic Art 1A-1B, 20A-20B, or consent of instructor. Drama and Theatre in Europe and United States: 1850-1918. (SP)

127. Drama and Theatre: 1918 to Present. (3,3). Formerly 127. Three 1-hour lectures per week. Semester Prerequisites: Dramatic Art 1A-1B, 20A-20B, or consent of instructor. Contemporary drama. (SP)

128. Senior Prosessinar. (3). Formerly 128. May be repeated for credit subject to acceptance of petition. Three 1-hour lectures per week. Semester Prerequisites: Senior standing, or consent of instructor. Enrollment is restricted to 15. Quarter Prerequisites: 120. Study of the works of a major playwright: a classical Greek dramatist, Shakespeare, Marlowe, Jonson, Corneille, Racine, Moliere, Lope de Vega, Calderon, Ibsen, Strindberg, Chekhov, Shaw, Brecht, O'Neill, or Beckett. (F,SP)

Playwriting

Lower Division Courses

39. Introduction to Playwriting. (3,3). Formerly 39. Three hours of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Instruction and practice in composing dramatic concepts. (F,SP)

Upper Division Courses

139A-139B. Playwriting. (3,3). Formerly 139A-139B-139C. Credit and grade to be awarded upon completion of the sequence. Three hours of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Practice in the fundamentals of dramatic composition. Group readings and discussion of written work. (F,SP)

Production

Lower Division Courses

45A-45B. Theatre in Production: Beginning Study. (3,3). Formerly 45A-45B-45C. Three 1-hour lectures per week and laboratory to be arranged. Semester Prerequisites: Consent of instructor. (F,SP)

A. Basics of stagecraft and production management, including set and costume construction, props, make-up, sound, stage management, theatre operations. Related to department’s productions.

Upper Division Courses

170. Theatre Laboratory. (1). Formerly 170. Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Consent of instructor. Non-acting participation includes University Theatre. Includes: Stage management, crew assistance in lighting, sound properties, costumes, make-up, backstage; technical assistance in scene or costume shop. (F,SP)

171. Theatre Performance. (1). Formerly 171. Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Consent of instructor. Practice in acting and/or dance in Dramatic Art productions. (F,SP)

172A-172B. Theatre in Production: Advanced Study. (3,3). Two 1-hour lectures per week and laboratory to be arranged. Semester Prerequisites: 45A-45B and consent of instructor.

A. Problems in concept realization; intermediate study of production techniques and procedures. (F)
B. Dynamics of production management; intermediate study of the theatre business. (SP)

180. Advanced Production Study. (3). Course may be repeated for credit. To be arranged. Semester Prerequisites: 45A-45B and one or more of the following department courses: 172A-172B, 173A-173B, 174A-174B, 175A-175B and consent of instructor. Supervised internship in department-sponsored major productions to include production research, management and design. (F,SP)

Theatrical Realization of Dramatic Texts. (3). Course may be repeated for credit. Six hours of lecture and twelve hours of laboratory per week. Semester Prerequisites: Audition or consent of instructor. Relating dramatic texts to theatrical presentation: to be taught by faculty directing the major productions. Lectures based on analyses of the texts of the work being presented and lab hours are spent in attendance at rehearsals, coaching sessions, and the performances of the play or concert. (F,SP)

196. University Theatre Workshop. (4). Formerly 190. To be arranged. Semester Prerequisites: Senior standing; 120 and 163 or equivalent and consent of production chairman. Individual directing projects to include research, auditions, casting and rehearsal; culminating in public performances as scheduled by the department. (F,SP)

Scenography and Design

Upper Division Courses

173A-173B. Scenography: Scenic Design for the Theatre. (3,3). Formerly 173A-173B-173C. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Consent of instructor. (F,SP)

174A-174B. Scenography: Costume Design for the Theatre. (3,3). Formerly 174A-174B-174C. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Consent of instructor. (F,SP)

175A-175B. Scenography: Lighting Design for the Theatre. (3,3). Formerly 175A-175B-175C. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Consent of instructor. Survey of visual arts as components of style in theatre. Not offered 1994-95. (F)

177. Visual Arts in Theatre. (3). Formerly 177. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Consent of instructor. Survey of visual arts as components of style in theatre. Not offered 1994-95. (F)

178. History of Fashion and Thraetlical Design. (3). Formerly 178. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Consent of instructor. History of costume in relation to social change. Laboratory instruction in conservation and restoration of costumes. (F)
Special Studies

Upper Division Courses

198. Directed Group Study for Undergraduates. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a pass/not pass basis. Enrollment is restricted by regulations listed in the Key to Symbols section of the General Catalog. Supervised group study of special topics, subject to approval by the chair. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a pass/not pass basis. Individual study. Semester Prerequisites: Eight or more units in the Department of Dramatic Art, with an average grade of B. Restricted to honor students. Enrollment is restricted by regulations listed in the Key to Symbols section of the General Catalog. Reading and conference with an instructor in an area not corresponding with any regular course. (F,SP)

Graduate Courses

Graduate Courses

222. Studies in Classical Theatre. (4). Formerly 222A-222B. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. A. Aeschylus to Shakespeare B. Shakespeare to Beckett (F,SP)

49. Twentieth Century World Theatre. (3). Two 1 1/2-hour lectures per week. Semester Prerequisites: Special permission of instructor. A study of the contemporary theatrical modes; topics may include dance, film, television, opera, and others. (SP)

Upper Division Courses

151A-151B. Theatre History. (3). Formerly 151A-151C. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. The development of theatrical production in its cultural contexts, including theatre architecture, the stage, scenery and scene design, costume, and directing. A. Classical Greece to the Renaissance B. The Renaissance to the Present (F,SP)

Graduate Courses

Graduate Courses

224. Studies in Continental Theatre. (4). Formerly 224A-225C. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. The development of theatrical production in its cultural contexts, including theatre architecture, the stage, scenery and scene design, costume, and directing. (F,SP)

225. Studies in Twentieth Century Theatre. (4). Formerly 225A-226B. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. The development of theatrical production in its cultural contexts, including theatre architecture, the stage, scenery and scene design, costume, and directing. (F,SP)

226. Studies in Continental Theatre. (4). Formerly 226A-226B. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. The development of theatrical production in its cultural contexts, including theatre architecture, the stage, scenery and scene design, costume, and directing. (F,SP)

239. Advanced Playwriting. (4). Formerly 239A-239B-239C. Four and one-half hours of lecture and discussion per week. Semester Prerequisites: 139 or consent of instructor. Not offered 1984-85. (SP)

260A-260B. Directing. (6,6). Formerly 260A-260B-260C. Credit and grade to be awarded upon completion of the sequence. Six hours of lecture and discussion and laboratory to be arranged per week. Semester Prerequisites: Consent of instructor. Directed for first-year graduate students. (F,SP)

261A-261B. Advanced Directing. (6,6). Formerly 261A-261B-261C. Credit and grade to be awarded upon completion of the sequence. Six hours of lecture and discussion and laboratory to be arranged per week. Semester Prerequisites: 260, 1 year of graduate work, and consent of instructor. Directed for second-year graduate students. (F,SP)

Graduate Special Courses

270. Theatre Laboratory. (1). Formerly 270. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Laboratory. Semester Prerequisites: Consent of instructor. Practice in theatre design, lighting, and stage production in faculty-directed productions. (F,SP)

271. Theatre Performance. (1). Formerly 271. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor. Practice in acting in faculty-directed productions. (F,SP)

273A-273B. Scenography: Advanced Stage, Costume, and Lighting Design. (4,4). Formerly 273A-273B. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: 173, 174, 175, submission of portfolio, and consent of instructor. Instruction in stage, costume, and lighting design for the advanced student. (F,SP)

293 Theatre Laboratory. (1-4). Formerly 293. Course may be repeated for credit. To be arranged. Semester Prerequisites: Consent of instructor. Advanced practice in design and directing. (F,SP)

295. Special Studies in Directing. (4). Formerly 295. To be arranged. Semester Prerequisites: Consent of instructor. Advanced directorial practice for third and fourth year graduate students. (F,SP)

602. Individual Study for Doctoral Students. (1-6). Formerly 601. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor. Study and research in special topics. Not open to practice of acting, directing, design, or playwriting. (F,SP)

East European Studies

Office, Slavic Languages and Literatures, 5416 Dwinelle Hall, 642-2979

The Department of Slavic Languages and Literatures offers courses in several Slavic and non-Slavic languages and literatures, both for those pursuing the Department's own degree and for interested students from other departments. There is no undergraduate major or graduate program in East European Studies. Languages frequently taught include Hungarian, Romanian, Bulgarian, and Georgian. For further information, see East European Studies course listings following Slavic Languages and Literatures.

The Major

Lower Division. Dutch 1, 2, 3, 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:


Additional courses are to be selected from the following list to complete a major: Dutch (see Graduate Department for complete description of these courses) 107, 120, 160, 175, 190, 198, 199; German 278, 290UL; Comparative Literature 180, 190UL, 216A; Linguistics 165, 244; History 128A, 130B, 142.

Honors Program. Students accepted in the honors program will enroll in Dutch H198 (1-4 units) for a total of four units and will be expected to write a senior thesis (Dutch 190) with distinction.

For additional information, consult the adviser for the group major in Dutch studies, 5329 Dwinnelle Hall.

Dutch Studies

Group Major Office, 5329 Dwinnelle Hall, 642-3010

Professors:

Svetlana Alpers, Ph.D. (History of Art) Johan P. Snapper, Ph.D. (German, Queen Beatrix Professor)

Regina de Schryver, Ph.D. (History) J. Frits Staal, Ph.D. (South Dunbar Ogden, Ph.D. (Sather Professor, History) J. Frits Staal, Ph.D. (South

Rudolph Willems, Ph.D. (Leuven, 1862) Wouter Prevenier, Ph.D. (Brussels, 1984)

Carlo Tindemans, Ph.D. (Leuven, 1982) (Brussels, 1984)

Peter Paul Rubens Professors:


Adviser: Mr. Snapper.

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. Since the program is both specialized (in dealing with one country) 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 studies may constitute the focal point to a larger area of interest. Suggested related fields of concentration are Comparative Literature, German, History, History of Art, Linguistics, and South and Southeast Asian Studies (e.g., Indonesian).

See Department of German for detailed listing of courses.

The Major

Lower Division. Dutch 1, 2, 3, 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:


Additional courses are to be selected from the following list to complete a major: Dutch (see Graduate Department for complete description of these courses) 107, 120, 160, 175, 190, 198, 199; German 278, 290UL; Comparative Literature 180, 190UL, 216A; Linguistics 165, 244; History 128A, 130B, 142.

Honors Program. Students accepted in the honors program will enroll in Dutch H198 (1-4 units) for a total of four units and will be expected to write a senior thesis (Dutch 190) with distinction.

For additional information, consult the adviser for the group major in Dutch studies, 5329 Dwinnelle Hall.
Economics

Department Office, 250 Barrows Hall, 642-0822

Professors:
Iris Adelmann, Ph.D.
George A. Akarof, Ph.D.
Prabhu K. Balaji, Ph.D.
George F. Break, Ph.D.
Carmelo D. Cipolla, Laurea cum laude
Geraldine D. C., Dr. rer. pol. (hon.)
Anthony 0. Fisher, Ph.D.
Richard J. Gilbert, Ph.D.
Steven M. Goldman, Ph.D.
G. Craig Hylton, Ph.D.
Barb Hansen, Ph.D. (Chair)
John J. Hylton, Ph.D.
Theodore E. Keeler, Ph.D.
Ronald D. Lee, Ph.D.
John M Letch, Ph.D.
James L. Pierce, Ph.D.
John Quigley, Ph.D.
Thomas J. Rothenberg, Ph.D.

Associate Professors:
Robert A. M. Anderson, Ph.D.
R. R. Brown, Ph.D.
Roger Crane, Ph.D.
Jeffrey A. Frankel, Ph.D.

Assistant Professors:
William T. Dickens, Ph.D.
Drew Fudenberg, Ph.D.
John W. Jeffery, Ph.D.

Acting Associate Professor:
Jeffrey A. Frankel, Ph.D.

Admission to the Major

The major may be declared in the sophomore or junior year, and students are admitted in either semester. A departmental application is required. Berkeley students are asked to file an application for admission in 250 Barrows Hall the semester before they hope to declare the major. Although many factors are considered in determining admission to the Economics major, a main criterion is academic performance as measured by GPA in prerequisite courses. Applicants will be accepted only from students who have satisfied the prerequisites listed below, the College's Reading and Composition requirement, the University's American History requirement, and who have completed between 40 and 84 semester units of college credit. Unfortunately, because of large and increasing enrollment and limited resources available, it has proved necessary to limit the number of students accepted. Prospective majors are encouraged to read the most current edition of the Economics Major's Handbook which gives more up-to-date information about economics courses and requirements. Handbooks are available for 50 cents in 250 Barrows Hall.

Transfer Students

Transfer students interested in the economics major should be aware that the admissions process requires evidence of academic performance at UC Berkeley, and that this may delay and in some cases prohibit admission to the economics major. Transfer students with more than 54 semester units of college credit who have completed beyond 40 and 84 semester units of college credit. Unfortunately, because of large and increasing enrollment and limited resources available, it has proved necessary to limit the number of students admitted under these conditions should make plans for an alternative major should admission to the Department not be granted. For all other students with more than 54 units of transfer credit, it is required to complete the prerequisites for admission and the need to accumulate information about expected performance essentially prohibit admission to the economics major.

All transfer students need at least one semester to complete the economic theory requirement at Berkeley before they can apply to the major. One or two semesters at Berkeley may be necessary before the economics department has enough information to evaluate a transfer student's academic performance relative to other applicants.

Undergraduate Major Programs

Students may elect to graduate under one of two plans:

Plan A: recommended for students interested in a broad liberal arts approach to economics.

Plan B: recommended for students interested in a more formal, theoretical approach to economics. Plan B is recommended for students intending to do graduate work in economics.

Plan A: Prerequisites for admission to the major under Plan A are the general prerequisites mentioned above, Economics 1; one upper division economics theory course completed at Berkeley (100A, 100B, or 101A) or a substitute approved in advance by the department; and two courses from the mathematics-statistics requirements specified in the next paragraph.

Plan B: Prerequisites for admission to the major under Plan B are the general prerequisites mentioned above, Economics 1; one upper division economics theory course completed at Berkeley (100A, 100B, or 101A) or a substitute approved in advance by the department; and two courses from the mathematics-statistics requirements specified in the next paragraph.

Requirements for graduation in the major are: completion of one course in statistics with calculus as a prerequisite (such as Statistics 20, 21 or 131) and one full year of calculus (such as mathematics 16A-16B or Math 1A and 1B); 24 semester units in upper division economics courses. The 24 units must include Economics 100A-100B; at least one course in applied economics chosen from the following: 121, 123, 124, 125, 131, 136, 151, 152, 161, 162, 171A, 171B, and 172A; and lastly, one course in economic history or history of thought from the following: 105, 106, 109, 111A, 111B, 113, 115. Those students with Statistics 2 and one or two quarters of calculus courses will qualify for admission into the major, but for graduation they have to satisfy the mathematics-statistics requirements specified above.

Students graduating under Plan A are strongly recommended to take:

1) Economics 100A-100B in the sophomore year.
2) Upper division electives in the social sciences.
3) Courses in accounting and in economic statistics.
4) An undergraduate seminar course in the senior year.

Plan B: The Department has adopted a policy of open admission for Plan B. Students are required to meet all Department and College prerequisites, all Department and College prerequisites, and the usual requirements for a major in the Letters and Science, Also, a transfer to Plan B is prohibited without reapplying. The requirements for admission to the major under Plan B are: the general prerequisites mentioned above; Economics 1; Mathematics 1A and 1B; Economics 101A (at Berkeley). There are no exceptions to these prerequisites. R1 The requirements for the major include 24 semester units in upper division or graduate economics courses. The units must include Economics 101A-101B; either Economics 141 or 240; either Economics 102 or 136. Also required is one additional mathematics course chosen from Mathematics 50B, 51, or 112.

Students graduating under Plan B are strongly recommended to take:

1) A specialization within the major by taking a two-course sequence in a core field of economics. Typically such a sequence would include one lecture course and one seminar course.
2) Additional courses in economics and accounting.
4) Upper division electives in other social sciences.

Transfer between Plans

Students may transfer from Plan A to Plan B by obtaining a faculty adviser's approval. Generally, these students will be required to take an additional upper division theory course (such as 102, 104, 108, or 136). A transfer from Plan B to Plan A is prohibited without reapplying to the major. The application will not receive special consideration because the student has been admitted as a Plan B major.

Departmental Honors

Students interested in graduating with honors in economics should consult the faculty adviser no later than the first semester of the senior year. The Department recommends that in all cases the senior major plan be submitted with honors with based on (a) evidence of superior performance provided by a thesis written in the senior year, and (b) the student's course grade record over the three major years. The senior thesis may be an extension of seminar paper prepared under the continued guidance of a faculty member through enrollment in H195. Students should refer to the Economics Major's Handbook for possible changes.

Advising: Students planning to do graduate work in economics should consult with faculty advisers regarding appropriate programs. These students will typically elect to be Plan B majors. All majors are encouraged to consult with a faculty adviser frequently in planning their program.

Graduate Program

The graduate program is designed for doctoral students interested in pursuing advanced study and conducting original research in economics. Detailed information concerning admission, financial aid, and degree requirements is given in the brochure, Ph.D. in Economics. Students are recommended to obtain a copy from the Graduate Secretary, Department of Economics.

The program is oriented toward the doctorate, and new admissions are restricted to candidates for the Ph.D. However, students enrolled in the School of Law or in other doctoral programs at Berkeley may take a Master of Arts degree in economics if approval is given by both departments. The requirements for an M.A. are: (1) a background in economic theory equivalent to that provided in Economics 101A-101B, 200A, 200B, or 201A, 202A; (2) completion of 24 units of approved coursework, of which 12 units must be in graduate economics courses numbered 201 or greater; (3) satisfactory performance in two written qualifying examinations. Each student's program must be approved by the economics graduate adviser and must include a balanced mixture of applied and theoretical courses. Students in other graduate programs at Berkeley who are interested in receiving an M.A. in economics should see the Department's Graduate Secretary for further details.

Law and Economics

The School of Law and the Department of Economics sponsor a concurrent program in economics and law. Students in other graduate programs at Berkeley who are interested in pursuing the J.D. degree and also complete the pre-thesis requirements for the Ph.D. Further information may be obtained from the Chair of the Graduate Committee of the Department of Economics.

Lower Division Courses

1. Introduction to Economics. (3) Formerly 1. Two hours of lecture and one hour of discussion per week. A survey of economics, designed to give an overview of the field. (F,S,SP)

75. World Population and Economics. (3) Formerly 75. Three hours of lecture per week. Semester Pre- requisites: 1 and one semester calculus. Quarter Pre- requisites: 1 or 103. A survey course covering basic population analysis and an outline of world population. The problems of "over-population," urbanization, public health, and environmental quality are discussed. (F,S,SP)

Upper Division Courses

1. Environmental Economics—Micro. (5) Formerly 100A. Three hours of lecture and two hours of section per week. Semester Prerequisites: 1. Quarter Prerequisites: 1 or 103. Resource allocation and price deter- mination. (F,S,SP)
90B. Economics Analysis—Macroe. (5). Formerly 100B. Three hours lecture and two hours of section per week. Semester Prerequisites: 1. Quarter Prerequisite: 100A, one semester of calculus, or consent of instructor. Class Prerequisites: 101A or 103. A study of the theories of the determination of national income, employment, and price levels, with attention to the effects of monetary and fiscal policy. (F,SP)

101A. Economic Theory—Micro. (5). Formerly 101A. Three hours lecture and two hours discussion per week. Semester Prerequisites: 100B and one semester of calculus. Basic economic theory with emphasis on microeconomic principles. (F,SP)

101B. Economic Theory—Macroe. (5). Formerly 101B. Three hours lecture and two hours of section per week. Semester Prerequisites: 101A and one semester of calculus. Formerly 101B. Formerly 101B. Three hours lecture and two hours of section per week. Semester Prerequisites: 100A or 101A. The organization and structure of production in the U.S. economy. Determinants of market structure, behavior, and performance. Implications for antitrust policy. (F,SP)

121. Industrial Organization and Public Policy. (3). Formerly 121. Three hours of lecture per week. Semester Prerequisites: 100A or 101A. The organization and structure of production in the U.S. economy. Determinants of market structure, behavior, and performance. Implications for antitrust policy. (F,SP)

122. Industrial Organization Seminar. (4). Formerly 122. Three hours of seminar per week. Semester Prerequisites: 121 and/or consent of instructor. Seminar on problems in the field of industrial organization. Seminar paper is required. (F,SP)

123. Government Regulation of Industry. (3). Formerly 123. Three hours of lecture per week. Semester Prerequisites: 121. Problems of public policy in the field of industrial organization. Analysis of regulatory consequences with particular attention to economic performance. (F,SP)

124. Special Topics in International Organization. (3). New Course since Spring 1983. Three hours lecture per week. Analysis of market structure, conduct and performance of selected industries. See course announcement for current topics and prerequisites. (F,SP)

125. Economics of the Environment. (3). Formerly 125. Three hours of lecture per week. Semester Prerequisites: 100A or 101A. Analysis of public policy measures designed to preserve and improve human environments. (F,SP)

131. Public Sector Microeconomics. (3). Formerly 131. Three hours of lecture per week. Semester Prerequisites: 100A-100B or 101A-101B. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. (F)

132. Seminar in Public Sector Economics. (4). Formerly 132. Three hours of seminar per week. Semester Prerequisites: 131 and consent of instructor. Enrollment will be limited. A seminar paper is required. (F,SP)

136. Monetary Theory and the Banking System. (3). Formerly 136. Three hours of lecture per week. Semester Prerequisites: 100B or 101B. Survey of monetary, interest and income theories. Commercial banks, financial intermediaries, the Federal Reserve System, and the supply of money. (F,SP)

137. Aggregate Economics Seminar. (4). Formerly 137. Three hours of seminar per week. Semester Prerequisites: 102 or 136 and consent of instructor. Enrollment will be limited. A seminar is required. (F,SP)

141. Economic Statistics and Econometrics. (3). Formerly 141. Two hours of lecture and one hour and one-half hours of section per week. Semester Prerequisites: 100A-100B or 101A-101B and Statistics 20, 21, or 131A. Quarter Prerequisites: Applied econometrics, crit of empirical econ research, intro to observation, est, and hyp testing. Introduction to problems of observation, estimation, and hypothesis testing in economics through the study of the theory and application of linear normal regression model, critical evaluation of selected examples of empirical economic research and exercises in applied econometrics. (F,SP)

151. Labor Economics. (3). Formerly 151. Three hours of lecture per week. Semester Prerequisites: 100A-100B or 101A-101B or consent of instructor. The social and economic background of labor legislation and the economics of collective bargaining. (F,SP)

152. Wage Theory and Policy. (3). Formerly 152. Three hours of lecture per week. Semester Prerequisites: 100A-100B or 101A-101B. The theory and analysis of determination of wages and employment. Application of the theory to policy analysis. (F,SP)

153. Labor Economics Seminar. (4). Formerly 153. Three hours of seminar per week. Semester Prerequisites: 151 or 152 and consent of instructor. Topics in labor economics and policy. (F,SP)

154. Women in the Labor Force. (3). Formerly 154. Three hours of lecture per week. Semester Prerequisites: 100A-100B or 101A-101B. An analysis of the changing role of women in the U.S. economy. (F,SP)

155. Urban Economics. (3). Formerly 155. Three hours of lecture per week. Semester Prerequisites: 100A or 101A. Applications of economic theory to urban problems. Topics covered include location theory, housing, transportation, and the fiscal problems of city governments. (F,SP)

156. Urban Economics Seminar. (4). Formerly 156. Three hours of seminar per week. Semester Prerequisites: 155 and consent of instructor. Enrollment will be limited. Honors seminar for thesis writers in the urban economics and social policy areas. (F,SP)

157. Economics of Social Policy. (3). Formerly 157. Three hours of lecture per week. Semester Prerequisites: 100A or 101A-101B. Applications of economic theory to problems of social policy. Topics covered will vary from year to year, but will usually include issues in health, education and welfare policy. (F,SP)

161. Economic Systems. (3). Formerly 161. Three hours of lecture per week. Semester Prerequisites: 1. Economic organizations and institutions, and their impact on economic variables. Models of economic systems; studies of actual economies. (F,SP)

162. Economics of the Soviet Union. (3). Formerly 162. Three hours of lecture per week. Semester Prerequisites: 1. The Soviet economy, its growth, institutions, problems; other Soviet-Type economies. (F,SP)

163. Special Topics in Economic Systems. (1.5). One and one-half hours of lecture per week. Semester Prerequisites: 1. Recommended: 161 or 162. As announced in the department course descriptions. (F,SP)

164. Economic Systems Seminar. (4). Formerly 164. Three hours of seminar per week. Semester Prerequisites: 1. Economic organizations and institutions, and their impact on economic variables. Models of economic systems; studies of actual economies. (F,SP)

171. Economic Development. (3). Formerly 171. Three hours of lecture per week. Semester Prerequisites: 100A-100B or 101A-101B. Problems of underdevelopment and poverty, policy issues and development strategies. (F,SP)

172. Case Studies in Economic Development. (3). Formerly 172. Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 1. A detailed study of the problems of development in selected geographical areas in Asia or Africa or Latin America. (F,SP)

173. Economic Development Seminar. (4). Formerly 173. Three hours of seminar per week. Semester Prerequisites: 171 or 172 and consent of instructor. Enrollment will be limited. A seminar paper will be required. (F,SP)

175. Economic Demography. (3). Formerly 175. Three hours of lecture per week. Semester Prerequisites: 1. A general introduction to economic demography, emphasizing the economic determinants of mortality, fertility, and labor force participation. Special attention is given to the relationship of population growth to economic development and the "Neo-Malthusian" literature on resource limitations. (F,SP)

181. International Economic Relations. (3). Formerly 181. Three hours of lecture per week. Semester Prerequisites: 100A-100B or 101A-101B. The role of international trade and its application to tariff protection. (F,SP)

182. International Economic Policies. (3). Formerly 182. Three hours of lecture per week. Semester Prerequisites: 181 or consent of instructor. The international mechanisms of adjustment under a monetary system of international trade, and international trade agreements. (F,SP)

183. International Economic Seminar. (4). Formerly 183. Three hours of seminar per week. Semester Prerequisites: 181 or 182 and consent of instructor. Enrollment will be limited. A seminar paper will be required. (F,SP)
203. Advanced Topics in Economic Theory. (1.5). Formerly 203. One and one-half hours of lecture per week. Semester Prerequisites: Consent of instructor. See department course description each semester. (F,SP)

204. Mathematical Tools for Economics. (4). Formerly N999. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: To be taken concurrently with 201A or consent of instructor. A review and discussion of the basic math tools needed for graduate work in economics. (F,SP)

205. History of Economic Thought. (2). Formerly 205A-205B. Two hours of lecture per week. Semester Prerequisites: Consent of instructor: Topics in the history of economic analysis. (F,SP)

206. Seminar in Mathematical Economics and Advanced Economic Theory. (3). Formerly 208. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F,SP)

210A. Introduction to Economic History. (3). Formerly 210A. Two hours of lecture per week. Survey of some central themes in world economic history. Required of all Ph.D. candidates in economics. (F,SP)

210B. Topics in European Economic History. (3). Formerly 210B. Two hours of lecture per week. Semester Prerequisites: 210A. A survey of some central themes in world economic history. (F,SP)

210C. Topics in American Economic History. (3). Formerly 210C. Two hours of seminar per week. Semester Prerequisites: 210A. A survey of some central themes in American economic history. (F,SP)

211. Seminar in Economic History. (3). Formerly 211. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (SP)

215A-215B. Political Economy. (3,3). Formerly 215A-215B-215C. Two hours of lecture per week. Systematic study of the economy in interaction with other aspects of society; contemporary Marxist and institutional approaches; the study of crisis. 215A is not prerequisite to 215B. (F,SP)

215C. Selected Topics in Political Economy. (1.5). Formerly 215C. One and one-half hours of lecture per week. Special topics, varying from year to year. (F)

216. Seminar in Political Economy. (3). Formerly 216. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F)

220A. Industrial Organization. (3). Formerly 220A and a portion of 220B.Two hours of lecture per week. Semester Prerequisites: 210A. Market structure, conduct and performance in the unregulated sector of the American economy. Public policies related to the promotion or restriction of competition. (F,SP)

220B. Industrial Organization. (3). Formerly 220C and a portion of 220B.Two hours of lecture per week. Semester Prerequisites: 220A. The characteristics of regulated industries and the consequences of regulation for economic performance. (F,SP)

220C. Special Topics in Industrial Organization. (1.5). One and one-half hours of lecture per week. Semester Prerequisites: See course announcement. See course announcement for current topics and prerequisites. (F,SP)

221. Seminar in Industrial Organization, Regulation and Public Policy. Formerly 221. Course may be repeated for credit. Two hours seminar per week. Semester Prerequisites: Consent of instructor. (F,SP)

230A. Public Sector Microeconomics. (3). Formerly 230A. Two hours of lecture per week. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. The course will cover three five-week segments covering: (1) welfare economics of government finance, (2) the property tax and other local revenue sources, and (3) analysis of local government expenditures. Students may take the PhD portions of the individual segments, with one unit credit for each. (SP)

230C. Public Sector Microeconomics. (1.5). Formerly 230C. One and one-half hours of lecture per week. The economic and policy analysis of government expenditures, taxes, and intergovernmental fiscal relations. (F,SP)

231 Seminar in Public Sector Economics. (3). Formerly 231. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F,SP)

236A-236B. Aggregate Economics. (3,3). Formerly 236A-236B-236C. Two hours of lecture per week. Semester Prerequisites: For 236A: 201A-201B and 202A-202B. For 236B: 236A. Macroeconomic models; the theory of aggregate economics policy; short-term planning models; fiscal and monetary policy in practice. (F,SP)

236C. Aggregate Economics. (1.5). Formerly 236C. One and one-half hours of lecture per week. Semester Prerequisites: Consent of instructor. (SP)

240. Introduction to Econometrics. (4.5). Formerly 240. Three hours lecture and 1 1/2 hours seminar per week. Semester Prerequisites: Statistics 131A or equivalent and a course in linear algebra. Quarter Prerequisites: Survey course in econ and related disciplines. A survey course designed for graduate students and undergraduates with a major GPA of 3.5 or better. Preparation and writing of an honors thesis under the supervision of a member of the faculty. One or two semesters, at the instructor’s option; if two semesters, credit and grade to be based on completion of the sequence. Application must be approved by Department Chairperson. Spring only. (SP)

241A. Econometrics. (4.5). Formerly 241A. Three hours lecture and 1 1/2 hours seminar per week. Semester Prerequisites: Statistics 101 and 102 or 204-200B or equivalent. Quarter Prerequisites: Statistics 100A-100B-100C or equivalent. A review of some central themes in econometric theory. Prerequisite for modern growth and development. (F,SP)

241B. Econometrics. (4,5). Formerly 241B. Three hours lecture and 1 1/2 hours seminar per week. Semester Prerequisites: Statistics 101 and 102 or 204-200B or equivalent. A review of some central themes in econometric theory. Prerequisite for modern growth and development. (SP)

241C. Econometrics. (4,5). Formerly 241C. Three hours lecture and 1 1/2 hours seminar per week. Semester Prerequisites: Statistics 101 and 102 or 204-200B or equivalent. A review of some central themes in econometric theory. Prerequisite for modern growth and development. (F,SP)

241D. Econometrics. (4,5). Formerly 241D. Three hours lecture and 1 1/2 hours seminar per week. Semester Prerequisites: Statistics 101 and 102 or 204-200B or equivalent. A review of some central themes in econometric theory. Prerequisite for modern growth and development. (SP)

242 Seminar in Econometrics. (3). Formerly 242. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. (F,SP)

243 Special Topics in Econometric Theory. (2). Formerly 243. Course may be repeated for credit. Two hours of lecture per week. Semester Prerequisites: 241A-241B. See department course description each semester. (F,SP)

250A-250B. Labor Economics. (3,3). Formerly 250A-250B-250C. Two hours of lecture per week. Semester Prerequisites: 250A is prerequisite to 250B. Consent of instructor: Analysis of labor market behavior. (F,SP)

250C. Labor Economics. (1.5). Formerly 250C. One and one-half hours of lecture per week. Semester Prerequisites: 250B Analysis of labor market behavior. (F,SP)

251 Seminar in Labor Economics. (3). Formerly 251. Two hours of seminar per week. Semester Prerequisites: Consent of instructor: Seminar for students at the doctoral dissertation level. (F,SP)

255A. Urban Economics. (3). Formerly 255. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Consent of instructor. (F,SP)

255B. Urban Economics. (3). Formerly 255. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: Consent of instructor. (F,SP)
Prerequisites: 2014 or consent of instructor. Application of economic theory to the study of activity and residence in cities: 255A covers the historical pattern of urban and regional development in the United States and states of international, comparative, and land-use policy. Analysis of public service provision and selected aspects of intergovernmental relations. (F,SP)

255B. Public Policy and Urban Problems. (3,3). Formerly 255B. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: 255A or equivalent consent of instructor. Sectoral problems and public policy in the urban economy. Theory and empirical analysis of housing, transport, and land-use policy. Analysis of public service provision and selected aspects of intergovernmental relations. (F,SP)

256. Seminar in Urban Economics. (3). Formerly 256. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of Instructor. Faculty-student research and dissertation workshop. (F,SP)

260A-260B. Economic Systems. (3,3). Formerly 260A-260B-260C. Two hours of lecture per week. Semester Prerequisites: 260A is prerequisite to 260B. Methods and problems of comparing economic systems; their institutions, ideologies, performance, and problems. (F,SP)

260C. Economic Systems. (1,5). Formerly 260C. One and one-half hours of lecture per week. Case studies of the Soviet Union and other non-market economies. (F,SP)

261. Seminar in Economic Systems. (3). Formerly 261. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of Instructor. (F,SP)

270A-270B. Analytics of Economic Development and Planning. (3,3). Formerly 270A-270B-270C. Two hours of lecture per week. Problems of underdevelopment and poverty, issue in development and the political economy of underdevelopment and poverty, issues in development and strategy. (SP)

270C. Analytics of Economic Development and Planning. (3,3). Formerly 270C. Two hours of lecture per week. Semester Prerequisites: 214-201B, 202A-202B, 201C, 202C. Basic macro-policy planning with investment project analysis. (SP)

270D. Special Topics In Development. (1,5). New Course since Spring 1983. One and one-half hours of lecture per week. Semester Prerequisites: See course announcement. See course announcement for current topics and prerequisites. (SP)

271. Seminar In Economic Development and Planning. (3). Formerly 271. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of Instructor. (F)

275A. Economic Demography. (3). Formerly 275A. Two hours of lecture per week. Economic consequences of demographic change in developing and developed countries including capital formation, labor markets, transfers and urbanization. Economic determinants of fertility, mortality and migration. (F,SP)

275B. Selected Topics in Economic Demography. (3). Formerly 275B. Two hours of lecture per week. A review of recent literature in selected areas of economic demography, content will vary from year to year. (F,SP)

280A-280B. International Economics. (3,3). Formerly 280A-280B-280C. Two hours of lecture per week. The world economy as a general equilibrium system. The theory of international relations, trade policy, trade policy. (F,SP)

280C. International Economics. (1,5). Formerly 280C. One and one-half hours of lecture per week. Semester Prerequisites: 280B. The international mechanism of adjustment in relation to current international monetary institutions; commodity market; foreign exchange agreements; terms of agreements; terms of trade; international food and agriculture; cartels; foreign exchange contracts and commodity agreements; the oil problem; trade with central and underdeveloped economies; economic policies for trade with centrally planned economies; and the institutions on trade and development; GATT, IMF, and The World Bank. (F,SP)

281. Seminar In International Trade and Finance. (3). Formerly 281. Course may be repeated for credit. Two hours of seminar per week. (F)

286. Special Topics In Economics. (1,5). Formerly 286. Course may be repeated for credit. One and one-half hours of lecture per week. Semester Prerequisites: Consent of instructor. Topics of different sections to be announced. (F,SP)

290B. Directed Group Study for Graduates. (1-4). Formerly 290B. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged. Semester Prerequisites: Consent of Instructor. Seminars for the group of selected topics which will vary from year to year. (F,SP)

299. Supervised Independent Study and Research. (1-9). Formerly 299. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor or consent of instructor for qualified graduate students to prepare themselves for the various examinations required for candidates for the Ph.D. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor or consent of instructor for qualified graduate students to prepare themselves for the various examinations required for candidates for the Ph.D. (F,SP)

Professional Courses

301. TA Precinctum. (6). Former 301. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Formerly 301. Course may be repeated for credit. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field advisor or consent of instructor for qualified graduate students to prepare themselves for the various examinations required for candidates for the Ph.D. (F,SP)

Interdepartmental Studies Courses

Upper Division Courses

IDS103. Introduction to Mathematical Economics. (3). Students who have taken Economics 104 will receive no credit for IDS 103. Three hours of lecture per week. Semester Prerequisites: Math 50A-50B. Selected topics illustrating the application of mathematics to economic theory. This course is intended for upper division students in mathematics, statistics, the physical sciences, and engineering, and for economics majors with adequate mathematical background. No economic background is required. (F,SP)

The Department of English offers courses in literature, in language, and in writing. Our courses in literature have many different foci: major authors, historical periods, genres, critical methods. 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 literary history and to the work of major British and American writers. Students are exposed to a variety of theories and methods in forming literary analysis, and to provide continued training in critical writing. Students begin the major with Freshman Reading and Composition (1A-1B), which trains them in writing while it introduces them to literary analysis. In the sophomore year, students normally take English 46A-46B, Major British Writers, which provides an intensive survey of major authors from Chaucer through the twentieth century and continued training in critical writing. The department supplements the survey by requiring students to take a course in American literature, a course in the classical or Biblical background to English literature, and a course in Shakespeare. In order to foster depth of historical study and awareness of the methodologies in forming literary analysis, students are required to take one course in a period or figure of British or American literature before 1900 (exclusive of Shakespeare and English 151) and one course from 170 or 180 series. In the senior year, students take English 151B, a senior seminar in selected topics. These techniques and learning students have acquired to the intensive study of a single author and to the writing of a long essay. Beyond these courses, students are largely free to choose the two other courses in consultation with their advisers. Collaborative study in art, history, literature, philosophy, and language is recommended but not specifically required.

Subject A. Students must have fulfilled the requirement In Subject A before taking any course in the Department of English. For further information, see Subject A listing in Index.

Major Program

The English major consists of not fewer than twelve courses in English, of which at least seven must normally be upper division courses. Students are required to include the following eight items in their program: (1) Freshman Reading and Composition (1A-1B); (2) Major British Writers (46A-46B) or equivalent: see the major program description available in the Department Office; (3) one course in American literature, selected from the following: English 30, 37, 130A, 130B, 130C, 130D, 130E, 133, 134, 136, 137; (4) one course in the classical or the Biblical backgrounds to English literature English 44A or 44B is strongly recommended, but see the major program description for a list of other courses that also fulfill this requirement; (5) a course in Shakespeare (but not English 117T, 151S); (6) a course in a figure or period of British or American
literature before 1900 (exclusive of Shakespeare and English 151), selected from the following: English 105A, 105B, 110A, 111, 112, 114A, 115A, 115B, 119A, 122, 125A, 130A, 130B, 137C; (7) a course from the 170 or 180 series; (8) English 151, which must be taken at Berkeley (a period or type course appropriate as background for the major author to be studied in 151 is strongly recommended).

After declaring the English major, a student is permitted to take only two of the twelve courses needed to complete the major on a P/NP basis (this includes English 99 and 199). All courses specifically required for the English major are graded.

Honors Program. H195A-H195B is a two semester course, graded IP at the end of the first semester. Students must take the two-semester course to graduate with honors in the major. H195A is organized as a course in literary criticism working toward the formation of a thesis topic. H195B will include regular meetings with the H195 instructor. During the second semester each student will write an honors thesis. Completion of the thesis is required for a passing grade in the course. Students with an overall G.P.A. of 3.51 or higher in courses taken at Berkeley in the major may apply for admission to the honors program not later than the first Tuesday of the Fall and Spring Semesters. The M.A. Program. The M.A. program in English is separate from the Ph.D. program. It welcomes a broad range of applicants including older students from a variety of academic and cultural backgrounds. It is designed to serve students who wish to undertake a one-year intensive graduate study in the general field of English and/or American literature, or who wish to pursue a special interest that lies within or cuts across the traditional fields. A student's course study will be determined individually at the beginning of the year with the advisor, and may or may not include a short thesis or approved special project. In special cases, study for the M.A. degree may be pursued in a second year. The M.A. program requires the successful completion of at least 24 units (usually 6 courses) and a general examination of two to three hours, and the writing of a dissertation. Additional details on requirements for the doctorate in English, including language requirements, are available from the English Graduate Office, 319 Wheeler Hall.

Courses in Writing
Please note: Courses in writing require individual conferences as part of the expected student workload.

Lower Division Courses
1A-1B, First-Year Reading and Composition. (4). Formerly 1A-1B. Three hours of lecture per week. Semester Prerequisites: Passing grade in Subject A (exam or course). 1A or equivalent course is prerequisite to 1B. Training in writing expected initially at the beginning of the year with the advisor, and may or may not include a short thesis or approved special project. In special cases, study for the M.A. degree may be pursued in a second year. The M.A. program requires the successful completion of at least 24 units (usually 6 courses) and a general examination of two to three hours, and the writing of a dissertation. Additional details on requirements for the doctorate in English, including language requirements, are available from the English Graduate Office, 319 Wheeler Hall.

Intermediate Expository Writing. (4). Formerly 44A. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. A seminar in expository and critical writing. (F,SP)

42. Writing in Conjunction With the Readings of Important Books of the 19th. (4). Formerly 42. Three hours of lecture per week. Semester Prerequisites: 1A-1B or equivalent. Introduction to critical thinking, discussion, and writing about literature by reading major works of the nineteenth and twentieth centuries and writing about them. (F,SP)

43B. Introduction to the Writing of Verse. (4). Formerly 43B. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. A workshop course intended for students who have recently begun to write verse or who have not previously taken a course in creative writing. (F,SP)

43D. Introduction to the Writing of Non-Fiction. (4). Formerly 43D. Three hours of lecture per week. Semester Prerequisites: 1A-1B or equivalent and consent of instructor. A workshop course in writing of prose non-fiction as an art. Writing and discussion of student work in such genres as the personal essay, biography, autobiography, history, and travel literature; reading and discussion of work by established artists in the same modes. (F,SP)

Upper Division Courses
141. Modes of Writing (Exposition, Fiction, Verse, Etc.). (4). Formerly 141. May be repeated once for credit with a different instructor. Three hours of lecture per week. Semester Prerequisites: 1A-1B or equivalent and consent of instructor. (F,SP)

142A, Advanced Composition for Potential Teachers. (4). Formerly 142A. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Special section in advanced composition for teaching assistants, readers, and honors students in departments other than English. (F,SP)

143A. Short Fiction. (4). Formerly 143A. May be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. A seminar in writing short stories. (F,SP)

143B. Verse. (4). Formerly 143B. May be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. A seminar in writing poetry. (F,SP)

143C. Long Narrative. (4). Formerly 143C. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. A seminar in writing long narrative. (F,SP)

143D. Expository and Critical Writing. (4). Formerly 143D. May be repeated for credit. Three hours of lecture per week. A seminar in expository and critical writing. (F,SP)

143E. Playwriting. (4). Formerly 143F. May be repeated for credit. Three hours of lecture per week. A seminar in playwriting. (F,SP)

143T. Poetry Translation Workshop. (4). Formerly 143T. May be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. A seminar in translating poetry; reading knowledge of at least one foreign language. Open to those who wish to assimilate foreign influences for writing poetry or to seek a fuller understanding of any foreign poetry by rendering it in English. (F,SP)

144. Practical Writing. (4). Formerly 144. One hour of lecture and three hours of writing workshop per week. Training in expository prose without emphasis on literary subject matter. Attention to general standards of effective writing and to specific problems in the prose of class members. (F,SP)

Courses in Language
Please note: Courses in language have irregularly scheduled tutorials as the instructional material demands.

Lower Division Courses
25A. Language. (4). Formerly 25. Three hours of lecture per week. Designed primarily for sophomores interested in English, foreign languages, and philosophy, but open to students in the upper division. (F,SP)

25E. Language. (4). Formerly 25. Three hours of lecture per week. Designed primarily for sophomores not interested in majoring in English, foreign languages, linguistics, or philosophy, but open to students in the upper division. (F,SP)

Upper Division Courses
102. Problems in English Linguistics. (4). May be repeated for credit with permission of the instructor. Three hours of lecture per week. Topics vary from year to year.
to year, but will consider diphonic and syncronic linguistics and their application to the study of literature. (FSP)

Courses in Literature

Please note: Courses in literature expect that students will devote an average of nine hours per week to class preparation.

Lower Division Courses

10. Methods and Materials of Literary Study. (4). Formerly 10. Three hours of seminar per week. Study of literary and critical texts and of critical methods and theories. (FSP)

17. Shakespeare, (4). New Course since Spring 1983. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on Shakespeare and reading of his best works. (FSP)

20. Modern British and American Literature. (4). Formerly 20. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of major authors of modern British and American literature. (FSP)

25. Introduction to the Study of Poetry. (4). Formerly 25. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures and discussion on poetry intended to develop the students' ability to understand and evaluate poetic technique. Designed primarily for students whose major is not English, but majors and prospective majors are welcome. (F)

27. Introduction to the Study of Fiction. (4). Formerly 27. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures and discussion on fiction intended to develop the students' ability to understand and evaluate fiction. Designed primarily for students whose major is not English, but majors and prospective majors are welcome. (FSP)

28. Introduction to the Study of Drama. (4). Formerly 28. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures and discussion intended to develop the students' ability to read, understand and evaluate plays. Designed primarily for students whose major is not English, but majors and prospective majors are welcome. (FSP)

30. American Literature. (4). Formerly 30. Three hours of lecture and one hour of conference, consultation, or discussion per week. An introductory survey of American literature. (FSP)

37. Special Topics in American Literature. (4). New Course since Spring 1983. Three hours of seminar per week. Topics vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the start of the semester. (Sections limited to 15 students each) (FSP)

44A-44B. Masterpieces of Literature. (4;4). Formerly 44A-44B. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on great works of the world's literature. A. Classical Literature. B. Medieval and Renaissance Literature. C. Literature Since the Seventeenth Century. (FSP)

48A-48B. Major British Writers. (4;4). Formerly 48A-48B-147A-147B-147C. Three hours of lectures per week or seminar. Semester Prerequisites: 1A-1B. Discussion of typical works of major authors from Chaucer through the twentieth century with consideration of the more important aspects of English history. A. Chaucer through Milton B. The 18th through the 20th centuries. (FSP)


Upper Division Courses


105A-105B. Introduction to Early English Poetry. (4;4). New Course since Spring 1983. Three hours of lecture and one hour of conference, consultation, or discussion per week. A. Lyric and religious poems B. The Epic

106A. Irish Literature. (4). Formerly 104A. Three hours of lecture and one hour of conference, consultation, or discussion per week. Gaelic literature 700-1800 (in translation). Study of the prose saga-cycles, satire, classical lyrical poetry, and bardic poetry, developing the mythological and inter-continental background of modern Irish literature. (FSP)

106B. Irish Literature. (4). Formerly 104B. Three hours of lecture and one hour of conference, consultation, or discussion per week. The Native Tradition in English literature. (RSP)

107. The English Bible As Literature. (4). Formerly 116A. Three hours of lecture and one hour of conference, consultation, or discussion per week. Introduction to the English Bible treated as a literary work. (FSP)

110A-110B. Medieval Literature. (4,4). Formerly 120A. Three hours of lecture and one hour of conference, consultation, or discussion per week. A. Development of literary form and idiom throughout the Christian West from the 1s to the 15th century B. Close study of selected classics in translation, including Nibelungenlied and Dante's Divine Comedy (F,SP)

111. Chaucer. (4). Formerly 152. Three hours of lecture and one hour of conference, consultation, or discussion per week. Literature of the 14th century and discussion of Chaucer's major works. (FSP)

112. Middle English Literature. (4). New Course since Spring 1983. Three hours of lecture and one hour of conference, consultation, or discussion per week. Middle English literature exclusive of Chaucer studied in the original language. (FSP)

114A-114B. English Drama. (4,4). Formerly 114A-114B. Three hours of lecture and one hour of conference, consultation, or discussion per week. A. English drama to 1603 B. English drama from 1603 to 1700 (FSP)

115A-115B. The English Renaissance. (4,4). Formerly 158A. Three hours of lecture and one hour of conference, consultation, or discussion per week. A. Beginning of the English Renaissance, and Literature of the 16th Century B. Literature of the 17th Century (FSP)

116. Backgrounds of English Literature in the Continental Renaissance. (4). Formerly 156. Three hours of lecture and one hour of conference, consultation, or discussion per week. A chronological survey of Shakespeare's career. (FSP)

117A-117B. Shakespeare. (4,4). Formerly 117A-117B. Three hours of lecture and one hour of conference, consultation, or discussion per week. A chronological survey of Shakespeare's career. (FSP)

117E. Shakespeare for Non-Majors. (4). Formerly 117E. Three hours of lecture and one hour of conference, consultation, or discussion per week. General introduction to Shakespeare's plays, intended for non-majors. (FSP)

117F. Shakespeare and Film. (4). Formerly 117F. Three hours of lecture and one hour of conference, consultation, or discussion per week. Close study of the texts and films based on 8 to 10 plays. Lectures will emphasize the critical implications of transposing plays to film. The goal of the course is the critical understanding of Shakespeare, and the course satisfies the departmental requirement of a course on Shakespeare in the major. (FSP)

117J. Shakespeare. (4). Formerly 117J. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies of selected plays, with practice in various critical approaches, e.g., establishing text, relating to source, changing concepts of comedy and tragedy, influence of theatrical conditions on technique. (F,SP)

117S. Shakespeare and the Theatre. (4). Formerly 117T. Three hours of lecture and one hour of conference, consultation, or discussion per week. Semester Prerequisite: Offered in conjunction with or as a sequel to 117S or 117A-117B. The interaction of Elizabethan plays and stage practices. Classroom exercises, written assignments, and a final examination. (FSP)

118. Milton. (4). Formerly 154. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of Milton's major works. (F)

119. The Augustan Age. (4). Formerly 118. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of Dryden, Swift, Pope, and some of their contemporaries. (FSP)

120. The Age of Johnson. (4). Formerly 119. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of later eighteenth century British literature. (FSP)

121. Romantic Period. (4). Formerly 121A-121B. Three hours of lecture and one hour of conference, consultation, or discussion per week. Literature of the Romantic period with an emphasis on poetry and non-fictional prose. (F,SP)

124. The English Lyric. (4). Formerly 149. Three hours of lecture and one hour of conference, consultation, or discussion per week. The development of the English tradition of structure and style in lyric poetry. (F,SP)

125A-125B. The English Novel. (4,4). Formerly 125A-125B. Three hours of lecture and one hour of conference, consultation, or discussion per week. Major European novels. (RSP)

125D. The 20th Century Novel. (4). Formerly 125E. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of major novels of the twentieth century. (F,SP)

126. British Literature: 1900-1945. (4,4). Formerly 160. Three hours of lecture and one hour of conference, consultation, or discussion per week. Literature of and discussion of British literature written between 1900 and 1945. (F,SP)

127. Modern Poetry. (4). Formerly 161 and 162. Three hours of lecture and one hour of conference, consultation, or discussion per week. British and American poetry: 1900 to the present. (F,SP)

128. Modern Drama. (4). Formerly 114C. Three hours of lecture and one hour of conference, consultation, or discussion per week. British and American drama: 1860 to the present. (F,SP)

130A. American Literature: Before 1800. (4). Formerly 130A. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of the major writers of the early American period. (FSP)

130B. American Renaissance. (4). Formerly 130B. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and
discussion of the major texts of the American Renaissance.

130C. American Literature: 1865-1900. (4). Formerly 130C. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of American literature from the Civil War through 1900. (F,S,P)

130D. American Literature: 1900-1945. (4). Formerly 130D. Three hours of lecture and one hour of conference, consultation, or discussion per week. A survey of modern American literature. (F,S,P)

131. American Poetry. (4). Formerly 131. Three hours of lecture and one hour of conference, consultation, or discussion per week. A survey of American poetry and selected works of literature written since the Second World War. (F)

132. American Novel. (4). Formerly 125C. Three hours of lecture and one hour of conference, consultation, or discussion per week. A survey of major American novels. (F,S,P)

133. Black Writers in America. (4). Formerly 133. Three hours of lecture and one hour of conference, consultation, or discussion per week. Black writers in the American cultural context. (F,S,P)

134. Contemporary Literature. (4). Formerly 183. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of selected works of literature written since the Second World War. (F)

135. American Studies. (4). May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. A course on the intellectual, cultural, historical, and social backgrounds to American literature. Topics will vary from semester to semester. Students should consult the department's "Announcement of Classes" for current offerings before the start of the semester.

137. Special Studies In American Literature. (4). New Course since Spring 1983. May be repeated for credit. Three hours of seminar per week. Topics vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

151. The Senior Course. (4). Formerly 151. May be repeated for credit on a different author with consent of the instructor. Three hours of seminar per week. Prerequisites: A period or type course appropriate as background for the major author is strongly recommended. Designed primarily for English majors. Intensive study of the more significant works of a major author and the writing of a long essay. (F,S,P)

151C. Chaucer. (4).

151G. Major Authors. (4). Authors will vary from semester to semester; consult the department's "Announcement of Courses" for offerings before the beginning of the semester.

151M. Milton. (4).

151S. Shakespeare. (4).

160. Methods and Materials of Literary Criticism. (4). Formerly 100. Three hours of seminar per week. A survey of major approaches in literary criticism; includes application of principles and methods to selected literary texts. (F,S,P)

165. Special Topics. (4). Formerly 108. May be repeated for credit on a different topic. Three hours of seminar per week. Designed primarily for English majors. Topics vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

166. Special Topics. (4). New Course since Spring 1983. May be repeated for credit on a different topic. Three hours of lecture and one hour of conference, consultation, or discussion per week. Topics vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

167. Special Topics: Reading Courses. (2). Formerly 109. May be repeated for credit with a different topic and permission of the instructor. One and one-half hours of seminar per week. Readings in selected literary topics. Topics vary from year to year. Extensive readings; written assignments and examinations at the discretion of the instructor. (F,S,P)

170. Literature and the Arts. (4). Formerly 170. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies in the relationship of English literature to the arts. (F,S,P)

171. Literature and Sexual Identity. (4). Formerly 171. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. A study of the functions of the definition of sexual identity in literature in relation to thematic, literary conventions, psychology, and the particular politics and sociology of individual cultures. The course may range broadly over Western literature or concentrate on one historical period. (F,S,P)

172. Literature and Psychology. (4). Formerly 172. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies in the relationship of English literature to psychology. (F,S,P)

173. The Language and Literature of Films. (4). Formerly 173. May be repeated for credit with permission of the instructor. 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. (F,S,P)

174. Literature and History. (4). Formerly 174. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Topics will vary from semester to semester. (F,S,P)

175. Women Writers. (4). Formerly 175. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies in the relationship of English literature to psychology. (F,S,P)

176. Literature and Popular Culture. (4). Formerly 176. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Topics will vary from semester to semester. (F,S,P)

177. Literature and Philosophy. (4). Formerly 177. May be repeated for credit with a different topic and permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies in the relationship of English literature to philosophy. (F,S,P)

178. Anglo-American Folklore. (4). Formerly 180F. Three hours of lecture and one hour of conference, consultation, or discussion per week. A survey of the major forms of oral literature and folklore among English-speaking peoples of North America in recent centuries, such as Anglo-American ballads, the folk-tale, popular legendary, and the folk or mummers' play. (F,S,P)

180A. Autobiography. (4). Formerly 180A. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies on and discussion of autobiographical forms. (F,S,P)

180C. Comedy. (4). Formerly 198C. Three hours of lecture and one hour of conference, consultation, or discussion per week. Studies of representative comic forms, techniques, and point of view. (F,S,P)

180E. The Epic. (4). Formerly 180E. Three hours of lecture and one hour of conference, consultation, or discussion per week. Readings and discussion of epic, considering their cultural and historical contexts, the nature of their composition, and the development of the form. (F,S,P)

180H. Short Story. (4). Formerly 124H. Three hours of lecture and one hour of conference, consultation, or discussion per week. Lectures on and discussion of the short story. (F,S,P)

180R. The Romance. (4). Formerly 180R. May be repeated for credit with permission of the instructor. Three hours of lecture and one hour of conference, consultation, or discussion per week. Study of the romance as a literary genre. Topics may range broadly over Western literature or concentrate on one historical period (e.g., medieval, modern). (F,S,P)

180S. Satire. (4). Formerly 180S. Three hours of lecture and one hour of conference, consultation, or discussion per week. Study of representative satirical forms, techniques and points of view. (F,S,P)

180T. Tragedy. (4). Formerly 180T. Three hours of lecture and one hour of conference, consultation, or discussion per week. Study of representative tragic forms, techniques, and points of view. (F,S,P)

180Z. Science Fiction. (4). Formerly 180Z. Three hours of lecture and one hour of conference, consultation, or discussion per week. A survey of science fiction, which includes both short stories and novels. The focus will be on the analysis of the texts and on the history and theory of the genre. (F,S,P)

193. Computers in the Humanities: Literary Applications. (4). New Course since Spring 1983. This course may be counted as one of those required for the major or as a breadth requirement for a student in the sciences. Three hours of lecture per week. An introduction to the use of computers in the study of literature, including analysis of texts, concordances, and bibliographic techniques. The course will include sufficient instruction in a programming language to enable students to program text manipulations. In addition to readings, students will be required to arrange training time on the computer for an average of three hours per week. No previous knowledge of computers is assumed. (F,S,P)

Professional Courses

310. Field Studies in Tutoring Writing. (1-3). New Course since Spring 1983. May be repeated for a maximum of six units. Must be taken on a pass/no pass basis. Four to six hours of supervised tutoring and one 2-hour seminar per week. Prerequisite: 193. May be repeated for credit with a different topic. Admission by consent of instructor.

99. Independent Study. (1-4). Formerly 99. May be repeated for credit. Must be taken on a pass/no pass basis. Independent. Semester Prerequisites: Open to sophomore honors students who have completed 15 or more units of English with an average of not less than 3.51. Meetings to be arranged. Reading and regular conference with the instructor in a field that shall not coincide with that of any regular course and shall be specific enough to enable students to write essays based on the studies. (F,S,P)

Upper Division Courses

H195A-H195B. Honors Course. (4,4). Formerly H195A-H195B. Credit and grade to be awarded upon completion
of the sequence. Three hours of lecture per week. Semester Prerequisites: Open only to seniors and candidates for the B.A. or B.S. degree; must be taken in a two-semester course, graded IP at the end of the first semester. During the second semester, each student will write an honors thesis. Completion of the thesis is required for a passing grade in the course. (F,S,P)

196A. Junior Seminar: Great Books of English and American Literature. (4). Formerly 196A. Three hours of lecture and one hour of conference, consultation, or discussion per week. Semester Prerequisites: Normally open only to students who have completed 30 units with a GPA of 3.5 or better. Consent of instructor. Intensive study of major works for example: Canterbury Tales, King Lear, Hamlet, Paradise Lost, Gulliver's Travels, Prelude, Middlemarch, Bleak House, Ulysses, Leaves of Grass, Sacred Letter, Modernism, and the English majors. (F,S,P)

196B. Senior Seminar: Special Topics. (4). Formerly 196B. Three hours of seminar per week. Semester Prerequisites: Normally open only to seniors with a GPA of 3.5 or better. Consent of instructor. The topics will fall within one of the following general areas: 1) "Critical and Methodological Problems in the Study of Literature." Sample topics: Comedy; Stylistic Genres; Modes of Literary Analysis; Psychoanalytic Criticism; Dramatic Literature and Problems in Staging; Literature and Psychology; Politics. 2) "Literary Modes and Eras." Sample topics: Politics and Literature in 18th Century England; The Social Context of the British Novel of the 1840s; Women in Literature. (F,S,P)

199. Supervised Independent Study for Advanced Undergraduates. (1-4). Formerly 199. May be repeated for credit. Must be taken on a pass/fail basis. Consent of instructor and the department. Independent. Semester Prerequisites: Open only to students who have completed 15 units of upper division English with an average grade of not less than B. Meetings to be arranged. Enrollment is restricted by University regulations. Reading and conferencing with the instructor in a field that shall not coincide with that of any regular course and shall be specific enough to enable students to write essays based upon their studies. (F,S,P)

Teachers' Courses

Professional Courses

301. Problems in the Teaching of Literature. (3). Formerly 301. Seminar. Students will serve as readers and discussion section leaders in an undergraduate lecture course, and must have completed satisfactorily a semester course in the theory of the undergraduate course. Weekly meetings, preparation, and evaluation of student exercises, and a term project report required. (F,S,P)

302. The Teaching of Composition. (3). Formerly 302. Course may be repeated for credit with consent of instructor. Must be taken on a satisfactory/unsatisfactory basis. Three hours of lecture per week. Discusses course aims, instructional methods, grading standards, and special problems, with practice in handling sample essays. When given for Teaching Assistants and Associates in the English 1A-18 program, the course will include class visitation. (F,S,P)

303. Teaching of English in Open Admission Programs. (3). Formerly 303. Three hours of lecture per week. Discussion of course aims, instructional methods, grading standards. Practice with actual student papers. The focus is on subjects whose level of skills may disqualify them from regular freshman programs. (F,S,P)

304. The Teaching of Composition. (3). Formerly 304. Three hours of lecture per week. A course designed for experienced Associates in the Department of English, based on the instructional model developed by the Bay Area Writing Project. (F,S,P)

397. Community College English Programs: Principles and Practice. (3). Formerly 397. Two hours of lecture and two hours of supervised classroom practice per week. Semester Prerequisites: Completion of 3/4 of work in the graduate English program. Designed to acquaint community college practitioners with the community college English programs and to afford them the opportunity to observe, participate, and assist in community college English classes, especially at the remedial level of freshmen writing classes. (F,S,P)

Graduate Courses

200. Problems in the Study of Literature. (4). Formerly 200. Three hours of lecture per week. Approaches to literary study, including textual analysis, scholarly methodology and bibliography, critical theory and practice. (F,S,P)

201A. The English Language. (4). Formerly 205A. Three hours of lecture per week. Structure of English. The structure of present-day English - pronunciation, grammar, vocabulary, dialects. (F,S,P)

201B. The English Language. (4). Formerly 205B. Three hours of lecture per week. Semester Prerequisites: A knowledge of the structure of English, of Old English, and of Latin. History of English. (F,S,P)

202. History of Literary Criticism. (4). Formerly 202. Three hours of lecture per week. (F,S,P)

203. Graduate Readings. (4). Formerly 203. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Open to advanced undergraduates, with the consent of the instructor. Graduate lecture courses surveying broad areas and periods of literature history, and directing students in wide reading. Offerings vary from year to year. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

205A-205B, Old English. (4-4). Formerly 211A-211B. Three hours of lecture per week. Semester Prerequisites: Open to undergraduates with the consent of the instructor. (F,S,P)

206. Celtic Studies. (4). Formerly 204. Course may be repeated for credit. Three hours of lecture per week. (F,S,P)

207A. Readings in Medieval Latin. (4). Formerly 210A. Course may be repeated for credit with the consent of the instructor. Three hours of lecture per week. Semester Prerequisites: Latin 2 or equivalent. An introduction to the central language and literature of the Middle Ages. (F,S,P)

207B. Readings in Renaissance Latin. (4). Formerly 210C. Three hours of lecture per week. An introduction to the range of Renaissance Latin texts. (F,S,P)

211. Chaucer. (4). Three hours of lecture per week. Discussion of Chaucer's major works. (F,S,P)

212. Readings in Middle English. (4). Formerly 213. Three hours of lecture per week. Rapid reading of selections in Middle English, from the twelfth century through the thirteenth century. (F,S,P)

217. Shakespeare. (4). Course may be repeated for credit. Three hours of lecture per week. Discussion of selected works of Shakespeare. (F,S,P)

218. Milton. (4). Formerly 254. Three hours of lecture per week. Discussion of Milton's major works. (F,S,P)

220. Theory of Composition. (4). Formerly 220. Three hours of lecture per week. Semester Prerequisites: Current or prior experience in the teaching of composition or consent of instructor. Readings in composition theory combined with consideration of practical applications. (F,S,P)

243A. Fiction Writing Workshop. (4). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Enrollment in Ph.D. program in English; consent of instructor; normally based on prior writings submitted. A writing workshop in fiction for graduate students. (F,S,P)

243B. Poetry Writing Workshop. (4). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Enrollment in Ph.D. program in English; consent of instructor; normally based on prior writings submitted. A writing workshop in poetry for graduate students. (F,S,P)

246. Graduate Pro-Seminars. (4). Formerly 246. Three hours of lecture per week. Two-semester pro-seminars in the major chronological fields of English and American literature, providing graduate instruction in scholarly and critical approaches appropriate to each field. A student will normally be expected to remain enrolled for both semesters. (F,S,P)

246A. Graduate Pro-Seminars. (4). Semester Prerequisites: 246A. (F,S,P)

246B. Graduate Pro-Seminars. (4). Semester Prerequisites: 246B. (F,S,P)

246C. Graduate Pro-Seminars. (4). Semester Prerequisites: 246C. (F,S,P)

246D. Graduate Pro-Seminars. (4). Semester Prerequisites: 246D. (F,S,P)

246E. Graduate Pro-Seminars. (4). A-B. Mediterranean

246F. Graduate Pro-Seminars. (4). Semester Prerequisites: 246F. (F,S,P)

246G. Graduate Pro-Seminars. (4). Semester Prerequisites: 246G. (F,S,P)

246H. Graduate Pro-Seminars. (4). Semester Prerequisites: 246H. (F,S,P)

246I. Graduate Pro-Seminars. (4). A-B. Victorian

246J. Graduate Pro-Seminars. (4). Semester Prerequisites: 246J. (F,S,P)

246K. Graduate Pro-Seminars. (4). I-J. American Literature. Modern British Literature will be covered in 203.

246L. Graduate Pro-Seminars. (4). Semester Prerequisites: 246L. (F,S,P)

246M. Graduate Pro-Seminars. (4). I-J. American Literature. Modern British Literature will be covered in 203.

250. Seminars: General Topics. (4). Formerly 250A-250B. One 2- to 3-hour meeting per week. Required of all graduate students. Offerings vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

251. Colloquia for Students in the English M.A. Program. (4). Formerly 251. One 3-hour meeting per week. Semester Prerequisites: Open only to students in the M.A. program. Qualifying students should consult their advisors and the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

270. Seminars: General Topics. (4). Formerly 270. Course may be repeated for credit. One 2- to 3-hour meeting per week. Intended for specifically qualified Ph.D. candidates; satifies the seminar requirement. Offerings vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

271. Editing. (4). Formerly 271. Three hours of lecture per week. Investigation of the methods of editing with specific examples from various sources. Offerings vary from semester to semester. Students should consult the department's "Announcement of Classes" for offerings before the beginning of the semester. (F,S,P)

289. Special Studies. (4-12). Formerly 289. Course may be repeated for credit. Independent. Normally reserved for students directly engaged upon the doctoral dissertation. (F,S,P)

299. Special Study. (1-8). Formerly 299. 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. (F,S,P)

601. Individual Study. (1-12). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Independent. Semester
Environmental Sciences

Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-2828

Major Advisers: William B.N. Berry, Head Adviser; Area I, Physical Science: Mark Christensen; Area II, Biological Science: Herbert G. Baker; Area III, Social Science: James Anderson.

Group Major in Environmental Sciences

The group major program is administered through the Division of Special Programs. Students are referred to this office for all administrative matters, and this is where major students will file their study lists. A student may elect to follow one of three distinct areas in the group major in environmental sciences, namely physical science, biological science, or social science. Details of course listings appear below. In each of these areas, there is a substantial amount of common ground, so that students will be able to talk with one another and to work together. Each program emphasizes broad and comprehensive training in the fundamentals of mathematics, physics, chemistry, and biology, and in those areas of social science directly related to environmental questions. Such training is regarded as indispensable for those who wish to acquire more than a superficial understanding of environmental science and technology on society, and who wish to contribute to the solution of environmental problems.

Although many environmental problems have an urban focus, especially air pollution, this field encompasses rural as well as urban problems. It is concerned with the interaction of urban people with the physical and biological environments created by cities but stops short of the problems stemming from the interaction of people with other people in cities; such matters must be left to the fields of urban studies and of ethnic studies.

The senior seminar (Environmental Sciences 126 and 196) is an important feature of the group major in environmental sciences. Typically, a group of twenty-five or fewer seniors, including students from each of the three groups, works under faculty guidance intensively for two semesters on a specific environmental problem. The technical, economic, and political background is studied thoroughly, and then detailed model solutions are worked out. Because of the continual incidence of new courses and the demise of others, in exceptional cases advisers will be willing to consider the substitution of certain other courses for those officially listed under the three major options.

Area I: Physical Sciences

Lower Division Courses. Biology 11; Chemistry 1A-1B, 8A; Computer Science 7 or 8; Mathematics 1A-1B; Physics 8A-8B or 7A-7B.

Upper Division Courses. Environmental Sciences 102, 125, 126, 196; Biology 150; Geography 130.

Additional courses from the following list to make a total of 30 upper division units. Anthropology: 144, 145; Civil Engineering 144, 145, 147; Conservation and Resource Studies 131, 132; Economics 103 or 104; Engineering 150, 160, 161, 162; Geography 131, 144, Geology 117, 114, Physics 124; Biomedical & Environmental Health Sciences 150; Plant and Soil Biology 100, 101, 103; Energy and Resources 100, 102, 151.

Area II: Biological Sciences

Lower Division Courses. Biology 1A-1B; Chemistry 1A-1B; Computer Science 7 or 8; Mathematics 16A-16B; Physics 8A-8B.

Upper Division Courses. Environmental Sciences 102, 125, 126, 196; Anthropology 148 or Geography 125.

Additional courses from the following list to make a total of 30 upper division units. Anthropology 108, 108; Biology 150; Botany 125, 154; Civil Engineering 144; Conservation and Resource Studies 101, 110, 131, 132; Entomology 103-103L, 106, 108, 130; Forestry 117, 122, 123A, 123B, 125, 141, 142, 143, 170, 177, 178; Geography 130, 131, 139, 148; Genetics 110; Nutritional Sciences 100; Physical Education 105A, 105B; Pest Management 151; Plant Pathology 123; Biomedical and Environmental Health Sciences 150, 156; Plant and Soil Biology 100, 101, 103, 161; Zoology 107A, 108, 131, 140, 141, 142.

Recommended Electives. Conservation and Resource Studies 130, Economics 125; Geology 10, 105; Biomedical and Environmental Health Sciences 130A, 130B; Energy and Resources 100.

Area III: Social Sciences

Lower Division Courses. Biology 11; Chemistry 1A-1B; Computer Science 7 or 8; Economics 1; Mathematics 16A-16B; Physics 8A-8B.

Upper Division Courses. Environmental Sciences 102, 125, 126, 196; Anthropology 140 or 148; Biology 150; Economics 100A or 100B or 101A or 101B; Geography 130.

Additional courses from the following list to make a total of 30 upper division units. Anthropology 101, 108; Biology 150; Botany 125, 154; Civil Engineering 144; Conservation and Resource Studies 110, 115, 130 or 131, 132, 150 or 151 or Environmental Design 169A; Conservation and Resource Studies 160; Economics 100B or 101B; Economics 125 or Forestry 110A or 110B; Energy and Resources 100; Geography 130 or 139 or 148 or Conservation and Resource Studies 163 or Forestry 115 or 118; Biomedical and Environmental Health Sciences 150; Mass Communication 102 or Journalism 141 or Political Science 162; Political Science 106; Public Policy 175 or Energy and Resources 151; Conservation and Resource Studies 169 or Forestry 117; Statistics 131A or 131B.

Recommended Electives. Economics 121, 175; English 40 or 144; Geology 10; Civil Engineering 144; Statistics 2, 20.

Lower Division Courses

10. Introduction to Environmental Science. (3). Formerly 123. Three hours of lecture and one hour discussion per week plus one 8-hour field trip per semester. Surveying biological and physical environmental problems, focusing on geologic hazards, water and air quality, water supply, soil erosion, introduced and endangered species, preservation of wetland ecosystems. Interaction of technical, social, and political approaches to environmental management. Emphasizing Bay Area problems. (F)

Upper Division Courses

125. Environments of the San Francisco Bay Area. (3). Formerly 125. Three hours lecture per week with field trips. The weather and climate, plants and animals, geology, landforms and oils of the Bay Area, with an emphasis on the interaction of these physical elements, their modification by humans, and problems deriving from human use. Environmental Science majors should take this course in the Sophomore or Junior year. (F)

126. The Bay Area Environment—Topics for Senior Seminar. (2). New Course since Spring 1962. May be taken on a passed/not passed basis. Three hours of discussion per week. Semester Prerequisites: Must be taken in same academic year as 196. Required for seniors planning to take 196. Selected issues on the Bay Area environment; selection of topic for Senior Seminar. (F)

196. Senior Seminar in Environmental Sciences. (4). Formerly 196B-196C. Four hours seminar per week. Semester Prerequisites: 125 and 126. Seminar giving considerable consideration to a specific current environmental problem in the Bay Area, designed primarily for students enrolled in one of the three Environmental Sciences major options. (SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Independent study. Semester Prerequisites: Enrollment is restricted by regulations listed in the General Catalog. (F,SP)

Ethnic Studies Graduate Group

Group Office, 3407 Dwinelle Hall, 642-6555.

Graduate Adviser: Ronald T. Takaki.

The ethnic Studies Graduate Group program studies comparatively the histories, cultures, and communities of racial minorities in the United States. It seeks to analyze how the experiences of various racial minorities were formed and shaped from each other, how developments such as slavery and racial discrimination set apart Americans of color from Americans of European ancestry, and how racial and class intersect in American society. Multi-disciplinary in approach, it utilizes a broad range of social science humanities methods to examine the critical area of race in American life. The curriculum focuses on racial minorities, particularly on African-Americans, Asian Americans, Chicano,s, and Native Americans within the context of American society in general—its culture, economy, and institutions—in order to understand more deeply the origins, nature, and meaning of America's racial diversity.

The curriculum for the Ethnic Studies Graduate Program is reviewed and approved annually by the Ethnic Studies Graduate Group. Courses pending approval at time of publication. Check with Graduate Secretary.

Ethnic Studies

Group Major Office, 3407 Dwinelle Hall, 642-6555.

Undergraduate Major Advisers: Mr. Saragosa, Ms. Megino

Choice of Program

A student can complete the group major in Ethnic Studies in the College of Letters and Science (A.B.)
degree) or in the Department of Ethnic Studies (A.B. degree). Students in each program are subject to the requirements of the respective College or Department.

Staff and courses in Ethnic Studies are listed under the section entitled Special Studies: Ethnic Studies.

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 Afro-Americans, Asian Americans, 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 of the children of racial minorities. Ethnic Studies majors also prepare themselves for advanced graduate study in either academic or professional fields.

The student majoring in Ethnic Studies works closely with an academic adviser and selects an Area of Emphasis—Social Sciences, Humanities, Community Studies, or Special Area of Emphasis.

Major Requirements

Lower Division. (1) Ethnic Studies 20; (2) Completion of a course in the history of Western Civilization or American History, or an equivalent course. A list of equivalent courses may be obtained from the adviser. (3) Completion of an introductory course in one of the four Ethnic Studies Programs (including Afro-American Studies).

Upper Division. (1) Completion of three core courses in Ethnic Studies: 130, 141, and 195; (2) Completion of two additional courses in Ethnic Studies; (3) Completion of six additional courses which form the basis of the declared Area of Emphasis. Two of the core courses must be taken in two different Ethnic Studies Programs (including Afro-American Studies).

Honors Program

The Department of Ethnic Studies provides a program leading to the A.B. degree with honors. A student will be recommended for honors if he or she completes at least 30 units in two semesters with an average GPA of at least 3.3 for all work undertaken in the Ethnic Studies Department and has been approved specifically for honors by the Department Chair upon recommendation by the faculty adviser for the group major. The honors student 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, a student must obtain at least a 3.3 GPA for all coursework undertaken at the University.

Film

Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-6804

Advisory Committee: William Nestrick, Head Advisor (English and Comparative Literature), Bertrand August (French and Comparative Literature), Seymour Chatman (Rhetoric), Carol J. Clover (Scandinavian), Anton Kaes (German), Gabriele Moses (Italian).

Group Major in Film

The group major in film is administered by the Division of Special Programs. It has been designed to place the history and theory of film in the larger context of humanistic studies.

Lower Division Requirements. Film 1A-1B or 2; Language Requirement: In addition to the language used for entrance to the University, students will choose a second language, the choice to be made so that both groups of the following languages are represented:

Group One: French, German, Italian, Japanese, Russian, Swedish through the intermediate level, e.g., French 3, German 3, etc.

Group Two: Czech, French, German, Polish, Portuguese, Serbo-Croatian or Spanish through the intermediate level, e.g., French 3, German 3, etc.

Upper Division Requirements. In addition to the introductory film course (Film 1A-1B or 2), the major program includes two courses in the history of film (one a film from its beginnings to 1930, one on film from 1930-1971), one course on the history of film theory, one on an individual auteur, and two on film genres. Most of these requirements can be satisfied by courses offered in departments, courses listed under "Film" are to supplement these offerings. ("Film" courses are offered only when regular College departments do not offer equivalent courses. They are always staffed by temporary faculty.) All of these requirements may be satisfied either at the lower division or upper division level, but the major must include 30 upper division units.

Attention is called to the departments of Afro-American Studies, Comparative Literature, English, French, German, Italian, Rhetoric, and Scandinavian for courses in film. Each semester, the office for the major prepares a list of courses to be offered in the College.

Honors Program. To be eligible for admission to the honors program in film, a student must have attained senior standing with a grade-point average of 3.5 or higher on all University work and a 3.5 grade-point average or higher in courses in the major. Students in the honors program must take Film H195A for a letter grade to complete a senior honors thesis.

Lower Division Courses

1A. English Composition in Connection with Film. (4). New Course since Spring 1983. Three hours lecture plus three hours of film laboratory per week. Semester Prerequisites: Subject A.

The historical evolution of editing practice will be studied in conjunction with classical writings on film. Compositions will deal with the various films presented in the film laboratory and with the theoretical and reportage aspects of documentary. The course is not open to students who have already completed the Reading and Composition requirement. (F)

1B. English Composition in Connection with Film. (4). New Course since Spring 1983. Three hours lecture plus three hours of film laboratory per week. Semester Prerequisites: Subject A is prerequisite to 1B. Writing in conjunction with the issue of translating a novel, a drama, and a poem into film. Topics will include readings on and examples of the avant-garde and experimental film. (SP)

2. Basic Film Techniques. (4). Formerly 1A-1B. May not be taken in addition to 1A-1B. Three hours of lecture and three hours of film laboratory per week. Semester Prerequisites: Limited enrollment. A course intended for majors. Techniques of film editing will be studied in conjunction with the historical evolution of editing practices. Other topics include camera and lenses, film stock, lighting and special effects. Examples chosen from silent and documentary films. (F)

25A. The History of Film. (4). Formerly 25A. Three hours lecture and three to four hours film laboratory per week. Semester Prerequisites: 1A-1B or 2. From the beginning through the conversion to sound. In addition to the development of the silent film, the course will conclude with an examination of the technology of sound conversion and experiments of early sound experiments. (F)

25B. The History of Film. (4). Formerly 25B. Three hours lecture and three to four hours film laboratory per week. Semester Prerequisites: 1A-1B or 2. The sound era through 1971. (SP)

Upper Division Courses

100. History of Film Theory. (4). Formerly 100. Three hours lecture and three hours film laboratory per week. Semester Prerequisites: 1A-1B or 2. The study, from a historical perspective, of major theorists of film.

108. Special Topics In Film Genre. (4). Formerly 108. Course may be repeated for credit. Three hours lecture and three hours film laboratory per week. The study of film by "kind". Focus on a particular genre such as the documentary, the western, the animated film, film noir, the musical. (SP)

151. Auteur Theory. (4). Formerly 151. Course may be repeated for credit. Three hours lecture and three hours film laboratory per week. The study of film by "author". Focus on a particular genre such as the documentary, the western, the animated film, film noir, the musical. (SP)

195. Honors Thesis. (4). Formerly H195A-195B. Independent. Semester Prerequisites: Senior standing with a 3.3 GPA on all University work and a 3.5 GPA on all courses in the major. Students in the honors program must take 195 for a letter grade to complete a senior honors thesis. Although the production of a film may be part of the preparation of the thesis and the film submitted as a documentation or essay, it is expected that the thesis will be substantial piece of writing on film criticism or film history. (F,SP)

199. Directed Group Study. (1-4). Formerly 199. Course may be repeated for credit as topic varies. Must be taken on a pass/no pass basis. One to four hours of lecture per week. Semester Prerequisites: 100 or equivalent and consent of instructor. Group studies of selected topics which vary from year to year. Field shall not coincide with that of any regular course and shall be specific enough to allow students to write an essay based on the study. (F,SP)

199. Supervised Independent Study for Advanced Undergraduates. (1-4). Formerly 199. Must be taken on a pass/no pass basis. To be arranged. Semester Prerequisites: 100 or equivalent. Open to majors with consent of instructor and major division. Group study of selected topics which vary from year to year. Must be taken in conjunction with the instructor in a field that shall not coincide with that of any regular course and shall be specific enough to allow students to write an essay based on the student's study. (F,SP)

Folklore

Program Office, 201 Kroeber Hall, 642-2092

Professors: Stanley Brandes, Ph.D. (Chair) John F. Lindow, Ph.D. Bonnie Wade, Ph.D. Wolfram Ebener, Ph.D. (Emeritus)

Associate Professors: James Deetz, Ph.D. John D. Miles, Ph.D. Alan Dundes, Ph.D. (Chair) Michael N. Nagler, Ph.D.

The Folklore Program

This program is designed to provide graduate students with a competent knowledge of both the materials of folklore and the various methods of studying these materials. The program is an interdisciplinary one in which faculty members from both the humanities and the social sciences participate. The scope of the courses is international. However, students may specialize in a particular genre, e.g., folktales; or in a particular area such as Russian folklore.

The Major

There is no undergraduate major in folklore.

Preparation for Graduate Study

The best preparation for the graduate program in folklore is a strong undergraduate record in one of the broad fields with which folklore is closely affiliated. Since it is a study of the humanist expression which
The Graduate Program

The requirements for the M.A. in folklore include 20 upper division units of which at least 10 must be graduate level (200 number) in folklore, and an M.A. thesis based upon field work or some other research project. (No course credits are allowed for the thesis.) Students must take at least one course in two of the following three areas: folk narrative, folk or ethnic music, folk or primitive art. As an introduction to the discipline, students must take Anthropology 160, The Forms of Folklore. In addition, all students are required to take the interdisciplinary Folklore 250A-250B, Folklore Theory and Techniques. The student must also demonstrate proficiency in reading at least one foreign language. German is perhaps the most useful language for folklore studies, but French, Spanish, or some language intimately connected with the M.A. thesis may be approved to satisfy the language requirement. Questions on the requirements for the M.A. in folklore should be addressed to the graduate adviser, Folklore Program, in 201 Kroeber.

Graduate Courses

250A-250B. Folklore Theory and Techniques. (3-3) Formerly 250A-250B. One 2-hour meeting per week. An interdisciplinary consideration of diverse topics related to fieldwork and research in folklore. (F,SP)

266. The Folktales and Allied Forms. (3) Formerly 266A-266B. One 2-hour meeting per week. The study of folktales, including myths, fairy tales, types, and classificatory theories of myth and folklore, and methods of analyzing prose narrative. (SP)

298. Readings in Folklore. (3-4) Formerly 298. Course may be repeated for credit. Individual conferences to be arranged. (F,SP)

299. Directed Research. (3-6) Formerly 299. May be repeated for credit. Individual conferences to be arranged. (F,SP)

French

Department Office, 4125 Dwinelle Hall, 642-2712

Professors:
- Leo Bersani, Ph.D.
- R. Howard Bloch, Ph.D.
- Joseph D. Duggan, Ph.D.
- Alvin A. Eustis, Jr., Ph.D.
- Basil Guy, Ph.D.
- Dennis Hollis, Doctorat de 3ème cycle
- Marie-Hélène Haute, Doctorat de 3ème cycle

Associate Professors:
- Bertrand P. Augst, Ph.D.
- Suzanne Fleischman, Ph.D.

Assistant Professors:
- Bonnie J. Isaac, Ph.D.
- Senior Lecturer: Gérard Jian, M.A.

Visiting Lecturers:
- Esther Alder, Ph.D.
- Ulysse Doutot, Licence de d'études supérieures

The Department places primary emphasis on instruction in French at all levels, and the majority of its upper division courses are conducted entirely in that language. Non-majors, however, may write in English in any upper division course.

Please note: For courses in which topics vary from year to year, students should consult the department Course Description, issued at the beginning of each semester.

The Major

Courses 1, 2, 3, 4, and 35 or their equivalents; 30 upper division units in French, of which 14 must be taken in residence.

There are two options in the major, which share a common base in language study and the acquisition of competence in spoken and written French. Option A (Literature): offers, in addition, a strong concentration in literature and is especially suitable as preparation for further literary study. Option B (Civilization) aims to include literature in the broader study of French civilization in its historical, social, and artistic context. It is especially suitable for those who desire a background for careers other than the teaching of French literature.

Option A. 102, 103A or 103B, three courses chosen from three different centuries (112-120, 121-125). Two electives. Courses 140, 145, and 146 do not count towards the major.

Option B. 102, 103A or 103B, three courses from 150-175; one course from 180A-180B; two electives. Option B is required for the Single Subject Waiver in French.

Honors Program. The honors program is open, with the consent of their major adviser, to students with an average 3.3 and a grade point average of 3.3 in the major. Students in the program will take H195A-H195B as seniors; Option A majors will write an essay on a topic related to French literature; Option B majors will choose a subject related to other aspects of French culture. This essay is written under the supervision of a member of the faculty. Credit and grade are awarded upon completion of the honors program. Prospective and current majors should consult the department's brochure, The Undergraduate Major.

Graduate Study

The M.A. Program. A minimum of 32 units in French is required, including at least 16 units of graduate courses. The aim of the program is to provide a comprehensive historical knowledge of French literature, and to that end students are asked to familiarize themselves with the works on a departmental reading list. For purposes of study and examination, the literature is divided chronologically as follows: 1) premiers siècles (1210-1550); 2) 1550-1600; 3) 1600-1785; 4) 1789-1870; 5) 1870-present. The student is asked to demonstrate competence in three of these periods by a written examination; a fourth may be covered by coursework; knowledge of the fifth period is tested by the completion of a research paper, based on work in a seminar or a 298 course.

The Ph.D. Program. Students are asked to choose three defined areas of study within French literature, with the additional choice of an adjacent field germane to the student's single major: 1) a historical period in French literature; 2) the development of a genre or literary problematic. The candidates take such courses as they and the adviser consider necessary in light of the approved program. Language requirements: a reading knowledge of two foreign languages other than French. For more detailed information concerning the graduate programs, students should consult the department's Guide to Higher Degrees in French.

Philosophy. In Romance Languages and Literatures (emphasis in French). Students admitted for this degree have a choice of two plans of study. Plan I includes a detailed knowledge of French literature and philology, a second Romance language as a collateral field, and knowledge of a prescribed list of masterworks in a third Romance language. Plan II requires a detailed knowledge of French literature and philology, and the demand of one broad integrated field (period, movement or genre) 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. 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 this program, students should consult the department's Guide to Higher Degrees.

Romance Philology. The department also collaborates in the doctoral program in Romance Philology; see the listing for this subject in the table of contents. Lower Division Courses

1. Elementary French. (5) Formerly 1 and a portion of 2. Five 1-hour classes and one 1-hour laboratory per week. Elementary French. Beginner's course. (F,SP)

2. French for Graduate Students, Beginning. (1) Formerly 1G. Must be taken on a satisfactory/unsatisfactory basis. Three hours of lecture per week. Preparation for graduate reading examinations in field of English and in all other disciplines. (F,SP)

3. Intermediate French. (5) Formerly 4 and a portion of 5. Five 1-hour classes per week. Semester Prerequisites: 1 or equivalent. Quarter Prerequisites: 1, 2, and 3. Intermediate French. (F,SP)

4. Advanced Intermediate French. (5) Formerly 4 and a portion of 5 and 6. Five 1-hour classes per week. Semester Prerequisites: 3 or equivalent. Quarter Prerequisites: 4 and 5. Intermediate French (a continuation of 3). (F,SP)

13. Intermediate Conversation. (2) Formerly 13. Three 1-hour classes per week. Semester Prerequisites: 2 or consent of Director of Lower Division. Quarter Prerequisites: 2 or equivalent. Intermediate French conversation. (F,SP)

14. Advanced Conversation. (2) Formerly 14. Three 1-hour classes per week. Semester Prerequisites: 3 or 13 or equivalent. Quarter Prerequisites: 4 or 13. Advanced French conversation. (F,SP)

23. Accelerated French. (10) Formerly 5. Five 2-hour classes and 2 hours of laboratory per week. Semester Prerequisites: 1 or equivalent with a minimum grade of A- or consent of instructor G. Jian. An intensive course combining French 2 and French 3. (F,SP)

34. Intensive Second-Year French. (10) Five 2-hour classes and two hours of laboratory per week. Semester Prerequisites: Completion of 1 and 2 (on semester system) at Berkeley, or the equivalent, or permission of the instructor. An intensive course combining French 3 and 4. (F,SP)

35. Practical Phonetics. (3) Formerly 35. Two 1-hour classes and one hour of laboratory per week. Semester Prerequisites: 2 or equivalent. Quarter Prerequisites: 3 or equivalent. Phonetics as an aid to pronunciation. (F,SP)

39. Seminar for Lower Division Students. (3) New Course since Spring 1963. One 3-hour seminar per week. Designed to introduce students to various critical problems in the study of French literature. Work in the course will include research and a research paper. Topics will vary from year to year. Enrollment limited to 15 students. Prospective students must consult with the instructor before enrolling in the course. (F,SP)

41. Woman's Voice in French Literature. (3) Formerly 41. Three 1-hour classes per week. The dual theme of female sexuality and female writing through an examination of texts by modern French authors. In English. (F,SP)
19th Century French Literature. (F,SP). Formerly 152A. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. Development of the novel, realism and naturalism. (F,SP)

153. French Diallektology. (F,SP). Formerly 153. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A, 103B, 103C, 103D, 103E, or 103F. The varieties of French spoken in France as well as in French-speaking areas outside of Europe.


140. Readings in French Literature. (F,SP). Formerly 140. Three hours of lecture per week. Semester Prerequisites: Reading knowledge of French. Readings in French. Class discussions and exercises in English. Does not count for the French major.


A. Middle Ages to the French Revolution
B. The Nineteenth Century
C. The 20th century
D. Modern French

150A-150B. Women in French Literature. (F,SP). Formerly 150A. Three hour course per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103D or 103E or 103F. A study of women as portrayed in French literature and of the contributions of women to French literature and thought. (F,SP)

151. African Literature in French. (F,SP). Formerly 151. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or equivalent. World War II. Sartre and existentialism, theatre of the absurd, nouveau roman. (F,SP)

152. African Literature in Translation. (F,SP). Formerly 152. Three hours of lecture per week. A study of African literature in translation. (F,SP)

153. African Literature and Debate. (F,SP). Formerly 153. Three hours of lecture per week. A major work in African literature is studied. Oral and written compositions will be used in the debater format, as well as the development of speech effective (SP)

159A-159B. Students of African literature are encouraged to participate in the "Movement Phalharmonic", and the development of African literature as well as the emergence of the pre-romantic aesthetics (F,SP)

160A-160B. French Historical Writing. (F,SP). Formerly 160A-160B. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The development of concepts in French history. The chronicles, the historian. Bossuet, Michelot are examples of the authors who may be studied. Topics vary from year to year. (F,SP)

161A-161B. A Year In French History. (F,SP). Formerly 161. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The idea of social and sexual utopia in France. The study of the French novel. (F,SP)

162A-162B. Perspectives On History. (F,SP). Formerly 162A-162B. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The study of the French novel. (F,SP)

165. Modern Notions of Utopia. (F,SP). Formerly 165. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103D or 103E or 103F. The idea of social and sexual utopia in France. The study of the French novel. (F,SP)

170. French Films. (F,SP). Formerly 170. Three hours of lecture per week. Semester Prerequisites: 102 or 102B or equivalent. Beginning French cinema studies: the language of film. (F,SP)

171A-171B. A Concept In French Cultural History. (F,SP). Formerly 171A-171B. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The idea of social and sexual utopia in France. The study of the French novel. (F,SP)

172A-172B. Psychoanalytic Theory and Literature. (F,SP). Formerly 172A-172B. Three hours of lecture per week. A major work in African literature is studied. Oral and written compositions will be used in the debater format, as well as the development of speech effective (SP)

19th Century French Literature. (F,SP). Formerly 19th Century French Literature. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The idea of social and sexual utopia in France. The study of the French novel. (F,SP)

20th Century French Literature. (F,SP). Formerly 20th Century French Literature. Three hours of lecture per week. Major works of modern literature: the idea of social and sexual utopia in France. The study of the French novel. (F,SP)

223. Prose Fiction. (F,SP). Formerly 223. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. Topics vary from year to year. (F,SP)

224. Literary Criticism. (F,SP). Formerly 224. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The course will focus on literary criticism by writers in the 20th century and discuss the various options proposed as well as the relationship between criticism and fiction or philosophy in a given writer's work. (F,SP)

225. Poetry and Prose of the 19th Century. (F,SP). Formerly 225. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. Studies in the French novel. (F,SP)

226. Senior Seminar. (F,SP). Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. Intensive study of a major author. (F,SP)

230. Writing in French. (F,SP). Formerly 230. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C. Oral and written comprehension, written compositions (including correspondence), translations, training in oral expression. Conducted entirely in French.

231A-231B. Translation and Debate. (F,SP). Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A, 103B, 103C, 103D, 103E, or 103F. In-depth knowledge of the 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, mainly from English to French. (SP)

320. History of the Language. (F,SP). Formerly 320. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A, 103B, 103C, 103D, 103E, or 103F. An examination of certain large cultural concepts from a double point of view; the Baroque and Romanticism. Topics vary from year to year. (SP)

322. Psychoanalytic Theory and Literature. (F,SP). Formerly 322. Three hours of lecture per week.
Senior Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103D or 103E or 103F. The relevance of psychoanalysis to literary texts. Concepts of fantasy, of the self, and of desire applied to texts by means of psychoanalysis to literary texts. Concepts of language: song and poem, or musical score and written text. A study of the relations between images and written texts. (SP)

176. Introduction to French Linguistics. (4). Formerly 176. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103A or 103B or 103C or 103E or 103F. An introduction to the major branches of linguistic analysis (phonology, morphology—including word-formation-syntactic, and semantics) as applied to the French language. (F)

177A-177B. History and Criticism of Film. (4,4). Formerly 124A. Three hours of lecture and one hour of laboratory per week. Semester Prerequisites: 170 or equivalent. Quarter Prerequisites: 103A or 103B or 103C. The development of French cinema. Discussions, oral and written reports will be based on the viewing of many classic and recent films. (F,SP)

178A-178B. Studies in French Film. (4,4). Formerly 124B. Three hours of lecture and one hour of laboratory per week. Semester Prerequisites: 170 or equivalent. Quarter Prerequisites: 103A or 103B or 103C. Topics vary from year to year. (SP)

180A-180B. French Civilisation. (4,4). Formerly 180A-180B. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or 103C or 103D. A study of the pressures on artistic, political, and economic structures at moments of crisis in French history. Problems of continuity and discontinuity in esthetic and social history. (SP)

185. Literature and Colonialism. (4). Formerly 185. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103D or 103E or 103F. Survey of French civilization: History, Arts and Society. A. Medieval, Renaissance, Classical Period B. Eighteenth Century: France since the Revolution (F,SP)

183A-183B. Configurations of Crisis. (4,4). Formerly 183B. Three hours of lecture per week. Semester Prerequisites: 103A or 103B or equivalent. Quarter Prerequisites: 103D or 103E or 103F. A study of the pressures on artistic, political, and economic structures at moments of crisis in French history. Problems of continuity and discontinuity in esthetic and social history. (SP)

201A-201B. History of the French Language. (4,4). Formerly 201A-201B-201C. Three hours of seminar per week. A. External history of the French language B. Historical Grammar (F)

203. French Syntax. (4). Formerly 203A-203B. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; current topics in the Department's Announcements of Courses. (SP)

220A-220B. Nineteenth Century Poetry. (4;4). Formerly 220A-220B-220C. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; current topics may be included in the Department's Announcements of Courses for current topics. (SP)

231. Baroque Literature. (4). Formerly 231A-231B. One 3-hour seminar per week. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; current topics may be included in the Department's Announcements of Courses for current topics. (SP)

240A-240B. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; current topics may be included in the Department's Announcements of Courses for current topics. (SP)

251A-251B. Nineteenth Century Poetry. (4,4). Formerly 251A-251B-251C. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; current topics may be included in the Department's Announcements of Courses for current topics. (SP)

260A-260B. Studies in 20th Century Literature. (4,4). Formerly 260A-260B-260C. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; see the Department's Course Descriptions for current topics. (SP)

270. Literary Criticism. (4). Formerly 270. One 3-hour seminar per week. A study of various critical approaches to literature. (F)

275A-275B. Problems of Literary Theory. (4,4). Formerly 275A-275B-275C. Course may be repeated for credit as topic varies. One 3-hour seminar per week. Offerings vary from year to year; see the Department's Course Descriptions for current topics. (SP)

292. French Literary and Social History. (4). Formerly 292. One 3-hour seminar per week. An analysis of patterns and trends in the literature and culture of France. (F)

Special Study. (1-4). Formerly 298. Course may be repeated for credit. Individual conferences. Designed for students engaged in the exploration of a restricted field, involving the writing of a report. May not be substituted for available graduate courses. (F,SP)

Individual Research. (1-2). Formerly 299. Course may be repeated for credit. Individual conferences. Reserved for students directly engaged in writing the doctoral thesis. (F,SP)

501. Special Study for Graduate Students. (1-8). Formerly 601. May be taken on a satisfactory/unsatisfactory basis. Individual conferences. Designed for students engaged in writing the doctoral thesis. Students will work individually with one faculty member during two semesters of their senior year. (F,SP)

Professional Courses

301A-301B. Teaching French in College. (3,3). Formerly 301A-301B-301C. Must be taken on a satisfactory/unsatisfactory basis. Three hours of lecture and attendance at demonstration class for five hours per week. Semester Prerequisites: For graduate students teaching at college level. Required for all new T.A.s Bi-weekly labs on methodology, grading and testing, occasional attendance at demonstration class, language laboratory observations; supervised classroom practice. Additional seminars and discussion sections on methodology. (F,SP)

302A-302B. French Teaching in College. (3,3). New Course since Spring 1993 Must be taken on a satisfactory/unsatisfactory basis. Three hours lecture and one hour laboratory per week. Semester Prerequisites: For graduate students teaching at college level. Required for all new T.A.s Bi-weekly labs on methodology, grading and testing, occasional attendance at demonstration class, language laboratory observations; supervised classroom practice. (F,SP)

Interdepartmental Studies Courses

Upper Division Courses

IDS135. Mozart and Beaumarchais: The Figaro Cycle. (4). Formerly 135. One 3-hour lecture per week. Additional seminars and discussion sections on methodology by Mozart and other composers. Also included will be Mozart's Don Giovanni and Cosi fan tutte, both composed in response to the success of Le Nozze di Figaro. Don Giovanni will be studied in conjunction with Moliere's Don Juan Sponsoring Departments: Music and French. Not offered 1984-85.

L & S: French / 159
Graduate Courses
IDS280. Discourse and Truth. (3). One 3-hour seminar per week. The history of the notion of parthia from the fifth century B.C. through Antiquity, focusing on the opposition between the right to speak the truth and the obligation to tell the truth as one knows it in the political and philosophical systems of Antiquity. The course will require at least twelve hours per week of effort, including time spent in class and in outside reading and preparation. Sponsoring Departments: French and Philosophy. (F)

Genetics
Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-2628
Undergraduate Head Adviser: Mr. Spieth.
Honors Program Adviser: Mr. Taylor.

Choice of College
A student can complete the group major in genetics in the College of Letters and Science (A.B. degree) or can elect the genetics major in the College of Natural Resources (B.S. degree). The choice of college is determined by the college in which the student is enrolled. Students in each program are subject to the requirements of their respective colleges.

Staff, graduate programs, and courses are listed under the College of Natural Resources.

Group Major in Genetics
The group major program in the College of Letters and Science is administered through the Division of Special Programs. Students are referred to this office for all administrative matters, and this is where major students will file their study lists.

The major in genetics is designed to provide a broad foundation in biology, centered on a core of emphasis on genetics. The field of genetics encompasses most areas of biological research. Major requirements range from molecular to populational levels; they are designed to take advantage of the diversity of course offerings at Berkeley so as to allow students with interests as varied as bacterial genetics, human genetics, or population biology to fulfill the requirement in a manner suited to their personal interests. The intent of the program is to be rigorous in the breadth of its requirements and flexible in the means of fulfilling them.

Lower Division Requirements (33 units):
- Biology 1A-1B (4-4)
- Chemistry 1A-1B (4-4)
- Chemistry 8A-8B (4-3) or 11A-11B (5-5)
- Math 16A-16B (3-3) or 1A-1B (4-4)
- Physics 8A (4)

Recommended: Physics 8B (4)

Upper Division Requirements: A minimum of 28 units satisfying the following distribution of courses is required.

I. General Genetics. Genetics 10A-10B (4-3).
II. Genetic Biology. Two of the following: Any advanced Genetics course (a maximum of four (4) units of work in the Honors Program—H193, H194, H195—or Genetics 199; graduate lecture courses in Genetics may also be applied toward this requirement); Anthropology 101 (4) (101 may be applied toward the Genetic Biology or the Evolution requirement, but not both; the same option applies to Zoology 109 or 117 (4); Botany 130 (4) or 138 (4); BEHS 103 (3) or 104 (2) or 182 (3); Microbiology 100A (4) or 100B (4); Molecular Biology 100A (4) or 100B (4); Zoology 104 (3) or 109 (3) or 110 (3).
III. Biochemistry. Biochemistry 102(4) or 100A-100B (4-4).

IV. Evolution. One of the following: Anthropology 101 (4) or 105 (4); Biology 101 (3); Paleontology 103 (2); Zoology 109 (3).
V. Additional Biology. At least two upper division biology courses in the biological sciences subject to approval of the major adviser.

Honors Program. The program consists of three courses taken in addition to requirements for the major. The sequence commences spring semester of the junior year with the junior honors seminar, Genetics 199, and is followed by at least five units of honors research in Genetics H195. The program terminates with Genetics H194, during which an honors thesis is written and submitted for review by a committee of three faculty members. A student in the program may elect to leave the program at any time prior to taking Genetics H194.

Students with an overall grade-point average of 3.3 (including a grade of B+ or better in Genetics 100A) are eligible to enter the honors program. An upper division grade-point average of 3.3 or higher at the time of graduation is required in order to be eligible for departmental honors.

Eligible students who complete the program may be awarded Honors, High Honors, or Highest Honors. The granting of honors will be decided by the thesis review committee and the honors adviser and is based solely upon the merits of the honors thesis. High honors is awarded for theses of distinctly superior honor quality. Highest honors is reserved for truly exceptional cases.

Geography
Department Office, 501 Earth Sciences Building, 642-3603
Professors: Peter Hart, Ph.D.
David Hoosen, F.D.
Benard Nietschmann, F.D.
Theodore M. Schultz, Ph.D.
Allan Pred, F.D.
Roger Byrne, Ph.D.
Robert R. Reed, Ph.D.
Omar E. Granger, Ph.D.
Richard A. Walker, Ph.D.
Assistant Professor: Michael J. Watts, Ph.D.

Visiting Lecturer: Douglas Powell, M.A.

Departmental Major Advisers: consult Undergraduate Assistant; Graduate Adviser: Mr. Reed.

Advice concerning requirements for undergraduate and graduate students is offered by the departmental advisers; guidance in the student's special field of interest is administered by the appropriate member of the staff. New students entering the Department at any level must consult the departmental adviser until a specialty adviser has been selected or assigned to them.

The Geography Department aims to provide a broad-ranging perspective on humans as inhabitants of the Earth's surface. The search for this kind of understanding involves thorough study of (a) the interlocking systems of the natural environment (climate, landforms, biota) and the evaluation of human resources; (b) those diverse historical, cultural, social, economic, and political structures and processes which affect the location and spatial organization of population groups and their activities; and (c) significant geographical units, whether defined as cities, regions, nation-states, or ecological landscapes, where integrated interpretation can be attempted, and a variety of problems thereby better understood.

The undergraduate major in geography therefore includes the study of various aspects of human, physical, and regional geography as well as cartography, quantitative methods, and field work. Backgrounds in the natural and social sciences, history, and statistical methods will be found useful for the geography major, the choices depending on the student's particular interests.

The Major
Lower Division. Geography 1, 4, and 7. (Transfer students who have had introductory courses elsewhere should consult with the departmental Undergraduate Adviser in order to avoid repeating lower division courses.)

Upper Division. A minimum of 27 units. One course from each of the following groups: 100-109: 110-125; 130-139; 140-149; 150-168; and 180-189. Students must fill out their program by completing three courses from within one of the following specialties: physical; cultural; urban-economic; environmental; and regional. All students are encouraged to take 180 or 181 and 189.

Honors Program. With the consent of the major adviser, a student with an overall grade point average of 3.5 or higher and a grade point average of 3.5 or higher in courses in the major may apply for admission to the honors programs. Application for acceptance in the program should be made by the beginning of the senior year. A senior in the honors program must complete Geography H195, in which a thesis is required, and may take graduate seminars.

Graduate Program
Geography deals with a broad spectrum of questions relating to society, environment, and spatial order. A variety of previous backgrounds may prove sound as a foundation for advanced work in the field. Although the Department offers graduate training in physical, cultural, economic, urban, and regional geography, it places strong emphasis on the interrelationships among these specialties and related disciplines.

The M.A. program involves completion of not less than one year of residence, course requirements that vary with the background of the student, and an original thesis or a comprehensive exam. Ph.D. candidates must complete a minimum of two years of residence (normally at least three for those entering from other disciplines) and pass the oral qualifying examination. In the preparation of many theses they must also be prepared to spend a year in field or allied research following the oral examination. Further details, including foreign language requirements, are available from the departmental office.

Lower Division Courses
1. Introduction to Physical Geography. (4). Formerly Sciences 189. Three hours lecture and a 1 1/2-hour laboratory period per week. Origin of the Earth's major geological and climatological patterns and their influence upon the characteristics of landforms, vegetation, and soils. Problems relating to the interrelationships between physical factors in the principal natural regions of the Earth. (F,SP)

4. Introduction to Cultural Geography. (4). Formerly Sciences 189. Three hours lecture and a 1 1/2-hour laboratory period 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. (F,SP)

7. The Geography of Human Economic Activity. (4). Formerly Sciences 189. Two 1 1/2-hour lecture-discussion sections per week. The location of urban and rural production and consumption activities. Processes affecting current geographical patterns of employment and unemployment. (SP)

18. Primary Production: Major World Commodities. (4). Formerly Sciences 189. Three hours lecture and a 1-hour laboratory section per week. Historical and contemporary geographical-economic patterns of production and trade in major food crops, fiber and mineral raw materials.

90. Seminars for Lower Division Students. (3). Formerly 90. Three hours seminar and one hour consultation per week. A reading and research seminar for freshmen and sophomore students. Topics to vary.
Upper Division Courses

103. Cultural Geography of Indigenous Peoples. (3). Formerly 100. Three hours of lecture per week. Analysis of the patterns forming material and symbolic relations between people and environment. Emphasis is on the ecological, social, and economic context of resources and environments, indigenous environmental knowledge, and indigenous existence. (F)

101. Cultural Geography of Urban Environments. (3). Formerly 101. Three hours of lecture per week. Population, environment, and urbanization; religious geography and human settlements; cities as expressions of varying cultural traditions. (SP)

107. Religious Geography. (3). Formerly 107. Three 1-hour lectures per week. Savage religion; magic; major religious tendencies and concepts expressing the desire to control nature; cultural and religious influences on population dynamics; holy cities; religion and environment. Indigenous environmental knowledge, sacred places, and spaces; pilgrimage; religious influences on population dynamics; holy cities; religion and political geography. (F)

108. Political Geography. (3). Formerly 108. Three 1-hour lectures per week. Evolution and viability of selected nation states; regional blocs and spheres of influence; the Western system and the "new nations"; sensitive frontiers. Internal coherence, capitals, core-areas, and centrifugal forces. A comparative evaluation of world power. (F)


110. Economic Geography of the Industrial World. (3). Formerly 110. Three hours of lecture per week. Industrialization, urbanization and regional development. Local effects of developments in manufacturing, services, technology, labor relations, corporations, finance, and industrial restructuring, industry, employment and the social fabric of the industrial city. The urbanization process. Emphasis on the U.S. (SP)

112. Historical Geography of Transportation. (3). Formerly 112. Three 1-hour lectures per week. The influence of geographic factors in the creation, transformation, and maintenance of transportation technology. The development and shaping of patterns of settlement and economy by transportation innovation; the role of transportation in regional development in western Europe and Anglo-America. (SP)

115. World Agricultural Systems. (3). New Course since Spring 1983. Three hours of lecture per week. An examination of world agrarian systems, patterns of resource use, and effects on the environment. Special attention is given to peasant economies, plantation agriculture, demographic growth, patterns of labor use and rural development. (SP)

116. Economic Geography of the Non-Industrial World. (3). Formerly 116. Three 1-hour lectures per week. Population and processes of economic change at the local level in the Third World. Topics include the household economy, marketing and trade systems, transportation, small-scale industry, and the informal sector.

120. Morphogenesis of the Western City. (3). Formerly 120 and 121. Three 1-hour lectures per week. Historical development of the physical structure of western cities and urban morphology theory from classical times through the Middle Ages to the present. The morphological expression of society in the medieval, early-industrial, and modern periods. (F)

121. Applied Urban Geography. (3). Formerly 126. Three 1-hour lectures per week. The applications of concepts and techniques in geography to the planning process, with examples from the United States, Western Europe, and the Developing World. (F)

125. Social Geography. (3). Formerly 125. Three 1-hour lectures per week. Human geographic aspects of the everyday functioning of society, socialization of the individual, work and social reproduction, and social transformation.

129. Environmental Perception and Cognition. (3). Formerly 129. Three hours of lecture per week. An examination of the relationships between people and their subjective environments. Focus on different societies' conceptual structure of space and place, the ordering of the natural world, and the use of cognitive maps and models in everyday lives.

130. Natural Resources and Population. (3). Formerly 130. 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. The origins of population abundance, population growth and migration, hunger and poverty. (F)

131. Development and Its Environmental Impact. (3). Formerly 131. Two 1½-hour lectures and a 1-hour section per week, plus one 1-day field trip. Ecologically and socially maladjusted economic development, and the elimination of future options in the "emerging" nations, with their increasing share of the world's population. An examination of the assumption that developed countries, whose own vulnerability has become so obvious, should serve as models. (SP)

132. Environmental Pollution and Social Policy. (3). Formerly 132. Three hours of lecture per week. Basic sources and types of pollution affecting air, water, land, workplaces, and human health. Pollution control strategies, environmental laws, and their effectiveness. The roles of science and economics in regulation. The dynamics of a polluting society and conflicts over pollution control. (SP)

133. Islands and Oceans. (3). Formerly 133. Three 1-hour lectures per week. Physical and human geography of the sea. Ocean and island environments and ecology; oceanic climates, industries, and settlement of islands; cultural adaptations by seafaring societies; marine resources and environmental issues. (F)

134. Natural Hazards and Problems. (3). Formerly 134. Three hours of lecture per week. An ecological approach to the study of interactions between the natural environment and human uses and human uses and human environment systems; perceptions of and adaptations to natural hazards such as droughts, floods, earthquakes, tornadoes, and volcanic eruptions.

136. Water Resources. (3). Formerly 136. Three hours of lecture per week. Water use, supply and public policy: history, institutions, current controversies. Topics include agricultural irrigation, urban water, energy, project evaluation, pollution, environmental impacts, artificial scarcity, and over development. Emphasis on California.

137. Geography of Food and Famine. (3). Formerly 137. Two 1½-hour lectures per week. An examination of the world food and hunger problems. Topics include famine, undernutrition, and malnutrition as an expression of environment and culture, as well as of national and international policies. Energy constraints and future food needs.

138. Geography of Human Health and Disease. (3). Formerly 138. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Enrollment will be limited. Quarter Prerequisites: Consent of instructor. Principles of medical geography and landscape epidemiology including changing patterns of human health and disease in the biosphere and biocultural environments and in relation to human settlement. Analysis of selected specific diseases of global importance.

139. Endangered Species and Habitats. (3). Formerly 139. Three one-hour lectures per week. Past and present patterns and causes of animal extinction, depletion, and habitat alteration. Effects of human attitudes and activities on animal populations and environments. Patterns and programs of conservation. Case studies of specific species and habitats, mostly from the tropics.

140. Analysis of Landforms. (3). Formerly 140. Three 1-hour lectures per week. Semester Prerequisites: 1 or equivalent. Geomorphic processes and the origin of landforms in varying geological and climatic environments. (F)

141. Topographic Map Analysis. (3). Formerly 141. Two 2-hour seminars per week. Semester Prerequisites: 140 or equivalent. The analysis of landforms portrayed by contours on the standard topographic map series published by the U.S. Geological Survey. (SP)

144. Principles of Meteorology. (4). Formerly 144. Three 1-hour lectures per week. Semester Prerequisites: 1 or consent of instructor. Energy and moisture balances of air masses and of river and lake basins; atmospheric interactions with plants, animals and man including agro-hydrological and climatological investigations.

147. Climatic Change. (3). Formerly 147A/147B. Three hours lecture per week. Fluctuations in climate during the period of instrumental record and their societal impacts. The role of air-sea interactions, volcanic eruptions, solar variability, human activities, etc., in regional and hemispheric climate anomalies. (SP)

148. Biogeography. (3). Formerly 148. Two 1½-hour lectures per week. Semester Prerequisites: 1 or a lower division course in Biology or Earth Science. Changing distribution patterns of plants and animals on a variety of spatial and temporal scales. The effects of "continental drift," Pleistocene climatic change, agricultural origins and dispersals. The ecology of invasions and extinctions. Island biogeography. (F)

149. Vegetation of North America. (3). Formerly 149. Two 1½-hour lectures per week. Semester Prerequisites: 1 or lower division course in Biology or Earth Science. Comparative review of vegetation and vegetation change in selected areas of North America. Evaluation of the relative importance of natural and cultural disturbance. Effects of climate, changes in fire frequency, grazing impacts, selective cutting, habitat modifications, preservation problems. (SP)

150. California. (3). Formerly 150. Three 1-hour lectures per week. Geographic regions of the state; historical expansion of agriculture, industries, and urban settlement as natural population centers; demographic and ecological bases of current environmental controversies. (F)

151. The American West. (3). Formerly 151. Three 1-hour lectures per week. The arid West, excluding California, as a settlement and resource frontier; historical and contemporary perspectives. (SP)

152. Historical Geography of the United States. (2). Formerly 152. Two 1-hour lectures per week. Evolution of the settlement pattern, regional economies, and cultures of the United States as it is related to the spread of the human landscape and its response to varying physical conditions. (F)

153. Geography of Canada. (2). Formerly 153. Two 1-hour lectures per week. Environment and culture of Canada as related to the physical base on which it has taken place during the last four hundred years.

154. Middle America. (3). Formerly 154. Three 1-hour lectures per week. The physical and cultural geography of Mexico, Central America, and the West Indies. Emphasis is on the area's cultural historical development and present-day ecological, demographic, and economic patterns.

155. Spanish South America. (3). Formerly 155. Three 1-hour lectures per week. Environment and cultural fabric of the Portuguese half of South America. Includes an overview of selected problems, at a national and regional level, arising from past and present strategies for resource use.

157. Environment and Human Societies in Amazonia. (3). Formerly 157. Two one-and-one-half hour lectures per week. Physical, biotic, and cultural processes and their interrelationships in the domain of the largest river system and the most extensive rainforest on earth. Environmental and social consequences at regional, national, and possibly planetary levels of
the escalating disruption of Amazonia's fragile ecosystems. (SP)

158. The Caribbean Region. (3). Three 1-hour lectures per week. The physical, cultural, political, and socioeconomic factors responsible for the diversity of the region and of peoples and landscapes. 1. Introduction: The Caribbean Islands in the Western Hemisphere: a regional perspective. 2. The physical geography of the Caribbean. 3. Climates of the Caribbean region and their effect on the biota. 4. Review of the biogeography of the region. 5. Population, culture, and social structure: a comparative approach. (F)

159. Alaska. (2). Formerly 159. Two 1-hour lectures per week. Semester Prerequisites: Upper division standing. A survey of Alaska's physical geography and human landscapes. (SP)

161. Sierra Nevada. (3). Formerly 161. Three 1-hour lectures per week. Semester Prerequisites: Upper division standing. A geographical survey of the Sierra Nevada range of California and Nevada geography, geomorphology, climate, hydrology, snow surveying, vegetation, history of exploration and settlement, economic development, recreational use, administration of public lands.

162. Soviet Union. (3). Formerly 162A-162B. Three hours lecture per week. A survey of population, natural resources, political conditions, historical background, the planned economy and the political and ethnic structures, followed by an attempt to integrate these topics in the context of distinctive regions. (SP)

163. Southeast Asia. (2). Formerly 163. Two 1-hour lectures per week. Environmental, culture, and development perspectives on Southeast Asia. (SP)

165. Africa: Ecology and Development. (3). Formerly 165. Three 1-hour lectures 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.

166. The Arid Lands. (3). Formerly 170. Three 1-hour lectures per week. Physical environments and resulting human activities and problems in the arid regions of the world. (F)

168. Humid Tropics. (3). Formerly 171. Two 1½-hour lectures per week. Integration of regional/systematic approaches within a zonal framework. An overview of physiographic and biotic dynamics in the milieu provides the foundation for a discussion of temperate zone biomes in the assessment of the tropics and their use by human groups.

180. Field Geography. (3). Formerly 180. One hour lecture plus nine hours (on Saturday) field work per week. A geographical survey of selected physical and cultural landscapes in the Bay Area and adjacent parts of Northern California. (F,SP)

181. Urban Field Study. (3). Formerly 181. One hour lecture plus nine hours (one day) field work per week. Internship in an urban community within the Bay Area: its history, economy, social makeup, and physical appearance. Evolution of spatial patterns, social justice and conflict in the city, business location, real estate and housing, images and ideologies. (SP)

183. Cartographic Representation. (4). Formerly 183. Two hours of lecture and six hours of laboratory per week. Problems in the representation of quantitative and qualitative data on thematic maps. (SP)

185. Air Photo Interpretation and Remote Sensing. (3). Two hours lecture and four hours of laboratory per week. An introductory survey of current methodology in the field of air photo interpretation and remote sensing. Emphasis on the practical application of aerial photography and non-photographic systems as applied to the detection, identification, measurement, and analysis of features in the natural and man-made environments. (F)

187. Quantitative Analysis in Geography. (3). Formerly 187. Three hours lecture and one hour laboratory per week. Semester Prerequisites: Statistics 131 and 131L. Quarter Prerequisites: Statistics 130A. The application of statistical and other numerical models to geographical problems and solutions. Topics to be considered include hypothesis testing, analysis of variance and regression, time and diffusion models, factorial analysis, spatial allocation models, and time-series analysis.

189. History of Geographical Thought. (3). Formerly 189. Three hours discussion per week. Themes including geographical problems, approaches, and controversies in the evolution of geography from ancient times, but with most emphasis on the 19th and 20th centuries. Its place in knowledge, relations with other disciplines, and its image and role in various aspects of society. (SP)

195. Honors Course. (1-4). Formerly 195. Course may be repeated for credit. Semester Prerequisites: Admission to Honors Program. Required for Honors in Geography. Students will write a thesis. (F,SP)

197. Field Study in Geography. (1-4). Formerly 197. Course may be repeated for credit. Must be taken on a passed/not passed basis. Regular individual meetings with faculty sponsor. Semester Prerequisites: Consent of instructor. Supervised experience in application of geography in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. One hour lecture, three to six hours of laboratory per week. Semester Prerequisites: Consent of instructor. (F,SP)

199. Supervised Independent Study. (3). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Senior standing. Overall GPA in major of 3.00. (F,SP)

200. First Year Graduate Seminar. (1). Formerly 200. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week, Semester Prerequisites: Required of and limited to first-year geography graduate students. A survey of faculty research interests. (F)

201. Philosophical and Methodological Issues in Human and Cultural Geography. (4). Formerly 210. Three hours discussion per week. A critical review of the philosophical and methodological bases for selected topics in human and cultural geography. (F)

202. Current Research Themes in Human and Cultural Geography. (4). One 3-hour seminar and one hour consultation per week. A survey of the literature in major areas of research in human and cultural geography. (SP)

203. Current Research Themes in Physical Geography. (4). New Course since Spring 1983. Course may be repeated for credit. Three hours seminar and one hour consultation per week. Basic approaches, methods, and techniques in selected topics in physical geography. (F)

205. History of Geography. (4). Formerly 260. Course may be repeated for credit. Three hours seminar and one hour consultation per week. A survey of the literature in major areas of physical geography. (SP)

211. Seminar on Development and Its Environmental Impact. (1). Formerly 211. One 1-hour meeting per week. Semester Prerequisites: Open only to graduate students concurrently enrolled in 131. Ecologically and socially maladjusted economic development, and the elimination of future options in the "emerging" nations. An examination of the assumptions that developed countries, whose own vulnerability has become so obvious, should serve as models. (SP)

221. Seminar On Development and Its Environmental Impact. (1). Formerly 211. One 1-hour meeting per week. Semester Prerequisites: Open only to graduate students concurrently enrolled in 131. Ecologically and socially maladjusted economic development, and the elimination of future options in the "emerging" nations. An examination of the assumptions that developed countries, whose own vulnerability has become so obvious, should serve as models. (SP)

240. Advanced Landforms Analysis. (4). Formerly 240. Three hours of seminar per week. Semester Prerequisites: Open only to graduate students concurrently enrolled in 131. Ecologically and socially maladjusted economic development, and the elimination of future options in the "emerging" nations. An examination of the assumptions that developed countries, whose own vulnerability has become so obvious, should serve as models. (SP)

242. Physiography of Western North America. (4). Three hours of seminar and one hour of consultation per week. Semester Prerequisites: Open only to graduate students concurrently enrolled in 131. Ecologically and socially maladjusted economic development, and the elimination of future options in the "emerging" nations. An examination of the assumptions that developed countries, whose own vulnerability has become so obvious, should serve as models. (SP)

251. Topics in Cultural Geography. (4). Formerly 251. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in cultural geography. (F)

252. Topics in Economic Geography. (4). Formerly 252. Course may be repeated for credit. Three hours seminar and one hour consultation per week. Research seminar on selected topics in economic geography. (SP)

253. Topics in Urban Geography. (4). Formerly 253. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in urban geography. (SP)

254. Topics in Environmental Issues. (4). Formerly 254. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in environmental issues. (SP)

255. Topics in Political Geography. (4). Formerly 255. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in political geography. (SP)

256. Topics in Historical Geography. (4). Formerly 256. Course may be repeated for credit. Three hours seminar and one hour consultation per week. Research seminar on selected topics in historical geography. (SP)

257. Topics in Climatology. (4). Formerly 257. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in climatology. (SP)

258. Topics in the Geography of Food. (4). Formerly 258. Course may be repeated for credit. Two hours seminar and one hour consultation per week.
Research seminar on selected topics in the geography of food. (SP)

259. Topics in Social Geography, (4). Formerly 259. 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. (SP)

260. Topics in Biogeography. (4). Formerly 258. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in biogeography. (F)

262. Topics in Latin America. (4). Formerly 271. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in the geography of Latin America. (F)

263. Topics in Transportation Geography. (4). Formerly 263. Course may be repeated for credit. Two hours seminar and one hour consultation per week. Research seminar on selected topics in transportation geography. (SP)

266. Topics in Maritimes Geography, (4). Formerly 296. Course may be repeated for credit. Three hours of seminar and one hour of consultation per week. Research seminar on selected topics in maritime geography.

268. Advanced Field Study In Geography, (3-7). Formerly 268. Course may be repeated for credit. One hour of lecture and eleven hours of field work per week. All day Saturday. Each additional unit requires four hours of field work per week. Extended field project required. (F,SP)

295. Geography Colloquium. (1). Formerly 295. Course may be repeated for credit. May be taken on a satisfactory/unsatisfactory basis. One and one-half hours of lecture per week. Seminar Prerequisites: Required of all graduate students not yet advanced to candidacy. Invited lectures on current research and field work. (F,SP)

296. Directed Dissertation Research. (1-6). Formerly 296. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Seminar Prerequisites: Advancement to Ph.D. candidacy. (F,SP)

297. Directed Field Studies. (1-6). Formerly 297. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Seminar Prerequisites: Open to students directly engaged in field studies. (F,SP)

298. Directed Study for Graduate Students. (1-6). Formerly 298. Course may be repeated for credit. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,SP)

299. Individual Research. (1-8). Formerly 299. Course may be repeated for credit. Individual research. Must be taken under the supervision of a staff member. (F,SP)

601. Individual Study for Master's Students. (1-6). Formerly 601. Units may not be used to meet either unit or residence requirements for the master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Seminar Prerequisites: For candidates for master's degree. Individual study for comprehensive or language requirements in consultation with the field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-6). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Seminar Prerequisites: For candidates for Ph.D. Individual study in consultation with the major field adviser. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

301. Professional Training: Teaching Practice. (1-4). Formerly 301. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

395. Seminar On the Teaching of Geography. (2). Formerly 395. Must be taken on a satisfactory/unsatisfactory basis. Two hours of seminar per week. Seminar Prerequisites: All new teaching assistants are expected to enroll. The aims and methods of teaching geography at the college and university levels. Open to all graduate students in the department. (F)

Interdepartmental Studies Courses

Graduate Courses

IDS216. Pollen Analysis. (3). Formerly 216. Two hours lecture and one two-hour laboratory per week. Seminar Prerequisites: Some relevant work in either the natural or social sciences. Advanced undergraduates may enroll with permission of the instructor. Introduction to the theory and technique (laboratory and field) of pollen analysis. Applications of pollen analysis in archaeological and paleoecological contexts. Discussions of selected case studies with special emphasis on Quaternary vegetation changes in North America. Sponsoring Departments: Geography and Paleontology. (SP)

Geology and Geophysics

Department Office, 301 Earth Sciences Building, 642-9214

Professors:

Walter Alvarez, Ph.D.
Bruce A Bolt, Ph.D., D.Sc.
George H Brimhall, Jr., Ph.D.
Ian S.E. Carmichael, Ph.D.
Garrus H. Curtis, Ph.D.
Harold C. Heigele, Ph.D.
Lana R. Johnson, Ph.D.
Luna B. Leopold, Ph.D.
Thomas V. McEvilley, Ph.D.
Chi-yuan Wang, Ph.D.
Lurrel E. Wendt, Ph.D.
Hans-Rudolph Wenk, Ph.D.

Charles Gilbert, Ph.D.
Raymond Jeanloz, Ph.D.

Associate Professors:

Mark S.T. Bukowski, Ph.D.

William E. Dietrich, Ph.D.

Richard L. Hay, Ph.D. (Emeritus)

Charles Meyer, Ph.D. (Emeritus)

Adolf Pabst, Ph.D. (Emeritus)

Charles Meyer, Ph.D. (Emeritus)

The Department of Geology and Geophysics offers the student excellent opportunities to acquire a broad background of knowledge and experience in the study of the composition, structure and evolution of the earth. Three undergraduate degree programs are offered, each leading to the A.B. degree in the College of Letters and Science. The section on the College of Letters and Science for the additional college requirements for graduation.

The Major in Earth Science

The major in earth science includes a broad spectrum of courses in the major. The major is designed for students who desire a general background in the field of earth science. The upper division requirements are sufficiently flexible to serve a variety of special interests in the general field.

Lower Division Courses.

Chemistry 1A-1B. Geology 10, Mathematics 1A-1B, Physics 6A-6B.

Upper Division Courses. Five upper division courses in geology or geophysics, including Geography 100 (or 101 if 10 has been completed), 102 and 118: Paleontology 111; two upper division courses in science, engineering or mathematics.

Honors Program. Students with an overall grade-point average of 3.3 in the University, including 3.3 in the major, may apply for admission to the honors program. Application should be made through the student's major adviser not later than the end of the student's junior year. Candidates for graduation with honors in geology are required to take six units of Geology 195.

The Major in Geophysics

The major in geophysics is designed for students with facility in mathematics and physics and an interest in geology; it provides a general background in the physical sciences, with emphasis on the physics of the earth.

Lower Division Courses.

Mathematics 1A-1B, Mathematics 50A-50B, Physics 7A-7B-7C, Chemistry 1A-1B.

Upper Division Courses. Physics 105, Physics 110A-110B, Geology 100, Geophysics 104, 108, 121, 122A, 122B, Mathematics 120A-120B (or 121A-121B)

Honors Program. Students with an overall grade-point average of 3.3 in the University, including 3.3 in the major, may apply for admission to the honors program. Application should be made through the student's major adviser not later than the end of the student's junior year. Candidates for graduation with honors in geophysics are required to take Geophysics 199 and either write a research paper or take a comprehensive examination.

The Major in Engineering Geoscience

The College of Engineering with the cooperation of the Department of Geology and Geophysics offers a curriculum in engineering geoscience leading to the degree of Bachelor of Science (see section on Engineering Science in this Catalog).

Graduate Programs

The central objective of the graduate program is to encourage creative thinking and develop the capacity for independent and original research.

Student Background. The student is expected to have as a background:

1. Two years of college mathematics including at least one year of calculus at the level of Mathematics 50A-50B; an introductory course in computer programming is highly recommended.

2. One year each of college chemistry and physics at the level of Chemistry 14 and Physics 7A-7B-7C.

3. For geology students, broad undergraduate training in geology, including paleontology, geophysics and geochemistry.

4. For geophysics students, additional mathematics and physics at the upper division level.

Students may be admitted with deficiencies in their prior training, but they are expected to correct these during their first year of graduate work.

Geology.Incoming students must choose between a Master's and Ph.D. program by the beginning of the first semester. Students should plan to cover a broad spectrum of advanced courses, selected with the approval of the Graduate Adviser. Courses taken within the Department of Geology and Geophysics should include several areas of study related to the student's major research interest.
Two Master's degree programs are offered. Requirements for the Master of Arts degree consist of 24 semester units of upper division and graduate courses, including a thesis, and completion of an examination. The Master of Science degree is granted upon completion of 20 semester units of upper division and graduate courses and submission of a Master's thesis. The M.A. program requirements include at least 12 units in the graduate (200) series; for the M.Sc., at least eight units must be in the 200 series. The Master's thesis should be completed with four semesters (two years).

Candidates for the Ph.D. degree must prepare and defend two research proposals at the oral qualifying examination by the end of the fourth semester; the students general mastery of geology is also tested at this examination. Candidates must also satisfy a language requirement within the first year. Students are encouraged to take graduate courses in mathematics and physical sciences as well as in earth sciences according to individual needs. The dissertation need not be related to the qualifying projects; a master's degree is not prerequisite for a Ph.D. Before the dissertation is completed the candidate must present a Departmental Seminar on the thesis research. Geophysics. Incoming students must choose between a Master's and Ph.D. program by the beginning of the first semester. The M.A. degree is awarded after successful completion of an oral examination to be taken no later than the third semester. In addition, candidates must complete at least half of upper division and graduate coursework, of which at least 12 must be purely graduate units.

Candidates for the Ph.D. degree must prepare and defend two research proposals at the oral qualifying examination during the third semester; the student's general mastery of geology is also tested at this examination. Candidates must also satisfy a language requirement within the first year. There is no formal course requirement, but students are encouraged to take graduate courses in mathematics and physical sciences as well as in earth sciences according to individual needs. The preparation of a Ph.D. dissertation requires at least a full academic year and a dissertation research must be related to the qualifying projects. A master's degree is not prerequisite for a Ph.D.

Seismograph Stations. The University operates 16 seismograph stations in northern California to study the seismicity here and in adjacent parts of Nevada and Oregon. Some conduct other research in seismology. Research includes the study of earthquake wave propagation, the nature of the waves, their relation to earth structure, the nature of earthquake occurrence, and the interrelations of the earth and the theory of the seismograph. Offices are in the Earth Science Building; seismographs and laboratories are in Haviland Hall and in an underground vault in Strawberry Canyon.

Geology

Lower division courses are designed to serve both general and specific interests in earth science, and they can be taken in any order. Credit is not allowed for both 10 and 101, which are alternative presentations of classical geology; enrollment is limited in 5.

Lower Division Courses

10. Introductory Geology. (4). Formerly 10. Two 1½-hour lectures and one 1-hour laboratory per week. Semester Prerequisites: Not open to geology majors. Introductory geology through lectures and laboratory study with at least one field trip. Minerals, rocks, and structure of the earth; internal and surface processes which change the earth. (F.S.P)

Upper Division Courses

100. General Geology. (4). Formerly 5. Two 1-hour lectures and two 3- or 4-hour laboratories or field trips per week. Semester Prerequisites: Physics 7A, Chemistry 1A, Mathematics 1A and consent of instructor. Quarter Prerequisites: Chemistry 1A and consent of instructor. Introduction to geology through field mapping with supplemental work in specific areas and processes. (F.S.P)

101. Field Geology. (4). Formerly 101. Two 4-hour field trips and one hour of discussion per week. Semester Prerequisites: Introductory course in geology. Geology of the Berkeley Hills and vicinity. (S.P)

102. Mineralogy. (4). Formerly 102. Two 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: 100. Three introductory lectures on crystallography, projections, optical crystallography and use of the petrographic microscope. Systematic mineralogy. (F,S,P)

106L. Mineral Deposits Laboratory. (2). New Course since Spring 1983. Six hours of laboratory per week. Semester Prerequisites: Must be taken concurrently with 106. (F,S,P)

107. Geological and Geophysical Plate Tectonics. (4). Formerly 107. Two 2-hour lectures and one hour of discussion per week. Semester Prerequisites: Mathematics 50A-50B; Physics 7A-7B-7C; senior standing in Geology, Geophysics, or related major. Two 2-hour lectures and one hour of discussion per week. Geology of the plate tectonic system; major plate boundaries; hot spot phenomena; mid-oceanic ridges; subduction zones; mountain building. (F,S,P)

110. Geological Evolution of North America. (3). Formerly 110. Three hours of lecture, one hour of discussion per week, and occasional weekend field trips. Semester Prerequisites: 100 and consent of instructor. Quarter Prerequisites: Consent of instructor. Geological evolution of North America and its neighbors; major structural and stratigraphic trends; tectonic and stratigraphic development of the Cordilleran and Appalachian Mountain systems. (F) Not offered 1984-85.

111. Petroleum Geology. (3). Formerly 196. Two 2-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 100 and consent of instructor. Origins of petroleum: quality, quantity, thermal maturation and migration. Commercial and primary source materials. (F,S,P)

113. X-Ray Crystallography. (4). Formerly 135. Three hours of lecture, two hours of laboratory, and one hour of discussion per week. Semester Prerequisites: Mathematics 50A-50B; Physics 7A-7B-7C; senior standing in Geology, Geophysics, or related major. Two 2-hour lectures and one 3-hour laboratory per week. Use of the petrographic microscope. Systematic mineralogy. (F,S,P)

115. The Earth. (4). New Course since Spring 1983. Three hours of lecture and one 2-hour discussion per week. Semester Prerequisites: Calculus through differential equations, one year of college physics. The earth as a whole; its internal constitution and evolution. (S.P) Not offered in 1984-85.

116. Special Topics in Geology. (3). Formerly 196. Course may be repeated for credit. Three hours of lecture and one 2-hour discussion per week. Semester Prerequisites: Consent of instructor. Group study of a geological topic not included in the regular department curriculum. (F,S,P)

119. Supervised Independent Study and Research. (1-4). Course may be repeated for credit. Must be taken on a pass/fail basis. (1-4). Individual studies and laboratory research. Enrollment is restricted by regulations. (F,S,P)

Graduate Courses

201. Seminar in Geochemistry. (3). Formerly 201. Two 2-hour discussions per week. Semester Prerequisites: Consent of instructor. Principles and problems in geochemistry. (S.P) Not offered in 1984-85.

205. Processes of Ore Deposition. (3). Formerly 205A. Two 1-hour lectures and one 3-hour laboratory per week, plus one field trip. Semester Prerequisites: Geology 101, 106, and 131, or consent of instructor. Major theories of ore transport and deposition, including field, laboratory and theoretical approaches. (S.P) Not offered in 1984-85.

209. Tectonics of Wester North America. (3). Formerly 209. Course may be repeated for credit. One 3-hour seminar per week and several field trips. Semester Prerequisites: Senior or graduate standing in Geology. Selected topics in the tectonic evolution of western North America. Course content will vary from year to year.
depending upon interest of participants. (SP) Not offered in 1984-85.

212. Advanced Stratigraphy and Tectonics. (3). Formerly 212. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Evolution of the earth: determination to internal, surficial and extraterrestrial processes. (SP)

214. Advanced Igneous Petrology. (4). Formerly 214. Two 1½-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Geology 131 and 161. The composition, generation and cooling of magmas to form igneous rocks. The physical and thermodynamic properties of silicate liquids. (F) Not offered in 1984-85.

215. Advanced Sedimentary Petrology. (4). Formerly 215. Course may be repeated for credit. One 2-hour seminar and two 3-hour laboratories per week. Semester Prerequisites: Geology 162 or consent of instructor. Quarter Prerequisites: Geology 105 or consent of instructor. Subjects in alternate years will be: 1) volcanism and petrology of volcanioclastics rocks, and 2) petrology of non-volcanic sedimentary rocks. (SP) Not offered in 1984-85.

216. Advanced Structural Geology. (2). New Course since Spring 1982. Course may be repeated for credit. Two 3-hour discussion periods and two 1-hour laboratory sessions per week. Semester Prerequisites: Course in elementary structural geology and consent of instructor. Topics in advanced structural geology.

217. Fluvial Geomorphology. (4). Formerly 217. Course may be repeated for credit. Three hours of lecture and one 1-hour laboratory per week; some field work is assigned. Semester Prerequisites: Consent of instructor. Application of fluid mechanics to sediment transport and development of river morphology. Form and process in river meanders, the pool-riffle sequence, aggradation, grade, and baselevel. (SP)

218. Environmental Analysis of Non-Marine Sedimentary Rocks. (2). Formerly 218. One 2½-hour seminar per week; occasional field trips. Semester Prerequisites: Elementary course in geology and consent of instructor. Seminar course devoted to current research in non-marine sedimentary rocks. Designed primarily for paleontologists and anthropologists who intend to do field work in non-marine rocks. (SP) Not offered in 1984-85.

225. Advanced Geomorphology. (3). Formerly 225. Course may be repeated for credit. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Discussion of problems in fluvial processes, sediment transport, and hillslope development. Topics vary from year to year. (F)

231. Equilibrium, Mass Transfer, and Kinetics in Geochemical Processes. (4). Formerly 231 and 232. Four hours of lecture per week. Semester Prerequisite: Consent of instructor. High temperature solution chemistry; calculation of the thermodynamic properties of minerals at high pressures and temperatures; reaction kinetics; numerical prediction of the rate and extent of mass transfer resulting from weathering, diagenesis, metamorphism, hydrothermal metasomatism, etc. (SP). Not offered in 1984-85.

236. Advanced Mineralogy. (2). Formerly 236. One hour of lecture and one 3-hour laboratory per week. Semester Prerequisites: Course in X-ray crystallography and consent of instructor. Basic concepts of X-ray crystal structure determination and application to crystal chemistry. Structure refinements and determination of site occupancies. Microstructure of minerals (planar, linear, and point defects; imaging techniques with the transmission electron microscope). Geologic significance of crystal structure and microstructural defects. (F)

280. Research. (2-12). Formerly 280. Course may be repeated for credit. Individual conferences to be arranged. Provides supervision in the preparation of an original research paper or dissertation. (F,SP)

290. Seminar. (2-6). Formerly 290. Course may be repeated for credit. Two to six hours of lecture and discussion per week. Topics will be announced each semester. (F,SP)

298. Directed Group Study for Graduates. (1-9). Formerly 298. Course may be repeated for credit. Occasional group meetings and individual conferences. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for master's degree. Individual study for the comprehensive or language requirement in consultation with the field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for Ph.D. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

300. Professional Preparation: Supervised Teaching of Geology and Geophysics. (1). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture and two 3-hour laboratories per week. Semester Prerequisites: Consent of instructor and approval of Department Chair. (F,SP)

401. The Use of the Electron Microprobe. (2). Formerly 401. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Eight hours of laboratory per week. Semester Prerequisites: Graduate standing and consent of instructor. The operation of an electron microscope, and ancillary equipment, for the analysis of inorganic solids. (F,SP)

402. Electron Microscopy and X-Ray Diffraction. (2). Formerly 402. New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Eight hours of laboratory per week. Semester Prerequisites: Graduate standing and consent of instructor. The use of an electron microscope, X-ray diffraction apparatus, and ancillary equipment. (F,SP)

Geophysics

Lower Division Courses

20. Earthquakes. (3). Formerly 120. Three hours of lecture and one hour of discussion per week. Introduction to earthquakes, their causes and effects. General discussion of basic principles and methods of seismology and geological tectonics, distribution of earthquakes in space and time, mechanics of earthquakes, effects of earthquakes and earthquake hazard and risk. (F)

Upper Division Courses

104. Mathematical Methods in Geophysics. (3). Formerly 104A-104B. Three 1-hour lectures and one 1-hour discussion period per week. Semester Prerequisites: Physics 105 and 110A-110B. Formerly 104A and 104B or a course in partial differential equations. Overview of thermal and dynamic processes of the earth and planetary interiors. Basic principles of fluid dynamics and magnetohydrodynamics. Observations from a radar magnetograph, plate tectonics, etc., are coupled with these principles to introduce simple models of the dynamic and thermodynamic state of planetary interiors. (SP)

105. Strong Motion Seismology. (2). Formerly 130. Two 1-hour lectures per week. Semester Prerequisites: Mathematics 50A or equivalent and consent of instructor. Quarter Prerequisites: Mathematics 50C. 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. (SP)

198. Special Topics in Geophysics. (3). Formerly 198. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Group study of a geophysical topic not included in the regular department curriculum. (F,SP)

Graduate Courses

204. Elastic Wave Propagation. (3). Formerly 204A. Three hours of lecture per week. Semester Prerequisites: Physics 104 or equivalent; Physics 121A; Physics 105. Quarter Prerequisites: Geophysics 104 or equivalent; Geophysics 121A (SP, 105A); Physics 105A. Wave propagation in elastic solids; effects of anelasticity and anisotropy; representation theorems; reflection and refraction; propagation in layered media; finite-difference and finite-element methods. (SP)

205. Theoretical Seismology. (3). Formerly 204B. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 204 or consent of instructor. Quarter Prerequisites: Physics 104 or equivalent; Geophysics 121A. Analysis and treatment of the generation and propagation of elastic waves in realistic earth models. Lamb's problem; waves in inhomogeneous media; eigenvalues; seismic source models; synthetic seismograms. (F) Not offered in 1984-85.

206. Geophysical Inverse Methods. (3). Formerly 206. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Geophysics 104 or equivalent. Quarter Prerequisites: Geophysics 104A or equivalent. Survey of various inverse methods available for geophysical problems. Deterministic and statistical, under- and over-determined, and linear and non-linear problems. Concepts of existence, uniqueness, construction, appraisal, resolution, and trade-off curves. Applications to gravity, magnetics, conductivity, seis- 

Physics 7A-7B; Mathematics 50A-50B. Quarter Prerequisites: Physics 5A-5B and Mathematics 50A-50B-50C. Elastic waves in the earth; forward and inverse problems for the velocity field. Inversion and refection methods of seismic exploration. Theory of the seismogram; interpretation of seismograms; causes, effects and distribution of earthquakes; mechanics of earthquakes; earthquake hazard and risk. (F)

122A. Physics of the Earth and Planetary Interiors. (3). Formerly 122A. Three 1-hour discussion periods per week. Semester Prerequisites: 108 or equivalent; Physics 105. Quarter Prerequisites: Either 104B or a course in partial differential equations. Gravitational theory of the earth and the terrestrial planets. Gravity anomaly, isostasy, and relations to tectonics. Density and constitution of the Earth and planetary interiors; theories of the origin and the early evolution of planets. (SP)

122B. Physics of the Earth and Planetary Interiors. (3). Formerly 122B. Three 1-hour lectures and one 1-hour discussion period per week. Semester Prerequisites: 108 or consent of instructor; Physics 105 and 110A-110B. Quarter Prerequisites: Physics 104A-110B. Three 1-hour lectures and one 1-hour discussion period per week. Semester Prerequisites: Consent of instructor. Group study of a geophysical topic not included in the regular department curriculum. (F,SP)

130. Supervised Independent Study. (1-4). Formerly 130. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Group study of a geophysical topic not included in the regular department curriculum. (F,SP)

204. Elastic Wave Propagation. (3). Formerly 204A. Three hours of lecture per week. Semester Prerequisites: Physics 104 or equivalent; Physics 121A; Physics 105. Quarter Prerequisites: Geophysics 104 or equivalent; Geophysics 121A; Physics 105A. Wave propagation in elastic solids; effects of anelasticity and anisotropy; representation theorems; reflection and refraction; propagation in layered media; finite-difference and finite-element methods. (SP)

205. Theoretical Seismology. (3). Formerly 204B. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 204 or consent of instructor. Quarter Prerequisites: Physics 104 or equivalent; Geophysics 121A. Analysis and treatment of the generation and propagation of elastic waves in realistic earth models. Lamb's problem; waves in inhomogeneous media; eigenvalues; seismic source models; synthetic seismograms. (F) Not offered in 1984-85.
mology, and planetary physics. (SP) Not offered in 1984-85.

208. Mechanical Properties of Earth Materials. (3). Formerly 208. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Geophysics 108 or course in continuum mechanics. Course Prerequisites: Consent of instructor. 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. (F)

209. Mineral Thermodynamics. (3). New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. Physical basis of the thermodynamic properties of minerals, including the use of elastic constants, spectroscopic, and related data. The emphasis is on high-temperature phenomena, including the nature of melting. Thermal defects and nonequilibrium processes, particularly diffusion and the theory of phase transformations, are also discussed. (SP) Not offered in 1984-85.

210. Bonding in Minerals. (3)? New Coursesince Spring 1983. Three hours of lecture and one hour of discussion per week. Introduction to the theoretical and experimental study of bonding forces in minerals, including simple models, and the results of rigorous calculations, from quantum mechanics; spectroscopic data, group-theoretical analyses, and crystal field theory; equations of state and high-pressure phenomena. (F)

217. Advanced Seismometry. (3). Formerly 217. Two 1-hour lectures and one 3-hour laboratory per week. Theory of the pendulum and other seismographs. An introduction to the theoretical and experimental study of bonding forces in minerals, including simple models, and the results of rigorous calculations, from quantum mechanics; spectroscopic data, group-theoretical analyses, and crystal field theory; equations of state and high-pressure phenomena. (SP)

218. Seminar in Seismology. (3). Formerly 218. May be repeated for credit. One 3-hour discussion period per week. Critical study of problems in current seismological research. Topic will vary from semester to semester. (SP) Not offered in 1984-85.

219. Seminar in Geophysics. (3). Formerly 219. May be repeated for credit. One 3-hour discussion period per week. Critical study of problems in current geophysical research. Content will vary. (F)

285. Research. (2-12). Formerly 285. Course may be repeated for credit. Individual conferences. Individual conferences to be arranged. Provides supervision in the preparation of an original research paper or dissertation. (F,SP)

289. Directed Group Study for Graduate Students. (1-9). Formerly 289. Course may be repeated for credit. Individual conferences and occasional group meetings. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for master's degree. Individual study for the comprehensive or language requirements in consultation with the field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for Ph.D. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

404. Modern Seismological Observatory Techniques. (2). Formerly 404. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two or three hours of laboratory plus one hour of discussion per week. Semester Prerequisites: 204 and graduate standing. Quarter Prerequisites: 204A and graduate standing. Advanced instruction in interpretation and reduction making use of the instrumental and computer facilities of the Seismographic Station. The purpose is to enable graduate students to use analog and digital observations of seismic waves in their research. (F,SP)

German

Department Office, S517 Dwinelle Hall, 642-7444

Professors:
Richard Birkmann, 1 Ph.D., Gerd Hille, 1 Ph.D., Wilfried Kuehne, 1 Ph.D., Joseph Mileck, Ph.D., Imrengard Rauch, Ph.D., Hinrich C. Seeba, Dr.Phil.

Associate Professors:
Bluma Goldstein, Ph.D., Anton Koes, 1 Ph.D., Johon P. Snapper, Ph.D.

Assistant Professors:
Robert G. Holub, 1 Ph.D., Thomas F. Shannon, Ph.D.

Senior Lecturer:
Klaus A. Mueller, M.A.

Adjunct Lecturer:
Leonard A. Talmay, Ph.D.

Major Adviser: E. Tennant.

Graduate Advisers: Literature: H.C. Seeba (L-Z) and F.C. Tubach (A-K); Linguistics: I. Rauch.

The Department of German offers undergraduates the opportunity to obtain a broad background in the field of German language, literature, and culture, and introduces them to the principles of literary analysis and criticism. German language instruction ranges from elementary courses to advanced courses in German style. Upper division courses cover German literature from the earliest times to the present, as well as the linguistic study of German.

The graduate program in literature emphasizes seminars that provide an in-depth study of more specialized areas. The graduate offerings in linguistics constitute a complete program of study in Germanic languages. Instruction in methodology is provided for teaching assistants and prospective teachers.

The curriculum of Dutch Studies focuses upon the language, literature, and culture of The Netherlands and Flanders.

The Major

Lower Division. German 1, 2, 3, 4, or their equivalent.

Upper Division. 30 units from Group II (a minimum of 14 units must be taken at UCB). The following courses are required: 100, 101A, 101B, 102. No more than four units of 102 can be applied toward the major.

Honor Program. A grade point average of 3.5 in the major and an overall GPA of 3.3 are required for participation in the program during the senior year.

Either H195A or H195B and an honors thesis (H196) must be completed. The Honors Committee, consisting of the major adviser and the thesis director, approves the topic and evaluates the thesis.

Graduate Program

Aims of the Graduate Program. The graduate program of the Department of German is designed for future teachers and teachers in the fields of German language, literature, and linguistics. It aims at a comprehensive historical knowledge of German literature and/or linguistics and is designed to encourage the student to develop intellectual independence and creative initiative. The program leads to the Master of Arts and Doctor of Philosophy degrees in literature or Germanic linguistics. Graduate students may wish to pursue Dutch Studies as their secondary field of study.

M.A. The study of essential aspects of German literature and culture or linguistics is stressed. In addition, students focus on related methodology, the tools for research, and on teaching methods.

Ph.D. in Literature. Various directions of study are explored, including literary history, literary theory, methodology, genres, periods, and related disciplines such as other literatures, aesthetics, sociology, linguistics, psychology, and folklore.

Ph.D. in Linguistics. The study of language, especially of modern German and its earlier phases, is emphasized. Areas of specialization include linguistic theory and method, dialectology, sociolinguistics, textual linguistics (linguistics and literature), applied linguistics, and German philology.

Prerequisite for Admission to Full Graduate Standing. A Bachelor of Arts degree (or its equivalent) with an undergraduate major in German. Students admitted on the basis of their overall scholarship records, but with deficiencies in their preparation in German, are expected to make these up by additional coursework.

Master of Arts: Literature

Requirements: 32 units, 22 of which are to be in graduate courses; the remaining units may in upper division courses. Only courses in which the student receives a grade of B- or better will be counted toward the total. The student's accumulated GPA in all coursework taken in graduate study must be at least 3.0 in order for the degree to be conferred. Unless specifically excused by the graduate adviser, the following courses are required: (1) at least one research seminar in literature; (2) at least one course in linguistics; (3) Middle High German (202A) and Readings in Middle High German Literature (203B) (each course is 2 units); (4) German Oral and Written Style (205) (2 units); (5) the Proseminar (208) (5 units).

The MA program should be completed in three semesters. An extension of one semester may be granted by the Graduate Committee.

Examination: The student will submit a reading list to the graduate adviser by the fifth week of the semester during which the examination will be taken. The graduate examination will emphasize the student's work in literature courses taken for the M.A. degree. However, the list should reflect major periods and authors in German literature. The examination will be administered by a committee of three. Candidates may choose one of the following formats:

1. a three-hour written examination;
2. a two-hour oral examination;
3. a two-hour written and a one-hour oral examination.

Doctor of Philosophy: Literature

Prerequisite: M.A. or its equivalent (in the case of transfer students, some remedial work may be necessary).

Requirements:
1. extensive reading that reflects the breadth of general literary and cultural history;
2. a working familiarity with various approaches to literature;
3. some form of concentration and critical perspective developed through coursework and/or a proposal to be defined in consultation with the faculty. This is assessed by the doctoral committee in its evaluation of the dissertation proposal. Examining committee determines the suitability of the proposal and the need for formal defense of it.

At least one semester before the Qualifying Examination the student will submit a comprehensive
reading list and, if applicable, a proposal to the examination committee for approval.

**Complementary Studies:** It is considered essential to the Ph.D. program that the student gain competence in an outside field complementary to the field of German literature. In the course of this study the student is expected to consult with faculty members in other disciplines.

The student must fulfill the language requirement before being admitted to the Ph.D. Qualifying Examination. There are two options (see Foreign Language Requirement in index):

1. demonstration of a useful reading knowledge of two European languages other than German or English. The languages, chosen in consultation with the graduate adviser, should contribute to the study of German literature in general and/or to the individual research interests of the student in particular. Latin and French are generally considered most useful. But if other foreign languages can be justified as more useful to the individual doctoral program, they may be substituted with the advisor’s permission.

2. demonstration of an exceptionally thorough knowledge and fluency in one European language other than German or English. The proficiency will be tested under the direction of the Graduate Council (Option II). The student is expected to satisfy the language requirement as early as possible.

**The Examination:** The Ph.D. Qualifying Examination consists of:

1. a written examination in two three-hour periods, to be taken within two weeks; each period may be extended by three hours for revision;

2. a three-hour oral examination which is to be taken within one month of the written examination and which will emphasize, in addition to the approved program of study, the preliminary work done on the dissertation.

**Master of Arts: Linguistics**

**Requirements:** 30 units in German with a grade of B- or better, including at least 24 graduate units, 4 of which may be in German literature. A knowledge of Middle High German and of the structure and history of the German language, as well as proficiency in modern German (202) is required. These requirements may be fulfilled by courses, 103, 104, 203, 270, 271 or their equivalents taken at another university.

When these requirements have been met, the student will be given a written examination with emphasis on the phonology, morphology, syntax, and semantics of Modern German and the history of the German language in all its periods. A reading list is available for general guidance.

**Doctor of Philosophy: Linguistics**

An M.A. in German linguistics or an equivalent is a prerequisite for admission to the program. There are two major course options. However, the student is expected to consult with the graduate adviser regarding the best sequence of courses to be taken. A limited program of study in the area of German literature can be included.

The student must demonstrate fluency in at least one Romance language, or a useful reading knowledge of two European languages, other than German and English (see requirements for Ph.D. in literature). The Ph.D. Qualifying Examination for students specializing in German linguistics consists of two written examinations of three hours each and an oral examination of three hours. The examination will deal primarily with the phonetics and synchronic aspects of German, its dialects and periods, the Germanic language family, and the methods of Germanic linguistics; one complementary field can be selected by the student.

**Waiver Program in German** (for future teachers of German).

Adviser: Klaus A. Mueller

Successful completion of the Waiver Program in German exempts the student from taking the examination required for the single subject credential with a teaching authorization in German.

The program is based on requirements for the German major at Berkeley as modified for additional work in special areas. The Waiver Program in German requires completion of a minimum of fifty-two (52) units of course work as listed below:

1. German 1-4 (20 units);
2. 32 units from Group II (as listed herein) including:
   - German 100 (3), 101A and 101B (3;3), 102 (2), 103 (3), 104 (3), 112 (3) and six units taken from literature courses;
3. German 300 (4).

**Dutch Studies**

For a description of the group major in Dutch Studies, see alphabetical listing under College of Letters and Science. Descriptions of the courses presenting the language, literature, history, and culture of the Netherlands, offered by the Department of German, follow German courses.

**German**

German 25 is strongly recommended as a complement to all lower division language courses.

1. **Elementary German.**
   - Formerly 1 and a portion of 2. Five 1-hour class meetings per week and laboratory practice. Elementary German. (F,SP)
2. **Elementary German.**
   - Formerly a portion of 2 and 3. Five 1-hour class meetings per week and laboratory practice. Semester Prerequisites: 1 or equivalent. Elementary German. (F,SP)
3. **Intermediate German.**
   - Formerly 3 and 4. Five 1-hour class meetings per week and laboratory practice. Semester Prerequisites: 3 or equivalent. Intermediate German. (F,SP)
4. **Advanced German.**
   - Formerly 5. Five 1-hour class meetings per week. Semester Prerequisites: 3 or equivalent. Quarter Prerequisites: 4 or equivalent. Grammatical review and selected reading in literature. May be taken concurrently with 100, 101, or 102. (F,SP)
14. **Individualized Instruction.** To be arranged. This course covers the material of 1-3 for a total of fifteen units. Students may enter at any level, and must enroll for a minimum of two units. Students who enroll should read the program instruction sheet which may be obtained from the department. Split grading permitted.
14A. **Individualized Instruction — Elementary Level.**
   - Quarter 1 and Quarter 2 are equivalent. Elementary Level. (F,SP)
14B. **Individualized Instruction — Elementary Level.**
   - Semester Prerequisites: 1 or 14A. (F,SP)
14C. **Individualized Instruction — Intermediate Level.**
   - Semester Prerequisites: 2 or 14B. (F,SP)
10. **Elementary German for Graduate Students.**
   - Formerly 1G. Must be taken on a satisfactory/unsatisfactory basis. Five 1-hour lecture/discussions per week. Elementary German for graduates preparing for reading examinations. (F,SP)
20. **Elementary German for Graduate Students.**
   - Formerly 2G. Must be taken on a satisfactory/unsatisfactory basis. Five 1-hour lecture/discussions per week. Semester Prerequisites: 1G. Elementary German for graduates preparing for reading examinations. (F,SP)
25. **Patterns and Images of Contemporary German Cinema.**

**Waiver Program in German** (for future teachers of German).
Introduction to the Linguistic Study of German. 
(3). Formerly 104. Three hours of lecture per week. A basic overview of the field of German linguistics, including modern German, its historical development and contemporary dialects. (SP)

Middle High German for Undergraduates. 
(3). Formerly 105. Not open to graduate students for credit. Three hours of lecture per week. Basic grammar and selected readings in Middle High German. Excerpts from the Nibelungenlied. (F)

Middle High German for Undergraduates. (3). 
Formerly 106. Three hours of lecture/discussion per week. Designed to impart a thorough reading knowledge of Middle High German. Not offered 1984-85.

Literary Translation. 
(3). Formerly 108. Three hours of lecture per week. Semester Prerequisites: Two upper division courses in German literature. Quarter Prerequisites: At least two upper division courses in German literature. This course introduces students to the problems of literary translation from German to English. Not offered 1984-85.

Business German. 
(3). Formerly 109. Three hours of lecture per week. An introduction to the terminology of business and commerce in German speaking countries. Not applicable towards the major. Not offered 1984-85.

Cultural History Courses

From 800-1648. 
(3). Formerly 110. Course may be repeated for credit. Three hours of lecture per week. The social, political, and historical background to Middle High German literature from the Age of Charlemagne to the Empire of Charles V. Not offered 1984-85.

From 1500-1800. 
(3). Formerly 111. Course may be repeated for credit. Three hours of lecture per week. The social, political, and historical background to German literature from the Reformation to the Age of Reason. Not offered 1984-85.

From 1800 to the Present. 
(3). Formerly 112. Course may be repeated for credit. Three hours of lecture per week. The social, political, and historical background to German literature since the French Revolution. Not offered 1984-85.

C. Literary History Courses

The Literature of the Middle Ages. 
(3). Formerly 120. Three hours of lecture per week. The key literary works of the Hohenstaufen period. (F)

Renaissance, Reformation, and Baroque. 
(3). Formerly 121. Three hours of lecture per week. Major authors and their works from the 15th through the 17th century. Not offered 1984-85.

Enlightenment and Sturm Und Drang. 
(3). Formerly 122. Three hours of lecture per week. Major authors and their works from the 18th century including philosophical tenets. Not offered 1984-85.

Classicism. 
(3). Formerly 123. Three hours of lecture per week. Major authors and their work from the Classical period. (F)

Romanticism. 
(3). Formerly 124. Three hours of lecture per week. Major literature from the Romantic period including philosophical aesthetic writings. Not offered 1984-85.

19th Century Literature. 
(3). Formerly 129. Three hours of lecture per week. Major trends and problems in 19th century German literature. Not offered 1984-85.

Modern Literature. 
(3). Formerly 126. Three hours of lecture per week. Major authors and their works of the modern period. Not offered 1984-85.

Contemporary Trends. 
(3). Formerly 127. Three hours of lecture per week. Major trends in German literature since 1945. (F)

Approaches to Literature

Philosophical Approaches to Literature. 
(3). Formerly 155. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 100. Philosophical approaches to German literature. Not offered 1984-85.

Socio-Linguistic Approaches to Literature. 
(3). Formerly 155. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 100. 1984-85 topic: Burgerliches Trauenspiel. Not offered 1984-85.

Psychological Approaches to Literature. 
(3). Formerly 157. Three hours of lecture per week. Semester Prerequisites: 100. Topic for 1984-85: To be announced. (SP)

Author Courses

Goethe. 

Schiller. 
(3). Formerly 142. Three hours of lecture per week. Analysis of Schiller's ballads, major dramas and philosophical writings. Not offered 1984-85.

Heine. 
(3). Formerly 143. Three hours of lecture per week. Heine's works. Not offered 1984-85.

The Poetry of Rilke and Hofmannsthal. 

Thomas Mann, Franz Kafka, Hermann Hesse. 
(3). Formerly 146. Three hours of lecture per week. Introduction to three internationally renowned German writers of the 20th century, with particular emphasis on their decidedly different characters, their common concerns but different attitudes to and resolutions of life's problems, and their different modes of expression. Not offered 1984-85.

Thomas Mann. 

George and Rilke. 
(3). Formerly 148. Three hours of lecture per week. Introduction to philosophical, ideological and aesthetic trends at the turn of the century; analysis of lyrical texts from 1890-1920. Not offered 1984-85.

B. Brecht. 

Studies in Poetry. 
(3). Formerly 150. Course may be repeated for credit. Three hours of lecture per week. Works of Heine. Not offered 1984-85.

Studies in Medieval Literature. 
(4). Formerly 150. Three hours of lecture per week. Major literature from the Romantic period including philosophical aesthetic writings. Not offered 1984-85.

Austrian Literature. 
(3). Formerly 154. Course may be repeated for credit. Three hours of lecture per week. Not offered 1984-85.

Problems in Philosophy. 
(3). Formerly 151. Course may be repeated for credit. Major trends in contemporary German. Not a continuation of German 106. Not open to undergraduates. (F)

Studies in Middle High German Literature. 
(2). Formerly 203. Two hours of lecture per week. Conducted entirely in German with intensive practice in speaking and understanding the language. (F)

Middle High German for Graduates. 
(2). Formerly 203. Two hours of lecture per week. Introduction to topical theory, including the study of the bibliography, history, and methodology of Germanistik. Required of all M.A. candidates. Not offered 1984-85.

Studies in Medieval Literature. 
(4). Formerly 204. Three hours of lecture per week. Semester Prerequisites: Graduate standing. Basic knowledge of Middle High German. Not a continuation of German 106. Not open to undergraduates. (F)

Readings in Middle High German Literature. 
(2). Formerly 203. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: German 203A or equivalent. Formerly 203. Readings in Middle High German, techniques of editing MHG texts. Elementary paleography, normalization. (F)

B. Literary History Courses

Studies in Medieval Literature. 
(4). Formerly 205. May be repeated for credit when topic changes. Three hours of lecture per week. Semester Prerequisites: 105 or 203A. Quarter Prerequisites: 106 or 203B. Variable topic. (F)

Literature of the Renaissance and Reformation. 
(4). Formerly 206. May be repeated for credit. Three hours of lecture per week. German literature of the Renaissance and Reformation. Not offered 1984-85.

Literature of the Seventeenth Century. 
(4). Formerly 207. Three hours of lecture per week. Topics include Gryphius, Lohenstein, Grimmelshausen, and Baroque poetry. (SP)

(4). Formerly 211. Three hours of lecture/discussion per week. Historical survey of Enlightenment in Germany. Not offered 1984-85.

189. Introduction to Contemporary Germany. 
(3). Formerly 113. Two hours of lecture and one hour of discussion per week. Introduction to the social, political, and historical background of the Federal Republic of Germany today. Open to all undergraduates with an interest in contemporary Germany but particularly intended for students who will participate in the the EAP to Göttingen in the following year. Not offered 1984-85.

G. Honors and Special Studies Courses

Honors Research Seminars for Undergraduates. 
(3-3). Formerly H195A-H195B. Three hours of seminar per week. Semester Prerequisites: Course open to students participating in Honors program. Topics for 1984-85: H195A. Studies in Poetry. (F) H195B. Studies in Narrative Texts. (SP)

Honors Studies in German. 
(2-4). Formerly H196. Semester Prerequisites: H195A or H195B or concurrent enrollment in either course. Supervised independent study and research course for honor students who are writing their theses for completion of the requirements for the Honors Program. (F,SP)

Directed Group Study. 
(2-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Seminar group of selected topics which will vary from year to year. (F,SP)

Supervised Independent Study and Research. 
(2-4). Formerly 199. Must be taken on a passed/not passed basis. Individual course. Supervised independent study and research. (F,SP)

Graduate Courses

Introductory Courses in Literature

Proseminar in German Literature. 

Major Periods in German Literature. 
(4). Formerly 201. May be repeated for credit. Three hours of lecture per week. Recommended for M.A. candidates. Variable topic. (F,SP)

Oral and Written Style. 
(2). Formerly 202. Three hours of lecture per week. Conducted entirely in German with intensive practice in speaking and understanding the language. (F)

Middle High German for Graduates. 
(2). Formerly 203. Two hours of lecture/discussion per week. Semester Prerequisites: Graduate standing. Basic knowledge, intensive reading in Middle High German. Not a continuation of German 106. Not open to undergraduates. (F)

Readings in Middle High German Literature. 
(2). Formerly 203. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: German 203A or equivalent. Formerly 203. Readings in Middle High German, techniques of editing MHG texts. Elementary paleography, normalization. (F)
214. Realism. (4). Formerly 236. May be repeated for
credit. Three hours of seminar per week. Variable topic. Not
offered 1984-85.

216. Naturalism. (4). Formerly 239. Three hours
of seminar per week. German naturalism. Not offered 1984-
85.

Course may be repeated for credit when topic changes.
Three hours of seminar per week. (F)

C. Genre Courses

hours of seminar per week. Not offered 1984-85.

226. Drama of the Twentieth Century. (4). Formerly
258A-258B. May be repeated for credit. Three hours of
seminar per week. Variable topic. Not offered 1984-
85.

228. 20th Century Novel. (3). Formerly 257A-257B. Three
hours of seminar per week. Modern German novel.
Not offered 1984-85.

D. Author Courses

230. Lessing. (4). Formerly 212. Three hours of seminar
per week. (F)

234. Goethe. (4). Formerly 215A-215B. May be repeated for
credit. Three hours of seminar per week. Variable topic.
Not offered 1984-85.

236. Schiller. (4). Formerly 224. Three hours of seminar
per week. (SP)

of seminar per week. (SP)

Three hours of seminar per week. Not offered 1984-
85.

247. Hermann Hesse. (4). Formerly 247. Three hours
of seminar per week. Not offered 1984-85.

248. Thomas Mann. (4). Formerly 248. Three hours
of seminar per week. (F)

249. Franz Kafka. (4). Formerly 249. Course may be
repeated for credit as topic varies. Three hours of
seminar per week. Topic for 1983: Irony in the Novel: With
reference to Kafka's Schloß and Prozess. Not offered 1984-
85.

E. Theory Courses

255. Interpretation and Criticism of Poetry. (4). For-
merly 245. May be repeated for credit. Three hours of
seminar per week. Variable topic. Not offered 1984-85.

Three hours of seminar per week. A discussion of the
relationship of history and literature as it affects the
theoretical notion of the historiocity of literature and the

258. Studies in Language and Consciousness. (4). New
Course since Spring 1983. Three hours of seminar per
week. Towards a new reading of literary texts. Not
offered 1984-85.

265. Topics in Romanticism. (4). Formerly 227. May be
repeated for credit. Three hours of seminar per week.

268. Aspects of Literary and Cultural History. (4). For-
merly 250. 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

Graduate Courses in Linguistics

270. Introduction to the History of the German Lan-
guage. (4). Formerly 270. Three hours of seminar per
week. Introduction to the history of the German language.
(F)

271. Historical Phonology, Morphology and Syntax
of German. (4). Formerly 271. Three hours of seminar
per week. Semester Prerequisites: 270. Recommended
for all candidates for the M.A. with linguistic emphasis.
Not offered 1984-85.

273. Gothic. (4). Formerly 273. Three hours of lecture

276. Old High German. (4). Formerly 276. Three hours
of lecture per week. Old High German. (SP)

278. History of the Dutch Language. (4). New Course
since Spring 1983. Three hours of lecture/discussion per
week. The prehistory, emergence, development of
Netherlandic, and its filiation with English and German.
See also Dutch 107. Not offered 1984-85.

282. Old Saxon. (4). Formerly 282. Three hours
of lecture per week. Not offered 1984-85.

hours of lecture per week. Semester Prerequisites: 103:
Grammar/Structure and the sounds of modern German in
contrast to the corresponding features of American English.
Not offered 1984-85.

290. Seminar in Germanic Linguistics. (4). Formerly
290. May be repeated for credit when topic changes.
Three hours of lecture per week. Topic will vary from
year to year. (F,SP)

290A. Dialectology. (3). Three hours of lecture per week.
F

290B. History of the English Language. (4). Three
hours of lecture per week. (SP)

Group and Individual Study

295. Doctoral Colloquium. (4). Formerly 265A-265B-
265C. May be repeated for credit. Two hours of seminar per
week. A series of weekly 2-hour symposia intended
mainly for Ph.D. candidates to report on their doctoral
work and for advanced students to prepare conference
papers and articles. Not offered 1984-85.

298. Directed Group Study. (2-8). Formerly 298.
May be repeated for credit when topic changes. Must be
taken on a satisfactory/unsatisfactory basis. Seminar.
Topic will vary from year to year. (F,SP)

299. Individual Study for Graduate Students in Lit-
erature and Linguistics. (2-12). Formerly 299. May be
repeated for credit when topic changes. Must be
approved by the graduate adviser. Three hours of
seminar per week. Topic will vary from year to year. (F)

300. Teaching of German in Elementary and Sec-
ondary Schools. (4). Formerly 300. Three hours
of lecture per week. For credential candidates. (F,SP)

301-A-301B. The Teaching of German in College.
(2-2). Formerly 301A-301B. Credit and grade to be
awarded upon completion of the sequence. Two hours
of lecture per week. For all new teaching assistants.
(F,SP)

302. Teaching Practicum. (4). Formerly 302. May be
repeated for credit. Must be taken on a satisfactory/unsat-
factory basis. Three hours of lecture per week. Semester
Prerequisites: Graduate standing. Supervised teaching
of lower division courses, including orientation
workshop. (F,SP)

303A-303B. The Teaching of German. (2-2). Formerly
303A-303B. Credit and grade to be awarded upon com-
pletion of the sequence. One hour of lecture per week.
Designed for student teachers fulfilling their residence
and teaching credential requirements. (F,SP)

303X. The Teaching of German. (4). Formerly 300X.
Three hours of lecture per week. The M.A. written project.
Recommended for student teachers fulfilling their residence
and teaching credential requirements. Discussion of
specific teaching techniques and problems. (F,SP)

Yiddish

1. Elementary Yiddish. (5). Formerly 1 and a portion
of 2. Formerly 1 and a portion of 2. Three 1-V2-hour lecture/discussion periods per week.
Beginning and advanced vocabulary and phrases for
beginning and intermediate students. (SP)

2. Elementary Yiddish. (5). Formerly a portion of 2
and 3. Three 1-V2-hour lecture/discussion periods per week.
Beginning and advanced vocabulary and phrases for
beginning and intermediate students. (SP)

3. Intermediate Yiddish. (5). New Course since Spring
1983. Three hours of lecture/discussion per week.
Semester Prerequisites: 2 or consent of instructor. Quarter
Prerequisites: 3. Reading in Yiddish of simpler works of
literature by authors like Sholem Aleichem, Mendele,
Peretz, Singer, in part to be decided on by the class.
Discussion primarily in Yiddish. Advanced points of Yid-
disch linguistics will also be covered. Not offered 1984-
85.

Dutch

For a description of the group major in Dutch studies,
see alphabetical listing under College of Letters and
Science.

1. Elementary Dutch. (5). Formerly 1 and a portion
of 2. Five 1-hour class meetings and one hour of language
lab per week. (F)

2. Elementary Dutch. (5). Formerly a portion of 2
and 3. Five 1-hour class meetings and one hour language
lab per week. Semester Prerequisites: 3 or equivalent.
Quarter Prerequisites: 2 or equivalent. Not offered 1984-85.

3. Intermediate Dutch. (5). New Course since Spring
1983. Five 1-hour class meetings and one hour language
lab per week. Semester Prerequisites: 3 or equivalent.
Quarter Prerequisites: 2 or equivalent. Not offered 1984-85.

107. The Structure of Modern Dutch. (3). New Course
since Spring 1983. Three hours of lecture/discussion per
week. The sound, word, sentence and meaning structure
of Modern Netherlandic. See also German 278. (SP)

110. Advanced Dutch. (3). Formerly 110. Three hours
of lecture per week. Semester Prerequisites: 3 or equiva-
Ient. A thorough review of Dutch grammar, vocabulary
and reading exercises, and an introduction to Dutch
literature. (F)

120. Advanced Dutch Conversation. (2). Formerly
120. Course may be repeated once for credit. Three
hours of lecture per week. Semester Prerequisites: 110
or consent of instructor. Quarter Prerequisites: 110. An
informal class emphasizing spoken Dutch, centering
around recent newspaper and magazine articles, dealing
with various areas of Modern Dutch culture, to aid in
the acquisition of vocabulary in those areas and speaking
facility through reading, memorization and speaking
practice. (SP)

130. Advanced Grammar and Composition. (3). For-
merly 130. Three hours of lecture per week. Semester
Prerequisites: 110 or consent of instructor. Quarter
Prerequisites: 110. Review of Dutch grammar, vo-
cabulary and grammar exercises; the emphasis is on
extensive writing practice with discussion of grammatical
and stylistic weaknesses exhibited in the writing as-
signments. (SP)

140. Topics in Dutch Literature. (3). Formerly 140.
Course may be repeated once for credit. Three hours of
lecture per week. Semester Prerequisites: 110. Designed
to analyze Dutch texts from Middle Dutch to contem-
porary literature. Topics vary per semester. (F)

150. Introduction to the Literature of the Netherlands.
(3). Formerly 150. Three hours of lecture per week.
Semester Prerequisites: 110 or consent of instructor. Quarter Prerequisites: 110. An introduction to the study of literature in general and to the literature of the Netherlands in particular. Selected readings in Dutch poetry, prose and drama. Emphasis on different genres in literature. (SP)


170. The Netherlands: Culture and Institutions. (3) Formerly 170. Three hours of lecture per week. A historical study of the cultural contributions of the Netherlands and an analysis of the political system. (F)

175. General and Cultural History of the Southern Netherlands. (3) Formerly 175. Three hours of lecture per week. This course focuses on the cultural and historical antecedents to the secession of Belgium from the Netherlands (1830) and examines the political and cultural realities within the bilingual Belgian society. Not offered 1984-85.

180. Middle Dutch. (3) Formerly 180. Three hours of lecture per week. Semester Prerequisites: 110 or consent of instructor. 110 Introduction to Middle Dutch texts including courtly epics, minnesongs, morality plays, and the Abele Speien. Not offered 1984-85.

190. Senior Thesis. (4) Formerly 190. Course may be repeated for credit up to four units. Semester Prerequisites: Advanced standing. Supervised independent study and research course for honors students. (F,SP)

198. Directed Group Study. (1-4) Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. One hour to four seminars per week. (F,SP)

199. Special Studies in Dutch. (1-4) Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conference. Semester Prerequisites: Overall G.P.A. of 3.0. Enrollment is restricted by regulations in General Catalog. (F,SP)

240. Graduate Readings in Dutch. (4) Formerly 240. May be repeated for credit. Three hours of lecture per week. Various periods and genres in Netherlandic literature from the Middle Ages to the modern period. Offerings vary from semester to semester. (F) Not offered 1984-85.

299. Individual Studies in Dutch for Graduate Students. (1-4) Formerly 299. 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)

History Department Office, 3229 Dwinelle Hall, 642-1971

Professors: Richard M. Abrams, Ph.D. Thomas G. Bernes, D.Phil. Guthrie C. Cannon, Ph.D. Thomas N. Bisson, Ph.D. William J. Bowmann, Ph.D. (Sheather Professor)

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Robert J. Brentano,' D.Phil. Gerhard E. Canary, Ph.D.

Gerald D. Feldman, Ph.D. Erich S. Gruen, Ph.D. Samuel Haber, Ph.D. Roger Hahn, Ph.D. Tullio Harlan, Ph.D. John L. Heilbron,^ Ph.D. Richard N. Halvorsen,^ Ph.D. Eugene F. Inchick, Ph.D. Martin E. Jay,^ Ph.D. David N. Keightley,^ Ph.D. Raymond K. Kent, Ph.D. Ina M. Lipton,^ Ph.D. Lawrence W. Levine, Ph.D. Leon F. Lifman,^ Ph.D.

Martin E. Jay,^ Ph.D. Thomas N. Bisson, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D. Lawrence D. Haber, Ph.D.

Engel Blutter, Ph.D. Kenneth M. Starpog, Ph.D. (Emeritus)

3. An honors research essay under the supervision of a member of the Department who has consented to direct it. For this purpose students will take either:

a) History H195, Senior Honors. In some cases, the essay produced in H195 may be a development from (but not a revision of) the paper produced in History 101.

b) History 285, a graduate research seminar. While the faculty supervisor will assign a grade for H195 or 285, the Honors Committee will determine whether or not the essay is of honors quality. The Honors Committee will evaluate the candidate's coursework, performance in H102, the oral examination, and the research essay. If the student's work is of honors quality in the Committee's estimation, the Committee will award Honors, High Honors, or Highest Honors as warranted by the overall performance.

Further information is available in the departmental office.

Education at Home Program. Students with a specific interest in early American history and culture may wish to participate in the Education at Home Program. The Program, conducted through the UC Riverside campus, is open to undergraduates from any campus in the UC system. Those selected for participation will spend eight weeks in Williamsburg, one in Philadelphia, and a concluding week in Washington, D.C.; it is a one-quarter program. For further information, brochures or application forms, call 787-3820 or write to Education at Home Program, International Services Center, University of California, Riverside, CA 92521. UC Berkeley history majors should consult the Department for information on major credit for the Program.

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 is issued prior to 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

4. Origins of Western Civilization. Formerly 4A-4B. Two 1-hour lectures and two 1-hour sections per week. Introductory study of major historical events in the origins of western civilization. Emphasis on class discussions, readings in the sources, and writing of essays.

4A. Ancient. (4)

4B. Medieval. (4)

5. European Civilization From the Renaissance to the Present. (4) Formerly 5. Half credit for students who have taken 4C or 4D (quarter system). Two hours of lecture and 2 hours of section per week. A survey of Europe from the Renaissance to the present. (F,SP)

7. Introduction to the History of the United States. Formerly 17A-17B. Two to three hours of lecture and 2 hours of sections per week.

7A. From Colonial Settlement to the Civil War. (4)

7B. From the Civil War to the Present. (4)

8. Latin American History. Formerly 18A-18B. Two hours of lecture and 2 hours of section per week.

8A. The Colonial Period. (4)

8B. The National Period. (4)


9A. China. (4)

9B. Japan. (4)

9C. India. (4)
103D. Latin America. (4). Formerly 1038E.
103F. Asia. (4). Formerly 1038F.
103H. Africa. (4). Formerly 1038H.
103S. History of Science. (4). Formerly 1038S.
103U. Studies in Comparative History. (4). Formerly 1038U.
105. Ancient Greece. Formerly 1014-1108-110C. Three hours of lecture and 1 hour of discussion per week. (F,SP)
105A. Bronze Age and Archaic. (4). Formerly 105A. Until ca. 500 B.C. The beginnings of organized activity in Greek cities.
105B. Classical. (4). Formerly 105B. From ca. 500 until the time of Philip of Macedon. More complex relations between Greek cities.
105C. Hellenistic Age. (4). Formerly 105C. From Alexander the Great to Cleopatra. The course explores the achievements of Alexander, the struggle for power among his successors, the social, political and economic history of the new Hellenistic kingdoms, and the expansion of Greek culture into the Near East.
106. Ancient Rome. Three hours of lecture and 1 hour of discussion per week.
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 Republican government, the growth of Roman imperialism, and the internal disruptions of the age of the Gracchi, Sulla, and Caesar.
106B. The Roman Empire. (4). A history of Rome from Augustus to Constantine. The course surveys the struggles between the Roman emperors and the senatorial class, the relationship between civil and military government, the emergence of Christianity, and Roman literature as a reflection of social and intellectual life.
107. Topics in Ancient History. Three hours of lecture and one hour of discussion per week. (F)
107A. Ancient Athenian Law. (4). Formerly 113. This course will concentrate on the courts and procedural law in their historical development. Some attention will be given to distinctive features of Athenian law in comparison to other Greek legal systems.
107B. The Age of Cicero. (4). Formerly 112. Examination of events, forces, trends involved in the fall of the Roman Republic in the crucial years between the deaths of Sulla and Cicero. Analysis of Cicero's speeches, essays, and correspondence. Political, social, and economic struggles in light of intellectual and cultural currents.
108. Byzantium. (4). Formerly 114. Three hours of lecture and 1 hour of discussion per week. The social, cultural, and religious history of the Near East and eastern Mediterranean from late antiquity through the early medieval ages. The survival of the Roman Empire in Byzantium, the Sassanian Empire in Iran, and the rise of Islam are the topics covered.
109A. Islamic History. (4). Formerly 182A-182B. Three hours of lecture and 1 hour of discussion per week. The Middle East from the origins of Islam to the 13th Century. The Arab conquests, the Islamic Empires, the successor states, and the formation of Islam as a religion and culture.
109B. The Middle East, 1000-1750. (4). Formerly 186A. Three hours of lecture and 1 hour of discussion per week. The establishment of Turkish power in the Middle East: Seljuk, Mongols, Ottomans, and Safavids.
109C. The Middle East From the 18th Century to the Present. (4). Formerly 183B. Students who have taken 183B (quarter system) should receive 1½ credit. Three hours of lecture and 1 hour of discussion per week. The breaking of pre-modern empires and the formation of national states in the Arab world, Turkey, Iran, and Islamic nationalism.
110. Inner Asia. (4). Formerly 188A-188B. Three hours of lecture and 1 hour of discussion per week. Origins, development, and dynamics of nomadic societies; history of the Scythians, Hsiung-nu, Huns, Turks, and Mongols; their relations with Greece, Rome, Iran, China, and Russia; conquest of Inner Asia by Russia and China; impact of modernization, nationalism, and communism.
112. Africa. Formerly 1904A-190B. Three hours of lecture and 1 hour of discussion per week.
125A. 1560-1665. (4).

126B. 1665 to the Present. (4).

126A-126B. The West in United States History. (4). Formerly 1704. Three hours of lecture and 1 hour of discussion per week. A cultural and social history of westward migration from the 16th to the 20th Centuries.

127. California. (4). Formerly 171. Three hours of lecture and 1 hour of discussion per week. The history of California and the European contact to the present, with emphasis on the diversity of cultures and the interplay of social, economic, and political developments.

130. Diplomatic History of the United States. Formerly 173A-173B. Three hours of lecture and 1 hour of discussion per week. European diplomatic impact on emerging America's foreign policy, colonial, revolutionary, and constitutional periods. Nineteenth century expansionism to imperialism, Spanish-American War and Roosevelt in World Wars I and II, the subsequent Cold War to the present.

130A. 1403-1914. (4).

130B. 1914-Present. (4).

131. Social History of the United States. Formerly 174A-174B. Three hours of lecture and 1 hour of discussion per week. The nature and development of social and economic institutions, class, family and racial relationships, sex roles, and cultural norms in the United States.

131A. 1807-1865. (4).

131B. 1865-Present. (4).

132A-132B. Intellectual History of the United States. (4). Formerly 175A-175B. Three hours of lecture and 1 hour of discussion per week. Focus on intellectual and cultural developments during this transitional period will be examined.

133. Religion In American Society. (4). Formerly 176. Three hours of lecture and 1 hour of discussion per week. The history of American women, focusing on changes in women's roles in society and popular attitudes toward women over the course of three centuries. (SP)

139. Topics in United States History. Three hours of lecture and one hour of discussion per week.

139A. Working Class in the United States. (4). The history of American workers from Colonial times to the present, emphasizing the changing patterns of technology and work experience, standards of living and social life, political values, ethnic interactions; and focusing as well on the changing role of the organized labor movement.

139B. Women in American History. (4). Formerly 178. Three hours of lecture and one hour of discussion per week. A survey of the history of American women, focusing on changes in women's roles in society and popular attitudes toward women over the course of three centuries.

140. Mexico. (4). Formerly 160A-160B. Students who have taken 160A (quarter system) should receive ½ credit. Three hours of lecture and 1 hour of discussion per week. The history of Mexico from the Late Empire to the present. The liquidation and transformation of the ancien regime.

141. The Anasazi Region. (4). Formerly 157A-157B. Students who have taken 157A or 157B (quarter system) should receive ½ credit. Three hours of lecture and 1 hour of discussion per week. History of the Anasazi region, the area that now comprises modern Peru, Bolivia, and Ecuador, from the Indian period (fifteenth century) to the present.

143. Brazil. (4). Formerly 163A-163B. Students who have taken 163A or 163B (quarter system) should receive ½ credit. Three hours of lecture and 1 hour of discussion per week. From 16th Century conquest and settlement to the emergence of an industrial economy during the post-1964 period of military rule. Emphasis on dependence of colony on empire, on plantation agriculture, survey history of Brazil, and the transition from agrarian to industrial society.

144. Modern Argentina. (4). Formerly 164. Three hours of lecture and 1 hour of discussion per week. Post-independence rise of Buenos Aires and of the cattle export economy. The national state; immigration, modernization, agricultural expansion. The exhaustion of the export economy; growing social and political conflicts.

150A. European Diplomacy. Students who have taken 150B or 150C should receive ½ credit. Three hours of lecture and 1 hour of discussion per week. From 16th Century conquest and settlement to the present.

150A. The Anglo-Saxon Period. (4). Formerly 150A. From the Romans through the Norman conquest (to Domesday Book and Eadmer).


151. Modern Britain. Three hours of lecture and 1 hour of discussion per week. Semester Prerequisites: An elementary knowledge of the history of Western Europe. Survey history of Britain from approximately the Tudor period to the present.

151A. 1485-1660. (4). Formerly 151A-151B.

151B. 1660 to the Present. (4). Formerly 151C-151D. Survey history of Britain from approximately the Tudor period to the present.

A. Formerly 151A-151B. 1485-1660.

B. Formerly 151C-151D. 1660 to the present.

152. Topics in British History. (4). Three hours of lecture and 1 hour of discussion per week.

153. British Empire and Commonwealth. (4). Formerly 154. Three hours of lecture and 1 hour of discussion per week.

154. Canada. (4). Formerly 155. Three hours of lecture and 1 hour of discussion per week. A survey of Canadian history from exploration and first settlement through colonial times to confederation and nationhood to the present.

155. Medieval Europe. Formerly 115A-115B. Three hours of lecture and 1 hour of discussion per week. Survey of Canadian history from exploration and first settlement through colonial times to confederation and nationhood to the present.

155A. From the Enlightenment to 1870. (4). Formerly 128A-128B.

155B. From the Enlightenment to 1870. (4). Formerly 128B. From the Enlightenment to 1870. (4). Formerly 128B-128C. Students who have taken 128A or 128B (quarter system) should receive ½ credit. Three hours of lecture and 1 hour of discussion per week. Political, social, and economic developments during this transitional period will be examined, together with the rise of Renaissance culture, and the religious upheavals of the sixteenth century.

158. Modern Europe. Students who have taken 122, 123, or 124 under the quarter system will receive only half credit. Three hours of lecture and 1 hour of discussion per week.

159A. Old Regime and Revolutions to 1815. (4). Formerly 122.

159B. 1815-1914. (4). Formerly 123 and 124.

159C. 1914 to the Present. (4). Formerly 125.

159D. European Economic History. Formerly 126A-126B-126C. Students who have taken 126A or 126B (quarter system) should receive ½ credit. Three hours of lecture and 1 hour of discussion per week.


159B. 1750-1914. (4). The Industrial Revolution and the rise of the modern European economy to world dominance in the 19th century, emphasizing the diffusion of the industrial system and its consequences, the world trading system, the rise of modern capitalism and the creation of the modern political economies of the United States, Europe, and Japan; evolution and interaction of the major institutions of advanced capitalist societies; differences and similarities of their business communities, labor organization, and patterns of government relationships with the private sector.

160. The International Economy of the Twentieth Century. (4). Formerly 126D. Three hours of lecture and 1 hour of discussion per week. Development and crises of the advanced economies, with particular emphasis on trade relations with third world countries. Economic impact of war, business cycles, and social movements.

161. Emergence of Modern Industrial Societies. (4). Formerly 107. Four hours of lecture per week. Survey of the development of the modern political economies of the United States, European, and Japan; evolution and interaction of the major institutions of advanced capitalist societies; differences and similarities of their business communities, labor organization, and patterns of government relationships with the private sector.

162A-162B. European Diplomatic History. (4). Formerly 127. Three hours of lecture and 1 hour of discussion per week. European international relations in the 19th and 20th centuries, with emphasis on the political and economic forces, shaping foreign policy and the international system.

163. Modern European Intellectual History. Students who have taken 128A, 128B, 128C, or 128D will receive only half credit. Three hours of lecture and 1 hour of discussion per week. Thought and art considered in their social and political contexts.

163A. From the Enlightenment to 1870. (4). Formerly 128A-128B.

163B. From 1870 to the Present. (4). Formerly 128B-128C.

164. Social History of Western Europe. Formerly 129A-129B. Three hours of lecture and 1 hour of discussion per week.

164A. European Society Before the Industrial Revolution. (4).

164B. European Society From 1750 to the Present. (4).

165. Topics in Modern European History. (4). Formerly 137B. Three hours of lecture, 1 hour of discussion per week.

166. France. Formerly 141A-141B-141C. Three hours of lecture and 1 hour of discussion per week.
The field major in Humanities provides students with an opportunity to acquire a broad background in the study of human beings as artists and as creators of values through the ages. The major is especially designed to combine such breadth by means of an interdisciplinary approach with an individual program tailored to each student’s interests and educational needs. Students will be primarily responsible for developing their own programs of study, but they must be done with the advice of a member of the faculty who will agree to act as the student’s adviser in the major.

The proposed major program is listed below. It has not yet received final approval. Students should consult their major adviser.

**Lower Division Requirement.**

I. One year of Western Civilization (Special Programs 44 or its equivalent). The list of courses that can be used to fulfill the requirement is available in the Special Programs office; II. Foreign language—one year (two semesters) of an ancient or modern language appropriate to the individual program.

**Upper Division Requirements.**

I: Six courses (minimum 20 units) in three of the following fields or disciplines (two courses in the social sciences or natural sciences may be substituted with the approval of an appropriate department): art, classics, comparative literature, dramatic art, film, history, history of art, languages and literature, music, philosophy, religious studies, rhetoric, and women’s studies; II: Humanities 100, the core course for the major; III: Humanities 190, the senior thesis course.

**Upper Division Courses**

100. Methods and Motifs. (4.) Formerly 100. Course may be repeated for credit as topic varies. Two 2-hour lectures and two 2-hour discussion sections per week. A core course for the Humanities Major intended to introduce techniques and methods for advanced research and writing through examination of a particular topic. Topic may vary from year to year. (SP)

190. Senior Thesis. (4.) Formerly 190A-190B. Individual conferences. Separate Prerequisites: Senior standing. Directed senior thesis on special topics approved by the Division relating to the student’s area of concentration. (F,SP)

H195. Honors Thesis. (4.) Formerly H195A-195B. Individual conferences. Separate Prerequisites: Senior standing and eligibility for honors program. Quarter Prerequisites: Senior standing eligibility for honors program. Entails writing a bachelor’s thesis pertaining to the student’s individual area of concentration within the humanities field major. Each student must submit a detailed proposal with a preliminary bibliography to the prospective thesis supervisor. The completed thesis will be read by the thesis supervisor and two other faculty members. (F,SP)

199. Supervised Independent Study. (1-4.) Formerly 199. Course may be repeated for credit. Must be taken on a pass/no pass basis. Meeting to be arranged. Separate Prerequisites: Enrollment is restricted by regulations pertaining to 199 courses. (F,SP)

**Italian**

Department Office, 5125 Dwinelle Hall, 642-2704

Professors:

Gian-Pietro Biasin, Ph.D.    
Louis George Clough, Ph.D.    
Gustavo Costa, Dottore in Filosofia    
Nicolas J. Perella, Ph.D.

Associate Professor:

Gavriel Moses, Ph.D.

Senior Visiting Lecturer:

Catherine Feuchl, B.A.

Major Adviser: Mr. Stefanin.

Graduate Adviser: Mr. Moses.

The Department gives undergraduates the opportunity to acquire proficiency in the Italian language and a broad background in Italian literature from its beginnings to the present. It also offers courses in English translation on Italian civilization, literature, and film. The graduate program offers in-depth training in the history and critical analysis of Italian literature along with courses in philology and stylistics.

**The Major**

**Lower Division.** Courses 1, 2, 3, 4, or their equivalents in linguistic proficiency.

**Upper Division.** 27 units of upper division courses (of which at least 12 units must be taken in residence) including: Italian 101A-101B, 103A-103B. No more than one approved upper division Italian course in English translation may count toward the major unit requirement.

**Honors Program.** To enter the honors program, in addition to having a minimum overall grade point average of 3.3, the student must have completed at least 18 units of upper division Italian courses with a grade point average of 3.5. Candidates must enroll in Italian H195 for one semester during which they will carry out research and write an honors thesis under the guidance of a faculty member.

**Graduate Program**

**Master of Arts in Italian.** The Ph.D. program is open to students with an M.A. degree in Italian or in a program in which Italian was the major field of study. Requirements: demonstration of a reading knowledge of Latin and a modern language other than Italian and English; a basic knowledge of Italian Philosophy; a writing and oral qualifying examination in a major field of Italian literature and in a minor of an approved related field; a dissertation. Detailed information is available from the Italian Department.

**Lower Division Courses**

1. Elementary Italian. (5.) Formerly 1 and a portion of 14B. Basic grammar for beginners: Part One. (F,SP)

101. Beginning Italian for Graduate Students. (F,SP)
and literary works of Machiavelli in the context of the thought and culture of his age. Not offered 1984-85.

Upper Division Courses

101A-101B. Advanced Grammar Composition and Linguistics. (3-4). Formerly 101A-101B. Three 1-hour classes per week. Semester Prerequisites: 4. Quarter Prerequisites: 5. Reading and grammatical analysis of representative texts; advanced written and oral composition. (F,SP) Sequence starts in Fall.

103A-103B. Introduction to Italian Literature. (3-3). Formerly 103A-103B. Three 1-hour lectures per week. An introduction to the chief currents and authors of Italian literature. Lectures, selected readings and analysis of texts. (F,SP) Sequence starts in Fall.

110A-110B. Literature of the 13th and 14th Centuries. (3-3). Formerly 110A-110B. Three 1-hour lectures per week. A close reading of Dante's masterpiece. (F,SP) Sequence starts in Fall.


112A-112B. Sixteenth Century Literature. (3-3). Formerly 112A-112B. Three 1-hour lectures per week. A. The High Renaissance. (F) B. The Late Renaissance. (SP)

113. Seventeenth Century Literature. (3). Formerly 113. Three 1-hour lectures per week. The main trends in the prose and poetry of the age of the Baroque. (SP)


117. Twentieth Century Literature. (3). Three 1-hour lectures per week. A. The High Renaissance. (F) B. The Late Renaissance. (SP)

119A. From Neoclassicism to Romanticism. (3) Formerly 119A. Monti, Foscolo, and early Leopardi. (F) 119B. Romanticism. (3) Formerly 119B. The mature Leopardi and Manzoni. (SP)


121. Italian Culture During the Fascist Period (in English). (3). Formerly 160. Three 1-hour lectures per week. An examination of the politico-cultural climate of the fascist regime. Not offered 1984-85.


127. Latin American Studies

Uppergraduate Group Major in Latin American Studies

Group Major Office, Department of Spanish and Portuguese, 4329 DeWitt Hall, 642-0477

Advisers: G. Arnold Chapman (Spanish and Portuguese). Head Adviser and Coordinator; Linda Lewin (History).
The group major in Latin American studies is designed to present a balanced curriculum of the history, culture, and environment of Latin America for students wishing a broader perspective of the area than is usual in a single departmental major. The program may be of particular interest to (1) students desiring a general education focused on the Latin American cultural regions; (2) students planning to enter business, government, or international agency service; and (3) students preparing to teach social science or language.

Lower Division. Spanish 1, 2, 3, 4 (or equivalent) or Portuguese 1, 2, 3, 4 (or equivalent); History 9A-88.

Upper Division. A minimum of 30 upper division units, but not more than 36, distributed as follows: Portuguese 101 (for the equivalent); Spanish 104A-104B or Portuguese 123A-123B; History 141A-141B; and five upper-division courses, at least two of which must be in a single field other than History, Portuguese or Spanish, as appearing on the List of Approved Courses (given below) and selected in consultation with a Group Major adviser.

List of Approved Courses: Anthropology 123, 124, 125, 126, 175, 176, 177, 179; Geography 131, 154, 155, 156, 157, 158; History 103E, 140, 142, 143, 144, 147, 149, 150, 152, 153, 170, 175, 176, 177, 178, 179; Political Science 113, 125, 126, 175, 176, 177, 179; Sociology 113, 114, 125, 130, 131, 135 (when topic is appropriate), 138, 185 (when topic is appropriate).

Honors Program. With consent of a group major adviser, a student with an over-all grade-point average of 3.8 or higher and a grade-point average of 3.3 or higher in completed courses in the major may apply for admission to the honors program. Students accepted in the honors program will enroll in upper division courses in Latin American Studies H185 for the preparation of a senior thesis.

Graduate Programs

Graduate Group office, Center for Latin American Studies, 2334 Bowditch Street, 642-2088

Advisers: Stanley Brandes (Anthropology), G. Arnold Chapman (Spanish and Portuguese), Tulio Halperin (History), Michel Laguerre (Afro-American Studies), Richard Norgaard (Agricultural and Resource Economics).

Master's Degree. The M.A. Program in Latin American Studies provides an opportunity for interdisciplinary work on Latin America at the immediate post-baccalaureate level. Candidates must have a bachelor's degree, a reading knowledge of either Spanish or Portuguese, and adequate grade standing. Applicants from the United States must take the Graduate Record Examination (GRE) aptitude test, and they must achieve a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). A higher score on the TOEFL is desirable. Samples of written work must also be submitted. Admission is limited by the number of places allotted to the program.

The formal requirements for the M.A. degree are 20 units of course credit and a thesis, following the University's Plan I for a master's degree. Students should take courses concentrated primarily in one or two departments, although courses in a broader range of departments may be taken if appropriate to a student's intellectual concerns. Students' programs must include at least two courses or eight units of graduate credit in each of two departments, in addition to the graduate credit earned for writing the master's thesis. The remaining courses for the required 20 units are chosen in consultation with an adviser selected from the graduate faculty. Students are encouraged to take a wide range of courses, including a strong reading knowledge of Spanish or Portuguese, and adequate grade standing.

Further information on the group major in Latin American Studies may be obtained from the program office.

Legal Studies

Program Office, 2240 Piedmont Avenue, 642-4038

Profs: Robert Coeter, Ph.D., Caleb Folke, Ph.D., David Lieberman, Ph.D., Sheldon Messinger, Ph.D., Philippe Monet, Ph.D., Daniel Rubinfeld, Ph.D., Harry N. Scheiber, Ph.D., Jerome Slodnick, Ph.D., Bernard Diamond, Ph.D., Martin Shapiro, Ph.D., Philip Sokolnick, Ph.D., Jennifer Stark, Ph.D., Susan Hurley, Ph.D.

Visiting Professors: Charles McClain, Jr., Ph.D., J.D.

The Major

The Legal Studies major provides undergraduate students with the opportunity to become familiar with legal ideas, legal institutions, and the legal process. It is designed to provide students with a critical appreciation 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 of 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, sociology, political science, economics, psychology, 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 rather for undergraduate students who are interested in law as a field of critical inquiry, irrespective of their ultimate career objectives.

Lower Division requirements. One term of coursework is required in each of the following areas: introductory statistics, introductory economics, introductory philosophy, European history.

Upper Division requirements. A minimum of 33 upper division units is required for the major. All students majoring in Legal Studies must take Legal Studies 100A, Foundations of Law and Society. In addition, they must take at least one course from each of the following four groups of courses: A. Legal and Social Theory; B. Historical/Comparative; C. Principles and Problems of Substantive Law; D. Administration of Justice. The remainder of the units may be either Legal Studies courses or courses from other departments with the approval of a committee of law-related courses offered outside the program.

The rationale for the structure of the Legal Studies curriculum becomes apparent if a few words are said about each of the course groupings referred to above. Students who enter the program as first semester of the Foundations of Law and Society sequence, which is designed to familiarize them with major legal ideas, introduce them to the nature of legal reasoning and the legal process, and highlight some of the basic philosophical problems one must confront in dealing with legal issues. This course is meant to ensure that students in the major have the analytical sophistication and critical back-ground with which to approach further study of law. 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 ensure 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 assures that students in the major are familiar with some of the important aspects of legal procedure or, more broadly, "legal process." These courses use relevant insights from the social sciences, e.g., organization theory, to illustrate the formal back-ground of law-making, adjudication, and implementation. The courses a student will be able to take as free options allow a modest degree of specialization within the major. The student who has met the distribution requirements, for purposes of the educated layman, has a very sound and comprehensive understanding of the law's structure and operation.

Honors Program. With consent of a Major adviser, a student with an overall GPA of 3.8 and a GPA of 3.5 in Legal Studies courses may be admitted to the Honors Program. The Honors student is required to enroll in H185, the Legal Studies honors course for one or two semesters, at the instructor's option, and to prepare an honors thesis.

Further information on the group major in Legal Studies may be obtained from the program office.

Upper Division Courses 100A-100B, Foundations of Law: The Quest for Justice. (4A). Formerly 100A-100B. Three hours of lecture and 1 hour of discussion per week. Semester Prequisites: 100A is prerequisite to 100B. Introduction to law for the liberal arts student. The purpose is to familiarize students with major legal ideas, legal reasoning, and legal processes; to provide a comparative and his-
toral perspective on law; and to highlight basic philosophical problems in the quest for justice. (F,SP)

103. Theories of Law and Society. (4). Formerly 103. Three hours of lecture and 1 hour of discussion per week. Major social and historical interpretations of legal origins, functions, and change. Emphasis on 19th and 20th century legal and social thought, particularly the work of Benthame, Maine, Marx, Durkheim, Weber, Malinowski, Pound, Llewellyn, Fuller, Gluckman. Course will use book of readings prepared by the instructor. (SP)

105. Ethics and Justice. (3). New Course since Spring 1983. Two 1 1/2-hour meetings per week. Readings in ethics and social theory combined with judicial decision making. The course aims to explore the relationship between philosophical arguments and legal decisions. Topics include religious and secular sources of morality, the value of human life, criminal responsibility, sexual morality and economic justice. Not offered 1984-85.

106. Legal Reasoning. (4). Formerly 106. Three hours of lecture and 1 hour of discussion per week. Ways in which legal reasoning relies on and contributes to notions about values and norms in other areas of human thought; shared features as well as functional and institutional differences shaping distinctive characteristics of legal argument will emerge. Not offered 1984-85.

107. Theories of Justice. (4). Formerly 107. Three hours of lecture and 1 hour of discussion per week. Major social and historical interpretations of law. Legal philosophy are combined with judicial arguments and legal decisions. Topics include religious and philosophical approaches to the human condition, criminal justice, and the role of the law in the imposition of social control and the regulation of economic interests, styles of judicial reasoning and the common-law tradition, and the impact of modern policy innovation on the legal system. (SP)

175. Comparative Judicial Process. (3). Formerly 175. Three hours of lecture and 1 hour of discussion per week. A study of the development and operation of legal systems in a comparative perspective. Topics of study include the origins of legal institutional response to the social needs created by modern industrial society; police organization and accountability. (SP)

177. Seminar On American Legal History. (3). Formerly 177. Two 1 1/2-hour meetings per week. Seminar Prerequisites: 100A and 178 or two U.S. History courses. This seminar explores the development of American legal and institutional forms in the social context. Major issues for discussion include the intellectual origins of American law and the relation between legal and social change in America. (F)

180. Mental Health, Law, and Social Policy. (4). Formerly 180. Four hours of seminar per week. Semester Prerequisites: Preference given to upper division students with background in psychology, sociology, law, or behavioral or health sciences. Seminar on selected current controversies of legal and social policy issues of mental illness. Topics will include the right to treatment, right to refuse treatment, social class and mental illness, confidentiality, informed consent, and similar topics. Not offered 1984-85.

182. Law, Politics and Society. (4). New Course since Spring 1983. Three hours of discussion per week. This course examines the theory and practice of legal institutions in performing several major functions of law: allocating authority, defining responsibilities, remedies for breach of contract, and the allocation of property rights. The jurisprudential significance of the analysis will be discussed. (F)

184. The Politics of the American Legal System. (4). New Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Seminar Prerequisites: Upper division standing. A study of the American legal system, from both behavioral and normative perspectives. The course begins with an examination of judicial decision making, the nature of judicial review, the systematic comparison of the judicial with other political institutions, law as symbol. Not offered 1984-85.

185. Legal and Moral Responsibility. (4). Formerly 185. Three hours of lecture and 1 hour of discussion per week. Analysis of the conditions of moral and legal responsibility. Discussion of the concepts of cause, blame, guilt, responsibility, and liability. Topics to be examined: role of excuses in a theory of responsibility; justification for holding one person responsible for the actions of others. Not offered 1984-85.

187. Comparative Constitutional Law. (3). Formerly 187. Three hours of lecture and 1 hour of discussion per week. An examination of constitutional family formation and dissolution and focuses on selected topics in child welfare law. Topics include: the state role in reproductive decisions, entry into marriage, divorce, economic consequences of divorce and child custody decisions. Not offered 1984-85.

189. Alms and Limits of the Criminal Law. (4). Formerly 189. Three hours of lecture and 1 hour of discussion per week. Analysis of the capacity of criminal law to fulfill its aims. What are the aims of criminal law? How are they assigned relative priority? What principles can be identified for evaluating the effort to control disadvantage? Inevitable rational flaw? (F)

192. Courts and Social Policy. (4). Formerly 192. Two 1-hour lectures and one hour of discussion per week. The course examines controversies over the capacity of the courts. These issues will be examined by tracing changes in the business of courts and exploring the emergence of these issues in their social context. (SP)

195. Law and the Environment in Historical Perspective. (4). Formerly 195. Three 1-hour lectures and one hour of discussion per week. The history of law and governance in American cities from the colonial period to the present. The course will focus on the role of law as it relates to the present, adapting the urban environment to the needs created by economic, population and geographic change. Not offered 1984-85.

198. Property and Liberty. (3). Formerly 198. Two hours of lecture and one hour of discussion per week. Topics include ways in which "property" may be defined; manner in which law regulates and protects property interests; arguments for and against redistribution of wealth and greater public control of private property. Readings in legal texts and essays by philosophers, economists, etc. (SP)

199. Supervised Independent Study and Research. (4). Formerly 199. Course since Spring 1983. Three hours of discussion per week. Credit. Three hours of seminar plus individual conferences. Semester Prerequisites: Consent of instructor. Advanced study in law and society with specific topics to be announced. (F,SP)

199A-H199B. Honors in Legal Studies. (4;4). Credit and grade to be awarded upon completion of the sequence. To be arranged. Semester Prerequisites: Senior standing, acceptance into Honors Program in Legal Studies, and approval of Program Chairman. Enrollment is restricted by regulations listed on page in the General Catalog. Consult the Legal Studies office for more information. (F;SP)
Linguistics

Department Office, 2337 Dwinelle Hall, 642-2757

Professors:
Wallace L. Chafe, Ph.D.
Chakrabarti, A. P. Ph.D.
Paul Kay, Ph.D. (Acting Chair, Fall)
George Lakoff, Ph.D.
Robin Lakoff, Ph.D.
J. L. H. D. Matisoff, Ph.D.
James A. Matisoff, Ph.D.
John Ohala, Ph.D.

Assistant Professors:
Leanne L. Hinton, Ph.D.
Donca Steriade, Ph.D.

Senior Lecturer:
Jesse O. Sawyer, Ph.D.

Major Advisers: Mr. Malisoff (F), Ms. Mithun (S), Ms. Steriade.
Graduate Advisers: Ms. Hinton (F,S), Ms. Lakoff (F), Mr. Chafe (S), Mr. Kay (S).

The Major

The undergraduate major in linguistics introduces students to the traditions and techniques of research into the structure, functions, and histories of languages. Since the study of language draws from and contributes to many other fields of study, students choosing the linguistics major are strongly urged to achieve a more than superficial acquaintance with some of the broad but independent fields: anthropology, mathematics, computer science, philosophy, rhetoric, English literature, or the literature of a foreign language.

Requirements: Lower Division. By the end of the sophomore year, concurrently with Linguistics 100 during the first semester of the junior year, the student should take Linguistics 5.

Requirements: Upper Division. Linguistics 100, 110, 115, 120, 130, plus 12 additional upper division units, of which at least six must be chosen from Linguistics Department listings. Linguistics majors who have completed the core courses are encouraged to enroll in linguistics graduate courses whose prerequisites they satisfy.

Honors Program. With the approval of the major adviser, a student with a grade-point average of 3.3 or higher, both overall and in the major, may apply for admission to the honors program. This consists of two or more units per semester for at least two semesters. Under the direction of a faculty member, students can earn 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, they must submit an acceptable term paper summarizing critically the material they have covered.

Graduate Programs

Preparation for Graduate Study in Linguistics.
Graduate students in linguistics should have had an undergraduate major in linguistics, a foreign language, or some equivalent acceptable to the Department. They should be prepared to take the required foreign language reading examinations early in their graduate career.

Master’s Degree in Linguistics. Students may follow either “Plan I” or “Plan II” for the Master’s Degree.
Plan I requires 25 units plus a thesis. (No course units counted for the thesis itself.) Plan II requires 30 units. Both plans include at their culmination, normally at the end of the second year, a three-hour comprehensive examination. Required courses (or equivalent examinations demonstrated by examination) for the Linguistics M.A. are Linguistics 200, 201, 210, 220, 230 plus any approved three-unit course in History of the Tongue, or Typological linguistics. Students are encouraged to supplement the core courses with a coherent battery of courses in a particular language or language family, in general linguistics, or in some allied field such as cognitive science, anthropology, or literature. These supplemental courses are to be chosen in consultation with the student’s adviser.

Doctoral Degree in Linguistics. The program follows Plan B, as described in The Doctoral Degree Program (see Index) with some augmentations. Information on further requirements is obtainable from the Department office.

Summer Linguistic Institute. The principal scholarly organization representing the field of linguistics in this country, the Linguistic Society of America, annually sponsors a six-week or eight-week summer program in linguistics, in collaboration with some co-sponsoring university. Students in linguistics, at both the graduate and the undergraduate level, are strongly encouraged to take part in such “Linguistic Institutes.” These programs offer a wide range of lecture courses, seminars, conferences, workshops, and lecture series, covering developments in the field and areas of interest which no single university can offer.

Lower Division Courses

1A-1B. Elementary Swahili. (4). Formerly 1A-1B. Four 1-hour recitation sessions and one 1-hour laboratory per week. A semester of A and B is recommended for a total of 12-14 months' study. (SP)
2A-2B. Elementary Language Tutorial. (3,3). Formerly 2A-2B. Course may be repeated for credit. To be arranged. Semester Prerequisites: Requires special permission. Application to Linguistics office. Especially designed tutorial for individuals or small groups needing instruction in a language not normally offered on the Berkeley campus. (F,SP)
5. Language and Linguistics. (4). Formerly 20. Three 1-hour lectures and one 1-hour discussion section per week. An introduction to the scientific study of language. (F,SP)
11. Writing Systems. (3). Formerly 11. Three 1-hour lectures per week. Examines different writing systems in terms of their historical origin and their cognitive properties. (SP)
16. The English Vocabulary. (3). Formerly 16. Three 1-hour lectures per week. The sources and the resources of the English lexicon. The structures, meanings, formal properties, and pronunciation of complex words in English. Native and borrowed word-formational processes. The development of technical terminologies. Eymology and semantic change. (F,SP)
51. The Politics of Language. (3). Formerly 51. Three 1-hour lectures per week. Dialects, prestige forms, bureaucratic, male and female language, politeness and indirectness, language planning, bilingualism, language attitudes. Enrollment limited to fifteen students. (SP)
52. Language in Literature. (3). Three 1-hour lectures per week. An examination of some of the ideas about language that can be found in literary works (e.g., Swift’s Gulliver’s Travels, Orwell’s Nineteen Eighty-Four), and their relevance to the linguist’s understanding of language structure.
53. Poetics. (3). Two 1½-hour meetings per week. An introduction to some of the ideas about language that can be found in literary works (e.g., Swift’s Gulliver’s Travels, Orwell’s Nineteen Eighty-Four), and their relevance to the linguist’s understanding of language structure.
90A-90B. Lower Division Seminar. (2,2). May be repeated for credit. One 2-hour or two 1-hour meetings per week. A seminar class for freshmen and sophomores.

Upper Division Courses

100. Introduction to Linguistic Science. (3). Three 1-hour lectures and one 1-hour section per week. Semester Prerequisites: 5 or concurrent enrollment. Quarter Prerequisites: 20. A basic technical introduction to linguistic science. Practice in phonetics, phonology, and transcription; practice in phonological and morphological analysis; basic steps in grammatical parsing and textual analysis. (F,SP)
110. Introduction to Phonetics and Phonology. (4). Formerly 110. Three 1-hour lectures and one 1-hour section per week. Semester Prerequisites: 20 or concurrent enrollment. Quarter Prerequisites: 20 or concurrent enrollment. Description, transcription, and analysis of human speech sounds in their physiological and acoustic aspects, especially as this aids our understanding of sound change and the psychological mechanisms serving speech. (F)

111. Phonological Analysis. (3). Three 1-hour lectures per week. Semester Prerequisites: 110. Research methods in phonetics and phonology.

150. Morphology. (3). Formerly 125. Three 1-hour lectures and one 1-hour section per week. Semester Prerequisites: 20. An introduction to the study of meaning and sentence structure, beginning with transformational grammar and extending to current approaches. (SP)


122. Language Typology and Linguistic Universals. (3). Formerly 135. Three 1-hour lectures and one 1-hour section per week. Semester Prerequisites: 120. Issues in language typology and linguistic universals. An examination of various linguistic subsystems in different languages. Topics will include interrogatives, pronominal systems, relative clause formation, case systems, etc. (F)

123. Pragmatics. (3). Formerly 153. Three 1-hour lectures per week. Semester Prerequisites: 122. Quarter Prerequisites: 105 or 120. The relation between language use and human actions. Some topics to be emphasized are: conversational logic, speech act theory, politeness, social role, psychological perception of oneself and language, variation in language use. (F)

124. Discourse. (3). Two 1½-hour meetings per week. Semester Prerequisites: 5 or 100. 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. (SP)

130. Comparative and Historical Linguistics. (4). Formerly 145. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 110. The reconstruction of language change. Dialectology. The establishment of language relationships and subgroupings. (SP)

131. Indo-European Comparative Linguistics. (3). Formerly 165. Three 1-hour lectures per week. Semester Prerequisites: 130. Quarter Prerequisites: 145. The affinities of the Indo-European languages and the reconstruction of their common ancestor.

140. Introduction to Field Methods. (3). Formerly 151. Three 1-hour lectures per week. Semester Prerequisites: 110 and 115. Quarter Prerequisites: 110 and 125. 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.

145. Introduction to Applied Linguistics. (3). Formerly 152. Two 1½-hour meetings per week. Semester Prerequisites: 100 and 120. Quarter Prerequisites: 20 and...
Graduate Courses
200. Graduate Proseminar in Linguistics I. (3). New Course since Spring 1983. Two 1 1/2-hour meetings per week. Semester Prerequisites: Graduate standing. Required of graduate students during first year in program. A close reading of selected works in the linguistic tradition. (SP)

201. Graduate Proseminar in Linguistics II. (3). New Course since Spring 1983. Two 1 1/2-hour meetings per week. Semester Prerequisites: 200. Required of graduate students during their first year in program. Reading of syntactic, semantic, and phonological writings in the "generative" tradition. (F)

210. Methods in Phonological Analysis. (3). New Course since Spring 1983. Two 1 1/2-hour meetings per week. Semester Prerequisites: 200. Required of graduate students during their first year in program. Reading of syntactic, semantic, and phonological writings in the "generative" tradition. (F)

211. Problems Course in Phonology. (3). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1 1/2-hour meetings per week. Semester Prerequisites: 210. Issues in phonological theory as they bear on the analysis of selected problems in phonological description and analysis.

212. Advanced Phonetics and Phonology. (3). Formerly 220 and 222. Two 1 1/2-hour meetings per week. Semester Prerequisites: 210. The psychoacoustical and psychological bases of speech production and perception. (SP)

214. Language and Music. (3). Formerly 255. Course may be repeated for credit. Two 1 1/2-hour meetings per week. A seminar of selected problems in the realm of language and music.

215. Advanced Morphology. (3). New Course since Spring 1983. Course may be repeated for credit. Two 1 1/2-hour meetings per week. Semester Prerequisites: 210 and 220. Quarter Prerequisites: 115 and 200. Quarter Prerequisites: 120 and 125. Examination of complex morphological systems. Issues in the theory of word morphology.

216. Word Formation. (3). Formerly 220. Two 1 1/2-hour meetings per week. Semester Prerequisites: 115 and 120. Quarter Prerequisites: 125 and 120. An investigation of selected problems in derivation and compounding and their relevance to grammatical theory.

217. Linguistic Implications of Lexicology and Lexicography. (3). Formerly 229. Two 1 1/2-hour meetings per week. Semester Prerequisites: 200. The broader issues in studying individual lexical problems and in inventorying a whole lexical stock, with illustrations from different languages.

220. Syntax and Semantics I. (3). New Course since Spring 1983. Credit and grade to be awarded upon completion of the sequence. Two 1 1/2-hour meetings per week. Semester Prerequisites: Graduate standing. The problems, methods, and explanations of syntax and semantics. (F)

221. Syntax and Semantics II. (3). New Course since Spring 1983. Credit and grade to be awarded upon completion of the sequence. Two 1 1/2-hour meetings per week. Semester Prerequisites: 220. Contemporary issues in syntax and semantics. Continuation of 220. (SP)

230. Historical Linguistics. (3). New Course since Spring 1983. Two 1 1/2-hour lectures per week. Semester Prerequisites: 130 or consent of instructor. Quarter Prerequisites: 145. The scholarly tradition of historical and comparative linguistics. Methods of reconstruction. (SP)

231. Historical Semantics. (3). Formerly 243. Two 1 1/2-hour meetings per week. Semester Prerequisites: 200. Synchronic variation and diachronic change in the realm of language.

235. History of Linguistics. (3). Formerly 261. Course may be repeated for credit. Two 1 1/2-hour meetings per week. Semester Prerequisites: Consent of instructor. Course may be repeated for credit. Two 1 1/2-hour meetings per week. Semester Prerequisites: Consent of instructor. Course may be repeated for credit. Two 1 1/2-hour meetings per week. Semester Prerequisites: Consent of instructor. Course may be repeated for credit. Two 1 1/2-hour meetings per week. Semester Prerequisites: Consent of instructor.
290D. Pragmatics. (3). Semester Prerequisites: Consent of instructor.
290E. Phonology. (3). Semester Prerequisites: Consent of instructor.
290F. Diachronic Linguistics. (3). Semester Prerequisites: Consent of instructor.
290G. Language Variation. (3). Semester Prerequisites: Consent of instructor.
290H. Linguistic Reconstruction. (3). Semester Prerequisites: Consent of instructor.
290I. Typology and Language Universals. (3). Semester Prerequisites: Consent of instructor.
290J. Lexicology. (3). Semester Prerequisites: Consent of instructor.
290K. Eyymology. (3). Semester Prerequisites: Consent of instructor.

298. Special Group Study. (2-4). Formerly 298. Course may be repeated for credit. To be arranged. Semester Prerequisites: One full year of graduate study at Berkeley or consent of graduate adviser. (F,SP)

302. Individual Study. (1-6). Formerly 302. Course may be repeated for credit. Credit based on satisfactory/unsatisfactory basis. To be arranged. (F,SP)

601. Individual Study for Master's Students. (1-6). Formerly 601. Course may be repeated for credit. Units may not be used to meet either unit or residence requirements for a master's degree. To be arranged. Individual study involves comprehensive or language requirements in consultation with the field adviser. (F,SP)

602. Individual Study for Doctoral Students. (1-6). Formerly 602. Course may be repeated for credit. May not be used for unit or residence requirements for the doctoral degree. Course may be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: One full year of graduate work at Berkeley or consent of graduate adviser. Individual study 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. (F,SP)

Professional Courses

301. Teaching Practice and Instruction. (2,4). Formerly 301. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. 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. Analysis of Linguistic Problem Sets. (2). Formerly 302. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour session per week. Semester Prerequisites: 110, 120 and 115 or 122 or consent of instructor. Quarter Prerequisites: 110, 120, and 122 or 125. Analysis and construction of data sets, in phonology, syntax, semantics, and historical/comparative linguistics, with respect to their usefulness in teaching beginning linguistics. (F,SP)

303. Syllabus Preparation. (2). Formerly 303. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour session per week. Practice in the design of courses of study in linguistics. (F,SP)

356. Teaching English as a Second Language. (3). Formerly 356. Three 1-hour lectures per week. Semester Prerequisites: 110 and 120. Quarter Prerequisites: 110, 105 or 120. Principles and techniques of language teaching, survey of current ESL texts, preparation of ESL materials, interpreting of linguistic analyses for ESL teachers (no auditors). (F,SP)

Interdepartmental Studies Courses

Graduate Courses

IDS237A-237B. Cognitive Science Seminar. (1-1). Formerly 237A-237B. One 1½-hour lecture and one 1½-hour discussion per week. Semester Prerequisites: Consent of instructor. Weekly presentations by local and visiting researchers of a range of topics in Cognitive Science, with ensuing discussion. Sponsoring Depart- ments: EECs, Linguistics, Philosophy, and Psychology. (F,SP)

IDS237A-237B. Cognitive Science Seminar. (1-1). Formerly 237A-237B. One 1½-hour lecture and one 1½-hour discussion per week. Semester Prerequisites: Consent of instructor. Weekly presentations by local and visiting researchers of a range of topics in Cognitive Science, with ensuing discussion. Sponsoring Depart- ments: EECs, Linguistics, Philosophy, and Psychology. (F,SP)

Logic and the Methodology of Science

Group Major Office, 731 Evans Hall, 642-2065

Professors:

- Ernest W. Adams, Ph.D. (Philosophy)
- John W. Addison Jr., Ph.D. (Philosophy)
- David Blackwell, Ph.D. (Statistics, Mathematics)
- Manuel Blum, Ph.D. (Electrical Engineering and Computer Sciences)
- Charles S. Chihara, Ph.D. (Philosophy)
- William Craig, Ph.D. (Philosophy)
- Donald Davidson, Ph.D. (Philosophy)
- Lester E. Dubins, Ph.D. (Mathematics, Statistics)
- H. Harrington, Ph.D. (Mathematics)
- John C. Harsanyi, Ph.D. (Philosophy, Economics)
- Leo J. Hendricks, Ph.D. (Philosophy)
- J. Frits Staal, Ph.D. (Philosophy, South Asian Studies)
- Alfred Tarski, Ph.D. (Mathematics, Emery Sugar)

Associate Professors:

- Alan Code, Ph.D. (Philosophy)
- George Myro, Ph.D. (Philosophy)

The Group in Logic and the Methodology of Science offers an interdisciplinary program of study and research leading to the Ph.D. degree. Although the Department of Mathematics and the Department of Philosophy each offers a Ph.D. degree toward which a student may write a dissertation in logic, the interdisciplinary program is designed for those with a broad interest in logic and the methodology of science. The Group major in mass communications is ad-

Mass Communications

Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-2628

Faculty Advisory Committee: Todd Giltin, Head Ad- viser (Sociology), Bertrand Augst (Comparative Lit- erature), Jack Clinit (Political Science), W. Russell Ellis (Architecture), Donald Hansen (Education), Karl Jackson (Political Science), Thomas Leonard (Journalism), Leo Lowenthal (Sociology), John G. Myers (Business Administration), Janice Perlin (Graduate College), Roger Trick (Public Policy), Harold Wilensky (Sociology), Ray- mond Wollfing (Political Science).

Group Major in Mass Communications

The group major in mass communications is ad-

Major Program

Requirements. One course from each of the following four groups:

1. History 78, History 124A, History 124B or History 131B;
2. Political Science 1 or Political Science 100;
3. Anthropology 3, Economics 1, Psychology 1, So- ciology 1 or Sociology 3;

These courses must be completed (or enrolled in) when applying for admission to the major.

Requirements for Graduation (in addition to the prerequisites for admission to the major):

A. The following three core courses in mass com- munication: Mass Communications 101; Mass Communications 102; Mass Communications 103.
B. One of the following methods courses or se- quences: Anthropology 100B/M - 190C/N; Political Science 3; Political Science 132A; Political Science 132B; Political Science 133; Psychology 101; So- ciology 5; Sociology 105.
C. Five or six different courses from the following list. No student may count the major more than three courses offered outside the College of Letters and Science. Anthropology 144, Anthropology 149, Anthropology 165, Anthropology 186, Business Administration 165, Business Administration 169,

Any exceptions or substitutions must be approved by the Group Major adviser.

The College of Letters and Science requires that 30 upper division units be completed in the major. Students who have used an upper division History or Political Science course to satisfy the prerequisites, or who have used an upper division course to satisfy the methods requirement, will normally satisfy this Sociology 110, Sociology 140, Sociology 160, Sociology 30 unit requirement by taking five courses from the elective list (C, above). Students who have used lower division courses to satisfy these requirements will normally need to take six courses from the elective list to total 30 upper division units in the major.

Honor Program. To be admitted to the honors program, a student must have attained at least a 3.3 grade-point average in the University and a 3.3 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. An honor study program is also available in Mass Communications H195, a one semester honors colloquium.

Lower Division Courses

10. Mass Communications in America: An Introduction. (4). Formerly 10. Two 1-hour lectures plus two 1-hour sections per week. Semester 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)

11. Mass Communications in America: An Introduction. (4). New Course since Spring 1985. Two 2-hour seminars per week. An introduction to the process of mass communication, including: 1) the role of mass media in society; 2) the components of the communication process; 3) media as professional environments; 4) interpersonal and mass communication compared; 5) the potential impact of new technologies. (SP) Not offered 1984-85

Upper Division Courses

101. The Structure of Mass Communications. (4). Formerly 101. Two 1½ hour lectures plus two 1½ hour sections per week. Semester Prerequisites: 10 and sophomore standing, or permission of the instructor. Quarter Prerequisites: A and sophomore standing. Analysis of contemporary structures of mass communications, primarily in capitalist societies, with historical background on the popular press, radio and television. The organization of mass and entertainment. Comparison with other societies. (SP)

102. The Effects of the Mass Media. (4). Formerly 102. Two 1½ hour lectures plus two 1½ hour sections per week. Semester Prerequisites: 10 or permission of the instructor. Quarter Prerequisites: 10. Introduction to the study of communication effects, with special emphasis on normative analytic models, the effects of television, and the effects of mass media exposure on attitude change. (F)

103. The Communications Media in Public Policy. (4). Formerly 103. Two 1½ hour lectures plus two 1½ hour sections per week. Semester Prerequisites: 10 or permission of the instructor. Quarter Prerequisites: 10. The context for policy affecting the communications media, including legal constraints, governmental institutions, media interests and public interest groups. Effects of the media on politics (e.g., bi-partisan issue and portrayal of special political candidates) will be assessed. Other current policy issues (e.g., special privileges for journalists and interactive cable TV) will be examined. (SP)

H195. Honors Colloquium. (3). Formerly H195A-195B. One 3-hour seminar per week. Semester Prerequisites: Open only to seniors in the group major in Mass Communications. Under the supervision of the instructor, students will work toward preparing thesis papers in the field, basing their work on theoretical considerations and, where applicable, analyzing empirical data. (SP)

197A. Media and Society. (4). Formerly 197. One 3-hour seminar plus ten to twelve hours field laboratory per week. Semester Prerequisites: Consent of instructor required. Audience: Upper division majors. Radio and television in terms of access, social organization and impact. Seminar topics: audience, objectivity, ownership and control; content and content analysis; alternative media; ethics and law; professional organizations and plazas; national and local news magazines; television and radio stations; newspapers. (SP)

197B. Social Issues in Publishing. (4). Formerly Field Studies 1960-1967. One 3-hour seminar and ten to twelve hours of field laboratory per week. Semester Prerequisites: Consent of instructor required. Audience: Upper division majors. In terms of access, social organization and impact. Seminar topics: audience, objectivity, ownership and control; content and content analysis; alternative media; ethics and law; professional organization and plazas; national and local news magazines; television and radio stations; newspapers. (F)

197C. Directed Group Study for Advanced Undergraduates. (4). Formerly 197C. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Regulations set by College of Letters and Science. Seminars for the group study of selected topics not covered by regularly scheduled courses. Topic to be announced. (F,SP)

199. Supervised Independent Study for Advanced Undergraduates. (1-4). Formerly 199C. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Regulations set by College of Letters and Science. Independent study and research by arrangement with faculty. (F,SP)

Mathematics

Department Office, 670 Evans Hall, 642-6550

Professors:
John W. Addison Jr., Ph.D.
Keith Miller, Ph.D.
William L. Arveson, Ph.D.
Calvin C. Moore, Ph.D.
William G. Bade, Ph.D.
Arthur O. Ogus, Ph.D.
George M. Bergman, Ph.D.
Andrew P. Oog, Ph.D.
Sheryl R. Berger, Ph.D.
Berestoy, Ph.D.
David Blackwell, Ph.D.
Edmund J. Pinney, Ph.D.
Hans J. Bremermann, Ph.D.
Murray H. Protter, Ph.D.
Paul H. Church, Ph.D.
Paul L. Chernoff, Ph.D.
Julia Robinson, Ph.D.
Alexander J. Chorin, Ph.D.
Marina Ratner, Ph.D.
Heinz O. Cordes, Ph.D.
John L. Rhodes, Ph.D.
Gerard Deltour, Ph.D.
Kenneth A. Ribet, Ph.D.
René Jacques De Vogelaere, Ph.D.
Julia Robinson, Ph.D.
J. de Vogelaere, Ph.D.
Stephen P. Diliberto, Ph.D.
Merwixe A. Rosenberg, Ph.D.
Istvan Fary, Ph.D.
Donald E. Sarason, Ph.D.
Jacob Feldman, Ph.D.
Richard R. Schoen, Ph.D.
David A. Freedman, Ph.D.
Abraham Steinfeld, Ph.D.
David Gale, Ph.D.
Jack H. Silver, Ph.D.
David Goldschmidt,Ph.D.
R. Stephen Smale, Ph.D.
D. Wolff, Ph.D.
Alberto Grunbaum, Ph.D.
Robert M. Solow, Ph.D.
C. Ole Heid, Ph.D.
Edwin H. Spanier, Ph.D.
A. Harrington, Ph.D.
Anda. R. Spanier, Ph.D.
Robert C. Hartshorne, Ph.D.
Morris W. Hirsch, Ph.D.
Henry Helson, Ph.D.
Leon A. Henkin, Ph.D. (Chair)
Renee S. Hofer, Ph.D.
Joseph P. Howarth, Ph.D.
Gerhard P. Hochschuld,Ph.D.
Stephen P. Hsu, Ph.D.
Wu-Yi Haiang, Ph.D.
Michael Katz, Ph.D.
William Kahn, Ph.D.
Michael Katz, Ph.D.
Henry Karl, Ph.D.
Iving Kaplanski, Ph.D.
Richard M. Karp, Ph.D.
Richard L. Karp, Ph.D.
Karl Kateto, D.Sc.
J. T. Kemeny, Ph.D.
John L. Kelley, Ph.D.
Frances E. Kemeny, Ph.D.
Robson D. Kirby, Ph.D.
Igor M. Kemeny, Ph.D.
Michael Klane, Ph.D.
Richard M. Klaz, Ph.D.
Lester E. Dubins, Ph.D.
Robert M. Katz, Ph.D.
John W. Kemeny, Ph.D.
Lester E. Dubins, Ph.D.

General Major Requirements. Both major programs require a lower division base of Mathematics 1A-1B and 50A-50B. Courses 16A-16B are not an acceptable alternative. The minimum upper division major requirements are as follows: Major in Mathematics. (a) Courses 104, 185, 113A, 113B (b) One course from each of two of the following three subject areas: I. Computing (100, 128A) II. Geometry (140, 141, 142) III. Logic and foundations (125A, 135) (c) At least eight upper division courses in all.

With the approval of the major adviser, students may count not more than two mathematically intensive courses in computer science, statistics, physics, astronomy, mathematical economics, or other sciences toward the major in mathematics.

Major in Applied Mathematics. (a) 104, 113A, 185 (b) 112 or 113B, and 128A (c) 3 additional upper division courses, approved by a major adviser, which make a coherent and interesting set of the applied areas such as: Actuarial Science, Classical Mechanics, Computer Science, Decision Theory, Economics, Fluid Mechanics, Geophysics, Mathematical Biology, Numerical Analysis, Operations Research, Probability Theory, Systems Theory. Many other clusters are also available.

Honors Program. In addition to completing the requirements for the major in mathematics or major in applied mathematics, students in the honors program must (a) earn a grade-point average of at least 3.5 in upper division and graduate courses in mathematics and at least 3.3 in all courses taken in the University; (b) complete course 198 in which they will write a senior honors thesis, or pass two graduate mathematics courses with a grade of at least A-; (c) receive the recommendation of their major adviser. Students interested in the honors program should consult with their major adviser at least two semesters before graduation.

Preparation for Graduate Study

Students preparing for graduate work in mathematics are strongly advised to acquire a reading knowledge of two foreign languages, from among French, German and Russian. Course H117, designed to challenge the student's ability to do creative thinking, is useful for students preparing for graduate work. Undergraduate students also often take one or more of the following introductory graduate courses: 202A-202B, 214, 228A-228B, 250A-250B.

Lower Division Courses

A. P. Algebras and Trigonometry. (2). Formerly P. No credit will be given to students who take Math P after completing any other course in the department with the...
exception of Math 10. Two 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: Two years of high school math. A review of algebra, graphs, functions, trigonometry, logarithmic functions, trigonometry, inverse functions, complex numbers, binomial theorem and conics. Designed for students who wish to prepare for calculus. Two units recorded credit, but recognized as four units of work in computing study lists. (F,SP)

PS. Algebra and Trigonometry. (1-2). Formerly PS. One or two units recorded credit, but recognized as two or four units of workload in computing study lists. Open consulting. Semester Prerequisites: Two years of high school math. A self-paced version of Mathematics 000P. (F,SP)

1A-1B. Analytic Geometry and Calculus. (4,4). Formerly 1A-1B-1C. Students will receive no credit for 1A or 1B after taking 2A or 3; 2 units for 1A after 16A, no credit for 1A after 16B, and 2 units for 1B after 16B. Two 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: Three and one-half years of high school math, including trigonometry and analytic geometry. Recommended for Math 1A: At least 610 on the CEEB MAT test (I or II), or at least 36 on the diagnostic test given by the Math Department. Students with AP credit should consider choosing a course more advanced than 1A. An introduction to differential and integral calculus, with analytic geometry of one variable. The course is major for majors in engineering and natural sciences. Some lecture sections may have a third lecture hour weekly and/or some workshops; these would not cover new material and student attendance would be strictly optional. (F,SP)

1A5-1BS. Self-Paced Study in Calculus. (1,1-4). Students will receive no credit for 1A5-1BS after taking 2A or 3. Open consulting. Semester Prerequisites: Three and one-half years of high school math, including trigonometry and analytic geometry. Formerly 1CS. A self-paced version of Mathematics 1A-1B. Reduced credit for students who have taken part(s) of 1A-1B-1C or 16A-16B. Simultaneous enrollment in both sections is possible. Unit credit and grades assigned at the end of each semester, depending on the number of study units completed. Units of credit can be adjusted upward. (F,SP)

2A-2B. Introduction to Analysis and Applied Calculus. (4,4). Formerly 2A-2B. Students will receive no credit for 2A and 2B after completing 50B. Three 1-hour lectures and three 1-hour sections per week. Semester Prerequisites: Three and one-half years of high school math, including trigonometry and analytic geometry. Formerly 1A-1B. Two 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: Three and one-half years of high school math, including trigonometry and analytic geometry. Formerly 1CS. A self-paced version of Mathematics 1A-1B. Reduced credit for students who have taken part(s) of 1A-1B-1C or 16A-16B. Simultaneous enrollment in both sections is possible. Unit credit and grades assigned at the end of each semester, depending on the number of study units completed. Units of credit can be adjusted upward. (F,SP)

3. Accelerated Freshman Calculus. (6). Students will receive no credit for 3 after taking 1B or 2A. Three 1-hour lectures and two 1-hour sections weekly. Semester Prerequisites: One year of high school calculus, or consent of instructor. Quarter Prerequisites: One year of high school calculus. Three 1-hour lectures and one 1-hour section weekly. Semester Prerequisites: Three 1-hour lectures and one 1-hour section per week. Semester Prerequisites: Two years of high school math, including trigonometry. Inequalities, absolute value, graphs of simple functions, the Riemann integral, continuity, rates of change and differentials, increasing and decreasing functions, basic properties of log, exp, cos, sin, introduction to integration, fundamental theorem of calculus, properties of the integral, integration by substitution and integration of polynomials of revolution and arc length. Some lecture sections may have a third lecture hour weekly and/or some workshops; these would not cover new material and student attendance would be strictly optional. (F,SP)

16A-16BS. Self-Paced Study in Analytic Geometry and Calculus. (1,3-3). Unit credit and grades assigned at the end of each semester, depending on the number of study units completed. Units of credit can be adjusted upward. Open consulting. Semester Prerequisites: Two years of high school algebra plus plane trigonometry. Formerly 16A-16BS. Self-paced instruction covering the material of 16A-16B. Reduced credit for students who have taken part(s) of 1A-1B-1C or 16A-16B. Simultaneous enrollment in both sections is possible. (F,SP)

17. Accelerated Analytical Geometry and Calculus. (5). New Course since Spring 1983. No credit after 1A, 2A, or 3. Three 1-hour lectures and two 1-hour discussion sections per week. Quarter Prerequisites: Sections of the 50A-50B-50C series. Covers the material of Math 16A and 16B in one semester rather than two. (F)

50A. Sophomore Mathematics. (4). Formerly a portion of the 50A-50B-50C series. Three 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: 1B or 2A or 3. Quarter Prerequisites: 1C. 50A-50B covers on a sophomore level: Ordinary differential equations. Basic linear algebra. Introduction to partial differential equations; Fourier series. (F,SP)

50H-50B. Honors Sophomore Mathematics. (4,4). Formerly 50H-50B-50C. Three 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: Same as 50A-50B. This is the honors class corresponding to 50A-50B. There is greater emphasis on theory and challenging problems; the material is rearranged in a more logical order. Recommended for students who enjoy mathematics. (F,SP)

50B. Sophomore Mathematics. (4). Formerly a portion of the 50A-50B-50C series. Three 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: BOB or 2B. Quarter Prerequisites: 1C. 50A-50B covers on a sophomore level: Ordinary differential equations. Basic linear algebra. Introduction to partial differential equations; Fourier series. (F,SP)

51. Introduction to Linear Algebra. (3). Formerly 51. Students will receive no credit for 51 after taking 50B. Two 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: 1B, 2A, 3, or 16B. Quarter Prerequisites: 1C. Matrix algebra, simultaneous linear equations, vector spaces, linear transformations, determinants, eigenvectors. (SP)

55. Discrete Mathematics. (3,3). Formerly 55. Students will receive no credit for 55 after taking 113A. Two 1-hour lectures and two 1-hour sections per week. Semester Prerequisites: 3B, 18 or 16B. Quarter Prerequisites: 1C or 18B. Logic, mathematical induction, finite series, the principle of recursion, combinatorics, trees, introdution to graphs, algebraic structures, probability. Emphasis on topics of interest to students of computer science. (F,SP)

99. Supplementary Work in Lower Division Mathematics. (1-3). Formerly 99. Course may be repeated for units. Pre-Querter Prerequisites: Some units in a lower division Mathematics class. Students with partial credit in lower division mathematics courses may, with consent of instructor, complete the credit under this heading. (F,SP)

Upper Division Courses

100. Computational Mathematics. (3,3). Formerly 115M and 116C. Course may be repeated for credit if approved by the Mathematics Adviser. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Vary according to instructor. Syntactic and semantic completeness of a higher level language. Exploration and application to more than one branch of Mathematics among group theory, number theory, systems of ordinary differential equations, complex analysis, geometry. Prerequisites and specific topics will vary. (SP)

104. Introductory and Intermediate Analysis. (4). Formerly 104A and 104B. A second-year course in analysis. Two 1-hour lectures per week. Semester Prerequisites: 50B or 2B. Quarter Prerequisites: 50B. This course requires at least 12 hours per week of effort including time spent in class and outside reading and preparation. Same as 104. Recommended for students who enjoy mathematics. Very good emphasis on theory and challenging problems. (F)

105. Integration. (3). Formerly 105. Three 1-hour lectures per week. Semester Prerequisites: 104. Quarter Prerequisites: 104A. Null sets and the Riemann integral, construction and properties of Lebesgue measure, the Lebesgue integral and convergence theorems, Fubini's theorem, absolutely continuous functions and differentiation, completeness, and Fourier series. (F,SP)

112. Linear Algebra. (3). Formerly 112. Three 1-hour lectures per week. Semester Prerequisites: 51, 50B, or 111. For students in engineering or mathematical, natural, or social sciences. The course will build toward a concrete knowledge of matrix theory than is 113B. Characteristic equations, values and vectors; orthogonal and unitary vector spaces, orthogonal, unitary, and hermitian matrices; quadratic forms, hermitian forms, and diagonalization of normal matrices; Introduction to infinite-dimensional spaces. (F,SP)

113A-113B. Introduction to Abstract Algebra. (4,4). Formerly 113A-113B-113C. Three 1-hour lectures per week. Semester Prerequisites: 51, 50B, or 111. Quarter Prerequisites: 50B, 51, or 111. Three 1-hour lectures per week at least 12 hours per week of effort, including time spent in class and in outside reading and preparation. Sets, groups, rings, fields, polynomials. Vector spaces, linear transformations and matrices, dual vector spaces, determinants, characteristic values, similarity, canonical forms, unitary spaces, unitary similarity, quadratic forms. (F,SP)

H113A-H113B. Introduction to Abstract Algebra. (4,4). Formerly H113A-H113B-H113C. Three 1-hour lectures per week. Semester Prerequisites: Same as 113A-113B. Honors version of 113A-113B. This course requires at least twelve hours per week of effort including time spent in class and outside reading and preparation. (F,SP)

115. Introduction to Number Theory. (3). Formerly 115. Three 1-hour lectures per week. Semester Prerequisites: 50B, 51 or 111. Division congruences, fundamental number theory, primes, selected topics: divisors, Diophantine analysis, continued fractions, partitions, quadratic fields, asymptotic distributions, additive problems. (F,SP)

H117. Mathematical Problem Seminar. (3). Formerly H117. May be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Recommended for students with strong interest in mathematical background and interest. Problems calling for original thought and various mathematical approaches. May include advanced topics developed through problems and open research problems. (F)

120A-120B. Analysis for Applied Mathematics. (3,3). Formerly 120A-120B-120C. Three 1-hour lectures per week. Semester Prerequisites: 50B or 2B. Quarter Prerequisites: 50B or 2B. Quarter Prerequisites: 50B or 2B.

121A-121B. Mathematical Tools for the Physical Sciences. (3,3) Formerly 121A-121B-121C. Three 1-hour lectures per week. Semester Prerequisites: 50B or 2B. Quarter Prerequisites: 50C or 2B. Functions of a complex variable, Fourier series, infinite-dimensional linear systems, introduction to infinite-dimensional systems. Infinite-dimensional linear systems, orthogonal expansion, and partial differential equations arising in mathematical physics. Similar to 104 and 185 or 120A-120B, but with more emphasis on applications. (F,SP)

123. Ordinary Differential Equations. (3) Formerly 123. Three 1-hour lectures per week. Semester Prerequisites: 50B or 2B. Functions of a complex variable, continuity, differentiability, and Riemann integration. Their arithmetic. Construction of the real numbers. Axioms of choice and its consequences. (F,SP)

H135. Introduction to the Theory of Sets. (3) Formerly H135. Three 1-hour lectures per week. Semester Prerequisites: 113A and 104. Quarter Prerequisites: 113B and 104A. Honors section corresponding to course 135 for exceptional students with strong mathematical inclination and motivation. Emphasis is on rigor, depth, and hard problems. (F)

140. Metric Differential Geometry. (3,3) Formerly 140. Three 1-hour lectures per week. Semester Prerequisites: 104 or 120B or 121B. Quarter Prerequisites: 104B or 120C or 121C. Frenet formulas, isometric inequity, local theory of surfaces in Euclidean space, first and second fundamental forms. Gaussian and mean curvature, isometric immersions, the Gauss-Bonnet-Von Dyck Theorem. (F,SP)

141. Elementary Differential Topology. (3) Formerly 141. Three 1-hour lectures per week. Semester Prerequisites: 104 or equivalent and linear algebra. Quarter Prerequisites: 104B 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 of moduli 2. (SP)

142. Elementary Algebraic Topology. (3) Formerly 142. Three 1-hour lectures per week. Semester Prerequisites: 104A and 113A. Quarter Prerequisites: 104A and 113A. The topology of one and two-dimensional spaces: manifolds and triangulation, classification of surfaces, Euler formula, plus further topics at the discretion of the instructor. (F)

145. Boolean Algebra. (3) Formerly 145. Three 1-hour lectures per week. Semester Prerequisites: 125A. Postulates; treatment as rings or lattices; relation to sentential calculus and calculus of classes; infinite operations; atoms; subalgebras, ideals, direct products; representation theorem. Not offered 1984-85.

160. History of Mathematics. (3) Formerly 160. Three 1-hour lectures per week. Semester Prerequisites: 50B and 113A. Quarter Prerequisites: 50C and 113A. History of algebra, geometry, analytic geometry, and calculus from ancient times through the seventeenth century, and selected topics from more recent mathematical history. (SP)

163. Tutorial in Upper Division Mathematics. (3) Formerly 163. May be repeated for credit with consent of instructor. Flexible. Semester Prerequisites: Consent of instructor: Emphasis is placed on the individual's experience in discovering and explaining mathematics. Subjects of which may be covered are game theory, category theory, differential topology, mathematical foundations of quantum mechanics, general theory of ordinary differential equations, and classical linear groups. Content varies. Not offered 1984-85.

170. Linear Programming, Games, Models of Exchange. (3) New Course since Spring 1963. Three 1-hour lectures per week. Semester Prerequisites: 50C or 50B. Topics include linear programming, matrix games, models of production and exchange. Treats properties of the models and methods for calculating their behavior.

185. Introduction to the Theory of Functions of a Complex Variable. (3) Formerly 185. Three 1-hour lectures per week. Semester Prerequisites: 104A. Quarter Prerequisites: 104A. 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 the Theory of Functions of a Complex Variable. (3) Formerly H185. Three 1-hour lectures per week. Semester Prerequisites: 104A. Quarter Prerequisites: 104A. Honors section corresponding to course 185 for exceptional students with strong mathematical inclination and motivation. Emphasis is on rigor, depth, and hard problems. Not offered 1984-85.


188. Mathematical Models In Physics and Engineering. (3) Formerly 188. Three 1-hour lectures per week. Semester Prerequisites: 112 or 113B; 185 or 120B or 121B. Quarter Prerequisites: 112 or 113C; 185 or 120C or 121C. Designed primarily for mathematics majors with little or no background in the physical sciences. Study of the relationship between mathematical concepts such as discrete and continuous spectra, resolvents of linear operators, group invariance, and physical concepts of conservation and propagation. (F)

191. Experimental Courses in Mathematics. (1-4) Formerly 191. May be repeated for credit. Flexible. Semester Prerequisites: Consent of instructor. The topics to be covered and the method of instruction to be used will be announced at the beginning of each semester that the course is offered. Not offered 1984-85.

196. Honor Thesis. (3) Formerly 196. May be repeated for credit. Unscheduled. Semester Prerequisites: Admissions to the Honors Program; an overall CPA of 3.30 in the major. Independent study of an advanced topic leading to an honors thesis. (F,SP) Varies as announced

199. Supervised Independent Study and Research. (1-4) Formerly 199. Must be taken on a pass/credit basis. Flexible. Semester Prerequisites: The standard college regulations for all 199 courses. (F,SP)

Graduate Courses


209. Operator Algebras. (3). Formerly 209A. Three 1-hour lectures per week. Semester Prerequisites: 202A-202B-202C. Quater Prerequisites: 206A-206B. Elementary C*-algebra theory. Connections with group representations. Basic von Neumann algebra theory. Density theorems, normal operators. Further topics may include: basic K-theory of C*-algebras, applications to physics such as the Stone-von Neumann theorem, automorphism groups, C*-dynamical systems. (F)

210. Nonlinear Functional Analysis. (3). Formerly 206. Three 1-hour lectures per week. Semester Prerequisites: 202A-202B-202C. Quarter Prerequisites: 206A-206B-206C. Fixed-point theorems, Monotone and accretive operators. Non-linear semigroups and evolution equations. Application to PDE. Topics are selected by the instructor. (F)

211. Mathematical Theory of Fluid Mechanics. (3). Formerly 211. Three 1-hour lectures per week. Development of the fundamental equations describing the behavior of fluid continuum followed by the treatment of special topics selected to exhibit different physical situations, analytical techniques, and approximate methods of solutions. (SP)

212. Several Complex Variables. (3). Formerly 212A-212B. Three 1-hour lectures per week. Semester Prerequisites: 113B or 202A-202B or their equivalents. Quarter Prerequisites: 206A-206B-206C or their equivalents. Power series developments, domains of holomorphy, Hartogs' phenomenon, pseudo convexity and plurisubharmonicity. The remainder of the course may include: analytic geometry and Stein manifolds, or the theory of analytic subvarieties and spaces. (F)


220. Applied Mathematics for Physical Sciences and Engineering. (3). Formerly 220A-220B. Three 1-hour lectures per week. Semester Prerequisites: 120B, 121B, or both 104 and 185. Quarter Prerequisites: 120C, 121C, or both 104 and 185. Ordinary and partial differential equations of mathematical physics and engineering. Special functions. (F)


224A-224B. Mathematical Methods for the Physical Sciences. (3). Formerly 224A-224B-224C. Three 1-hour lectures per week. Semester Prerequisites: 112 or 113B; 104 and 185, or 121A-121B, or 120A-120B. Quarter Prerequisites: 112 or 113C; 104A and 185, or 121A-121B-121C, or 120A-120B-120C. Introduction to the theory of differential equations and difference equations. Linear differential equations and systems. Partial differential equations. Green's function. Operator theory, with applications to one-parameter unitary groups, eigenfunction expansions, perturbation theory. (F)


226A. Abstract Machines and Languages. (3). Formerly 226A-226B-226C. Three 1-hour lectures per week. Semester Prerequisites: 113B and 135. Consistent induct. Quarter Prerequisites: 113C and 135 or content of instructor. 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-computing variables. (F)

226B. Semigroups and Machines. (3). Formerly 226B-226C. Three 1-hour lectures per week. Semester Prerequisites: 226A or content of instructor. Semigroups, wreath products, prime decomposition theorem, application to finite state machines, algebraic theory of complexity. (F)

227A-227B. Theory of Recursive Functions. (3). Formerly 227A-227B. Three 1-hour lectures per week. Semester Prerequisites: 225B. Quarter Prerequisites: 225C. Recursive sets of natural numbers; characterizations, significance, and classification. Relativization, degrees of unsolvability. The recursion theorem. Constructive ordinals, the hyperarithmetical hierarchy, the analytical hierarchy. Recursive objects of higher type. A: (SP) B: Not offered 1984-85.

228A-228B. Numerical Solution of Differential Equations. (3). Formerly 228A-228B. Three 1-hour lectures per week. Semester Prerequisites: 124A-124B. Ordinary differential equations; elementary methods, including Runge-Kutta and predictor-corrector methods.

236A-236B. General Theory of Algebraic Structures. (3). Formerly 236A-236B-236C. Three 1-hour lectures per week. Semester Prerequisites: 113A and 135. Structures defined by operations and/or relations, and their homomorphisms. Classes of structures determined by identities. Constructions such as free objects, objects presented by generators and relations, ultraproducts, direct limits. Applications of general results to groups, rings, lattices, etc. Course may emphasize study of specific categories, category-theory and adjoint functors, or other aspects. (F)

250A. Groups, Rings, and Modules. (3). Formerly 250A. Three 1-hour lectures per week. Semester Prerequisites: 113A and 113B or their equivalents. Quarter Prerequisites: 113A-113B-113C or their equivalents. (3). Rings, modules, including the Jordan-Holder theorem and the Sylow theorems. Basic theory of rings and their ideals. Unique factorization domains and principal ideal domains. Modules. Chain conditions. Fields, including the field of rational functions, theory of finite fields, and transcendence degree. (F)

250B. Field Theory. (3). Formerly 250B-250C. Three 1-hour lectures per week. Semester 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. (3). Formerly 251. Three 1-hour lectures per week. Semester Prerequisites: 250A. Topics such as: Noetherian rings, rings with descending chain condition, theory of the radical, homological methods. Not offered 1984-85.

252. Representation Theory. (3). Formerly 252. Three 1-hour lectures per week. Semester Prerequisites: 250A. Structure of finite dimensional algebras, applications to representations of finite groups, the classical linear groups. Not offered 1984-85.

253. Homological Algebra. (3). Formerly 253. Three 1-hour lectures per week. Semester Prerequisites: 250A. Modules over a ring, homomorphisms and tensor products of modules, functors and derived functors, homological dimension of rings and modules. (SP)


257. Group Theory. (3). Formerly 257. Three 1-hour lectures per week. Semester Prerequisites: 250A. Topics such as: generators and relations, infinite discrete groups, groups of Lie type, permutation groups, character theory, solvable groups, simple groups, transfer and cohomological methods. (F)

258. Classical Harmonic Analysis. (3). Formerly 258. Three 1-hour lectures per week. Semester Prerequisites: 250A, 206A or a basic knowledge of real, complex, and linear analysis. Measure and integration, product measures, convergence and summability, conjugate functions, Hardy spaces, boundary behavior of analytic and harmonic functions. Additional topics at the discretion of the instructor. Not offered 1984-85.

259. Transformation Groups. (3). Formerly 259. Three 1-hour lectures per week. Semester Prerequisites: 215A and 214. Topological groups, Haar measure, general theory of topological transformation groups, the existence of slices and applications, the Smith theory of periodic transformations. (SP)

260. Abstract Harmonic Analysis. (3). Formerly 260. Three 1-hour lectures per week. Semester Prerequisites: 250A, 206A or 206B. Topological groups, Haar measure, Pontryagin duality, and structure theory of locally compact abelian groups, Peter-Weyl theorem, approximation theorems, alternative study of harmonic analysis on commutative groups, or else head in the direction of group representations for noncommutative locally compact groups. (SP)

261A-261B. Lie Groups. (3). Formerly 261A-261B- 261C. Three 1-hour lectures per week. Semester Prerequisites: 250A 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. (F,SP)

265. Differential Topology. (3). Formerly 265. Three 1-hour lectures per week. Semester Prerequisites: 214 plus 215A or some familiarity with algebraic topology. Approximations, degrees of maps, vector bundles, tubular neighborhoods. Introduction to Morse theory, handlebodies, cobordism, surgery. Additional topics selected by instructors: characteristic classes, classification of vector bundles, embeddings, singularities of maps. (F)

271. Topics in Foundations. (3). Formerly 271. May be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars. (F,SP)

272. Advanced Numerical Analysis. (3). Formerly 272. May be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Topics of current interest in numerical analysis and its applications. Not offered 1984-85.

273A. Ordinary Differential Equations. (3). (F)

273B. Initial Value Problems. (3).

273C. Boundary Value Problems. (3).

273D. Finite Element Methods. (3).

273E. Topics in Numerical Linear Algebra. (3).

273F. Topics in Computational Physics. (3).

273G. Nonlinear Equations and the Minimization of Functions. (3).

273H. Monte Carlo Methods. (3).

273J. Ill-Posed Problems. (3).

273K. Inverse Problems. (3).

274. Topics in Algebra. (3). Formerly 274. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars. (SP)

275. Topics in Applied Mathematics. (3). Formerly 275. May be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars. Not offered 1984-85.

276. Topics in Topology. (3). Formerly 276. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars. Not offered 1984-85.

277. Topics in Differential Geometry. (3). Formerly 277. May be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars. (F,SP)

278. Topics in Analysis. (3). Formerly 278. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Advanced topics chosen by the instructor. The content of this course changes, as in the case of seminars. (F,SP)

280A-280B. Mathematical Theory of Relativity. (3,3). Formerly 280A-280B-280C. Three 1-hour lectures per week. Semester Prerequisites: 140 or consent of instructor. Quarter Prerequisites: 140. Special theory of relativity, reformulation of classical physical theories in relativistic form, principle of equivalence, Einstein's theory of gravitation, astrophysical and cosmological problems. Additional topics chosen by the instructor. A: (SP) B: Not offered 1984-85.

290. Seminars. (1-6). Formerly 290. May be repeated for credit. Topics in foundations of mathematics, theory of numbers, numerical calculations, analysis, geometry, topology, algebra, and their applications, by means of lectures and informal conferences; work based largely on original memoirs. (F,SP)

295. Individual Research. (1-9). Formerly 295. May be repeated for credit. Sections 1-20: letter grading; sections 21-60: SU grading by appointment. Intended for graduate students for the Ph.D. (F,SP)

299. Reading Course for Graduate Students. (1-6). Formerly 299. May be repeated for credit. Sections 1- 20: letter grading; sections 21-60: SU grading by appointment. Investigation of special problems under the direction of members of the department. (F,SP)

600. Individual Study for Master's Students. (1-6). Formerly 500. May be repeated for credit. Topics chosen by the instructor. Individual study for the comprehensive or language requirements in consultation with the field adviser. (F,SP)

Professional Courses

300. Teaching Workshop. (3). Formerly 300. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour lectures per week, plus class visits. Designed for teaching assistants. With little or no teaching experience, the course consists of practice teaching, alternatives to standard classroom methods, guided group and self-analysis of videotapes, reciprocal classroom visitations, and an individual project. (F,SP)

301. Undergraduate Math Instruction. (1-2). New Course since Spring 1983. May be taken for one unit by special permission of instructor. Course may be repeated once for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Permission of Student Learning Center; Sophomore standing and at least B- average in 2 semesters of lower division Mathematics courses, or else Freshman standing and at least B average in Math 1A and 1B. Two to three hours per week. Not offered 1984-85.

Interdepartmental Courses

Upper Division Courses

311. Introduction to Mathematical Economics. (3). Students who have taken Economics 104 will receive no credit for IDS 103. Three hours of lecture per week. Semester Prerequisites: Math 50A-50B. Selected topics illustrating the application of mathematics to economic theory. This course is intended for upper division students in mathematics, statistics, the physical sciences, and engineering, and for economics majors with adequate mathematical preparation. prerequisites in mathematics are required. Sponsoring Departments: Mathematics and Economics. (SP)

Medieval Studies

Program Office, 322 Wheeler Hall
Chair: Anne Middleton; Graduate Adviser: Suzanne Fleischman (French)

Medieval studies are currently undertaken in a joint degree program designed to preserve the established major of training in a major subject, while broadening the student's experience in other aspects of the field. The degree granted in recognition of this extra achievement is the Ph.D. with a joint designation, for example, "Ph.D. in English and Medieval Studies." Each student is expected to fulfill the Ph.D. requirements of the major department of study, which administers the program of study. In addition, each student must major in two outside departments, one of which is History (unless that is the department of the major). The program includes a special examination in Latin, consisting of representative passages from medieval authors. Interested students should apply for admission to the
**Microbiology and Immunology**

**Department Office, 3573 Life Sciences Building, 642-3771**

**Professors:**
- Phyllis E. Blair, Ph.D.
- Alexander Glazer, Ph.D.
- Marian E. Koshland, Ph.D.
- Leon Wofsy, Ph.D. (Chair)
- Barry Knowles, Ph.D.
- Hiroshi Nikaido, M.D.
- David Zusman, Ph.D.

**Associate Professors:**
- Robert L. Bumsted, Ph.D.
- Dennis Ohman, Ph.D.
- William Bleazard, Ph.D.

**Assistant Professors:**
- Phyllis E. Blair, Ph.D.
- Marla G. Miller, Ph.D.
- D. Michael Cook, Ph.D.

**Senior Lecturers:**
- Boby Good, M.D., Ph.D.
- Phyllis E. Blair, Ph.D.
- Hiroshi Nikaido, M.D.
- David Zusman, Ph.D.
- Dennis Ohman, Ph.D.

**Adjunct Professor:**
- H. Claudia Henny, Ph.D.

**Graduate Advisers:**
- Mrs. Blair, Mr. Glazer, Mr. Mishell, Mr. Chinn, Mr. Nakano, Mr. Zuman

**Graduate Advisers:**
- Mrs. Good, Mr. Leighton

Students who are interested in the major in microbiology are urged to consult the major adviser concerning the specific courses to be taken as a basis for the major.

The Department of Microbiology and Immunology offers an undergraduate major in microbiology, and graduate training in both microbiology and immunology. The undergraduate major, administered according to two plans, provides training in microbiology at the upper division level on the basis of preparation at the lower division level in general biology and physical science. Plan I is strongly recommended for all students who plan to undertake subsequent graduate work. Honor students with a special interest in immunology may arrange an individual major program in this area with the approval of the undergraduate adviser.

## The Major

**Minor Scholarship:** Required for graduation in the major. Students are required to complete 3 or 4 of the courses listed below, plus a minimum of 6 units of additional upper division coursework in other pertinent subjects in the biological sciences, such as immunology, hematology, parasitology, histology, endocrinology, and applied aspects of microbiology.

**Honor Program:** With the consent of the major adviser, students with an overall grade-point average of 3.3 or higher and a grade-point average of 3.3 or higher in courses in the major may apply for admission to the honors program. Students enrolled in the program must take at least 4 units of research courses (H195 and/or H196) and must present the results of their research in a poster at the annual meeting of the Society for General Microbiology. The honors program adviser will help plan honors programs individually; approval of the program by the honors program adviser is required. The honors program adviser is authorized to exempt students in the honors program from requirements in the study of particular courses sequences of courses in the major. Students interested in enrolling in the program should consult the honors program adviser (Mrs. Blair).

## Preparation for Graduate Study

### Lower Division Courses

- **6. Microbiology and Defense. (2). Formerly 6. No credit for students who have completed 8 or 10. Must be taken on a passed/not passed basis.** One 2-hour session per week. Semester Prerequisites: High school biology; Freshman status. Lectures and discussion concerning the organism's biological defenses against its environment. Topics will be limited in number, but explored in depth suitable for freshmen who plan to major in a biological science. (SP)

### 8. Cancer and Immunology. (1) New Course since Spring 1983. Students who have taken 6 or 10 will receive no credit for 8. Must be taken on a passed/not passed basis. One 1-hour session per week. Semester Prerequisites: High school biology; freshman status. Lectures and discussion concerning the factors involved in the development of cancer and the role that the immune system can play in its prevention. Topics will be limited in number but explored in depth suitable for freshmen who plan to major in a biological science. (F) Odd years only.

### 10. The Microscopic World. (3) Students who have received credit for 8 or 10 will receive only two units for 10. Must be taken on a passed/not passed basis. Two 1½-hour lectures per week. Semester Prerequisites: High school chemistry or Chemistry 1A; high school biology or Biology 1A. An introduction to the biology of microorganisms and the immune system; the fundamental principles of and major advances in microbiology and immunology. Intended for students interested in microbiology, chemistry, and in those not majoring in a biological science. (F) Odd years only.

### Upper Division Courses

- **100. Introduction to Microbiology. (3). Formerly 102 or 100A. Three 1-hour lectures per week. Semester Prerequisites: Biology 1A, Chemistry 5, Chemistry 8A, 8B. Quarter Prerequisites: Biology 1A, Chemistry 5 and 8A-8B. A survey of general microbiology which introduces the methodology of microbiology and stresses the basic biological properties of microorganisms, and prokaryotic cells in posterior, including their growth, physiological diversity, structure, and ecology. (F) 100L. Microbiology Laboratory. (3). Formerly 102L or 101A. One 4-hour laboratory per week. Semester Prerequisites: 100 (may be taken concurrently). Quarter Prerequisites: 102 and 100A. Experimental disease course designed for those who plan to acquire the isolation of bacteria from natural habitats, methods of culture and microscopic observation, and the structural and physiological features of microbial cells. (F)

### 103. Introductory Immunology. (5). Formerly 103 Must be taken on a passed/not passed basis. Two 1½-hour lectures and one 2-hour discussion per week. Semester Prerequisites: Biology 1A; Chemistry 102. One 4-hour laboratory per week. Semester Prerequisites: 102. Examines the immune system; cellular and humoral immunity; antigen-antibody reactions; antibody molecules; immunoglobulin genes; cells and molecular mediators that regulate immune responses. (F) 150. Molecular Genetics of Microbial Cells. (3). Formerly 100B. Two 1½-hour lectures per week. Semester Prerequisites: 100, Chemistry 100A or 102 (may be taken concurrently). Quarter Prerequisites: 100A; Biochemistry 102. Formerly 100B. Genetic and biochemical approaches to the study of the structure and function of microbial cells. Covers microbial metabolism and its regulation, genetic regulation of microbial genes, including plasmid biology, transposable elements, and recombinant DNA methodology, and the properties of bacterial viruses. (SP) 153A. Experimental Problems in Microbiology and Immunology. (2). Formerly 101B. One 1-hour lecture and three 3-hour laboratory periods per week during the first one-half semester. Semester Prerequisites: 100L; Chemistry 5. Quarter Prerequisites: 102L or 101A; Chemistry 5. Laboratory projects designed to acquaint students with biochemical and genetic techniques to the study and manipulation of bacteria, their viruses, plasmids, and other molecular aspects of microorganisms. Illustrates principles presented in course 150, and required of all Plan 1 majors. (SP) 153B. Experimental Problems in Microbiology and Immunology. (2). Formerly 102. One 1-hour lecture and 9 hours of laboratory per week for second one-
H190. Research Seminar. (2-4). Formerly H190. May be repeated for credit. Offered in different sections by faculty. Required of graduate students. Approved by the regulations listed on page 187. (F,SP)

H196. Laboratory Research. (2-4). Formerly H196. May be repeated for credit. Offered in different sections by faculty. Required of graduate students. Approved by the regulations listed on page 187. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Senior standing; honors list. Schedule to be arranged. Semester Prerequisites: Consent of instructor. Open to all students, but enrollment restricted by the regulations listed on page 187. (F,SP)

Graduate Courses

202A. Advanced Immunology. (3). Formerly 202A. Two 1½-hour lectures and one hour of discussion per week. Semester Prerequisites: Undergraduate courses in biology, immunology, and genetics, or consent of instructor. The immune response; antigen-antibody reactions; structure and function of antibody molecules; immunoglobulin genes, both structural and regulatory; lymphocyte differentiation; cellular interactions; and mechanisms of immunity and tolerance. (F)

202B. Cellular Immunology. (3). Formerly 202B. Two 1½-hour lectures and one hour of discussion per week. Semester Prerequisites: 103 or 204A or the equivalent. Quarter Prerequisites: 103 or 204A. Cellular Immunology: Structure and function of lymphocytes and accessory cells; the major histocompatibility complex; the idiotype network; bacterial adjuvants; and immunoregulatory mediators. (SP) Even years only.

202L. Immunology Laboratory. (1-4). Formerly 202L. Course may be repeated for credit. Two 1½-hour lectures and one 1½-hour laboratory per week. Semester Prerequisites: 103 or 204A or consent of instructor. Students will work on projects involving a variety of molecular and cellular immunological techniques and participate in seminars on the application of experimental immunological methods to current research problems. Students with specialized needs may take portions of the course on a modular basis. (SP)

203. Microbial Metabolism. (3). Formerly 203C. Course may be repeated for credit when topics change. One 1½-hour lecture and one 1½-hour seminar and discussion per week. Semester Prerequisites: 100, 150, or equivalent; Biochemistry 100A-100B or equivalent; course in molecular genetics recommended. Quarter Prerequisites: 100A-100B or the equivalent; Biochemistry 100A-100B-100C or the equivalent. Selected subjects in the physiology of various microorganisms, with special emphasis on the regulation of gene expression in prokaryotic systems. Genetic and biochemical approaches will be stressed. Open to advanced undergraduates. (Related course on eukaryotic systems, Biology 215, is available in alternate years.) (F) Odd years only.

212. Seminar in Current Research. (1). Formerly 212. May be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion period per week. Semester Prerequisites: Graduate standing in the Department of Microbiology and Immunology. Requires of all first-year graduate students in Microbiology and Immunology. (F,SP)

214. Introduction to Research. (3-6). Formerly 214. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Graduate standing in the Department of Microbiology and Immunology, Group in Microbiology, or consent of instructor. Advanced graduate students are encouraged to take this seminar as a way of becoming familiar with ongoing research interests in the Department. This seminar is designed to familiarize graduate students with the lecture courses taught by visiting scientists and scholars. (F,SP)

295. Special Topics. (1-3). Formerly 295. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Open to qualified students to prepare themselves for the various examinations required of candidates for the...
Middle Eastern Studies

Group Major Office, 301 Campbell Hall, 642-0108

Head Undergraduate Adviser: Professor Wm. Brinner, 699 Evans, 642-6182/3757.

This program offers an opportunity to study a region, a discipline or thematic concerns, encompassing a specialized field or field of interest, within its own country and its historical and cultural context. It aims to provide a broad introduction to the Middle East and East, encompassing the Arab world, Turkey, Iran, and Israel. This program is designed to allow students to pursue a broad and balanced course of study which will familiarize them with the languages, culture, and history of the region, its basic geographic, demographic, social, political and economic characteristics, and with the course of recent political, economic, social, and cultural change. The program draws on over 200 Middle Eastern-related courses available in 25 different departments of the University.

The program is under the supervision of an interdisciplinary committee of faculty members organized through the Center for Middle Eastern Studies at the Institute of International Studies. Students will be assisted in planning their programs by a faculty committee representing several academic departments and by a major adviser who will help to define courses of study which suit individual needs.

Major Program

Lower Division. A Required Introductory Course: Fundamental History and Culture of the Middle East; an introductory course in Middle Eastern history and culture, geography, and current economic, political, and developmental problems. Taught by faculty from the several departments contributing to this program, this course is a prerequisite for upper division courses. B. Additional Courses—Students are required to take two years of a Middle Eastern language: Arabic, Hebrew, Persian, or Turkish. In the case of Arabic and Hebrew, this will entail two upper division courses; in the case of Persian and Turkish, two lower division and two upper division courses.

Upper Division Survey Program. Students will choose at least one course in each of the following three groups, so as to provide a broad introduction to the geography and ethnography of the Middle East, its history and cultures, and current political, economic, and social development.

A. Anthropology 181, The Near East; Geography 166, The Arid Lands.


C. Political Science 142A-142B, Government and Politics in the Middle East; Economics 172, Cases in Economic Development.

Concentration. In addition to the interdisciplinary survey, the student will pursue advanced studies, focusing on a particular region, discipline, or thematic problems within the Middle Eastern region. The program of advanced and more specialized study may be flexibly designed in consultation with the adviser to meet the interest of students and to create a coherent and integrated perspective on some aspect of Middle Eastern affairs. Courses in this part of the program may be selected from any of the courses in the Catalog, Courses in Middle Eastern Studies, and, when available from the Center for Middle Eastern Studies, 207 Moses Hall, in the Division of Special Programs, 301 Campbell Hall. The courses should be selected with a view toward developing a knowledge in the particular aspect of the subject. Specialized fields of study may include advanced language study, religious and cultural studies, history, contemporary trends in economic development and social change, and the impact of imperialism and colonialism on the Middle East, or any topic agreed upon between the student and the adviser. The student will take a total of eight courses in the program. The courses selected may not overlap in survey courses above. The following survey courses programs are given purely for illustrative purposes and do not indicate requirements for the program.

Culture and Language


Near Eastern Studies 140, 141, Islamic Institutions Near Eastern Studies 130, 133, Judaism in Late Antiquity Near Eastern Studies 143A-143B, Islam in Iran

Economic Development and Social Change

Geography 101, Principles of Cultural Geography: Culture and Urban Environments Geography 104, Environmental systems, Zoology, Physiology, and Microbiology. (F,SP)

Honors Program. The student will meet the requirements of the major and all honors courses in the major. A maximum of 36 upper division units. Honors courses are open to honors students on approval of the instructor and adviser.

Graduate Program

The Department offers a program of graduate study leading to the Ph.D. degree. This program emphasizes training and performance in laboratory research. Current areas of research activity include: structure, function, and metabolism of nucleic acids and proteins; chemical events in mutation and recombination; control mechanisms in the growth of microorganisms and plants; and cellular interactions in development. Students interested in pursuing graduate work in molecular biology are advised to obtain a strong background in chemistry, physics, and mathematics, and to be familiar with the basic concepts of biology. Biochemistry and genetics form the specific foundation for much of the instructional work in the Department. The common preparation required of all graduate students is essentially that outlined above for the undergraduate major.

Students are expected to take Molecular Biology 200A and 200B and at least one graduate course chosen in consultation with the graduate adviser. Each student serves as a teaching assistant as a requirement for the Ph.D. degree. Demonstration of reading knowledge of one foreign language chosen from French, German, Japanese, and Russian is required before the qualifying examination can be taken. In the qualifying examination the student must demonstrate proficiency in research as well as a general knowledge of different areas of molecular biology. Incoming students with adequate undergraduate preparation should plan on finishing their Ph.D. requirements, including the dissertation, within five years. Those with deficiencies may require a longer time; such deficiencies, however, should be made up during the first year of graduate work.

Associate Professors:

Steven K. Beckendorf, Ph.D. Michael R. Botchan, Ph.D. Elizabeth H. Blackburn, Ph.D.

Assistant Professor:

Richard M. Harland, Ph.D. D.D.

The Undergraduate Major

The Department administer a program leading to the A.B. degree with a major in molecular biology. The major focus of this program is the description and analysis of biological phenomena at the molecular level.

The Major Program

Lower Division. Chemistry 1A-1B, 8A-8B; Biology 1A-1B; Mathematics 16A-16B; Physics 8A-8B.

Upper Division. Molecular Biology 100A-100B, 101; Biochemistry 100A; Chemistry 130A-130B; related electives (4).

Recommened: The Math 1 and Physics 7 series in place of the Math 16 and Physics 8 series. Additional courses in the life sciences chosen in accordance with a plan approved by the departmental adviser; a reading knowledge of at least one foreign language (French, German, Japanese, or Russian).

Honors Program. With the consent of the major adviser, students may enroll in the honors program no later than the beginning of the senior year. For enrollment in the program and for graduation with honors, a grade-point average of 3.4 or higher is required, both in courses satisfying the requirement of the major and in all courses taken in the University. To complete the honors program, students must complete at least two units of course H190 and one unit of H190 and write a superior thesis based on research. Certain graduate courses in molecular biology will be open to honors students on approval of the instructor and adviser.
Lower Division Courses

10. Introduction to Molecular Biology. (2). Formerly 10. Two 1-hour lectures per week. Semester Prerequisites: Biology 1A, Chemistry 8A-8B or equivalent. Designed for those not specializing in science. The molecular basis of life. Contemporary description of genetics, mutation, evolution, growth, and reproduction, with emphasis on viruses and simple organisms. Extension to higher organisms and medical and social implications. (F,SP)

Upper Division Courses

100A. General Molecular Biology. (4). Formerly 100A-100B. Three 1-hour lectures and two 1-hour discussions per week. Semester Prerequisites: Biology 1A, Chemistry 8A-8B or equivalent. Designed for those not specializing in science. The molecular basis of life. Contemporary description of genetics, mutation, evolution, growth, and reproduction, with emphasis on viruses and simple organisms. Extension to higher organisms and medical and social implications. (F,SP)

100B. General Molecular Biology. (4). Formerly 100B-100C. Three 1-hour lectures and two 1-hour discussions per week. Semester Prerequisites: Biology 1A, Chemistry 8A-8B or equivalent. Designed for those not specializing in science. The molecular basis of life. Contemporary description of genetics, mutation, evolution, growth, and reproduction, with emphasis on viruses and simple organisms. Extension to higher organisms and medical and social implications. (F,SP)

189. Advanced Molecular Biology. (3). Formerly 200B. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Biology 1A-1B or Microbiology 100A; Biochemistry 100A or 102, and physical chemistry. Quarter Prerequisites: Biology 1A-1B or equivalent, or Microbiology 100A; Biochemistry 100A or 102, and physical chemistry. Cell and molecular structure and gene expression in eukaryotes; cellular differentiation, macromolecular synthesis, chromosomal organization. (SP)

202. Research Reviews in Eukaryotic Gene Expression. (1). Formerly 202. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One and one-half hour lecture per week. Presentation and discussion of recent and literature on eukaryotic gene expression. (F,SP)

210. Special Topics in Molecular Biology. (1-3). Formerly 210. Course may be repeated for credit. One hour lecture per week per unit. A course dealing with the areas of current interest in molecular biology. (F,SP)

211. Introduction to Research in Molecular Biology. (4-12). Formerly 211. Course may be repeated for credit. Laboratory research, conferences. Semester Prerequisites: Limited to graduate students in the department. Quarter Prerequisites: Limited to students in graduate program of department. Close supervision of experimental work and the use of individual staff members; an introduction to experimental methods and research approaches in particular areas of molecular biology. (F,SP)

217. Research Reviews in Animal Cells and Viruses. (1). Formerly 217. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour lecture per week. Semester Prerequisites: Consent of instructor. Reports and discussion of general research by staff and students. (F,SP)

220. Molecular Biology of Animal Viruses. (2). Formerly 220. Two 1-hour lectures per week. Genes and chromosomes in eukaryotes; cellular differentiation, macromolecular synthesis, chromosomal organization. (F,SP)

260. Molecular Biology of Animal Viruses. (2). Formerly 260. Two 1-hour lectures per week. Genes and chromosomes in eukaryotes; cellular differentiation, macromolecular synthesis, chromosomal organization. (F,SP)

H190. Research Seminar. (1). Formerly H190. May be repeated for credit. One 1-hour seminar per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: Enrollment in Molecular Biology Honors Program. Course requires attendance at all meetings of the seminar, a seminar paper, and a final examination. (F,SP)

H196. Research. (1-3). Formerly H196. May be repeated for credit. Laboratory research and written report. Semester Prerequisites: Enrollment in Molecular Biology Honors Program. Laboratory research followed by a written report for advanced students under direction of a member of the staff. (F,SP)

198. Current Topics in Molecular Biology. (1-5). Formerly 198. Must be taken on a pass/fail basis. One and one-half hour meeting per week. Semester Prerequisites: Consent of instructor. Group studies of selected topics. (SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a pass/fail basis. Laboratory research and written report. Semester Prerequisites: General O.P.A. of at least 3.0. Enrollment is restricted by regulations listed on page. (F,SP)

Graduate Courses

203. Advanced Molecular Biology. (3). Formerly 203. Two 1½-hour lectures per week and 1-hour discussion per week. Semester Prerequisites: Biology 1A-1B or Microbiology 100A; Biochemistry 100A or 102, and physical chemistry. Quarter Prerequisites: Biology 1A-1B or equivalent, or Microbiology 100A; Biochemistry 100A or 102, and physical chemistry. Genes and functional characteristics of prokaryotic cells and of viruses; biosynthesis of nucleic acids; proteins; metabolic regulation. (F)

Music

Office Department, Office 104 Morrison Hall, 642-2578

Presidents

Philip Brett, Ph.D.
Richard L. Crocker, Ph.D.
Alan B. Scott, Ph.D.
Edwin Dugger, M.F.A., Ph.D.
Daniel Heartz, Ph.D.
Andrew Imbrie, M.A.
Joseph Kerman, Ph.D.
Lawrence Moe, Ph.D.
(University Organist)
Anthony Newcomb, Ph.D.
(Emertus)
John M. Swolchoamer, Ph.D.

Assistant Professors:

Gerard Grisey, Certification
t'etudes superieures

Senior Lecturers:

Jacqueline R. Clark, A.B.
Elizabith Davidson, M.A.

Visiting Ernst Bloch Professor:

Richard Crawford, Ph.D.

University Carillont.

Ronald M. Barnes, M.A.

Visiting Lecturers:

Mirra Abramowitch, A.B.
Benjamin Abramowitch, Ph.D.
Virginia Baker (Violin)
William Body, M.A.
(Trumpet)
(Organ)
(Denish anusopulos, Piano)
(Laurence Goldberg, B.Mus.
(Harpichord)
(Paul Hare, B.S.)
(Peter Hallitas, M.M.
(Viola da gamba)
(Bonnie Hampson (Viola)
(Delbert Henry, M.M.
(Cello)
(Peter magnificent)
(William Klingelhofer, B.Mus.
(French horn)
(C.K. Ladzekpo)

L & S: Molecular Biology / 189

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Visiting Lecturers:

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(French horn)
(C.K. Ladzekpo)
of the major program, but students wishing advanced placement in music or musicianship should consult the Schedule of Classes or the Department Office for examination dates. Two pre-major advisers are available throughout the year to consult with students interested in the music program.

The Major
First Year. Courses A-B; 1A-1B.
Second Year. Courses C-D; 2A-2B; 70A-70B. Recommended: Performance courses.
Third and Fourth Years. (a) Performance—Two courses from the group 140-149, preferably in sequence. (b) Courses 170A-170B. (c) Additional courses to complete the minimum of 24 units in the series for majors 130-179. Interdepartmental courses offered through the Music Department are acceptable for the major.

Semester conversion of major program. Students who have partially fulfilled sequential major requirements under the quarter system (A-B-C-D-E-F; 1A-1B-2A-2B-3A-3B-4A-4B-5A-5B) should consult a Department adviser before enrolling in the equivalent semester system sequence. Students must complete the equivalent of four semester units in order to fulfill the performance course requirement (a).

Honors Program. Adviser: Mr. Heartz. Qualified students majoring in music are invited to consult the adviser concerning studies which they may propose to undertake. Research projects in music history, composition, analysis, performance, or other areas of specialization, will be considered. A minimum of four units of Honors Course (H195) is required of seniors who wish to obtain departmental honors at graduation.

Teaching Training. Consult major advisers.

Graduate Programs
The Department of Music offers programs leading to the M.A. and Ph.D. degrees, with specialties in composition or in scholarship and criticism, including the history of music, analysis, and ethnomusicology (not in music education or performance). All students working for the Ph.D. degree are required to serve as teaching assistants for one year. Applications for admission are considered only once a year for the fall semester; the deadline for application is December 1. Applicants are asked to take the Department's placement examinations in music history and theory (harmony, counterpoint, dictation, sight reading, and languages).

Medieval Studies. Please see Index for further information on Medieval Studies.

Unit value: Some music courses which meet three hours each week offer four units of credit because preparation time exceeds University guidelines. In such History and Literature courses the student is required to devote considerable time each week to listening assignments and/or score analysis in addition to other course requirements. In Theory courses it is estimated that three hours will be required to prepare for each class hour, primarily in the completion of written exercises in the subject.

Group I
Courses open to all students in the University.

Theory
Lower Division Courses
20A-20B. Basic Musicianship. (2). Formerly 10A-10B. Three class hours per week. Fundamentals of music, including notation, sight singing, ear training, and beginning linear analysis. For general students. (F,SP)
25A-25B. Introduction to Music Theory. (4,4). Formerly 254. Three hours of lecture per week. Semester Pre-
requires: Consent of Instructor. A writing course based on traditional harmony. Beginning linear and vertical analysis. For general students. Emphasis on written exercises. (F,SP)
27. Introduction to Music. (4). Formerly 27. Two 1-hour lectures, one 1-hour listening section, and one 1-hour discussion section per week. Devoted to the development of listening skills, and a survey of major forms and types of Western art music. (F,SP)

History and Literature
Studies of the music and music genres of important composers for the general student who has had an introductory music course. Emphasis on required listening assignments with supplementary readings and term papers or projects.

Upper Division Courses
127. History of Western Music. (4). Formerly 127A-127B. Two 1-hour lectures, one 1-hour listening section, and one 1-hour discussion section per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. The evolution of styles of Western music from 1600 to the present. (SP)
129A. Opera. (4). Formerly 129A. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. A study of musical and dramatic aspects of opera. Lectures on selected operas will be supplemented by assigned recordings, performances of the San Francisco Opera, and films of notable performances. (F)
128C. Contemporary Music. (4). Formerly 128C. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. Twentieth-century music, from Stravinsky to the present. Not offered 1984-85.
128D. J.S. Bach. (4). Formerly 128D. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. (SP)
128E. Mozart and Haydn. (4). Formerly 128E. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. Not offered 1984-85.
128F. Music of Johannes Brahms. (4). Formerly 128F. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. Not offered 1984-85.
128H. The Piano Concerto. (4). Formerly 128H. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Quarter Prerequisites: 27. A study of the development of the 19th-century piano concerto. (F)

Ethnomusicology
Lectures, listening assignments, and readings in translation, with live or video-taped performance demonstrations. Laboratory sections offer practical experience performing on instruments indigenous to the culture studied. No previous musical experience is required.
130A. Afro-American Music. (4). Formerly 130A. Three hours of lecture per week. Semester Prerequisites: 27 or consent of instructor. Study of the Afro-American music tradition from its West African origins to the various forms in which it existed at the end of the 19th century. (F)
130B. Afro-American Music. (4). Formerly 130B. Three hours of lecture and 1 discussion section per week. Historical and analytical study of Afro-American music in the 20th century. Emphasis on the evolution of jazz and various forms of popular and religious music. (SP)
131. Music in the United States. (4). Three hours of lecture and one hour of discussion/listening per week. Surveys the "classic" African American music from the 18th century to the present: hymnody, popular song and instrumental music (ca. 1850-1950), fine art music, and Afro-American music (ragtime, blues, jazz). (SP) 1985 Only.
132. Music of the Middle East. (4). Three hours of lecture and two hours of laboratory per week. Music of the Middle East, including folk, art, popular and religious music of the Pan-Islamic and Israeli traditions. (F) 1985 Only.
133A. Music of the Southeast Asia Tradition. (4). Formerly 133A. Three hours of lecture and 2 hours of laboratory per week. Surveys the musics of Indonesia (Java and Bali), Thailand, Cambodia, Laos, Malaysia, and the Philippines—cultures which share instrument types but have developed distinctive musical styles. Not offered 1984-85.
133B. Music of India. (4). Formerly 133B. Three hours of lecture and 2 hours of laboratory per week. Includes the classical music traditions of both North and South India (Hindustani and Carnatic musics). Emphasis on class listening. (SP)
134A. Music of the East Asia Tradition. (4). Formerly 134A. Three hours of lecture and 2 hours of laboratory per week. Surveys the musics of China, Tibet, Korea, Vietnam, and Japan—cultures which share instrument types but have developed distinctive musical styles. Not offered 1984-85.

Performance
Admission to all performance courses is determined by audition during the period of advance enrollment. All courses in this group may be repeated for credit. Performance courses should be taken in a two-semester sequence beginning in Fall.
140. Javanese Gamelan. (2). Formerly 140. May be repeated for credit. Two 2-hour rehearsals per week. A performing course for the study and practice of Indonesian music and instruments. (F,SP)
141. University Symphony Orchestra. (2). Formerly 141. May be repeated for credit. Two 2-hour rehearsals per week. Major compositions for orchestra will be performed. (F,SP)
144. University Chorus. (2). Formerly 144. May be repeated for credit. Two 1½-hour rehearsals per week. Primarily concerned with major works for chorus and orchestra. (F,SP)
146. Chamber Music Ensemble. (2). Formerly 146. May be repeated for credit. Two 2-hour rehearsals per week. Chamber music for string, winds, piano, percussion, and voice. (F,SP)
147. Contemporary Chamber Music Ensemble. (2). Formerly 147. May be repeated for credit. Two 2-hour rehearsals per week. A group organized to perform and study compositions representing recent developments in music. (F,SP)
148. African Music Ensemble. (2). Formerly 148. May be repeated for credit. Two 2-hour rehearsals per week. Primarily concerned with major works for chorus and orchestra. (F,SP)
149. Collegium Musicum. (2). Formerly 149. May be repeated for credit. Two 2-hour rehearsals per week. Performance of Renaissance and Baroque music for voices and instruments. (F)

Group II
Courses primarily for students whose major subject is music.
Note: Musicianship (A-B-C-D), Harmony (1A-1B-2A-2B), and Elementary Piano (405A-405B-405C-405D) are all prerequisites to the major and must be taken concurrently unless the requirement is satisfied by examination.
Lower Division Courses

A-B. Musicianship. (3:3). Three 1-hour meetings per week. Semester Prerequisites: Majors only; A is prerequisite to B. Formerly A-B-C. Ear training, sight singing, and dictation. (F,SP) Sequence begins (F).

C-D. Musicianship. (3:3). Formerly D-E-F Three 1-hour meetings per week. Semester Prerequisites: B is prerequisite to C. C is prerequisite to D. Quarter Prerequisites: Quarter C is prerequisite to Semester C or D. A continuation of A-B. (F,SP) Sequence begins (F).

1A-1B. Harmony. (4:4). Formerly 1A-1B-1C. Three class hours per week. Semester Prerequisites: 1A is prerequisite to 2B. Advanced diatonic, chromatic, and early 20th-century harmony. Emphasis will be on written exercises. (F,SP) Sequence begins (F).

2A-2B. Harmony. (4:4). Formerly 2A-2B-2C. Three class hours per week. Semester Prerequisites: 1B; 2A is prerequisite to 2B. Advanced diatonic, chromatic, and early 20th-century harmony. Emphasis will be on written exercises. (F,SP) Sequence begins (F).

70A-70B. History of Western Music I. (4:4). Formerly 21A-21B-21C. Three hours of lecture and one discussion meeting per week. Semester Prerequisites: 1B or consent of instructor. A survey of music history and criticism, and practice in analytical methods for music of all periods, with emphasis on listening, exercises and papers. The second half of the semester will be devoted to a study of music from 1750 to 1850 and 19th-century music. (SP)

70A. A study of music from 1750 to 1850. For a continuation, see 170A-170B. (SP)

Upper Division Courses

150. Instrumental and Vocal Instruction. (1). Formerly 150. May be repeated for credit if an average grade of B is maintained. One half-hour laboratory per week. Semester Prerequisites: Must be a music major. Advanced private instruction in keyboard, stringed, woodwind, brass, and percussion instruments and in voice. (F,SP)

Theory

Upper Division Courses

151. Introduction to Composition. (4). Three class hours per week. Semester Prerequisites: 2B, 154A, and consent of instructor. A study of motive structure, its extension and elaboration, and forms, such as scherzo, sonata, variation, and song, based on eighteenth- and nineteenth-century models. (SP)

152. Keyboard Harmony. (2). Formerly 100B. Three class hours per week. Semester Prerequisites: 2B and consent of instructor. An analytical study of the syntax of harmony. The student is expected to develop the skill of playing standard harmonic progressions on the piano. (F)

153. Score Reading. (2). Formerly 100C. Three class hours per week. Semester Prerequisites: 2B and consent of instructor. A study of music from ca. 1600 to 1750, with emphasis upon the unique instruments in the Music Department's collection will be studied in detail. Term paper assigned. (SP)

154A-154B. Counterpoint. (4:4). Formerly 101A-101B-101C. Three class hours per week. Semester Prerequisites: 2B. A study of species counterpoint. Regular exercises in two and three voices required. Group discussion and analysis. (F)

B. A study of species counterpoint. Regular exercises required. Analysis of chorale preludes, 2- and 3-part inventions, canons, and fugue expulsions. (SP)


156. Studies in Musical Analysis. (4). Formerly 107A-107B-107C. Three 1-hour meetings per week. Semester Prerequisites: 2B. The study of various analytical techniques and their application to important works of music. (F)


161. Instrumental Conducting. (4). Formerly 111A-111B. Two 2-hour classes per week. Semester Prerequisites: 2B; 152, 153, and 156 recommended. A systematic study of baton techniques and modern orchestral instruments. Students gain experience in reading and conducting modern orchestral scores. (SP)

162. Choral Conducting. (4). Formerly 112A-112B. Two 2-hour classes per week. Semester Prerequisites: 2B, 152, and consent of instructor. A study of choral literature of various styles and periods with emphasis on conducting techniques and score reading. (F,SP)

History and Literature

Analytical and historical studies of the music of important composers and periods in the development of Western music. Emphasis on the detailed study of selected representative compositions, through scores, recordings, and assigned readings.

Upper Division Courses

170A-170B. History of Western Music II. (4:4). Formerly 121A-121B-121C. Three hours of lecture and one discussion meeting per week. Semester Prerequisites: 170A-170B or consent of instructor. An analytic study of the Middle Ages and the Renaissance, with emphasis upon performance practices and styles. (SP)

171A. The Performance of Medieval and Renaissance Music. (4). Formerly 115. Three class hours per week. Semester Prerequisites: 2B and 70B, or consent of instructor; experience in playing an instrument or singing. A study of the music of the Middle Ages and the Renaissance, with emphasis upon performance practices and styles. (SP)

171B. Monteverdi. (4). Formerly 1160. Three hours of lecture per week. Semester Prerequisites: 2B and 70B, or consent of instructor. Not offered 1984-85.

171C. The Performance of Baroque Music. (4). Formerly 116C. Three hours of lecture per week. Semester Prerequisites: 2B and 70B, or consent of instructor; experience in playing an instrument or singing. A study of music from ca. 1600 to 1750, with emphasis upon performance practices and styles. Not offered 1984-85.

171D. J.S. Bach. (4). Formerly 116G. Three hours of lecture per week. Semester Prerequisites: 2B and 70B, or consent of instructor; experience in playing an instrument or singing. A study of music from ca. 1600 to 1750, with emphasis upon performance practices and styles. Not offered 1984-85.

172A. Mozart. (4). Formerly 117A. Three hours of lecture per week. Semester Prerequisites: 2B and 70B, or consent of instructor. Not offered 1984-85.

172C. Schubert. (4). Formerly 117D. Three hours of lecture per week. Semester Prerequisites: 2B and 70B, or consent of instructor. Not offered 1984-85.

200. Workshop in Electronic Music. (4). Formerly 201. Course may be repeated for credit. One 3-hour class meeting and nine hours of laboratory per week. A consideration of compositional machine skills necessary to operate the analog equipment in the electronic music studio; practical application of musical acoustics to the available equipment; compositional assignments. Not offered 1984-85.

201. Seminar: Contemporary Music. (4). Formerly 203. Three class hours per week. Studies in recent contemporary music. (F)


204. Studies in Musical Analysis. (4). Formerly 204. Three class hours per week. The application of analytical principles to a group of compositions and the intensive study of at least one major work. (SP)

205. Canon and Fugue. (4). Formerly 205A-205B. Three class hours per week. Semester Prerequisites: 154B. A study of subjects, countersubjects, answers, expositions, episodes, and canonic procedures. Regular
written assignments, including the composing of complete fugues, required. Not offered 1984-85.

210. Proseminar in Music History. Formerly 208. Three class hours per week. Studies in the history and literature of Western music, dealing with representative composers, music, and topics. The courses listed below will be given in rotation.

210A. Gregorian and Medieval Chant. (4).
210B. Medieval Polyphony. (4).
210D. The Seventeenth Century. (4).
210E. The Eighteenth Century. (4).
210F. The Nineteenth Century. (4).(F)
210G. The Twentieth Century. (4).(SP)

211. Musical Paleography. (4). Three class hours per week. Treatment of musical documents, especially from European Middle Ages and Renaissance, with emphasis on systems of notation. (SP)

212. Seminar: Medieval Studies. (4). Formerly 212A-212B. Course may be repeated for credit. One 3-hour class per week. A highly specialized study of medieval music. The topic will change each time the course is offered. Not offered 1984-85.

213. Seminar: Studies in the Sixteenth Century. (4). Formerly 213. Course may be repeated for credit. Three class hours per week. A highly specialized study of sixteenth-century music. The topic will change each time the course is offered. (SP)

214. Seminar: Studies in Baroque Music. (4). Formerly 216A-216B. Course may be repeated for credit. Three class hours per week. A highly specialized course in Baroque music. The topic will change each time the course is offered. (SP)

215. Seminar: Studies in Classical Music. (4). Formerly 217A-217B. Course may be repeated for credit. Three class hours per week. A highly specialized study in Classic music. The topic will change each time the course is offered. (F)

216. Seminar: Studies in Romantic Music. (4). Formerly 218A-218B. Course may be repeated for credit. Three class hours per week. A highly specialized study in Romantic music. The topic will change each time the course is offered. Not offered 1984-85.

217. Seminar: Jazz. (4). Formerly 219. Course may be repeated for credit. Three class hours per week. A highly specialized jazz. The topic will change each time the course is offered. Not offered 1984-85.

218. Seminar: Problems in Criticism. (4). Formerly 220A-220B. Course may be repeated for credit. Three class hours per week. A specialized course in musical criticism. The topic will change each time the course is offered. Not offered 1984-85.

219. Textual Criticism and Editing. (4). Three hours of class per week. Semester Prerequisites: Consent of instructor. Techniques of editing and musical notation; problems associated with making modern editions of music in older notational systems. Consideration of multiple sources (e.g., discerning filiation among manuscripts and constructing a stemma, different editions of printed sources), and the relation of critical techniques to good performance. Not offered 1984-85.

220. Topics in Asian Music. (4). Formerly 220. Course may be repeated for credit. Three class hours per week. A highly specialized course in ethnomusicology, dealing with problems in research in music of Asian cultures. The topics will change each time the course is offered. Not offered 1984-85

235A. Theory and Methodology of Ethnomusicology I. (4). Formerly 235A. Three class hours per week. An introduction to the ideas, methods, theories, themes, and work of historians, philosophers, musicologists, and other scholars in the field of ethnomusicology. (F)

235B. Theory and Methodology of Ethnomusicology II. (4). Formerly 235B. Course may be repeated for credit. Spring 1985 only. Three class hours per week. An introduction to the ideas, methods, theories, themes, and work of anthropologists, sociologists, folklorists, linguists, and other social scientists in the field of ethnomusicology. (SP)

235C. Topics in Ethnomusicology. (4). Formerly 235C. Course may be repeated for credit. Three class hours per week. A highly specialized course in Ethnomusicology. The topic will change each time the course is offered. Not offered 1984-85.

238. Field Methods in Ethnomusicology. (4). Formerly 238. Course may be repeated for credit. Three class hours per week. Semester Prerequisites: 235A-235B. Techniques, equipment, research and data collection, analysis, documentation, notation, transcription. Not offered 1984-85.

250. Colloquium. (1). Formerly 250. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. About 5 meetings per semester. 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. (F,SP)

258. Group Special Studies. (2-8). Formerly 258. 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)

260. Individual Study for Master's Students. (1-8). Formerly 260. May not be used for unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Semester Prerequisites: For candidates for master's degree. Preparation for the comprehensive or language requirements in consultation with the field advisor. (F,SP)

262. Individual Study for Doctoral Students. (1-8). Formerly 262. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Semester Prerequisites: For candidates for doctoral degree. Study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

270. Professional Preparation for Teaching Assistants in Music. (2-4). Formerly 270. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Special study under the direction of a member with emphasis on the teaching of undergraduate courses in Music. (F,SP)

405A-405B. Elementary Piano. (1;1). Formerly 405A-405B. Students who completed quarter courses 405A or 405B may, with consent of instructor, repeat the course on a passed/not passed basis. One class hour per week. Semester Prerequisites: Open only to majors in music. Required of music majors who do not pass the entrance examination in piano. (F,SP)

405C-405D. Elementary Piano. (1;1). Formerly 405C-405D. Students who completed quarter courses 405C or 405D may, with consent of instructor, repeat the course on a passed/not passed basis. One class hour per week. Semester Prerequisites: Open only to majors in music. Required of music majors who do not pass the entrance examination in piano. (F,SP)

405E-405F. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Semester Prerequisites: Open only to majors in music. Required of music majors who do not pass the entrance examination in piano. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. May not be used for unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Semester Prerequisites: For candidates for master's degree. Preparation for the comprehensive or language requirements in consultation with the field advisor. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Semester Prerequisites: For candidates for doctoral degree. Study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

300. Professional Preparation for Teaching Assistants in Music. (2-4). Formerly 300. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Meetings to be arranged according to units taken. Special study under the direction of a member with emphasis on the teaching of undergraduate courses in Music. (F,SP)

Interdepartmental Studies Courses

Upper Division Courses

IDS135. Mozart and Beaumarchais: The Figaro Cycle. (4). Formerly 135. Three hours of lecture plus extensive listening assignments. Semester Prerequisites: Major in French or Music, or consent of instructor. Beaumarchais' plays as a portrait of European society on the eve of the French Revolution, and their musical settings by Mozart and other composers. Also included will be Mozart's Don Giovanni and Cosi fan tutte, both composed in response to the success of Le Nozze di Figaro. Don Giovanni will be studied in conjunction with Molierie's Don Juan. Sponsoring Departments: Music and French. Not offered 1984-85.

Native American Studies

Major Office, 3415 Dwinelle Hall, 642-7671

Choice of Program

A student can complete the major in Native American Studies in the College of Letters and Science (A.B. degree) or in the Department of Ethnic Studies (A.B. degree). Students in each program are subject to the requirements of the respective College or Department.

Staff and courses in Native American Studies are listed under the section entitled Special Studies: Ethnic Studies (Native American Studies).

Major in Native American Studies

The Native American Studies Program exists to provide a point of academic focus and identity for Native American students and to broaden the understanding of other students interested in the history, culture, and contemporary situations of Native Americans.

The curriculum has been structured to provide courses that deal with both historical and cultural analyses of Native American cultures and contemporary legal and social institutions that affect Native American life. The Program stresses not only 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.

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

Lower Division. (a) 50; (b) 71A-71B; (c) Ethnic Studies 20 or 21.

Upper Division. (a) 103; (b) 110; (c) 15 units of upper division Native American Studies courses; (d) Three upper division courses supportive of major. One course from Ethnic Studies Group Major. Two courses from outside Native American Studies and the Department of Ethnic Studies.

The Honors Program

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 six-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.
Near Eastern Studies

Department Office, 605 Evans Hall, 642-3757

Program Coordinators:
Hamid Algar, Ph.D.
Robert B. Alter, Ph.D.
Guillermo Descola, Ph.D.
Arthur A. Bloch, Ph.D.
William M. Brinner, Ph.D.
Hans-Heinrich Heine, Ph.D.
Mounah A. Khouri, Ph.D.

Associate Professors:
William C. Hickman, Ph.D.
Martin Schwartz, Ph.D.

Assistant Professor:
Cathleen A. Keller, Ph.D.

Visiting Professors:
Vickie Gold, Ph.D.
John E. Huesman, Ph.D.

Visiting Associate Professor:
William J. Fulco, Ph.D.

Visiting Lecturers:
Gail K. Remedio, Ph.D.
Daniel A. Foxing, Ph.D.
Charlotte Grosman
Isaac M. Kikawada, Ph.D.

Major Adviser: Joseph T. Zeidan.

Graduate Adviser: David B. Stronach.

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 offers specialized training in Archaeology, Art History, Assyriology, Egyptology, Hittitology, Iranian studies, Judaic and Islamic studies, and Turkish. For students from other disciplines, the Department provides a wide variety of courses to supplement such related fields as linguistics, history, political science, comparative literature, and anthropology. The Department strongly recommends that graduate students take advantage of courses offered in these fields provided that they are relevant to their fields of study. Credit for such courses will be recognized by the Department, subject to approval of the graduate adviser. Many of the Department’s courses are restricted to a small number of students, thus affording an opportunity for close contact with the instructing staff. To those not studying the language, lecture courses offer a comprehensive body of information on peoples and present Near Eastern civilizations. The Department is one of several participating in the recently formed Graduate Program in Ancient History and Mediterranean Archaeology (see Index for a description of the program). The Department is also participating with the Graduate Theological Union in a joint doctoral degree program in Near Eastern Religions. In addition, the Department is co-sponsoring with the School of Library and Information Studies a concurrent degree program in Near Eastern Studies and Librarianship, leading to the M.A. degree in Near Eastern Studies, and the M.L.S. with two possible specializations: (1) Islamic Bibliography, (2) Jewish Bibliography. For further information consult the departmental office.

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 to supplement their programs with selected courses in Palestinian archaeology, Biblical studies, Semitic epigraphy and philology.

The Majors

A. The Major in Near Eastern Studies

1. In Arabic, Hebrew and Persian, and Turkish: Prerequisite: the elementary courses in the language, or their equivalents. It is recommended that these be taken before the freshman year.

The major requires from 24 to 30 upper division language units, depending upon the language undertaken, plus six upper division lecture units. Major guidelines for each discipline are available in the Departmental office. With the consent of the Department, portions of the requirement may be fulfilled by related courses in other departments.

2. In Assyriology, Hittitology, Old Iranian Studies, and Egyptology: A basic reading knowledge of German is recommended. The major requires from 24 to 30 upper division language units, depending upon the language undertaken, plus six upper division lecture units.

B. The Major in Ancient Near Eastern Archaeology and Art History

1. Mesopotamian Archaeology. This option requires at least 30 semester units that include six lower division and 24 upper division semester units. The six lower division units must be taken from: Near Eastern Studies 10, 15, 16, 17, 18, 20A-20B, 25; Anthropology 2 or another lower division Anthropology course. The 24 upper division units are to be selected from the lecture courses and seminars offered by the Department in the fields of history, archaeology, art and culture. The following courses are required: Near Eastern Studies 120A-120B and 120A-123B. The remainder of the upper division units must be selected from the following list (any substitutions may be approved by the major adviser): Near Eastern Studies 102A-102B, 121A-121B, 122A-122B, 124A-124B; or Anthropology 120, 128, 130, 131, 133, 134, 136.

2. Egyptian Archaeology. This option requires that students take Near Eastern Studies 16, 102A-102B, and Egyptian 100A-100B, 101A-101B. Students also must have eight units from Near Eastern Studies 20A-20B, Near Eastern Studies 15 and Anthropology 244A. Additionally, students must take eight upper division units from the following list: Near Eastern Studies 120A-120B, 121A-121B, 122A-122B, 123A-123B, 124A-124B; History 109A-109B-109C. While it is not required, the Department does recommend some background in French, German, and/or Arabic.

Honors Program. With the consent of the major adviser, a student with an overall grade-point average of 3.3 or higher and a grade-point average of 3.5 or higher in courses completed in the major may apply for admission to the honors program. The honors program consists of completion of the honors course H198, in which the student will prepare a honors thesis in the senior year.

Graduate Program

Graduate programs leading to the M.A. and Ph.D. degrees are offered in the following languages and literatures: Arabic, Hebrew, Persian, and Turkish; and in the following special fields of the Near East: Archaeology, Art History, Assyriology, Biblical and Judaic Studies, Old Iranian Studies, Comparative Semitics, Egyptology, Hittitology, and Islamic Studies.

Degrees

Applicants for graduate study should have fulfilled the equivalent of the departmental requirements for the A.B. or be prepared to satisfy these requirements before advancement to candidacy. Both M.A. and Ph.D. degrees are offered in the major and at least one minor language offered in the Department. If deemed relevant to the major, the minor language may be taken outside the Department with the consent of the graduate adviser.

The M.A. is obtained according to Plan I and Plan II as outlined in the General Catalog (see "The Master's Degree"). In addition to the requirements outlined for the Plan adopted, students must pass a reading examination in French or German (another language may also be required in the field of emphasis). Plan I, the Department's program in Archaeology and Art History: an M.A. thesis and 20 units of coursework, and Plan II, for the departments other programs: 24 units of coursework; a written final examination is required of students to test (a) working knowledge of pertinent languages, (b) general knowledge of the history and civilization of area of emphasis; (c) knowledge and familiarity of other subjects suggested by the student's advisory committee. Two scholastic years are required, either concurrently or in connection with coursework will also be required. Students must satisfactorily complete the requirements for the M.A. to be eligible for the Ph.D. program.

Admission to candidacy in the Ph.D. depends on successful completion of the following requirements: (1) a written examination of one of the two European languages not taken during the M.A. degree (proficiency in another European language germane to the student's field of emphasis may also be required); (2) written and oral sections of the qualifying examinations; and (3) a program of the dissertation prepared during the course of graduate work in the Ph.D. program.

After admission to candidacy the student is to fulfill the requirements for the dissertation as outlined in the General Catalog (see "The Doctor's Degree"). For further information on these graduate programs see the Graduate Assistant in 605 Evans Hall.

Special Programs

The Concurrent Degree Program in Near Eastern Studies and Librarianship is open to qualified candidates with a B.A. degree in Near Eastern Studies who are majoring in either Arabic, Turkish, or Hebrew. The Joint Doctoral Program in Near Eastern Religions is open only to students toward the Ph.D. degree, but all students must first possess an M.A. (or equivalent) in the field of Near Eastern Studies or in a related field provided they have at least two ancient languages suitable to the proposed program. Applicants must be admitted into both the Graduate Theological Union and the University, and the degree is conferred jointly by both institutions.

The graduate program in Ancient History and Mediterranean Archaeology is open to students with backgrounds in Ancient History and Archaeology. The ancient studies faculty of this department are members of the faculty group for this program.

For further details, consult the regulations of the Graduate Division and the graduate adviser in 609 Evans Hall.

Near Eastern Studies

L & S: Near Eastern Studies / 193

Lower Division Courses

10. Introduction to the Near East. (4). Formerly 104A-104B. Three 1-hour lectures and 1 hour discussion per week. The background and present status of the ethnic and religious groups in the Arab states, Turkey, Israel, and Iran. (F)

12. Middle Eastern Religions. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. The major religions, religious trends and experiences of the Middle East from the earliest strata to the present. Readings, discussions, and research papers. (SP)

15. Introduction to Near Eastern Art and Archaeology. (4). Formerly 15. Three 1-hour lectures and one 1-hour discussion per week. A survey-history of the chief languages and writing systems of the Near Eastern continuum, with emphasis on their main characteristics and relationships, and their role in developments of society, literature, and art. (F)

16. Introduction to Islamic Art. (4). Formerly 18. Three 1-hour lectures plus one 1-hour discussion per week. The art and architecture of Islamic lands from the seventh to the seventeenth century. (SP)

17. Introduction to Languages and Scripts of the Near East. (4). New Course since Spring 1983. Three 1-hour lectures plus one 1-hour discussion per week. A survey-history of the chief languages and writing systems of the Near Eastern continuum, with emphasis on their main characteristics and relationships, and their role in developments of society, literature, and art. (F)

18. Introduction to Egyptology. (4). Formerly 25. Three 1-hour lectures plus 1-hour museum study per week. A survey of the art and architecture of ancient Egypt and their relations to the social and political institutions of the times. (F)
20A-20B. History and Culture of Ancient Western Asia. (4:4) Formerly 20A-20B. Three hours of lecture and one hour of discussion per week. A survey of the civilizations of the Near East with special emphasis on ancient Mesopotamia, from their origins to Hellenistic times. (F,SP)


30. Introduction to Judaism. (3). Formerly 35. Three 1-hour lectures per week. The nature of classical Judaism, its major cultural and intellectual expressions in the Middle Ages, and transformations in the modern era.


33. Topics in Near Eastern Studies. (3). New Course since Spring 1983. One three-hour seminar per week. Survey of the ancient Near East with an emphasis on linguistic, historical, and cultural studies. Formerly 20A-20B. Three hours of lecture per week. A survey of the archaeology of Iran from Paleolithic times down to the present. Formerly 175A-175B. Quarter 175A-175B is repeated for credit. Formerly 175A-175B. Formerly 180A-180B. Three 1-hour lectures per week. A survey of the archaeology of Iran from Paleolithic times down to the present. Formerly 180A-180B.


102A-102B. Culture of Ancient Egypt. (4:4). Formerly 175A-175B-175C-1780. Three hours of lecture per week and one hour of discussion per week. Semester Prerequisites: 102A or consent of instructor is prerequisite to 102B. Quarter Prerequisites: Quarter 175A-175B is prerequisite to Semester 102B. A survey of the archaeological and textual materials available for the reconstruction of Egyptian culture and society in the Middle and New Kingdoms. Special emphasis will be given to current historical theories and recent archaeological discoveries. Extensive use will be made of Louvre Museum Egyptian Collection. (F,SP)

103. Religion of Ancient Egypt. (3). Formerly 174A-174B. Three hours of lecture per week. A survey of the beliefs of the ancient Egyptians from the written sources. (F)

104. Selected Topics in Mesopotamian History. (3). Course may be repeated for credit. Three 1-hour lectures per week. The history of Mesopotamian states and culture from 3000 B.C. to the Persian conquest.

105A-105B. Ancient Mesopotamian Documents and Literature. (3:3). Formerly 172A. Three hours of lecture per week. Discussion of original cuneiform sources bearing on the society, religious practices, and academic life of the Sumerians. Assyro-Babylonians, Hitittes, and Hurrians. (F,SP)

120A-120B. Near Eastern Art. (4:4). Formerly 140A-140B-140C. Three hours of lecture and one or two days of discussion per week. The artistic traditions of the ancient Near East from the Neolithic period through the Achaemenid period. (SP)

121A-121B. Islamic Art. (4:4). Formerly 144A. Three 1-hour lectures and one hour of discussion per week. Topics in Islamic art and architecture from the rise of Islam to the present.

122A-122B. Iranian Archaeology. (4:4). Formerly 142. Three 1-hour lectures and one hour of discussion per week. A survey of the archaeology of Iran from Paleolithic times down to the Achaemenid period. Formerly 122A-122B. Mesopotamian Archaeology. (4:4). Formerly 143A-143B. Three 1-hour lectures and one hour discussion per week. A survey of the archaeology of Mesopotamia.

124A-124B. Archaeology of the Ancient Mediterranean. (3:3). Formerly 145A-145B-145C. Three hours of lecture and one hour of discussion per week. The aim of this course is to investigate specific archaeological problems by means of a general survey of archaeological sites in Cyprus, Jordan, Israel, and Syria. The time period covered will be Ceramic Late Neolithic—Middle Bronze (about 5000-1600 B.C.). (F,SP)

130A-130B. History of Ancient Israel. (3:3). Formerly 150A-150B-150C. Three hours of lectures per week. The patriarchal age through the Hellenistic period. (F)

131A-131B. Aspects of Biblical Religion. (4:4). Formerly 151A-151B. Three 1-hour lectures and one hour of discussion per week. The teachings of ancient Israel's sages, sages, and sages on various universal problems.

132. Judaism and Hellenism. (3). Formerly 153. Three hours of lecture per week. The analysis of the impact of Hellenism on Judaism through a detailed study of various apocryphal and pseudepigraphical Apocalyptic writings. Special attention will be given to Wisdom Tradition and the philosophical works of Philo Judeus and their relationship to Greek philosophy and early Christianity.

133. Judaism in Late Antiquity. (3). Formerly 154A-154B. Three 1-hour lectures per week. Reading in translation and discussion of selection of Talmudic Midrashic literature, their use for a history of Jewish thought and their historical development and place within the broader Jewish and gentile context (1st to 8th centuries Common Era). (F)


140. Topics in Islamic Thought and Institutions. (3). Formerly 180A. Course may be repeated for credit. Three 1-hour lectures per week. Selected topics from Islamic intellectual history. (F)

141. Modern and Contemporary Islamic Thought. (3). Formerly 180B. Three 1-hour lectures per week. A survey of leading Muslim thinkers and movements of the past two centuries.

142. Shi'ite Islam. (3). New Course since Spring 1983. Three 1-hour lectures per week. The beliefs, traditions, and practices of the Shi'ite school of Islam. (F)

143A-143B. Islam in Iran. (3:3). Formerly 160A. Three 1-hour lectures per week. A general survey of the history of Iran in the Islamic period, covering the rise and development of religious institutions, the elaboration of the religious sciences, sultans, and sectarian movements.

144. Introduction to Islamic Law. (3). New Course since Spring 1983. Three 1-hour lectures per week. The origins and evolution of the legal precepts of Islam.

145. Islamic Bibliography. (3). New Course since Spring 1983. Course may be repeated for credit. Three 1-hour lectures per week. A survey of primary sources in the Islamic religious sciences.

150A-150B. Arabic Literature in Translation. (3:3). Formerly 181A-182A-182B. Three 1-hour lectures per week. A survey of Arabic literature from its origins in pre-Islamic poetry through its historical development during the Umayyad and Abbasid periods. No knowledge of Arabic is required. (F,SP)

160. Religions of Ancient Iran. (3). Formerly 161A-161B. Three 1-hour lectures per week. Principally devoted to Zoroastrianism and with some attention to Indo-Iranian origins, and relevance of Iranian religion for the history of Hellenistic Gnosticism, Judaism, and Islam.


170A-170B. Turkish Literature in Translation. (3:3). Formerly 164A. Three 1-hour lectures per week. A study of Turkish literature in translation, drawing on texts from the 8th to the 20th century. Readings will be chosen to illustrate the development within specific genres: lyric poetry, drama, folktales, etc.

171. Ottoman Civilization. (3). Formerly 169A-169B. Three 1-hour lectures per week. Religious, social, economic, and legal institutions of the Ottoman period (14th-20th century) will be discussed within a narrative historical framework.

172. Turkish Sufi Literature. (3). Formerly 166. Three hours of lecture per week. An introduction to the study of Turkish Sufism and its major literary works. No knowledge of Turkish is required.

H185. Senior Honors. (2). Formerly H198. Must be taken on a passed/not passed basis. Variable. Semester Prerequisites: Limited to senior honors candidates. Directed study centering upon preparation of an honors thesis. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Variable. Semester Prerequisites: Consent of instructor. Students may enroll in more than one section of 290, but the total number of units of Special Study in any one semester may not exceed 12. (F,SP)

290A. Near Eastern Studies. (1-5). Formerly 290A. Variable. (F,SP)

290B. Arabic. (1-5). Formerly 290B. Variable. (F,SP)

290C. Cuneiform. (1-5). Formerly 290C. Variable. (F,SP)

290D. Egyptian. (1-5). Formerly 290D. Variable. (F,SP)

290E. Hebrew. (1-5). Formerly 290E. Variable. (F,SP)

290F. Iranian. (1-5). Formerly 290F. Variable. (F,SP)

290G. Semitics. (1-5). Formerly 290G. Variable. (F,SP)

290H. Turkish. (1-5). Formerly 290H. Variable. (F,SP)

291A-291B. The Archaeology of Israel and Jordan. (3:3). Formerly 291A. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: 102A-102B or 123A-123B or 124A-124B or consent of instructor. Study of selected sites which illustrate issues, problems or methods in archaeological research. Emphasis on results of archaeo-
292A-292B. Seminar in Near Eastern Archaeology. (4,4). Formerly 292. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: 120A-120B or 123A-123B. Quarter Prerequisites: 140A-140B-140C or 143A-143B. Research into a major aspect or problem of Mesopotamian archaeology. (F,SP)

293A-293B. Seminar in Near Eastern Art. (4,4). Formerly 293. Course may be repeated for credit. Three hours of seminar per week. Semester Prerequisites: Consent of Instructor. Graduate seminar on specific aspects of the arts of Western and Central Asia. Topic to be announced at first seminar meeting. (F,SP)

294A-294B. Seminar in Islamic Art. (4,4). Formerly 294. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor. Topics will vary according to student interest. (F,SP)

295. Supervised Field Research in Archaeology. (8-12). Formerly 295. Course may be repeated for credit. Variable. Full time participation in an archaeological excavation or exploratory survey. 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 semester. (SP)

296. Problems in Egyptian Archaeology. (4,4). Formerly 296. Course may be repeated for credit when subject matter changes. Three hours of seminar per week. Semester Prerequisites: Two semesters of 102 or the equivalent, or consent of Instructor. Quarter Prerequisites: Five quarters of 175 or the equivalent, or consent of instructor. Topics will vary and may deal with a particular chronological period or with a particular class of archaeological material. Work with museum specimens or with field data may be involved. (SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Variable. Semester Prerequisites: Consent of instructor. Special topics in Near Eastern Studies. Topics vary and are announced at the beginning of each semester. (F,SP)

601. Individual Studies for Master's Students. (1-8). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study for the comprehensive or exploratory survey. 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 semester. (SP)

602. Individual Study for Doctoral Students. (1-4). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Variable. 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. (F,SP)

Arabic

Lower Division Courses

1A-1B. Elementary Arabic. (5,5). Formerly 1A-1B-1C. Five 1-hour recitation sessions and 1-hour lab per week. (F,SP) Sequence begins (F).

20A-20B. Intermediate Arabic. (5,5). Formerly 20A-20B-20C. Five 1-hour recitation sessions per week. Semester Prerequisites: 1A-1B-1C. Quarter Prerequisites: 1A-1B-1C or 10. (F,SP) Sequence begins (F).

Upper Division Courses

100A. Arabic Grammar and Syntax. (3). Three hours of lecture per week. Semester Prerequisites: 20A-20B. Quarter Prerequisites: 20A-20B-20C. Formerly 100A and a portion of 100B. Discussion of the grammar, syntax, semantics and styles of Arabic, as reflected in literary texts. (F)

100B. Arabic Grammar and Syntax. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: 100A, or consent of instructor. Formerly a portion of 100B and 100C. Discussion of the grammar, meters, and aspects of Arabic, as reflected in literary texts. Literary texts (see syllabus), organized throughout the semester in an increasing degree of difficulty, are assigned for rapid reading at home and homework. (F,SP)

101A-101B. Spoken Arabic. (3,3). Formerly 101A-101B-101C. May be repeated for additional credit if a different instructor is offered. One 2-hour meeting per week. Semester Prerequisites: 1A-1B. Quarter Prerequisites: 1A-1B-1C. Practice of speaking an Arabic dialect. (F,SP)

104. Literary Arabic Usage. (3,3). Formerly 102A-102B-102C. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 101. Quarter Prerequisites: 20A-20B-20C. Rapid reading of newspapers and literary texts. Training in the usage of the literary language in writing and speaking and development of skill in Arabic penmanship. (F)

105. Classical Arabic Poetry. (3). Formerly 104A-104B. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 101. Quarter Prerequisites: 103A-103B-103C. Reading and literary analysis of classical poetry. (F)

106. Classical Arabic Prose. (3). Formerly 104B-104C. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 20A-20B. Quarter Prerequisites: 103A-103B-103C. Selected readings from various periods. (F)

108. Arabic Religious and Philosophical Texts. (3). New Course since Spring 1983. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 20A-20B. Quarter Prerequisites: 103A-103B-103C. Selected readings from several periods. (F)

109. Modern Arabic Literature: Poetry. (3). Formerly 105A-105B. Course may be repeated for credit. Three hours of lecture/recitation per week. Semester Prerequisites: 20A-20B. Quarter Prerequisites: 103A-103B-103C. Readings from modern Arabic verse. (F)

110. Modern Arabic Literature: Prose Writings. (3). Formerly 105B-105C. Course may be repeated for credit. Three hours of reading/recitation per week. Semester Prerequisites: 20A-20B. Quarter Prerequisites: 103A-103B-103C. Fiction, essays, and drama. (F)

111-111B. Survey of Arabic Literature (in Arabic). (3,3). Formerly 110A-110B-110C. Course may be repeated for credit. Three 1-hour class meetings per week. Semester Prerequisites: 100. Quarter Prerequisites: 103A-103B-103C. This course is designed primarily for majors and graduate students. 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 Postclassical Periods: A literary-historical survey of Arabic literature from the middle of the thirteenth century to the present. (F,SP)

H195. Senior Honors. (2). Formerly H198. Must be taken on a passed/not passed basis. Variable. Semester Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Variable. Instruction in areas not covered by regularly scheduled courses. (F,SP)

Cuneiform

Upper Division Courses

100A-100B. Elementary Akkadian. (3,3). Formerly 100A-100B-100C. Two 1-hour meetings per week. SE-
101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

102A-102B-102C. Egyptian Texts. (3;3). Course may be repeated for credit. Must be taken on a passed/not passed basis. Variable. Semester Prerequisites: Consent of instructor when material varies. Three hours of lecture per week. An analysis, contrastive features of Hebrew and English literature from the European Enlightenment to contemporary linguistic theories. (F,SP)

200A-200B. Reading in Coptic. (3,3). Formerly 200A-200B-200C. Course may be repeated for credit. Three hours of classes per week. Semester Prerequisites: 102A-102B. Three 1-hour meetings per week. Semester Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: Background in German and French recommended. Introduction to Semitic grammar and writing. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)

101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: Background in German and French recommended. Introduction to Semitic grammar and writing. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)

101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: Background in German and French recommended. Introduction to Semitic grammar and writing. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)

101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

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298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)

101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: Background in German and French recommended. Introduction to Semitic grammar and writing. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)

101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: Background in German and French recommended. Introduction to Semitic grammar and writing. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)

101A-101B. Intermediate Egyptian. (3,3) Formerly 101A-101B-101C. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B, Quarter Prerequisites: 100A-100B-100C. Readings in Middle Egyptian hieroglyphic and hieratic texts. (F,SP)

102A-102B. Elementary Coptic. (3,3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: German and Greek recommended. A. Introduction to Sahidic dialect. B. Readings in Sahidic, other dialects. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: Background in German and French recommended. Introduction to Semitic grammar and writing. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Consent of instructor. Special topics in Egyptian. Topics vary and are announced at the beginning of each semester. (F,SP)
Semiotics

Upper Division Courses

100A-100B. Aramaic. (3,3). Formerly Aramaic 100A-100B. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Hebrew 100A-100B. Biblical and Aramaic Semitics, including study of the Aramaic parts of Daniel and Ezra and the inscriptions and papyri from Syria, Egypt, Mesopotamia, and the Persian Empire. Sequence beginning Fall.

101A-101B. Syriac. (3,3). Formerly 101A-101B. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Biblical Aramaic or consent of instructor. Quarter Prerequisites: Language and morphology of the Syriac language. Readings in the Syriac translation of the Bible and in Syriac literature. (F)

195. Senior Honors. (2). Formerly H198. Must be taken on a pass/fail basis. Variable. Semester Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a pass/fail basis. Variable. Semester Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a pass/fail basis. Variable. Enrollment is restricted by regulations shown in the General Catalog. (F,SP)

Graduate Courses

200A-200B. Advanced Persian. (3,3). Formerly 200A-200B. Course may be repeated for credit. Three hours of class per week. Semester Prerequisites: Twelve units of upper division work. Quarter Prerequisites: Reading Twenty-eight 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). Formerly 202A-202B. Course may be repeated for credit. Three hours of class per week. Reading of texts in Avestan, western Middle Iranian, and Sogdian, taken from Zoroastrian, Manichaean, and Buddhist texts.

Persian and Iranian

Lower Division Courses

1A-1B. Elementary Modern Persian. (5,5). Formerly 1A-1B. Five 1-hour meetings per week. (F,SP)

15A-15B. Conversational Persian. (2,2). Formerly 15A. Two 1-hour meetings per week. Semester Prerequisites: Consent of instructor. Practice of spoken Persian as a supplement to elementary Persian. (F,SP)

Upper Division Courses

100A-100B. Intermediate Modern Persian. (5,5). Formerly 1A-1B-1C. Five 1-hour meetings per week. (F,SP)

101A-101B. Selected Readings in Persian Literature. (3,3). Formerly 101A-101B. Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 100A or equivalent. Quarter Prerequisites: 1A-1B-1C. (F,SP)

102A-102B. Readings in Classical Persian Prose. (3,3). Formerly 102A-102B. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 100A or equivalent. Quarter Prerequisites: 101A-101B-101C. Systematic study of representative selections from all periods of classical Persian literature, with attention to the historical and intellectual context. (F)

Graduate Courses

201A-201B. Iranian Philology. (3,3). Formerly 201A-201B. Course may be repeated for credit when subject matter varies. Three hours of class per week. Semester Prerequisites: 110A-110B, 111A-111B, or consent of instructor. Quarter Prerequisites: 110A-110B-110C, 111A-111B-111C, or consent of instructor. Reading of texts in Avestan, western Middle Iranian, and Sogdian, taken from Zoroastrian, Manichaean, and Buddhist texts.

Pre-Islamic Iranian Studies

Upper Division Courses

110A-110B. Pre-Sasanian Persian. (3,3). Formerly 110A-110B. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: 100A-100B or equivalent; background in German or French recommended, but not required. Quarter Prerequisites: 100A-100B-100C. Manichaean Middle Persian texts, with an introduction to Pahlavi. (F)

111A-111B. Old Iranian. (3,3). Formerly 111A-111B. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor; background in German and French recommended, but not required. Texts from the Vendidad and the Yashts; Achaemenid inscriptions. (SP)

Graduate Courses

201A-201B. Iranian Philology. (3,3). Formerly 201A-201B. Course may be repeated for credit when subject matter varies. Three hours of class per week. Semester Prerequisites: 110A-110B, 111A-111B, or consent of instructor. Quarter Prerequisites: 110A-110B-110C, 111A-111B-111C, or consent of instructor. Reading of texts in Avestan, western Middle Iranian, and Sogdian, taken from Zoroastrian, Manichaean, and Buddhist texts.
Turkish

Lower Division Courses

1A-1B. Elementary Modern Turkish. (5-5) Formerly 1A-1B-1C. Five 1-hour meetings per week. (F,SP) Sequence begins (F).

15A-15B. Conversational Turkish. (2-2). Formerly 15A-15B-15C. Course may be repeated for credit. Two hour meetings per week. Semester Prerequisites: 1A-1B. Quarter Prerequisites: 1A-1B-1C. Practice of spoken Turkish as a supplement to intermediate Turkish. (F,SP)

Upper Division Courses

100A-100B. Intermediate Modern Turkish. (5-5,Formerly 100A-100B-100C. Five 1-hour meetings per week. Semester Prerequisites: 1A-1B or equivalent. Quarter Prerequisites: 1A-1B-1C. (F,SP) Sequence begins (F).

101A-101B. Readings in Modern Turkish. (3-3). Formerly 101A-101B-101C. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: 100A-100B or consent of instructor. Quarter Prerequisites: 100A-100B or equivalent. Selected topics from modern Turkish literary works.

102A-102B. Ottoman Turkish Texts. (3-3). Formerly 102A-102B-102C. Course may be repeated for credit. Three 1-hour meetings per week. Semester Prerequisites: 1A-1B or consent of instructor. Quarter Prerequisites: 1A-1B-1C. Study of Ottoman Turkish, with emphasis on Arabic script, from the 13th to the 20th century. (F,SP)

H195. Senior Honors. (2). Formerly H198. Must be taken on a passed/not passed basis. Variable. Semester Prerequisites: Limited to senior honors candidates. Directed study centered upon preparation of an honors thesis. (F,SP)

198. Directed Group Study for Upper Division Students. (1-4, Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Variable. Instruction in areas not covered by regularly scheduled courses. (F,SP)

199. Supervised Independent Study and Research. (1-4, Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Variable. Enrollment is restricted by regulations shown in the General Catalog. (F,SP)

Graduate Courses

200A-200B. Advanced Turkish. (3,3). Formerly 200A-200B-200C. Course may be repeated for credit. Three 2-hour meetings per week. Semester Prerequisites: Twelve units of upper division work in Turkish. Quarter Prerequisites: Twenty-eight units of upper division work in Turkish. Different sections offering a variety of texts from all periods of Turkish literature. (F,SP)

298. Seminar. (1-3). Formerly 298. Course may be repeated for credit. Variable. Semester Prerequisites: Consent of instructor. Special topics in Turkish. Topics vary and are announced at the beginning of each semester. (F,SP)

Neurobiology

Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-6289

Head Advisers: Jeffery A. Winer (642-8227; Head Adviser) (A); Richard Van Slujter (School of Optometry, 522 Minor Hall, 642-1235) (N-2).

Group Major in Neurobiology

The group major program is administered through the Division of Special Programs to which students are referred for all administrative matters, and where they will file their study lists after consultation with the appropriate adviser.

The neurobiology group major is intended for students planning careers related to the study of the nervous system. To understand what is known about the function of the nervous system, and to prepare for future advances in this area, a sound background is required in basic sciences (physics, chemistry, mathematics), together with more selective knowledge in anatomy, biochemistry, physiology, psychology, molecular biology, and zoology. Courses in electrical engineering, computer sciences, linguistics, or cognate subjects are also desirable as they address analogous problems.

The group major requires a basic background in physics, chemistry, mathematics, and other disciplines, and gives guidance on coursework among the many relevant subjects. It may lead to graduate study in neurobiology, and might be appropriate for those entering the medical or health sciences and who are already interested in late specialization in neurology, neuropsychology, neurosurgery, ophthalmology, optometry, otolaryngology, pharmacy, or mental health. The departmental majors in physiology, zoology, electrical engineering, and psychology can also prepare the student for graduate work in neurobiology and lead to a greater range of career choices.

Lower Division Courses. Students are strongly advised to pursue physics, chemistry, and mathematics to the highest level they can achieve in their freshman and sophomore years. (such as Mathematics 51, Physics 7C, Chemistry 130B).

The following or equivalent courses at other institutions are minimum requirements for entry to the major: Biology 1A-1B (4-4); Chemistry 1A-1B (4-4); 8A-8B (4-3); Mathematics 1A-1B (4-4); Physics 8A-8B (4-4).

Additional recommended courses: Computer Science 5 (5); EECS 40 (3); Mathematics 50A-50B, 51 (4-4-3); Physics 7A-7B-7C (4-4-4); Physiology 1 (3); Psychology 1 (5); Statistics 5 (3) or Statistics 2 (4) or Statistics 20 (3).

Upper Division Courses. A minimum of 25 units, including two laboratory courses in different areas must be completed. Students must complete at least one course in each of the following categories, including two laboratories:

Behavior. Psychology 115 (3) or Zoology 135 (3), and Zoology 135L (3) or IDS 122 (3); Psychology 116 (3).

Biochemistry. Biochemistry 100A-100B (4-4) plus Biochemistry 101L (5) or 102 (4) plus 102L (3).

Cell Biology. Physiology 100B (4) or Zoology 104 (3).

Neuroanatomy. Anatomy 110A (3) or Anatomy 203 (4).

Neuropsychology. Physiology 100A (5), 110B (3), 101A (1.5), or Zoology 121 (3) or IDS 111 (3).

Additional courses: Anatomy 154 (2); Chemistry 130A-130B (3-3); Computer Science 8 (3); EECS 100 (4) or EECS 104 (2), 140 (4) 145 (3) 145L (2), 145A (4), 145B (4), 145BL (2), Entomology 103 (2), 103L (2); Genetics 102 (3) 100A-100B (4-3); Lethocera 160 (3); Molecular Biology 100B (4); Physiological Optics 132B (5); Physiology 123 (3), 150 (2), 169 (3); Psychology 110 (4), 111 (3), 111L (2), 112 (3), 112L (2), 114L (2); BEHS 130A-130B (4-4); Statistics 131A-131B (4-4), Zoology 105 (5), 120 (3), 124 (5).

Honors Program. The honors program consists of the preparation of a written thesis on a topic in neurobiology. Ordinarily the thesis consists of a report on the results of independent study and research conducted under the supervision of a faculty sponsor. At the end of the junior year or the beginning of the senior year, a student must submit a request to the major adviser to enroll in the honors program. Requirements for admission are a grade-point average of 3.3 or higher in all courses undertaken at the University, a grade-point average of 3.3 or higher in courses completed in the major, the recommendation of a major adviser, and the agreement of a faculty member to serve as a sponsor.

The student must enroll in at least 4 units of a 199 course in a cognitive department to prepare a thesis, but units for such courses will not count toward the 25 upper-division units required in the major. The thesis must be presented to the faculty sponsor before the ninth week of the semester in which the student expects to graduate, and the sponsor informs the major adviser whether the honors program has been satisfactorily completed. Then, if the student has also satisfied the required grade-point stipulation, he or she will be recommended to the Dean for a degree with honors.

Graduate Program in Neurobiology

This program is administered by the Graduate Group in Neurobiology and offers graduate education leading to the Ph.D. degree. Applicants should have a bachelor's degree in science and should have satisfied the requirements for the undergraduate Group Major in Neurobiology by coursework or by independent study.

Advancement to candidacy for the Ph.D. is dependent on satisfaction of the foreign language requirement and successful passage of the qualifying exam. All candidates must acquire teaching experience equivalent to a minimum of one semester of half-time teaching as a teaching assistant or associate.

Inquiries concerning admission, financial aid, and degree requirements may be addressed to the Group Chair, F.S. Werblin, Department of Electrical Engineering and Computer Sciences, 283 Cory Hall.

Oriental Languages

Graduate Program in Neurobiology

Graduate Program in Neurobiology

Graduate Program in Neurobiology

Graduate Program in Neurobiology

Graduate Program in Neurobiology

Graduate Program in Neurobiology

Graduate Program in Neurobiology

Graduate Program in Neurobiology
department also emphasizes the study of a particular Oriental culture in its broader geographical context.

The Major

**Emphasis on Chinese**

**Lower Division. Oriental Languages—Chinese 1A-1B (5-5); Chinese 10A-10B (5-5); Chinese 2A-2B (5-5).** Three units may be taken on a passed/not passed basis.

**Upper Division.** A total of 28 upper division units, to be met in one of two ways according to the student’s chosen program—Modern Chinese Program: One 3-unit course in Chinese Languages (160, 163, 165); two 3-unit courses in Classical Chinese (140, 145, 148, 150, 151, 153, 155); Chinese 100A-100B (5-5); the remaining nine units to be met through upper division modern Chinese language or literature courses (140, 154, 156, 158) of which one 3-unit course may be a lecture class on literature (Oriental Languages 131).

**Classical Chinese Program: One 3-unit course in Chinese Linguistics (161, 163, 165); Chinese 100A-100B (5-5); the remaining nine units to be met through upper division classical Chinese language or literature courses (140, 145, 148, 150, 151, 153, 155). One lecture class on a classical subject will be permitted (Oriental Languages 116, 121).**

**Emphasis on Japanese**

**Lower Division. Oriental Languages—Japanese 1A-1B (5-5); Japanese 10A-10B (5-5); Linguistics 5 (3).** Linguistics 5 may be taken on a passed/not passed basis.

**Upper Division.** Japanese 100A-100B (5-5); Japanese 129A (3); Japanese 129B (3) or Japanese 129C (3) or Japanese 129D (3) or Japanese 160 (3); Japanese 162 (3); Oriental Languages 135 (3). **Lower and Upper Division.** In consultation with the adviser, a program of Japanese courses in addition to those prescribed above to make a total of 54 units.

**Emphasis on Altiaca Languages**

**Lower Division. Oriental Languages—Korean 1A-1B (5-5) and Korean 10A-10B (5-5) or Japanese 1A-1B (5-5) and Japanese 10A-10B (5-5) or (Near Eastern Studies) Turkish 1A-1B (5-5) and Turkish 10A-10B (5-5); Linguistics 5 (3).** Linguistics 5 may be taken on a passed/not passed basis.

**Upper Division.** Oriental Languages—Altaic 144A-144B (3-3); Altai 154A-154B (3-3) and other relevant courses as designated by the advisor (e.g., Altai 177A-177B (3-3), Turkish 100A-100B (5-5) and Turkish 170A-170B (4-4), Korean 100A-100B (5-5)) to make a total of 24 upper division units.

**Honors Program.** An undergraduate student who has completed 9 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 to the Department Chair for admission to the honors program. If accepted, the student will enroll in H195 for two consecutive semesters leading to the writing of a Senior honors thesis. (F,SP)

**Graduate Programs**

M.A. and Ph.D. programs are offered in Chinese Language and Literature, in Classical Chinese, and in Japanese Language and Literature. The M.A. degree is offered in Altaiac Language and Literature, with emphasis on Mongolian. Information concerning graduate degree requirements may be obtained from the Department Office.

Prospective graduate students are urged to acquire an adequate command of their language of study as early as possible. Toward this end, a period of study at the Inter-University Program for Chinese Language Studies in Taipei, Taiwan, or at the Inter-University Japanese Language Studies in Tokyo, Japan, both institutions co-sponsored by the University of California, Berkeley, is strongly recommended.

**Oriental Languages-General**

Courses in which knowledge of an Oriental language is not required.

**Lower Division Courses**

39. Seminars for Lower Division Students. (3). Formerly 39. Course may be repeated once for credit. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Seminars designed to introduce beginning undergraduates to various areas of Oriental literature, thought, and culture, such as methods of literary, linguistic, philological analysis, and problems of sinology. Work in the course may include readings of texts in English translation and of secondary sources.

A research paper, applying methodology treated in the seminar to East Asian materials will be required. (F,SP)

**Upper Division Courses**

116. Ancient Chinese Archaeology and Civilization. (3). Formerly 116. Two 11/2-hour lectures per week. A survey of the beginnings and early development of Chinese society, institutions, literature, thought, and art, from the late Neolithic through A.D. 200, based upon the most recent archaeological discoveries and readings from primary historical and literary sources. Not offered 1984-85.

121A-121B. Development of Buddhism in East and Inner Asia. (3,3). Formerly 121A-121B. May be repeated for credit. Three 1-hour lectures per week. The introduction of Buddhism from India into Central Asia and China, and its subsequent spread to Korea and Japan. The separate tradition of Tibetan Buddhism is included. (SP)

122. Buddhism and Contemporary Society in East Asia. (3). Formerly 122. Three 1-hour lectures per week. A study of the Buddhist tradition as it is found in contemporary life in East Asia. The course will focus on China, Korea, Japan, Singapore, Taiwan, and China (Tibet). Students will be asked to explore the relationship that exists between Buddhism and other religious traditions, as well as political and social factors which are influencing its development. Not offered 1984-85.

131A. Chinese Literature in Translation. (3). Formerly 131A. Three 1-hour lectures per week. Lectures on primary genres, authors, and individual works of Chinese literature from the beginnings to the fourteenth century. Not offered 1984-85.

131B. Chinese Literature in Translation. (3). Formerly 131B. Three 1-hour lectures per week. Lectures on principal genres, authors, and individual works of Chinese literature from the fifteenth century to the present day. Not offered 1984-85.

135. History of Japanese Literature. (3). Formerly 135. Three 1-hour lectures per week. From the beginning to modern times, with emphasis on Chinese, Buddhist, and Western influences. Not offered 1984-85.


**Special Upper Division Courses**

H195. Honors Course. (2-4). Formerly H195. Course may be repeated for credit. To be arranged. Semester Prerequisites: Senior honors candidates in Oriental Languages. Directed independent study and preparation of senior honors thesis. (F,SP)

196. Directed Group Study. (1-3). Formerly 196. Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Junior standing. Small group instruction in courses not covered by regularly scheduled courses. (F,SP)

197. Supervised Independent Study. (1-4). Formerly 197. Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Senior honor student in Oriental Languages. Enrollment is restricted by regulations listed in the Letters and Science bulletin. (F,SP)

**Chinese**

**Lower Division Courses**

1A-1B. Elementary Chinese. (5,5). Formerly 1A-1B-1C. Five 1-hour meetings plus two hours in language laboratory per week. Semester Prerequisites: A is prerequisite to B. F (SP) 1A: Fall; 1B: Spring

2A-2B. Introduction to Classical Chinese. (3,3). Formerly 2A-2B-2C. Three 1-hour meetings per week. Semester Prerequisites: A is prerequisite to B. Characters, radicals, grammar; easy readings in pre-Han, Han, Six dynasties, and T'ang literature. (F,SP) 2A: Fall; 2B: Spring

10A-10B. Intermediate Chinese. (5,5). Formerly 10A-10B-10C. Five 1-hour meetings plus one hour in language laboratory per week. Semester Prerequisites: 1B, 10A is prerequisite to 10B. Quarter Prerequisites: 1C. (F,SP)

**Upper Division Courses**

100A-100B. Advanced Chinese. (5,5). Formerly 100A-100B-100C. Five 1-hour meetings per week. Semester Prerequisites: 1A. A is prerequisite to B. Quarter Prerequisites: 10C. Reading and discussion, in Chinese, of modern Chinese texts, literary, political and general, in a variety of styles. Assignments to develop oral and writing skills. (F,SP) 100A: Fall; 100B: Spring

101. Readings in Modern Chinese. (3). Formerly 101A-101B. Three 1-hour meetings weekly. Three 1-hour meetings per week. Three 1-hour meetings per week. Quarter Prerequisites: 100B. Quarter Prerequisites: 100C. Reading of current political and similar materials and discussion, in Chinese, of contents. (F)

102. Survey of Chinese Literature. (3). Formerly 102A-102B-102C. Three 1-hour meetings per week. Semester Prerequisites: 100B, 102A, 102B, 102C, and 102D do not have to be taken in sequence. Quarter Prerequisites: 100C. A four-year-level course designed to develop the student’s reading ability of modern Chinese writings on the development of Chinese literature. Class conducted in Chinese.

102A. Pre-Han. (3).


102C. Song-Yuan. (3). (F)

102D. Ming-Qing. (3). (SP)

109. Chinese Bibliography. (3). Formerly 109. Three 1-hour lectures per week. Semester Prerequisites: Two 1-hour division courses in classical Chinese. (SP)

140A-140B. Readings in Chinese Buddhist Texts. (3,3). Formerly 140A-140B-140C. Three 1-hour reading lectures per week. One upper division course in classical Chinese. (F,SP)

145. Taoist Texts. (3). Formerly 145. One 3-hour meeting per week. Semester Prerequisites: 2B. Quarter Prerequisites: 2C. Readings in printed and manuscript sources. Not offered 1984-85.
146. Documents On the Chinese World Order. (3). Formerly 148. Two 1-1/2-hour reading/lecture meetings per week. Semester Prerequisites: Two semesters of classical Chinese, including 109. Quarter Prerequisites: Three quarters of classical Chinese, including 109. Philological analysis of documents pertaining to the Chinese tributary system, ca. B.C. 100 - ca. A.D. 1280. The selection of contexts, the tension between rhetoric and reality, and to contrast the Sinic Zone with the Inner Asian Zone. (F)

150. Ancient Chinese Prose. (3). Formerly 150A-150B. Two 1-1/2-hour lectures per week. Semester Prerequisites: 2A. Quarter Prerequisites: 2A-2B. Readings in historical, religious, and philosophical texts of the Chou and Han periods from printed and manuscript sources. (F)

151. Readings in Modern Chinese. (3). Formerly 151A-151B. Must be taken on a passed/not passed basis. Three 1-hour meetings per week. Semester Prerequisites: 100B. Quarter Prerequisites: 100C. Reading of current political and similar materials and discussion, in Chinese, of contexts. (SP)

153A-153B. Readings in Early Medieval Literature. (3-3). Formerly 153A-153B-153C. One 3-hour meeting per week. A different theme or literary form will be studied each semester. (F)

154. Readings in Vernacular Chinese Literature: Fiction. (3). Three 1-hour reading/lecture meetings per week. Semester Prerequisites: 100B. Quarter Prerequisites: 100C. A critical study of pre-modern Chinese fiction. (F)

155. Readings in Later Medieval Poetry. (3). Formerly 155B. Course may be repeated for credit as topic varies. Three 1-hour reading/lecture meetings per week. Semester Prerequisites: 100B. Quarter Prerequisites: 100C. Yuan-Ming drama, readings at fourth year level. Not offered 1984-85. (F)

156. Readings in Vernacular Chinese Literature: Drama. (3). Three 1-hour reading/lecture meetings per week. Semester Prerequisites: 100B. Quarter Prerequisites: 100C. Yuan-Ming drama, readings at fourth year level. Not offered 1984-85. (F)

158. Readings in Modern Chinese. (3). Formerly 15A-15B. Must be taken on a passed/not passed basis. Three 1-hour meetings per week. Semester Prerequisites: 100B. Quarter Prerequisites: 100C. Reading of current political and similar materials and discussion, in Chinese, of contexts. (SP)

161. Structure of the Chinese Language. (3). Two 1-1/2-hour sessions per week. Semester Prerequisites: Linguistics 5 or 100. Quarter Prerequisites: Linguistics 20. A linguistic analysis of the Chinese language, its phonological and grammatical differences from Mandarin. (F)

165. History of the Chinese Language. (3). Two 1-1/2-hour sessions per week. Semester Prerequisites: Linguistics 5 or 100. Quarter Prerequisites: Linguistics 20. Writing system, early dictionaries, historical phonology, and classical grammar. Not offered 1984-85. (F)

163. Cantoneese Linguistics. (3). Three 1-lecture hours per week. Semester Prerequisites: 108 and Linguistics 5 or 100. Quarter Prerequisites: 10C and Linguistics 20. A linguistic analysis of Cantoneese with emphasis on its phonological and grammatical differences from Mandarin. (F)

165. History of the Chinese Language. (3). Two 1-1/2-hour sessions per week. Semester Prerequisites: Linguistics 5 or 100. Quarter Prerequisites: Linguistics 20. A critical study of early Chinese literature. (F)

168. Readings in Modern Chinese. (3). Formerly 168. Three 1-hour meetings per week. Semester Prerequisites: 100B. Quarter Prerequisites: 100C. Reading of current political and similar materials and discussion, in Chinese, of contexts. (SP)

174A-174B. Intermediate Tibetan. (3-3). Formerly 174A-174B-174C. Two 1-1/2-hour meetings per week. Introduction to the study of Tibetan and historical works of literature. (F)

177A-177B. Manchu. (3-3). Formerly 177A-177B. Three 1-1/2-hour meetings per week. Reading of historical and expository texts. Not offered 1984-85. (F)


180. Japanese Literature. (3). Three 1-hour meetings per week. Quarter Prerequisites: A is prerequisite to B. Quarter Prerequisites: 1C; 10A-10B are prerequisite to B. (F)

Upper Division Courses

100A-100B. Advanced Japanese. (5-5). Formerly 100A-100B-100C. Five 1-hour meetings per week. Semester Prerequisites: 100B: A is prerequisite to B. Quarter Prerequisites: 10B; A is prerequisite to B. Quarter Prerequisites: 1C; 10A-10B are prerequisite to B. (F)

Upper Division Courses

100A-100B. Advanced Japanese. (5-5). Formerly 100A-100B-100C. Five 1-hour meetings per week. Semester Prerequisites: 100B: A is prerequisite to B. Quarter Prerequisites: 10B; A is prerequisite to B. Quarter Prerequisites: 1C; 10A-10B are prerequisite to B. (F)

Upper Division Courses

100A-100B. Advanced Japanese. (5-5). Formerly 100A-100B-100C. Five 1-hour meetings per week. Semester Prerequisites: 100B: A is prerequisite to B. Quarter Prerequisites: 10B; A is prerequisite to B. Quarter Prerequisites: 1C; 10A-10B are prerequisite to B. (F)

200 / L & S: Oriental Languages

Altaic

Upper Division Courses


154A-154B. Intermediate Mongolian. (3-3). Formerly 154A-154B-154C. Three 1-hour meetings per week. Continued reading and exercises in Khalkha, together with an introduction to the orthography and grammar of this Mongolian in the Cyrillic script. Selected prose texts from the 17th century to the present in both Cyrillic script and vertical script. (F)

177A-177B. Manchu. (3-3). Formerly 177A-177B. Three 1-hour meetings per week. Semester Prerequisites: Junior standing. An introduction to literary Manchu; selected prose texts. Not offered 1984-85.

Tibetan

Lower Division Courses

1A-1B. Elementary Spoken Tibetan. (5-5). Formerly 1A-1B-1C. Five 1-hour meetings per week. An introduction to standard Central Tibetan (Lhasa dialect). (F, SP)

Upper Division Courses

100A-100B. Intermediate Spoken Tibetan. (3-3). Three 1-hour meetings per week. Semester Prerequisites: 1B and 164B or consent of instructor. Reading exercises with practice in comprehension and oral repetition. Translation of texts from phonetic transcription into written Tibetan. Practice in original composition. Class discussion of grammatical appropriates. (F, SP)

164A-164B. Elementary Literary Tibetan. (3-3). Formerly 164A-164B-164C. Two 1-1/2-hour meetings per week. Introduction to the grammar of standard literary Tibetan; graded readings in Tibetan prose from literary and historical sources. (F, SP)

167. Tibetan Linguistics. (3). Two 1-1/2-hour meetings per week. Semester Prerequisites: Linguistics 5 and 100. Quarter Prerequisites: Linguistics 20. This course deals mainly with modern Tibetan phonology and grammar. (F)

174A-174B. Intermediate Tibetan. (3-3). Formerly 174A-174B-174C. Three 1-1/2-hour meetings per week. Semester Prerequisites: 164B. Quarter Prerequisites: 164C. Emphasis on doctrinal Buddhist texts. (F)

Graduate Courses

Graduate Courses


205. Seminar in Early Chinese Fiction. (3). Formerly 205. Course may be repeated for credit with consent of instructor. One 3-hour seminar per week. Studies in the historical development of Chinese fiction and a critical analysis of some early fictional writings. Not offered 1984-85.

206. Chinese Vernacular Literature. (3). Formerly 206. Course may be repeated for credit with consent of instructor. One 3-hour seminar per week. Detailed study of a text with its literary and historical backdrop. (SP)

210. Seminar in Buddhism and Buddhist Texts. (3). Formerly 210. Course may be repeated for credit with consent of instructor. One 3-hour seminar per week. (F)

212. Seminar in Chinese Literary History. (3). Formerly 212. One 3-hour seminar per week. Textual and aesthetic criticism. (F)
213. Seminar in Philological Analysis of Ancient Chinese Texts. (3). Formerly 213. One 3-hour seminar per week. Semester Prerequisites: Chinese 150 or 151. 


215. Tun-Huang Studies. (3). Formerly Tibetan 215A-215B. One 3-hour seminar per week. Aspects of current scholarship on the Tun-huang manuscripts and an introduction to the methods of textual criticism. (SP)

216. Texts On the Civilization of Medieval China. (3). Formerly 216. One 3-hour seminar per week. (F)

218. Seminar On the Sources for the Traditional Chinese World Ord. (3). Formerly 218. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor. Cultural, strategic, and economic factors in the political systems of large complex societies. (SP)

Reading in Altaiic Texts. (3). Formerly 224. Course may be repeated for credit with consent of instructor. One 3-hour seminar per week. Not offered 1984-85.


236. Seminar in Chinese Linguistics. (3). Formerly 236. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Major topics in Chinese semantics. (SP)

239. Seminar in Japanese Linguistics. (3). Formerly 239. Course may be repeated for credit. One 3-hour seminar per week. Semester Prerequisites: Japanese 162 or consent of instructor. Quarterly Topics: Japanese 162. The topic varies according to the interests of the participants: dialectology, phonology, or grammar. (F)

249. Seminar in Modern Japanese Literature. (3). Formerly 249. Course may be repeated for credit with consent of instructor. One 3-hour meeting per week. Semester Prerequisites: Japanese 155 or 159. (F)

260. Seminar in Classical Japanese Drama. (3). Formerly 260. One 3-hour seminar per week. Semester Prerequisites: Japanese 129A, 129B, 129C, or 160. Analysis and discussion of major plays from the no and Noh theater. Selections from the works of Zeami and Chikamatsu will be made in alternate years. (SP)

269. Seminar in Classical Japanese Poetry. (3). Formerly 269. Course may be repeated for credit. One 3-hour seminar per week. Semester Prerequisites: Japanese 129B. (SP)

275. Historical Documents. (3). Formerly 275. Two 1½-hour meetings per week. Semester Prerequisites: Consent of instructor. The course concentrates on the late Nanbok-shu through Five Dynasties period. Topics vary from semester to semester and include poetry, biography, historiography and external relations. For 1983-84, emphasis will be upon Tang China's relations with her eastern and northeastern neighbors. (F)

299. Directed Study for Graduate Students. (1-8). Formerly 299. Course may be repeated for credit. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,S,P)

299. Thesis Preparation and Related Research. (1-8). Formerly 299. Course may be repeated for credit. Special tutorial or seminar on selected topics not covered by available courses or seminars. (F,S,P)

301. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Consent of instructor. Individual study for the comprehensive or language requirements in consultation with the graduate adviser. (F,S,P)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the Ph.D. degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare for various examinations required of candidates for the Ph.D. (F,S,P)

Paleontology

Department Office, 7 Earth Sciences Building, 642-1821

Professors: J. Wyatt Durham, Ph.D. (Emeritus)
William A. Clemens, Jr., Ph.D.
Donald E. Savage, Ph.D.
Zach M. Arnold, Ph.D. (Emeritus)

Associate Professors: Wayne L. Fry, Ph.D.
Carole S. Hickman, Ph.D.

Assistant Professors: Charlotte A. Brunner, Ph.D.
Kevin Pedian, Ph.D.

Major Adviser: Ms. Brunner.

Graduate Advisers: Mr. Berry and Mr. Savage.

Graduate study in Paleontology may select between two major options. The Paleobiology Option is designed for those students who wish to major in some aspect of the biological sciences and who wish to acquaint themselves with ancient as well as modern life and environments. The Geology/Appplied Option have an opportunity of selecting those courses that will prepare them for employment in the fossil fuels or environmental concerns, or they may choose courses that will provide them with a background in marine geosciences.

The Major

All majors in Paleontology will take certain Lower and Upper Division science courses that will provide a background for and an appreciation of the principles and practices of paleontology. The student may then elect to complete the major requirements in either the Geology or the Paleobiology Option.

Lower Division. Courses required of all majors in Paleontology: Biology 1A-1B, Chemistry 1A-1B, Mathematics 16A, Paleontology 20, Physics 8A-8B.

Upper Division. Courses required of all majors in Paleontology: Biology 101, Biomedical and Environmental Health Sciences 130A, Paleontology 111.

The Geology Option: Geology 100, Geology 102, Geology 120, and at least three additional Upper Division units in appropriate coursework to be selected after consultation with the undergraduate Adviser.

The Paleobiology Option: Genetics 102, Zoology 109, and an additional eight Upper Division units to be selected from Paleontology 101, 112, 115, 120, and 125.

The Paleontology Major will include 32 required units: Lower Division units and 26 required Upper Division units.

The Geology Option will prepare students in those aspects of sedimentary geology and paleontology that may be useful in applied aspects of geology and paleontology.

The Paleobiology Option will provide students with a general background in paleontological perspectives to evolutionary biology.

As guides to potential programs, the following should be noted: Programs of those students who desire to seek employment in the fossil fuels industries should include the following courses among those needed to satisfy the Upper Division course requirement: Geology 116, IDS 216 (Pollen Analysis), Paleontology 115.

Students with interests in environmental concerns should include courses from the following in their programs: Environmental Studies 102 and 125.

Honors Program. With the consent of the major adviser, students with an overall grade average of 3.3 or higher and a grade-point average of 3.3 or higher in the major may apply for admission to the honors program no later than the beginning of the spring semester. Students accepted into this program may substitute the research and Honors Thesis course for up to eight units of the major requirements, and must complete a thesis (course H195).

Students who wish to arrange an individual major should confer with the department adviser.

The Museum of Paleontology, research institute and archive for staff and students and for qualified visiting scholars. The collection of fossil vertebrates, invertebrates, plants, and recent mollusk shells and vertebrate skeletal elements. These are from every continent, principally from the western United States. Requests for utilization of the collections or facilities should be addressed to the Director, Room 7, Earth Sciences Building.

Preparation for Graduate Study

Graduate study, with programs leading to both the M.A. and Ph.D. degrees, is a principal activity of the Department. Students may elect either the field of environmental studies in the biological sciences or the geology or the geophysical sciences. Facilities are extensive and education in most paleontological fields is offered. Candidates are expected to acquire a broad familiarity with several fields of paleontology, as well as with the techniques used outside the Department, such as geology, anthropology, and botany. Ph.D. candidates are required to pass reading examinations in two foreign languages (usually French, German or Russian) before taking the oral qualifying examination.

For further details on the requirements for the M.A. and Ph.D. degrees, please contact the graduate assistant for the Department.

Lower Division Courses

2A. Topics in Paleontology: The Age of Dinosaurs. (2). Formerly 2A. More than one course in this series may be taken for credit with consent of instructor. Two hours lecture per week. Open without prerequisite to all students and designed for those not specializing in paleontology. Evolution, history, and biology of the dinosaurs and their world, including the earliest mammals and birds. (SP)

2B. Topics in Paleontology: Mass Extinctions. (1). Formerly 2B. More than one course in this series may be taken for credit with consent of instructor. Two hours of discussion per week for 1½ weeks. Open without prerequisite to all students and designed for those not specializing in paleontology. Mass extinctions and other large-scale fluctuations in biological diversity are examined. Patterns in and causes of diversity fluctuations in historic and geologic time are discussed. (SP)

2C. Topics in Paleontology: Ancient Landscapes. (1). Formerly 2C. More than one course in this series may be taken for credit with consent of instructor. One hour lecture per week. Open without prerequisite to all students and designed for those not specializing in paleontology. An overview of fossil land plants from the last 400 million years with emphasis on reconsiderations of ancient forests and the environments they live in. (SP)

2D. Topics in Paleontology: Understanding Evolution. (2). Formerly 2D. More than one course in this series may be taken for credit with consent of instructor. Two 1-hour lectures per week plus four optional discussion sections. An introductory survey designed to acquaint students with evolutionary patterns and processes. Included will be the recent contributions of such disciplines as genetics, biochemistry, biology, anthropology, geology, linguistics, and paleontology to our current understanding of evolution. (SP)

2E. Topics in Paleontology: Age of Mammals. (1). Formerly 2E. More than one course in this series may be
225. Paleontology and Evolution of Amphibians, Reptiles and Birds. (4). Formerly 225. Two hours of lecture and two 3-hour laboratories per week. Semester Prerequisites: 125 and 126, and Zoology 109 or equivalent. Evolution, systematics, functional morphology, and paleontology of the non-mammalian land vertebrates with emphasis on the Mesozoic Era. Offered in alternate years. (F)

226. Evolution and Systematics of Mammals. (4). Formerly 226. Two hours lecture, two 3-hour laboratories and a 1-hour discussion per week. Semester Prerequisites: 125, 126, and Zoology 109 or equivalent. Study of fossil record of mammals: comparative research on modern animals contributing to determination of mammalian phylogenetic relationships. One weekend field trip will provide experience with collecting techniques. Offered in alternate years. (F)

227. Mammalian Paleofaunas of the World. (4). Formerly 227. Two hours lecture and two 3-hour laboratories per week. Succession of world's mammalian faunas, their geography, stratigraphy, and ecology as related to geologic history and to contemporaneous paleontology. (F)

234. Biology of Mollusks. (3). Formerly 234. Two hours of lecture and one 3-hour laboratory per week. Semester Prerequisites: Consent of instructor. Systematics, ecology, functional morphology, evolution, biogeography of selected mollusk groups. (F)

240. Advanced Stratigraphic Paleontology. (2). Formerly 240. Course may be repeated for credit. Two hours of seminar per week. Topics may vary from year to year but include evaluation of current literature and discussions aimed at refinement of paleontologic disciplines in stratigraphy and geochronology, emphasizing established scientific principles, global tectonics, evolutionary biology. (F,SP)

241. Ancient Climates. (2). Formerly 241. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Review of techniques of paleoclimatological evidence for and its uses in reconstructions of earth's past climates. (F,SP)

242. Advanced Paleobiogeography. (2). Formerly 242. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Topics will vary from year to year but will include consideration of changing distributional patterns of major groups of organisms in light of global tectonics, changing positions and connections of continents and ocean basins, and modifications in the earth's climate. (F,SP)

243. Advanced Paleozoology. (2). Formerly 243. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Topics vary from year to year but will include paleozoology of major groups of organisms or major environments from population, community evolutionary, or taphonomic perspectives. (F)

245. Advanced Marine Micropaleontology. (2). Formerly 245. Course may be repeated for credit. Two hours of seminar per week. Environments and history of foraminifera, radiolarians, diatoms, nanofossils and diamic lamic microfossils. (F,SP)

246. Seminar in Topics of Evolution Above the Species Level. (2). Formerly 246. Course may be repeated for credit. Two hours of seminar per week. Current issues in macroevolution and paleobiology, using both neontological and paleontological data. Intensive study of a small number of broad questions in evolution per semester, to be determined by interest of participants and current developments in the field. (F,SP)

247. Application of Multivariate Statistics to Problems in Paleontology. (3). New course since Spring 1983. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Biomedical and Environmental Health Sciences 130A or consent of instructor. Quarter Prerequisites: Biomedical and Environmental Health Sciences 160A. The use of cluster analysis, principal component, factor and discriminant analyses in paleontology will be examined in depth. Lectures will include
discussions of data selection, assumptions and purposes of analyses, standardization of data, calculation of analy-
ysis, and experimental design. In laboratory courses, students will use computer programs to analyze assigned data sets and data from their research in biogeography, biostatistics, paleoanatomy, morphometrics and taxonomy. (SP)

250A. Seminars in Paleontology. (2). Formerly 250A. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of seminar per week. Advanced study and current literature in various fields of paleontology. Topics vary from year to year. (F,SP)

250B. Seminars in Paleontology. (2). Mr. Berry.


250E. Seminars in Paleontology. (2). Ms. Hickman.

250F. Seminars in Paleontology. (2). Mr. Padian.

250G. Seminars in Paleontology. (2). Mr. Savage.

250H. Seminars in Paleontology. (2). Staff.

280. Directed Research Preparation. (1-8). Formerly 280. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Open to qualified graduate students working on master’s thesis research. (F,SP)

284. Directed Thesis Research. (1-8). Formerly 284. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Open to qualified graduate students working on theses. (F,SP)

286. Directed Dissertation Research. (1-9). Formerly 286. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Seminar Prerequisites: Admission to doctoral degree program in paleontology. Open to qualified students who are engaged directly in research on the dissertation. (F,SP)

297. Directed Field Studies. (1-8). Formerly 297. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Field work. Open to qualified graduate students working on a master’s thesis research. (F,SP)

301. Professional Preparation. (1). Formerly 301. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture per week. (F,SP)

302. Professional Preparation. (1). Formerly 302. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture per week. (F,SP)

395. Seminar On Teaching of Paleontology. (2). Formerly 395. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of seminar per week. The aims and methods of teaching paleontology at the college and university level. (F,SP)

Open to all graduate students in the department and to others with consent of instructor. (F)

401. Museum Procedures and Techniques. (2). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour discussion and three hours laboratory per week. Seminar Prerequisites: Consent of instructor. Curation and collection management of natural history materials. Students provide practical experience necessary for career in museums. (F,SP)

Interdepartmental Studies Courses

Graduate Courses

IDS215. Faunal Analysis in Archaeology. (4). Formerly 215A-215B. One hour lecture, one hour discussion, and two 3-hour laboratories per week. Seminar Prerequisites: Professor Kneafsey in paleoanthropology, anthropology or social sciences. Advanced undergraduates may enroll with permission of the instructor. Introduction to the theory and technique (laboratory and field) of pollen analysis. Applications of pollen analysis in archaeology and paleoanthropological contexts. (F,SP)

IDS216. Pollen Analysis. (3). Formerly 216. Two hours lecture and one 2-hour laboratory per semester. Seminar Prerequisites: Consent of instructor. Includes work in either the natural sciences or social sciences. Advanced undergraduates may enroll with permission of the instructor. Introduction to the theory and technique (laboratory and field) of pollen analysis. Applications of pollen analysis in paleoanthropological contexts. (F,SP)

IDS226. Human Evolution, Prehistory and Paleoenvironments. (2). Formerly 226. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Seminar Prerequisites: Consent of instructor. A seminar course devoted to consideration of the research in Paleoanthropology and related subjects. Sponsoring Departments: Anthropology and Paleontology. (SP)

Philosophy

Department Office, 314 Moses Hall, 642-2722

Professors:

Ernest W. Adams, Jr., Ph.D.
William Craig, Ph.D.
Donald H. Davidson, Ph.D.
Hubert L. Dreyfus, Ph.D.
Paul R. Ferguson, Ph.D.
Benson Mates, Ph.D.
Robert E. Thruston, Ph.D.
Hans Sluga, Ph.D.
Edward W. Strong, Ph.D.
Herbert Thruston, Ph.D.
Bruce J. Vermazen, Ph.D.

Assistant Professors:

Janet Broughton, Ph.D.
Thompson Clarke, Ph.D.
Alan Code, Ph.D.
Linda Hoy, Ph.D.

Visiting Professors:

Barry G. Stroud, Ph.D.
Charles B. Cooper, Ph.D.
William Craig, Ph.D.
Donald H. Davidson, Ph.D.
Hubert L. Dreyfus, Ph.D.
Paul R. Ferguson, Ph.D.
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Alan Code, Ph.D.
Linda Hoy, Ph.D.

Assistant Professors:

Linda Hoy, Ph.D.

Visiting Mills Professor:

Gregory Vlastos, Ph.D.

Philosophy

Department Office, 314 Moses Hall, 642-2722

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Linda Hoy, Ph.D.

Visiting Mills Professor:

Gregory Vlastos, Ph.D.

The Major

Lower Division. 12A or 14A, 25A-25B.

Upper Division. 100, 104, 122.

A total of 42 units is required in the major program. Eighteen units are required in the upper division in addition to the required three upper division courses: 100, 104, and 122. The student must take one course from the 160-178 series and one course from the 190-184 series and four additional upper division courses (one course numbered 191-199 may be counted among the four only if the major adviser gives written approval). Course 101 does not count as a major requirement.

Philosophy 12A or 14A should be passed before the end of the junior year. Philosophy 100 should be taken as soon as possible after declaring a major. One of the four additional upper division courses may be taken in another department, provided that the course selected is deemed by the major adviser to be relevant to the major.

Honors Program. With the consent of the major adviser, a student with an overall 3.3 grade-point average or higher and a grade-point average of 3.5 or higher in courses in the major may apply for admission to the honors program. This program requires completion of one of the following courses: Philosophy 191B, Senior Colloquium, or (2) a graduate seminar, admittance to such seminar being contingent upon approval of the instructor in charge. It also requires that the candidate write an acceptable honors thesis, for which three units of credit will be given under H195.

Lower Division Courses

2. Individual Morality and Social Justice. (4). Formerly 2. Three hours of lecture and one hour discussion per week. Introduction to ethical and political philosophy. (F)

4. Knowledge and Its Limits. (4). Formerly 4. Three hours of lecture and one hour discussion per week. Introduction to the theory of knowledge. (F)

6. Man, Nature, and Society in Western Literature. (4). Three hours of lecture and one hour discussion per week. A philosophical exploration of 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; the individuals ability to understand and control his own life; and the advantages and dangers of the technological domination of nature. We will also follow man’s growing realization of his role in nature. (F)

7. Existentialism in Literature and Film. (4). Formerly 107A-107B. Three hours of lecture and one hour discussion per week. Christian, agnostic, and atheistic existentialism as expressed in the works of Dostoyevsky, Melville, Kafka, Antioni, Goddard, etc. (F)

12A. Introduction to Logic. (4). Formerly 12A. Three hours of lecture and two hours of discussion per week. Syntax, semantics, and proof theory of sentential and predicate logic. (F)

12B. Introduction to Logic. (4). Formerly 12B. Three hours of lecture and two hours of discussion per week. Syntax, semantics, and proof theory of sentential and predicate logic. (SP)

14A. Rudiments of Logic and the Philosophy of Logic. (4). Formerly 14A. Three hours of lecture and two hours of discussion per week. (F,SP)

14B. Rudiments of Logic and the Philosophy of Logic. (4). Formerly 14B. Three hours of lecture and two hours of discussion per week. (F,SP)

25A. Ancient Philosophy. (4). Formerly 25A. Three hours of lecture and one hour discussion per week. The history of ancient philosophy with special emphasis on the Presocratics, Plato, and Aristotle. (F)

25B. Modern Philosophy. (4). Formerly 25C-25D. Three hours of lecture and one hour discussion per week. The history of modern philosophy from Descartes through Kant. (SP)

28. Introduction to Scientific Method. (4). Formerly 142. Three hours of lecture and one hour discussion per week. (F)

38. Freshman Seminar. (3). Formerly 90. Three hours of seminar per week. Study of various fields of philosophy of special interest to freshmen. Topics will vary from semester and will be individually announced. Freshman seminars are restricted to fifteen students each. (F,SP)

General prerequisites: students enrolling in any restricted upper division course must have completed 8 units in 2, 4, 25A or 25B or have completed, under
conditions specified below, course 101. Additional prerequisites are indicated in certain courses.

Unrestricted Course

Upper Division Courses

101. Philosophical Theories. (4). Formerly 101. Three hours of lecture and one hour discussion per week. Semester Prerequisites: Open to juniors and seniors who are not majors in philosophy and who have not taken 4 or equivalent. Fundamental problems in metaphysics and the theory of knowledge. (F,SP)

102. Normative Ethics. (3). Formerly 102. Three hours of lecture per week. Semester Prerequisites: One introductory course in philosophy or consent of instructor. Moral philosophy studied through the examination of moral principles, moral problems, and common sense moral intuitions. Specific problems discussed will vary from year to year, but will be drawn from the following: affirmative utilitarianism; hedonism; the problem of possible worlds; moral dilemmas; the obligation to help the needy; killing and letting die; war; choices between lives. (F)

103. Biomedical Ethics. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: Upper division courses in the biological sciences, or consent of instructor. Major Prerequisites: One introductory course in philosophy of medicine and the biological sciences. Topics to be discussed include: ethical considerations and the implications of the concepts of health and disease; rights to health care and the allocation of scarce resources; informed consent and the refusal of treatment; experimentation on human beings; killing and letting die; euthanasia; definitions of "death"; behavior control; genetic engineering; the physician-patient relationship; paternalism. (SP)

104. Ethical Theories. (4). Formerly 104. Three hours of lecture and one hour discussion per week. The fundamental concepts and problems of moral philosophy will be discussed through the study of classical and contemporary philosophical ethics of theories. (F)

105. Foundations of Ethics. (3). Formerly 105. Three hours of lecture per week. Semester Prerequisites: 104 or equivalent. Quarter Prerequisites: 104. An advanced investigation of fundamental questions about the nature of morality. (SP)

106. Philosophy in Literature. (3). Formerly 106. Three hours of lecture per week. Philosophical issues as expressed in poetry, drama, and the novel. (F)

110. Aesthetics. (3). Formerly 125A-125B. The course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Upper division courses in philosophy or consent of instructor. Majors in literature or the arts. Major Prerequisites: Upper division courses in philosophy. Visual Arts/Literature and Music. Form, expression, representation style; interpretation and evaluation. (F)

111. Aesthetic Theories. (3). Formerly 128. Three hours of lecture per week. A study of aesthetic theories based on historical materials. (SP)

115. Political Philosophy. (3). Formerly 128. Three hours of lecture per week. Analysis of political obligation and related problems. (F)

117. Marxism. (3). Formerly 110A-110B. Three hours of lecture per week. A critical appraisal of the philosophical foundations and implications of Marx's view of man and society. (F)

118. Philosophy of Law. (3). Formerly 118. Three hours of lecture per week. Philosophical problems arising in the legal context. (F)

120. Philosophy of History. (3). Formerly 127. Three hours of lecture per week. Theories of History: Augustine, Vico, Hegel, and others. (SP)

122. Theory of Knowledge. (4). Formerly 134A. Three hours of lecture and one hour of discussion per week. (F)

123. Special Topics in the Theory of Knowledge. (3). Formerly 134B. Three hours of lecture per week. (F)

125. Metaphysics. (3). Formerly 131. Three hours of lecture per week. (F)

126. Philosophy of Religion. (3). Formerly 112. Three hours of lecture per week. The nature and the validity of religious ideas. (SP)

128. Philosophy of Science. (3). Formerly 119. 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. (F)

129. Special Topics in the Philosophy of Science. (3). Formerly 130. 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. (SP)

130. Philosophy of Social Science. (3). Formerly 141. Three hours of lecture per week. Philosophical topics arising from psychology, economics, sociology, etc. (SP)

131. Philosophy of Action. (3). Formerly 130. 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? (SP)

132. Philosophy of Mind. (3). Formerly 132. Three hours of lecture per week. Mind and matter; other minds; the concept "person." (SP)

133. Philosophy of Language. (3). Formerly 133A. Three hours of lecture per week. The nature and the validity of the concept "person." (SP)

134. Special Topics in the Philosophy of Language. (3). Formerly 133B. Three hours of lecture per week. (SP)

135. Theory of Meaning. (3). Formerly 133. Three hours of lecture per week. Three courses chosen from one course in logic or consent of instructor. Quarter Prerequisites: One course in logic. 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)

140A. Intermediate Logic. (3). Formerly 143A. Three hours of lecture per week. Semester Prerequisites: 122A-122B or equivalent. Quarter Prerequisites: 122A-122B. Major concepts, results, and techniques of modern logic. Model theoretic treatment of propositional and first-order logic. Basic set theoretic tools. Completeness, computation, and incompleteness. (F)

140B. Intermediate Logic. (3). Formerly 143B. Three hours of lecture per week. Semester Prerequisites: 122A-122B or equivalent. Quarter Prerequisites: 122A-122B. Major concepts, results, and techniques of modern logic. Model theoretic treatment of propositional and first-order logic. Basic set theoretic tools. Completeness, computation, and incompleteness. (F,SP)

142. Philosophical Logic. (3). Formerly 146. Three hours of lecture per week. Main subject of study will be logical aspects of natural language, and their relations to formal logic. Special attention will be given to unsettled questions of logical theory, including the nature of generalizations, time and tense, etc. (SP)

143. Intensional Logic. (3). Formerly 147. Three hours of lecture per week. A historical and sematic treatment of modal and other intensional logics, such as tense logic, epistemic, and deontic logic. (F)

144. History of Logic. (3). Formerly 147. Three hours of lecture per week. Selected topics from the history of logic such as Aristotelian and Stoic logic, medieval logic, Leibniz, and the nineteenth century to Frege. (SP)

146. Philosophy of Mathematics. (3). Formerly 144. Three hours of lecture per week. Foundations of mathematics: logicism, intuitionism, formalism. Set theoretical paradoxes, definition of numbers, problems of continuums. (SP)

148. Probability and Induction. (3). Formerly 142. Three hours of lecture per week. Different approaches to the foundations of probability; inductive confirmation of scientific theories. (SP)

152. Medieval Philosophy. (3). Formerly 166. Three hours of lecture per week. (SP)

154. 19TH Century Philosophy. (3). Formerly 180. Three hours of lecture per week. (SP)

155. Foundations of Analytic Philosophy. (3). Formerly 150-151. Three hours of lecture per week. (F)

160. Plato. (3). Formerly 160A-160B. Three hours of lecture per week. (F)

161. Aristotle. (3). Formerly 161. Three hours of lecture per week. (SP)

163. Special Topics in Greek Philosophy. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: 150A or 151 or equivalent. Quarter Prerequisites: 160A-160B or 161. The course is designed to deal with a variety of topics in Greek philosophy. Its contents will vary from occasion to occasion. Possible topics are: the close study of one or more of Plato's dialogues, the reading of one of Aristotle's texts, stoicism, scepticism, and neo-platonism. (SP)

170. Descartes. (3). Formerly 170. Three hours of lecture per week. (F)

171. Hobbes. (3). Formerly 171. Three hours of lecture per week. (SP)

172. Spinoza. (3). Formerly 172. Three hours of lecture per week. (F)

173. Leibniz. (3). Formerly 173. Three hours of lecture per week. (SP)

175. Locke. (3). Formerly 174. Three hours of lecture per week. (SP)

176. Berkeley. (3). Formerly 175. Three hours of lecture per week. (SP)

178. Hume. (3). Formerly 176. Three hours of lecture per week. (F)

181. Hegel. (3). New Course since Spring 1983. Three hours of lecture per week. (F)

182. Kierkegaard. (3). Formerly 181. Three hours of lecture per week. Semester Prerequisites: One philosophical course. A study of Kierkegaard as theologian, psychologist, and philosopher with emphasis on those aspects of his thought which have provided the basis of existential phenomenology. Readings in The Present Age, Either/Or, Fear and Trembling, Concept of Dread, and Sickness unto Death. (SP)

184. Nietzsche. (3). Formerly 184. Three hours of lecture per week. (F)

185. Special Topics in Modern Philosophy. (3). New Course since Spring 1983. Three hours of lecture per week. The course is designed to deal with a variety of topics in modern philosophy. Its contents will vary from occasion to occasion. Possible topics include: the detailed study of an important text by a modern philosopher, or the study of a particular period or movement of modern philosophy. (SP)

186. Phenomenology. (3). Formerly 150A. Three hours of lecture per week. Backgrounds of phenomenology and existentialism. Husserl and Merleau-Ponty. (F)

187. Heidegger. (4). Formerly 152B. Three hours of lecture and one 1-hour section per week. A study of Heidegger's Being and Time. (F)
188. Wittgenstein. (3). Formerly 190. Three hours of lecture per week. (SP)

189. Special Topics in Recent European Philosophy. (3). New Course since Spring 1993. Three hours of lecture per week. The course is designed to deal with a variety of topics in recent European philosophy. Its contents will vary from occasion to occasion. Possible topics include: further work in phenomenology and existentialism, the regulations of a particular text by an important figure in contemporary European philosophy, current French and German philosophy. (SP)

191X. Moral Psychology. (3). New Course since Spring 1993. Three hours of lecture per week. A study of notions and problems that deal with the individual as moral personality. Emphasis on weakness of will; self-regard and self-deception; moral motives, emotions, and virtue; moral education. (F)

H195. Philosophy Tutorial. (3). Formerly H195. Three hours of tutorial per week. Semester Prerequisites: Students in Honors Program. The department will designate a tutor, under whose guidance the student will seek to satisfy the thesis requirement of the Honors Program. (F,SP)

H196. Senior Colloquium. (3). Formerly H196. Three hours of seminar per week. A seminar course for honor study on a topic to be announced. Emphasis on the writing of papers and discussion of them. (SP)

198. Group Study. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Tutorial. One unit per week of instruction. Consent of instructor. Directed study on special topics. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Tutorial. One unit per week of instruction. Enrollment is restricted to students in the appendix Courses listed under General Rules and Regulations. (F,SP)

Graduate Courses

200. First Year Graduate Seminar. (3). Formerly 200. May be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. Two hours of seminar per week. A combination seminar and tutorial, required of and limited to first year graduate students in philosophy. (F)

204. Recent Work in Ethics. (3). Formerly 204. May be repeated for credit. Two hours of seminar per week. Semester Prerequisites: 104 or equivalent. Open to advanced undergraduates. (F,SP)

233. Recent Work in Philosophy of Language. (3). Formerly 233. May be repeated for credit. Two hours of seminar per week. (F)

234. Recent Work in Theory of Knowledge. (3). Formerly 234. May be repeated for credit. Two hours of seminar per week. (F)

237. Philosophical Problems. (3). Formerly 237. May be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Graduate students who have not yet passed the Qualifying Examination. Quarter Prerequisites: Graduate students who have not yet passed the Qualifying Examination. (SP)

250. Special Studies. (1-9). Formerly 250. May be repeated for credit. Tutorial. Semester Prerequisites: Approved by a faculty member. (SP)

251. Directed Studies. (1-9). Formerly 251. May be repeated for credit. Tutorial. Semester Prerequisites: Consent of instructor. Open to qualified students wishing to pursue special study or research under the direction of a member of the staff. (F,SP)

301. Professional Preparation: The Teaching of Philosophy. (2-4). Formerly 301. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. Independent study. Semester Prerequisites: Graduate teaching reading or other advanced study in preparation for teaching duties. Consent of instructor. Directed study on special topics. (F,SP)

Professional Courses

301. Professional Preparation: The Teaching of Philosophy. (2-4). Formerly 301. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. Independent study. Semester Prerequisites: Graduate teaching reading or other advanced study in preparation for teaching duties. Consent of instructor. Directed study on special topics. (F,SP)

Interdepartmental Studies Courses

IDS236. Cognitive Science Research Discussion. (1). Course may be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. One 1-hour meeting per week. Semester Prerequisites: Student must be the Cognitive Science R.A. for one of the professors associated with the Cognitive Science Program. The students will interface on the Cognitive Science-related research that they are carrying on as R.A.'s with the aim of broadening both their experience and the scope of the research. The group, in addition, will discuss relevant selected readings. This course is required of all Cognitive Science R.A.'s. (F,SP)

IDS237A-237B. Cognitive Science Seminar. (1-1). Formerly 237A-237B. One 1-hour meeting per week and one 1/2-hour discussion per week. Semester Prerequisites: Cognitive Science R.A. for one of the professors associated with the Cognitive Science Program. The students will interface on the Cognitive Science-related research that they are carrying on as R.A.'s with the aim of broadening both their experience and the scope of the research. The group, in addition, will discuss relevant selected readings. This course is required of all Cognitive Science R.A.'s. (F,SP)

IDS280. Discourse and Truth. (3). One 3-hour seminar per week. The history of the notion of parthemia from Antiquity, focusing on the opposition between the right to speak the truth and the obligation to tell the truth as one knows it in the political and philosophical systems of Antiquity. The course will require at least twelve hours per week of effort, including time spent in class and in outside reading and preparation. Sponsoring Departments: French and Philosophy. (F)

Physical Education

Department Office, 200 Hearst Gymnasium, 482-3288

Professors:

- George A. Brooks, Ph.D.
- Harold M. Eichler, Ph.D.
- Roberta J. Park, Ph.D. (Chair)
- Mary Lou Norrie-Brown, Ph.D. (Emerita)
- Anna S. Epsenmacher, Ph.D. (Emerita)
- Franklin M. Henry, Ph.D. (Emerita)

Counselors:

- Joseph Royo, Ph.D.

Assistant Professors:

- Brenda J. Bredemeier, Ph.D.
- Frederica Bernhard, M.S. (Emissary)
- Lucidore C. Barnowski, M.S. (Emissary)
- Charles J. Keeney, A.B. (Emissary)
- Raffe D. Miller, M.A. (Emissary)

Chairperson:

- Charles J. Keeney, A.B. (Emissary)
- Julius Pullay-Alpar, M.Phys.ed., M.D. (Emeritus)

Graduate Advisers: Miss Park, Mr. Brooks.

Teacher Education Advisers: Miss White.

The Department of Physical Education at Berkeley offers an undergraduate A.B. and graduate majors leading to the M.A. and Ph.D. degrees. In addition, the Department makes available to all students instructional classes in a wide variety of sports, physical education courses, and gymnastic activities. There is a waiver program approved by the Commission for Teacher Preparation and Licensing for students who want to apply for a teaching credential. The Department offers an Exercise Science Research Laboratory for students and members of the University community who wish to utilize the service.

The Physical Education major is concerned with the wholeness of knowledge pertaining to an understanding of human beings as they engage in a wide range of motor activities. Emphasis is placed upon the development of scientific and scholarly basis for understanding: (a) the physiological status of individuals engaged in physical activity; (b) acquisitiveness, performance, and retention variables in motor activities; and (c) the nature and role of games, sports, and similar activities in human cultures—both contemporary and historical. At Berkeley the physical education major is academic in its orientation since it is built upon an organized body of knowledge with a content that is theoretical and scholarly as distinguished from technical and professional.

Students who have completed the undergraduate major in physical education will find that it has prepared them with a solid theoretical base in the major field and laboratory for entrance into advanced degree programs which emphasize research, as well as for entrance into such professional programs as physical therapy, sports medicine, coaching, recreation administration, teaching, coaching and athletic training. The department does not offer formal programs in these professional fields, however.

For junior transfer students who plan to apply for admission in the area of biological science with a major in physical education, preparation should be as follows:

- Students who have completed 56 to 70 semester units: Chemistry 1A and at least three of the following: Anatomy 108-108L or equivalent (a lower division course covering human anatomy with laboratory is acceptable). Elementary Statistics, Physics 8A, Microbiology 10A, Physiology 109-109L (human physiology with laboratory), Psychology 1, History 5, 7B, 17A-17B or 30, Anthropology 3 or Sociology 1.

- Students who have completed 71 to 80 semester units: Chemistry 1A, Anatomy 108-108L or equivalent (a lower division course covering human anatomy with laboratory is acceptable), Elementary Statistics, Physics 8A, Microbiology 10A, Physiology 109-109L (human physiology with laboratory), and at least two of the following: Elementary Statistics, Physics 8A, Microbiology 10A, Physiology 109-109L (human physiology with laboratory), Psychology 1, History 5, 7B, 17A-17B or 30, Anthropology 3 or Sociology 1.
Courses accepted for the above requirements must be the equivalent of Berkeley campus courses.

The Major

Lower Division. Chemistry 1A; a course in elementary statistics; a college level course in human anatomy with laboratory; a college level course in human physiology with laboratory; Physics 8A; Mathematics 16A; Psychology 1; History 5, 7B, 17A-17B or 30; Anthropology 3 or Sociology 1.


Honors Program. A student with an overall grade-point average of 3.3 or higher and a grade-point average of 3.5 or higher in courses in the major may, with the approval of the major adviser, apply for admission to the honors program. Requirements in the honors program are completion of Physical Education 195-four units or Physical Education 195 and Physical Education 200-four units, and For the Ph.D. degree, specialization in one of three broad areas is required: (1) Historical and Social-Scientific Aspects of Human Motor Performance; (2) Motor Learning, Performance, and Development; (3) Motor Control. Detailed information concerning admission, degree requirements, and teaching associateships is available upon request from the Graduate Secretary, 200 Hearst Gymnasium.

Graduate Degrees

Graduate work leading to the M.A. and Ph.D. degrees is offered in the Department of Physical Education. Each is a research-oriented degree. The department does not offer professional degree programs. For the M.A. degree the student may choose either Plan I (a minimum of 20 units and a thesis), or Plan II (a minimum of 24 units and comprehensive examination which covers three sub-disciplinary areas). For the Ph.D. degree, specialization in one of three broad areas is required: (1) Historical and Social-Scientific Aspects of Human Motor Performance; (2) Motor Learning, Performance, and Development; (3) Motor Control. Detailed information concerning admission, degree requirements, and teaching associateships is available upon request from the Graduate Secretary, 200 Hearst Gymnasium.

Activities Instruction

The Department offers instructional classes to students in sports, dance, fitness, and gymnastic activities. Instruction is planned to develop and improve performance skills, to impart knowledge and concepts relevant to the activity, to introduce information concerning the effects of regular exercise, and to help students to develop and maintain physical fitness. Elementary through advanced level classes are provided in many activities. All classes are open to men and women for a single fee a semester. Beginning spring semester 1985 computerized pre-enrollment will make it necessary to re-number the physical activities courses. Consult the Schedule of Classes for relevant information.

Departmental Fees. The incidental fee payable by all students enrolled in athletics entitled to use of gymnasiums, swimming pools, tennis courts, and athletic fields. Lockers and shower facilities are provided. A few activity classes such as bowling and fencing require payment of extra fees.

Locker Rules and Penalties. A penalty fee will be imposed if students fail to comply with the following regulations: (a) failure to clear locker and return lock by specified date; (b) failure to return equipment or clothing on or before the date posted for such return at the end of each semester or at the end of each session of the University; (c) overnight use of locker in designated areas.

Exercise Stress Testing. As a service to the campus community the Department of Physical Education (in conjunction with the Student Health Service) offers a program of exercise stress testing and prescription. Participants are advised that they may experience symptoms of palpitation, alterations of function and body composition (percent fat, percent lean). Additionally, electrocardiographic (ECG) and oxygen consumption responses during graded and maximum exercise on a treadmill or bicycle ergometer are monitored. The determination of maximum oxygen consumption (VO max) is the best measure of physical fitness available. Participants are presented with a computer generated evaluation of fitness status, and an evaluation of exercise to maintain or improve physical fitness. This program is available to the university community on a fee basis.

Upper Division Courses

101. Kinesiology and Body Mechanics. (3). Formerly 101. Two hours of lecture and one three-hour laboratory per week. Semester Prerequisites: Human anatomy with laboratory, in human physiology with lab; Physics 10 (or 8A recommended). Physical structure and muscular movements in various physical activities. Analysis of joint and muscle actions, and physical laws related to joint and muscle action. (F)

102. Kinesiology of the Handicapped. (2). Formerly 102. Two hours lecture per week. Semester Prerequisites: 101. Causes, incidence, effects of those physical disabilities that affect participation in society. Current research and nature of programs designed to lead to optimum function of the handicapped. (SP)

105A. Exercise Physiology. (4). Formerly 105A. Three hours lecture and one three-hour lab per week. Semester Prerequisites: A college level course in human physiology with laboratory and Chemistry 1A. 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 metabolism, etc. (SP)

105B. Exercise Physiology. (4). Formerly 105B. Three hours of lecture and one three-hour laboratory per week. Semester Prerequisites: 105A. 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. (SP)

107. Sports Medicine. (2). Formerly 107. Two hours of lecture per week. Semester Prerequisites: 105A. Analysis of the causes and situations of injuries in physical activities; strategies in the prevention, recognition, evaluation, management and rehabilitation of sports related injuries. (SP)

108. Neuromuscular Fatigue. (2). Formerly 108. Two hours of lecture per week. Semester Prerequisites: Elementary Statistics and Psychology 1. The analysis of fatigue and recovery processes in gross human motor activity. How various situations affect the central and peripheral nervous systems and muscular performance. (F)

110A. Motor Control. (3). Formerly 110A. Two hours of lecture and two hours of laboratory per week. Semester Prerequisites: Psychology 1 and elementary statistics. Motor development from birth to maturity, age changes, sex and individual differences, maturation, and motor learning in childhood and adolescence, relation of motor performance to other aspects of development. (SP)

112. Motor Development of the Handicapped. (2). Formerly 112. Two hours of lecture per week. Semester Prerequisites: 111. Motor development of the handicapped as a function of age, sex, and type of disability. Research and developmental and environmental factors on motor development according to the type of handicap. (SP)

114. Psychological Bases of Physical Activity. (2). Formerly 111B. Two hours of lecture per week. Semester Prerequisites: Psychology 1. Selected social-psychological constructs as factors which influence physical activity. Personality variables, motivation, presence of others, and competition. (F)

120. Sports in American Society. (2). Formerly 120. Two hours of lecture per week. Semester Prerequisites: Sociology 1. Interrelationships of sports and physical activity with other aspects of American culture. Emphasis on the twentieth century. (F)

121. Social-Cultural Bases of Human Movement. (3). Formerly 121. Two hours of lecture and one hour of section per week. Semester Prerequisites: Sociology 1 or Anthropology 3. The social and cultural importance and structure, variety, and extent of sport in modern societies. Social forces such as institutions, processes,
and systems are examined in relation to sport and sport groups as subcultures. (F)

130. History of Physical Education and Sport. (3). Formerly 130. Two hours of lecture and one hour of section per week. Semester Prerequisites: History 5, 7B, 17A-17B or 30. History of physical education and sport. Social, cultural, and pertinent scientific aspects. Emphasis on 17th through early 20th centuries. (F)

131. Curriculum Development and Administration. (2). Formerly 131. Two hours of lecture per week. Semester Prerequisites: 111 and 130. Curriculum development and evaluation in school and college programs of physical education including the instructional program, intramural sports and interscholastic athletics. Administrative policies and procedures pertaining to staff, facilities, equipment, budget and program. (F)

135A. Measurement and Evaluation in Physical Education. (3). Formerly 135A. Two hours of lecture and two hours of laboratory per week. Semester Prerequisites: Elementary statistics. Evaluation in physical education. Measurement of physical abilities and specialized motor skills. (SP)

135B. Measurement and Evaluation in Physical Education. (3). Formerly 135B. Two hours of lecture and two hours of laboratory per week. Semester Prerequisites: 135A. Advanced topics in the measurement and evaluation of human motor performance. (F)

140. Recreation in American Society. (2). Formerly 140. One and one-half hours of lecture and one hour of section per week. Semester Prerequisites: Sociology 1 or Anthropology 3. Nature, scope and significance of recreation in the social and economic life of the American people. (SP)

150. Theory of Dance. (3). Formerly 150. Two hours of lecture and three hours of laboratory per week. Semester Prerequisites: Activity class sections in dance and either Sociology 1 or Anthropology 3. Ethnic, social, and contemporary dance forms: development of folk forms in Europe and the Americas; present trends in the United States; nature and function of rhythm in dance; theories and principles of technique and composition. Not offered 1984-85.

165. Introduction to the Biomechanical Analysis of Human Movement. (4). Formerly 165A-165B. Three hours of lecture and three hours of laboratory per week. Semester Prerequisites: Activity class sections in dance and either Sociology 1 or Anthropology 3. Ethnic, social, and contemporary dance forms: development of folk forms in Europe and the Americas; present trends in the United States; nature and function of rhythm in dance; theories and principles of technique and composition. Not offered 1984-85.

171. Conditioning of Athletes and Care of Injuries. (2). Formerly 171. One hour of lecture and two hours of laboratory per week. Semester Prerequisites: Current American Red Cross first aid certificate and college level course in human anatomy and physiology. Conditioning and care of athletes, sleep, diet, health, and activity habits. Care of injuries, with special emphasis on taping, therapy, and protective equipment. (SP)

195. Honors Course. (2-4). Formerly H195. Course may be repeated for credit. Individual conferences to be arranged. Special study and/or research in the field of human movement. (F,SP)

196. Honors Thesis. (2). Formerly H196. Course may be repeated for credit. Individual conferences to be arranged. (F,SP)

197. Field Study in Physical Education. (1-3). Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences to be arranged. Supervised experience relevant to specific aspects of physical education. Prerequisites: Permission of the instructor. Meetings with faculty sponsor and written reports required. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-3). Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences to be arranged. Restricted by regulations listed in the Key to Symbols section of the General Catalog. (F,SP)
Physical Science

Major Advisor: Gilbert Shapiro, 386 Le Conte Hall, 642-1270.

Field Major in Physical Sciences

This program has been developed for students who wish to concentrate in the physical sciences on a broader basis than is possible in a departmental major. Two plans are offered within the major. Plan A is based on Physics 8, which is required of science students, and Mathematics 16, which is required in part by life sciences departments. Through this plan a student preparing for a career in environmental or health science may major in physical science and at the same time acquire the necessary pre-professional preparation. For example, Plan A, together with organic chemistry and a year of biology, will meet the entrance requirements of most medical schools. Plan B is based on Physics 7 and Mathematics 1, which are required by physical science and engineering departments. Within this plan it is possible to complete much of the departmental major in that plan, physiology, or chemistry, while also studying astronomy and geology as well as computer science.

Plan A

(Broad introduction to physical science)

Lower Division Courses. Mathematics 16A-16B, 55; Physics 8A-8B; Chemistry 1A-1B; Computer Science 8.

Upper Division Courses. Physics 132; Chemistry 130A-130B; Physiological Optics 110; Statistics 131A. Electives in computer science, mathematics, statistics, and physical science with the approval of the adviser to complete a total of 30 upper-division units in the major. Up to eight upper-division units in engineering science will be accepted with the approval of the adviser.

Plan B

(Of departmental concentration)

Lower Division Courses. Mathematics 1A-1B, 50A-50B; Physics 7A-7B-7C; Chemistry 1A-1B or 4A-4B; recommended Chemistry 14.

Additional Required Courses. Geology 100 or Astronomy 7 or 127A.

Upper Division Courses. Physics 105; Chemistry 120A and Physics 110A, or Physics 137A and Chemistry 104. Electives in computer science, mathematics, statistics, and physical science with approval of the adviser to complete a total of 24 upper-division units. Up to eight upper-division units in engineering science will be accepted with approval of the adviser.

Honors Program

Students with a grade-point average of at least 3.30 may wish to participate in an honors program leading to graduation with honors. The honors program will include two semesters of work in a departmental honors program with a senior thesis.

Single Subject Teaching Credential. All credential candidates must be certified under the provisions of the California Teacher Preparation and Licensing Act of 1970. Prospective single subject teachers in the major must complete the 15 units considered above. In addition, some special courses are among the options open to the student. Those considering a physics major are urged to consult with their adviser. Course work in the major and also the opportunities available in the major are among the options open to the student. Those considering a physics major are urged to consult with their adviser.

Additional information concerning admission, teaching assistantships, fellowships, and degree requirements is given in a departmental major adviser.

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. In addition to applications and transcripts of undergraduate work, applicants for admission must submit scores on the graduate record examination in physics. Detailed information concerning admission, teaching assistantships, fellowships, and degree requirements is given in a departmental major adviser.

Upper Division Courses. Physics 105; 110A-110B; 112A-112B, five units of 111; one additional course from the following list chosen with the approval of the major adviser: 124, 129A, 139, 141A, 141B, 142, 150, 180, and IDS 145. These options will give the student an introduction to some areas of current research.

Special programs may be worked out in consultation with the adviser. Completion of the physics major is usually required for admission to graduate work. Additional mathematics from among the courses Mathematics 104, 120A-120B, 121A-121B, 85 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 consult the major adviser concerning the honors program. This program requires completion of the major, at least one semester of Physics 190 and a senior thesis, H195A-H195B.

Biophysics. Students who wish to obtain a broad introduction to the physical sciences and their application to biology are referred to the major in bio-physics, which appears under Biophysics and Medical Physics.

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.) Major Adviser: R.D. Tripp.

Field Major in Physical Science. Students interested in this major, see Physical Science for description of the major program. Major Adviser: G. Shapiro.
a comprehensive final examination administered by the Physics Department. At least 18 units must be in graduate courses in the major subject.

**Lower Division Courses**

Courses 7A-B7C, or H7A-H7B-H7C are fundamental and are designed to meet the needs of students majoring in any of the physical sciences, or who are enrolled in the colleges of Chemistry or Engineering. Those proceeding with a second year mathematics sequence should take courses 50A-50B and 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 desires 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.

**Lower Division Courses**

7A. Physics for Scientists and Engineers. (4).
Formerly 6A-6B. Three hours lecture, one hour discussion, and two hours laboratory per week. Semester Pre-requisites: High school physics, Math 1A or 1AS; Math 1B or 1BS (which may be taken concurrently). Mechanics and wave motion. (F,SP)

7B. Physics for Scientists and Engineers. (4).
Formerly 59D-59E. Three hours lecture, one hour discussion, and three hours laboratory per week. Semester Pre-requisites: 7A or equivalent; Mathematics 50A. Heat, electricity, and magnetism. (F,SP)

7C. Physics for Scientists and Engineers. (4).
Formerly 59D-59E. Three hours lecture, one hour discussion, and three hours laboratory per week. Semester Pre-requisites: 7B or equivalent; Mathematics 50B. (must be taken concurrently). Electromagnetic waves, physical optics, relativity, and quantum physics. (F,SP)

**Upper Division Courses**

H7A-H7B-H7C. Physics for Scientists and Engineers. (4).
Formerly H54A-H54B. Three hours lecture, one hour discussion, and three hours laboratory per week. Semester Pre-requisites: Mathematics 16A or 190A or consent of instructor. Mechanics, wave motion, electrostatics and heat. Other upper division physics courses are also included in series 8A-8B. (F,SP)

8A. Introductory Physics. (4).
Formerly 6A-6B. Students with credit for 7A will not receive credit for 8A. Three hours lecture and one hour discussion per week plus ten 3-hour laboratories per semester. Semester Pre-requisites: Mathematics 16A or 190A or consent of instructor. Mechanics, wave motion, electrostatics and heat. Students with credit for 8A-8B may subsequently declare majors in Physical Science or Engineering. (F,SP)

8B. Introductory Physics. (4).
Formerly 6B-6C. Students with credit for 7B or 7C will not receive credit for Physics 8B. Three hours lecture and one hour discussion per week plus ten 3-hour laboratories per semester. Semester Pre-requisites: 8A or equivalent. Quarter Pre-requisites: 6A. Electromagnetism, optics and modern physics. (F,SP)

10. Descriptive Introduction to Physics. (3).
Formerly 10. Not open to students who have taken any of 7A-B7C, H7A-H7B-H7C, 8A-8B or equivalent. Three hours lecture and one hour discussion per week. Semester Pre-requisites: Open to students with or without high school physics. A brief presentation of some of the more important phenomena in physics with experimental illustration. (F,SP)

Formerly 21. Two hours of lecture and one hour of discussion per week. Semester Pre-requisites: 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 and production in musical instruments, musical scales. Numerous illustrative lecture demonstrations will be given. Only the basics of high school algebra and geometry will be used. (SP)

29. Lower Division Physics Seminar. (1,5).
Formerly 39. Must be taken on a passed/not passed basis. Two hours of lecture per week. Semester Prerequisites: Enrollment by consent of instructor during the week of pre-enrollment. Consult bulletin boards outside of 366 Le Conte for more information. Enrolment limited to 20 students per section. Physics Seminar course designed for both non-major students and those students considering a major in physics. Topics vary from semester to semester. (F,SP)

49. Supplementary Work in Lower Division Physics. (1-3).
Formerly 49. Course may be repeated for credit. Meetings to be arranged. Students with partial credit in lower division physics courses may, with consent of instructor, complete the credit under this heading. (F,SP)

Formerly 101A-101B. Three hours lecture and one hour 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, oscillations, normal modes, rigid body dynamics, tensor analysis techniques. (F,SP)

110A-110B. Electromagnetism and Optics. (4).
Formerly 110A-110B. Three hours lecture and one hour discussion per week. A course emphasizing electromagnetic theory and applications; charges and currents; electric and magnetic fields; dielectric, conductive, and magnetic media; relativity, Maxwell equations. Wave propagation in media, radiation and scattering, Fourier optics, interference and diffraction, ray optics and applications. (F,SP)

111. Modern Physics and Advanced Electrical Laboratory. (1-3).
Formerly 111. Five units required for physics major; eight units may be taken for credit. Half-credit allowed. Two 4-hour laboratory sessions per week. Semester Prerequisites: 137A or consent of instructor. The course will begin with a nine week (8 hours/week) laboratory on Basic Semiconductor Circuits (BSC(Sup)) for 1.5 units, followed by individual experiments which are approximately 0.5 units each. This advanced laboratory for junior and senior students involves some of the significant subjects in nuclear, classical, and solid-state physics. Individual work is encouraged. (F,SP)

112. Introduction to Statistical and Thermal Physics. (4).
Formerly 112. Three hours lecture and one hour discussion per week. Basic concepts of statistical mechanics, microscopic basis of thermodynamics and applications to microscopic systems, condensed states, phase transformations, quantum distributions, elementary kinetic theory of transport processes, fluctuation phenomena. (F,SP)

124. Introductory Nuclear Physics. (3).
Formerly 124. Three hours lecture and one hour discussion per week. Semester Prerequisites: 137A tools of nuclear physics, alpha, beta, and gamma decay, nuclear interactions and structure, brief introduction to particle physics. (F,SP)

129. Particle Physics. (4).
Formerly 129A-129B. Three hours lecture and one hour discussion per week. Semester Prerequisites: 137A tools of nuclear physics, alpha, beta, and gamma decay, nuclear interactions and structure, brief introduction to particle physics. (F,SP)

132. Contemporary Physics. (3).
Formerly 132. Not open for credit to students who have completed 137A. Three hours lecture and one hour discussion per week. Semester Prerequisites: 8A-8B or equivalent or consent of instructor. Quarter Prerequisites: 6A-6B-6C. A general descriptive course of selected topics in contemporary physics. Subject matter will vary from year to year. 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)

137A-137B. Quantum Mechanics. (4,4).
Formerly 137A-137B. Three hours lecture and one hour discussion per week. Introduction to the methods of quantum mechanics with applications to atomic, molecular, solid state, nuclear and elementary particle physics. (F,SP)

139. Special Relativity and General Relativity. (3).
Formerly 139. Three hours lecture and one hour discussion per week. Semester Prerequisites: 105, 110A or consent of instructor. Quarter Prerequisites: 105A-105B and 110A-110B. Historical and experimental foundations of Einstein's special theory of relativity. Spatial and temporal measurements, particle dynamics, electromodynamics, Lorentz invariants. Introduction to general relativity. Selected applications. Designed for advanced undergraduates in physics and astronomy. (SP)

141A-141B. Solid State Physics. (4,3).
Formerly 141A-141B. Three hours lecture and one hour discussion per week. Semester Prerequisites: 137A-137B: 137B may be taken concurrently. A thorough introductory course in modern solid state physics. Crystal symmetries; classification of solids and their bonding; electromagnetic, elastic, and particle waves in periodic lattices; thermal and dielectric properties of solids; energy bands of metals and semi-conductors; superconductivity; magnetism; ferroelectricity; magnetic resonances. (F,SP)

Formerly 142A-142B. Three hours lecture and one hour discussion per week. Semester Prerequisites: 137A-137B; 137B may be taken concurrently. Quarter Prerequisites: 105A-105B, 110A-110B and 110A-110B. Motion of charged particles in electric and magnetic fields, dynamics of fully ionized plasma from both macroscopic and microscopic point of view, magnetohydrodynamics, small amplitude wave examples from solar physics and controlled fusion research. (SP)

150. Introduction to Atmospheric and Space Sciences. (3).
Formerly 150. Three hours lecture and one hour discussion per week. Semester Prerequisites: Satisfaction of the pre-requisites standing in the form of credit or consent of instructor. Recent measurements and physical theories of processes in the solar system, galaxy, and universe resulting from the interactions of particles, fields, radiation and matter. (F)

Formerly 153. Must be taken on a passed/not passed basis. One and one-half hours of lecture per week plus optional section meetings. Semester Prerequisites: Introductory course in physical science or consent of instructor. A critical study of the political, economic, and social forces that influence the work of physicists and scientists generally. (F)

Formerly 160. Three hours lecture and one hour discussion per week. Semester Prerequisites: 112 or equivalent, or consent of instructor. Thermal and electrical conversion of solar, chemical, and nuclear energy. Thermal, optical, and electrical properties of energy conversion materials. Physics and thermodynamics of the efficient use of energy conversion processes. (SP)

H190. Physics Honors Course. (2).
Formerly H190. Course may be repeated for credit. Must be taken on a passed/not passed basis. A seminar which includes study and reports on current theoretical and experimental programs. Open to all qualified students. (SP)

Formerly H195A-H195B. Credit and grade will be awarded upon completion of the full sequence. (SP)
To obtain credit the student must, at the end of two

Quarter Prerequisites: 221A-221B-221C or equivalents. Time dependent processes. Semidassical theories of emission and absorption, theory of angular momentum; stationary state problems; variational principles; time independent perturbation theory; time dependent perturbation theory; theory of scattering. (F) Of

Seminar. (2). Formerly 290. Course may be repeated for credit with consent of instructor. Topics will vary from semester to semester. See Department of Physics announcements. (F,SP)

Seminar, (2). Formerly 290. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Topics will vary from semester to semester. See Department of Physics announcements. (F,SP)

251A-251B. Introduction to Graduate Research in Physics. (11). Formerly 251A-251B. Must be taken the first year. Three hours of discussion section per week. Quarter Prerequisites: Graduate standing in Department of Physics or consent of instructor: 251A is prerequisite to 251B. A survey of experimental and theoretical research in the Department of Physics, designed for first-year graduate students. One regular meeting each week with supplementary visits to experimental laboratories. Meetings include discussions with research staff. (F,SP)

250. Seminar. (1-12). Formerly 250. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Consent of instructor; 250A is prerequisite to 250B. A seminar in the process of scientific inquiry. Students will 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,SP)

602. Individual Study for Doctoral Students. (1-6). Formerly 602. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory
basis. Semester Prerequisites: For qualified graduate students. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Professional Courses

300. Professional Preparation: Supervised Teaching of Physics. (2-4). Formerly 300. Must be taken on a satisfactory/satisfactory basis. Semester Prerequisites: Graduate standing, consent of the teaching assistant, or consent of instructor. Discussion, problem review and development, guidance of physics laboratory experiments, course development, supervised practical teaching experience.

Interdepartmental Studies Courses

Lower Division Courses

IDS80. Environmental Physics. (3). Formerly 80. Two 1-hour lectures and one 1-hour discussion per week. Elementary concepts of physics with application to problems of environment, energy, pollution, biology, geology, or astrogeophysical examples of the role of physics in contemporary social issues. Sponsoring Departments: Conservation and Resource Studies and Physics. (SP)

Graduate Courses


IDS254. High Energy Astrophysics. (3). Formerly 254. Three hours of lecture per week. Semester Prerequisites: Algebra 231 or equivalent of prerequisite. Quarter Prerequisites: Physics 110A-110B or equivalent. Basic physics of high energy radiation processes in an astrophysical environment. Cosmic ray production and propagation. Applications selected from pulsars, x-ray sources, supernovae, interstellar medium, intergalactic medium, extragalactic radio sources, quasars, and big bang cosmologies. Sponsoring Departments: Physics and Astronomy. (SP)

IDS285. Theoretical Astrophysics Seminar. (2). Formerly 285. Course may be repeated for credit. Must be taken on a satisfactory/un satisfactory basis. One 2-hour seminar per week. The study of theoretical astrophysics. Sponsoring Departments: Astronomy and Physics. (F,SP)

Physiology-Anatomy

Department Office, 2549 Life Sciences Building, 424-5978

Professors:
Beth Burns, Ph.D.
Martin O. Dacles, Ph.D.
John G. Forte, Ph.D.
Walter J. Freeman, M.D.
Robert I. Macey, Ph.D.
Jeffery A. Winer, Ph.D.

Lecturers:
Terry E. Machen, Ph.D.
Lester Packard, Ph.D.

Assistant Professors:
Gary L. Firestone, Ph.D.

Adjunct Professor:
George Sayers, Ph.D.

Adjunct Assistant Professor:
Alexandre T. Quintanilha, Ph.D.

Major Advisers: Mrs. Diamond, Mr. Nicoll, Mr. Free man.

Graduate Advisers: Mr. Machen, Mrs. Timiras, Mr. Westheimer (Physiology); Mr. Srebnik (Anatomy); Mr. Tisan, Mr. Winer.

Major in Physiology

Goals. The curriculum outlined below leads to the A.B. degree in Physiology. It is intended to provide broad understanding of the cellular mechanisms underlying the life process, of the functions of the various parts of living organisms, and of the integrated physical and functional response of whole organisms to the environments in which they live, together with the functional changes that occur in living organisms with the passage of time during their life span.

Lower Division. Chemistry 1A-1B (4-4); Chemistry 1A-1B (4-4); Mathematics 1A-1B (4-4); recommended, or 1B-18 (3-3); Physics 8A, 8B, 1A-1B (5-5).

Upper Division. Physiology 100A (5-5) and 100B (5-5); Physiology 101A (1.5) and 101B (1.5); either Anatomy 108-108L (3-2) or Anatomy S104 (5); either Biochemistry 102 (4) and/or 100A-100B (4-4); and three additional upper-division courses, two of which must be in physiology. Recommended: two additional semesters of coursework in physics, mathematics, or chemistry; e.g., Chemistry 5 or 130A-130B.

Honors Program. To be enrolled in the honors program a student must maintain a grade-point average of at least 3.50 in the courses required for the undergraduate major in physiology. To receive honors with the bachelor's degree the student must (1) achieve a grade-point average of at least 3.50 overall in the classes required for the undergraduate major in physiology as stipulated above, (3) complete at least 6 units of course 199 or equivalent, and (4) submit a satisfactory thesis based upon the research performed.

Graduate Program in Physiology

Students qualified for admission may elect a course of work leading either to the M.A. degree or directly to the Ph.D. degree in physiology. The M.A. degree is not prerequisite for the Ph.D. degree. Candidates for either degree must have completed the equivalent of the requirements for the undergraduate major shown above, in addition to the minimum requirements for the particular graduate degree as follows:

1. The M.A. degree in physiology is to be earned according to Plan I of the Graduate Division, which includes the satisfactory completion of 20 units of coursework and a thesis.

2. The Ph.D. degree in physiology. Required: Biochemistry 102 (4) or 100A-100B (4-4); Chemistry 130A-130B (2-3, 2-3); a course in statistics; at least eight units of upper division or graduate courses each in physiology and morphology; and at least 16 units of course 299.

Preliminary oral exams are mandatory for all Ph.D. students following their first year of study.

Before advancement to candidacy for the Ph.D. degree the student must (a) demonstrate ability to make an accurate written translation for the physiological scientific literature in two of the languages approved by the Department (e.g., French, German, Russian, or Computer Language); (b) be sponsored by a major professor for dissertation research; and then pass an oral qualifying examination to test general mastery of physiology and at least two other related subjects which are approved by the major professor and the graduate adviser. On passing the oral examination the student must receive the degree of "Candidate in Philosophy."

All candidates for the Ph.D. degree must acquire a broad understanding of the human body and brain: Intended for students following their first year of study.

Graduate Program in Anatomy

In addition to meeting the general requirements of the Graduate Division, the student must have had the following courses, or their equivalents, before admission to the graduate degree program in anatomy: Biology 1A-1B (5-5); Chemistry 1A-1B (4-4); Chemistry 1A-1B (4-4); Mathematics 1A-1B (4-4) recommended, or 1A-1B (3-3); Physics 8A-8B-8B (3-1-4).

1. The M.A. degree in anatomy is to be earned according to Plan I of the Graduate Division, which includes the satisfactory completion of 20 units of coursework and a thesis. Required: One year high school or college chemistry. The course will concentrate on basic mechanisms underlying human life processes; including cells and membranes; nervous and muscle function; cardiovascular, respiratory, renal and gastrointestinal physiology; metabolism, endocrinology and reproduction. (SP)

2. The Ph.D. degree in anatomy. Required: Anatomy 102 (3), 151 (4), 233 (4), 235 (7); at least 24 units of course 299; Physiology 100A, 100B, 101A, 101B (4-1-5.1-5.1); Biochemistry 102 (4). An adequate reading knowledge in two of the languages approved by the Department (e.g., French, German, Russian, or Computer Language) must be demonstrated before proceeding to the oral qualifying examination, which covers the major subdivisions of anatomy and morphology. A dissertation based upon original research in anatomy is to be prepared according to Plan B of the Graduate Division.

Preliminary oral exams are mandatory for all Ph.D. students following their first year of study.

All candidates for the Ph.D. degree must acquire teaching experience equivalent to a minimum of one semester of full-time work as a teaching Assistant or Associate (e.g., two semesters of 1/4-time or four semester of 1/4-time teaching).

For further details concerning the graduate degrees, please consult the graduate adviser in anatomy.

Physiology

Lower Division Courses

1. Introductory Human Physiology. (3). Formerly 1. One 2-hour lecture and one 1-hour discussion per week. Semester Prerequisites: One year high school or college chemistry. A comprehensive introduction to human physiology. The course will concentrate on basic mechanisms underlying human life processes; including cells and membranes; nervous and muscle function; cardiovascular, respiratory, renal and gastrointestinal physiology; metabolism, endocrinology and reproduction. (SP)

1. Introductory Human Physiology. (3). Formerly 1. Self-paced, tutorial. Semester Prerequisites: One year high school or college chemistry. Course is equivalent to Physiology 1 but designed for individual flexibly-paced study. (F) Not offered Spring 1985

1. Introductory Human Physiology. (1). Formerly 1. One 3-hour laboratory and one 1-hour discussion per week. Semester Prerequisites: One year high school or college chemistry. 1 or concurrent enrollment. Experiments and demonstrations are designed to amplify and reinforce information presented in Physiology 1. Course may include investigation of the function of muscle, nerve, cardiovascular, renal, respiratory, endocrine, and blood systems. (SP) Offered even years.

1. The Biology of Man. (2). Formerly 10. Must be taken on a pass/fail basis. Two 1-hour lectures, one 1-hour discussion and two 1/2-hour demonstrations per week. An introduction to the function, structure and origins of the human body and brain. Intended for students not majoring in the biological sciences. (F)

39. Computer Simulations in Physiology. (3). Course may be repeated for credit. Must be taken on a pass/fail not passing basis. One 1-hour lecture and two 3/4-hour laboratories per week. Semester Prerequisites: Fully conversant with Basic programming and comfortable with elementary mathematics. Research seminar course. Class sessions and readings assignments present special
topics in physiology which are particularly suitable for computer simulation. Students will be provided with microcomputers to set up standard simulations to be followed on the screen. (F)

99. Supervised Independent Study and Research. (1-4). Formerly 99. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Consent of instructor. Limited to freshmen and sophomores. Individual research by lower division students. (F-SP)

Upper Division Courses

100A. Cellular and Neural Physiology. (5). Four 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Biology 1A-1B, Biochemistry 102 or equivalent, one year physics, one year calculus. Recommended: Chemistry 130A-130B. Formerly 101 and 103. Structure and function of cells and organelles. Topics will include: membrane structure and transport; motility, metabolism, secretion, neurotransmission, transmission, integration, sensory processing, and motor coordination. (F)

100B. Organ Physiology. (5). Five 1-hour lectures per week. Semester Prerequisites: 100A and Biology 1A-1B. Recommended: a course in vertebrate anatomy. Formerly 102 and 103. Clinical and chemical basis of organ and tissue function. Vegetative and homeostatic functions in mammals, including endocrine, cardiovascular, respiratory, gastrointestinal and renal systems. (SP)

101A. Cellular and Mammalian Physiology Laboratory. (1). Formerly 102L and 103L. One 4-hour laboratory and one 2-hour discussion and demonstration on alternate weeks. Semester Prerequisites: 100A and Biochemistry 102 (may be taken concurrently). Basic laboratory techniques and experiments in cellular and neural physiology planned to accompany lectures in Physiology 100A. (F)

101B. Organ Physiology Laboratory. (1.5). Formerly 102L and 103L. One 4-hour laboratory and one 2-hour discussion or demonstration on alternate weeks. Semester Prerequisites: 100A and Biochemistry 102 (may be taken concurrently). Basic laboratory techniques and experiments in endocrinology, organ physiology and tissue fluids. (SP)

109. Survey of Mammalian Physiology. (3). Formerly 109. Students who have taken 100A-100B will receive no credit for 109. Three 1-hour lectures per week. Semester Prerequisites: Anatomy 108. Mechanics of human life processes; study of function of cells, tissues and organ systems. (SP)

109L. Laboratory of Mammalian Physiology. (2). Formerly 109L. Students who have taken 101A-101B will receive no credit for 109L. One 1-hour lecture and one 3-hour laboratory per week. Semester Prerequisites: Anatomy 108. Physiology 109 should be taken concurrently. Laboratory experiments demonstrating the functional mechanisms underlying life processes in mammalian systems. (SP)

123. Comparative Physiology. (3). Formerly 123. Students who have taken Zoology 120A-120B will receive no credit for 123. Three 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B. Comparative survey of physiological function among the various animal phyla in order to examine evolutionary aspects of organs and processes which are peculiar to certain animal groups or species will be emphasized. (F) Not offered 1984.

141. Physiology of the Endocrines. (3). Formerly 141. Three 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B, Chemistry 6A-6B, Biochemistry 102 or equivalent; concurrent enrollment. The endocrine glands of mammals and their hormones. Strong emphasis is placed on clinical aspects of normal and pathologic endocrine function in the human being, including the relationship of the central nervous system and pituitary gland to intermediary metabolism, growth, thyroid, adrenal and reproductive function, and sexual development. (F)

142. Molecular Endocrinology. (3). Three 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B, Chemistry 6A-6B, Biochemistry 102 (or consent of instructor). Recommended: Zoology 120 or Physiology 141. Molecular mechanisms by which hormones elicit specific biological responses and regulate gene expression; hormone-receptor interactions; synthesis, transport and targeting of hormones. (SP)

150. Biomechanics. (2). Formerly 150. Two 1-hour lectures per week. Semester Prerequisites: 100A; Biochemistry 102 or equivalent. Special emphasis upon bioenergetics of mitochondria. (SP)

152. Physiology of Human Development. (3). Formerly 152. Three 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B. Recommended: Anatomy 151. The development of systems to facilitate maturation, fertilization, embryology and fetal physiology; birth and neonatal adjustment, functional maturation in infant, child and adolescent; neuroendocrine control of puberty; factors influencing development. (SP)

153. Physiology of the Aging Process. (3). Formerly 153. Three 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B. The aging human body; structural and functional changes at organismal, cellular, subcellular and molecular levels. Comparative, epide- miological and environmental aspects. Theories of aging and perspectives on aging modification and life extension. (F)

169. Biology of Human Reproduction. (3). Formerly 169. Two 1-hour lectures per week. Semester Prerequisites: Biology 1A-1B. Anatomy and physiology of reproductive system. Induction; fertility control; contraception; pregnancy and abortion; lactation; sexual differentiation of brain and reproductive organs; homosexuality. (F) Offered odd years.


197. Field Study in Physiology. (1-4). Formerly 197. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Students must declare an undergraduate major. Supervised experience relevant to specific aspects of physiology in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F-SP)

198. Directed Group Study. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Undergraduate research by small groups. (F-SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual study and research on selected topics in physiology. At least 5 units of upper division courses in physiology. Enrollment is restricted by regulations listed in the General Catalog. Special library or laboratory projects may be assigned. Individual research by upper division students. (F-SP)

Graduate Courses

211. Seminar in Epithelial Physiology. (1). Formerly 213. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour discussion per semester. Semester Prerequisites: Graduate standing and consent of instructor. Advanced current topics in epithelial transport will be considered. (SP) Offered odd years.

211. Seminar in Cell Physiology. (1). Formerly 211. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour discussion per semester. Semester Prerequisites: Graduate standing and consent of instructor. Current research on cell structure and function. (F)

213. Seminar in Membranes and Transport. (1). Formerly 213. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion per semester. Semester Prerequisites: Graduate standing and consent of instructor. Current research on membrane structure, function and transport. (F)

214. Intracellular Signalling. (2). Formerly 214. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion per week. Semester Prerequisites: 100A or consent of instructor. Experimental methods for studying some of the mechanisms by which one part of a cell can tell another part to do; cell membrane potential and ion fluxes, pH, free calcium, cyclic nucleotides, protein phosphorylation, lipid pathways. (SP)

215. Neuroendocrinology. (3). Formerly 215. Three 1-hour lectures per week. Semester Prerequisites: 141, 100A-100B or equivalent, or consent of instructor. Neuroendocrine control of endocrine glands and effects of hormones on brain functions. (F)

216. Seminar in Neuroendocrinology. (1). Formerly 216. Course may be repeated for credit. One 1-hour lecture per week. Semester Prerequisites: Consent of instructor. Current research in the field will be considered. (F) Offered every year.

223. Seminar in Comparative Physiology. (1). Formerly 223. Course may be repeated for credit. One 1-hour discussion per week. Semester Prerequisites: 123 or equivalent. Consent of instructor. Quarter Prerequisites: 123 or equivalent. Selected subjects in the field of comparative physiology will be covered. (SP)


242. Seminar in Endocrine Physiology. (1). Formerly 242. May be repeated for credit. One 2-hour discussion per week. Semester Prerequisites: Consent of instructor. Selected topics from current research in endocrinology. (SP)

243. Seminar in Molecular Mechanisms of Hormone Action. (2). New course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour discussion per week. Semester Prerequisites: Graduate standing or consent of instructor. Current experimental approaches in exploring hormone regulated gene expression and control of cellular metabolism. (F)

256. Sensory Physiology. (2). Formerly 256. Two 1-hour lectures per week. Semester Prerequisites: 100A-100B OR consent of instructor. Transduction, coding and information processing in sensory systems. Correlation of findings from neurophysiology, psychophysics and perception. (F)

261. Seminar in History of Neurophysiology. (1). Formerly 261. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour discussions per week. Semester Prerequisites: Consent of instructor. Selected readings in classical texts of physiology with emphasis on the historical development of ideas about the nervous system. (F)

272. Advanced Topics in Physiological Transport. (2). Formerly 272. One 1-hour seminar-workshop and one 2-hour laboratory per week. Semester Prerequisites: Course in differential and integral calculus; 172 or concurrent enrollment in 172 is required. Recommended: Course in elementary physiology and course in physical chemistry. Kinetics of transport across cell membranes. Theories of passive, facilitated and active transport process in cell membranes of single cells and heterocellular epithelia. Workshop will include seminars and discussion on recent literature. Laboratory will involve modeling and computer simulation and is intended to expand physiological transport systems. (F)

282. Seminar in Development and Aging. (1). Formerly 282. Course may be repeated for credit. One 2-hour discussion per week. Semester Prerequisites: Consent of instructor. Lectures by visiting researchers active in the areas of development and aging, with particular emphasis on the neuroendocrine systems, as well as presentation and evaluation of research in these areas conducted by graduate students. (SP)

290. Seminar in Neurobiology. (1). Formerly 290. Course may be repeated for credit. One 2-hour dis-
cussion per week. Student Prerequisites: Consent of instructor. Discussions and readings in special topics, to be offered each semester. (F)

292. Departmental Seminar. (1). Formerly 292. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour lecture per week. Departmental seminar dealing with various topics in functional biology. (F,SP)

293. Seminar in Physiology and Anatomy Research. (1). Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Seminar Prerequisites: Graduate standing in Physiology or Anatomy. Seminar on current research interests by departmental faculty to familiarize entering students with opportunities for graduate research. (F,SP)

298. Special Study in Physiology. (1-12). Formerly 298. Course may be repeated for credit. Individual arrangements to be made. Seminar Prerequisites: Consent of instructor. Graduate research by small groups. (F,SP)

299. Individual Research in Physiology. (1-12). Formerly 299. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual arrangements to be made. Seminar Prerequisites: Consent of instructor. Original research in physiology by graduate students. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major professor. Seminar Prerequisites: Graduate standing. For candidates for Ph.D. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of the candidate for the Ph.D. (F,SP)

Professional Courses

300. Supervised Teaching of Physiology. (2). Formerly 300. Course may not be taken for credit. May be taken on a satisfactory/unsatisfactory basis. One hour of discussion and six hours of practice in tutoring physiology per week. Seminar Prerequisites: 100A and 100B, or equivalent courses and permission of instructor. Development of traditional and nontraditional teaching methods, and their practical application to physiology instruction. (F)

302. Practice of Teaching Physiology. (2). Formerly 302. Course may be repeated for credit for two semesters up to four units. Must be taken on a satisfactory/unsatisfactory basis. Weekly conference with instructor and teaching hours as assigned. Seminar Prerequisites: Appointment as a teaching assistant. Teaching laboratory assignments, assigned readings in physiology, biology, or IDIS courses. Analysis of specific format and problems. (F,SP)

491. Physiological Surgery. (2). Formerly 491. Must be taken on a satisfactory/unsatisfactory basis. One 4-hour laboratory per week. Seminar Prerequisites: 100A and 100B, graduate standing in biological sciences or consent of instructor. Students should be prepared to spend at least five hours per week in the preparation of the animal for operation and its post-operative treatment. Techniques of anesthesia and sterile surgical procedure, and experimental with special physiological research preparation. One 4-hour laboratory per week. preferably in even years. (F,SP)

492. Physiological Instrumentation. (2). Formerly 492. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture and three hours of laboratory per week. Seminar Prerequisites: Graduate standing in Physiology or Anatomy or consent of instructor. Instruction in the design and construction of mechanical instruments, application of individual mechanical instrumentation projects to monitoring of physiological parameters. Not offered 1984-85.

Anatomy

Lower Division Courses


99. Supervised Independent Study and Research. (1-4). Formerly 299. Course may be repeated for credit. Must be taken on a passed/not passed basis. Seminar Prerequisites: Limited to freshmen and sophomores. Consent of the instructor required. Individual research. (F,SP)

Upper Division Courses

105. Histophysiology. (4). Formerly 105. Two 1-hour lectures, one 1-hour discussion and one 3-hour laboratory per week. Seminar Prerequisites: Biology 1A-1B. The structural basis for the function of mammalian (particularly human) tissues and organ systems. Both light and electron microscopic levels of organization are considered. (SP)

108. General Human Anatomy. (3). Formerly 108. Three 1-hour lectures per week. Seminar Prerequisites: Biology 1A-1B or Chemistry 1A-1B. The functional anatomy of the human body as created by gross and microscopic examination. Designed to be taken concurrently with 108L. (F)

108L. General Human Anatomy Laboratory. (2). Formerly 108L. One 4-hour laboratory per week. Seminar Prerequisites: Biology 1A-1B or Chemistry 1A-1B, concurrent enrollment in Biology 1A or Chemistry 1A, following course. Prepared human dissections, models and microscopic slides. May be taken concurrently with 108. (F)

110A. Mammalian Neuroanatomy. (2). Formerly 110A. Two 1-hour lectures and one 1-hour discussion section per week. Seminar Prerequisites: Physiology 100A-100B or consent of instructor. Quarter Prerequisites: Biology 1A-1B-1C. Properties of neurons and neural systems in terms of their structure and evolution. May be taken concurrently with Physiology 110B. (SP)

151. Developmental Anatomy. (4). Formerly 151. Three 1-hour lectures, one 1-hour laboratory per week. Seminar Prerequisites: Biology 1A-1B. Quarter Prerequisites: Biology 1A-1B or 11A-11B. Conception, nidation and the development of the human embryo and fetus. Determinants of abnormal development and introduction to experimental teratology. (SP)

154. Development of the Nervous System. (2). Two 1-hour lectures followed by half-hour discussion section per week. Seminar Prerequisites: 151; IDS 112A recommended. A survey of the main features of neural development, with emphasis on the developmen of neurologic system. May be taken concurrently with Physiology 110B. (SP)

198. Directed Group Study. (1-4). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Undergraduate research by small groups. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences to be arranged. Seminar Prerequisites: 104 or 108, 108L. Enrollment is restricted by regulations listed in the General Catalog. Special library and laboratory projects may be assigned. Individual research by upper division students. (F,SP)

Graduate Courses

203. Functional Neuroanatomy. (4). Formerly 203. Two 1-hour lectures and two 3-hour laboratories per week. Seminar Prerequisites: Consent of instructor. Course of instruction. Development, structure (gross and microscopic) and functional relationships of the mammalian nervous system. (SP)

205. Systematic and Regional Human Anatomy. (7). Formerly 205A-205B. Three 1-hour lectures; three 4-hour laboratories per week. Seminar Prerequisites: Anatomy 151 or Zoology 155. Dissection, x-ray and surface anatomy of the body, with special reference to the functional capacities of the structure examined. (F)

262. Seminar in Advanced Neuroanatomy. (2). Formerly 262. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour lectures per week. Seminar Prerequisites: 203 and consent of instructor. Current research in functional neuroanatomy. (SP) Offered odd years.

299. Individual Research in Physiology. (1-12). Formerly 299. Course may be repeated for credit. Two 1-hour lectures and one 1-hour laboratory per week. Seminar Prerequisites: 203 or consent of instructor. Structure, function and comparative organization of brain stem, thalamus and cerebral cortex. Contemporary neuroanatomical research techniques; use of synaptic and neural morphology; and axoplasmic transport methods in sensory and motor systems. (SP) Offered odd years.

298. Special Study in Anatomy. (1-12). Formerly 298. Course may be repeated for credit. Individual arrangements to be made. Seminar Prerequisites: Consent of instructor. Graduate research by small groups. (F,SP)

299. Individual Research in Anatomy. (1-12). Formerly 299. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual arrangements to be made. Seminar Prerequisites: Consent of instructor. Individual research by graduate students. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. Course may be repeated for credit. May not be used for unit or residence requirements. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major professor. Seminar Prerequisites: For candidates for Ph.D. Intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of the candidate for the Ph.D. (F,SP)

Professional Courses

211. Seminar in Contemporary Neuroanatomical Techniques. (2). Formerly 211. Course may be repeated for credit. Two 1-hour lectures and one 1-hour laboratory per week. Seminar Prerequisites: 203 or consent of instructor. Structure, function and comparative organization of brain stem, thalamus and cerebral cortex. Contemporary neuroanatomical research techniques; use of synaptic and neural morphology; and axoplasmic transport methods in sensory and motor systems. (SP) Offered odd years.

Upper Division Courses

Interdepartmental Studies Courses

IDS112A. Mammalian Neuroanatomy. (3). Two 1-hour lectures per week each followed by a 1-hour discussion section. Seminar Prerequisites: Biology 1A-1B or consent of instructor. Properties of neurons and neural systems in terms of their structure and evolution. Designated to be taken concurrently with IDS 112B. Sponsoring Departments: EECS and Physiology-Anatomy. (SP)

IDS112B. Mammalian Neurophysiology. (3). Two 1-hour lectures per week each followed by a 1-hour discussion section. Seminar Prerequisites: Biology 1A-1B or consent of instructor. Properties of neurons and neural systems in terms of their function in relation to reflex and goal-directed behavior. Designated to be taken concurrently with IDS 112A. Sponsoring Departments: EECS and Physiology-Anatomy. (SP)

Graduate Courses

IDS113. Cellular Neurobiology. (3). Formerly 201. Two 1-1/2 hours per week. Seminar Prerequisites: Chemistry 1B, Mathematics 1B, Physics 6B, and an introductory neurobiology course. Physico-chemical basis of membrane potentials, electrotrods, action potential generation and propagation, synaptic transmission, sensory receptor function, and volume conductor...
tentials. Sponsoring Departments: Physiology-Anatomy, Biophysics, and EECS. (F)

IDS200B. Integrative Neurobiology. (3). Formerly IDS 200 and IDS 202Sponsoring Departments: Physiology-Anatomy, EECS, Zoology. Two 1½-hour lectures and one 1-hour recitation per week. Semester Prerequisites and Corequisites: IDS 111 or Zoology 121. In-depth consideration of current research questions central to the understanding of the organization of nervous systems, and of the behavior mediated by these systems. When appropriate these questions are illustrated with examples drawn from both the vertebrate and invertebrate literature. Circuit, network, or system analogs and will be emphasized where these approaches lend clarity. Sensorimotor integration is discussed in small systems or neurons (SP)

IDS200L. Neurobiology Laboratory. (4). Formerly 201L. Two 6-hour laboratories plus one 3-hour demonstration per week. Semester Prerequisites: IDS 200B. (IDS 200B may be taken concurrently.) Intended to provide the student with a working knowledge of current anatomical, physiological, and biophysical techniques in neurobiology through demonstrations, exercises, and individual research problems. Topics include synaptic transmission, excitable membranes, sensory reception, and circuits of neurons generating behavior. Sponsoring Departments: Physiology-Anatomy, Zoology, and Biophysics. (SP)

IDS82. Tumor Biology Seminar. (1). Formerly 282. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring Department: Biomedical and Environmental Health Sciences, Zoology, Physiology-Anatomy, and Microbiology. (F,SP)

Professional Courses

IDS493. Physiological Instrumentation. (2). Formerly 493. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 3-hour laboratories per week. Semester Prerequisites: Graduate standing or consent of instructor. Topics will cover problems in the detection, amplification, and recording of biotachonomic phenomena with the use and design of transducers. Sponsoring Departments: Physiology-Anatomy, EECS, and Biophysics. (SP)

Related Courses in Other Departments

BIOLOGY 139. Cell Motility. (2).

BIOLOGY 239. Cell Motility Research and Reviews. (1).

Political Economy of Industrial Societies

Group Major Office, Institute of International Studies, 209 Moses Hall, 642-4465

Major Advisers: Mr. Rosberg and Mr. Martic (Institute of International Studies), Coordinators; Mr. Abrams (History); Mr. Aggarwal (Political Science); Ms. Bonnell (Sociology); Mr. Cohen (City and Regional Planning); Mr. Ebenfeld (Economics and Business Administration); Mr. Feldman (History); Mr. Gregor (Political Science); Mr. Hammel (Anthropology); Mr. Landau (Political Science); Mr. Reed (Geography); Mr. Rochlin (Institute for Governmental Studies); Mr. Tease (Business Administration); Ms. Tyson (Economics); Mr. Ward (Economics); Mr. Zysman (Political Science).

Group Major in Political Economy

Industrial societies have undergone a series of unprecedented developments in recent years which have affected industrial democracies as well as developed socialist countries. These developments are difficult to understand by conventional means because of their diversity.

Because the Political Economy of Industrial Societies program stresses an interdisciplinary format, the program offers students a chance to study the nature of problems and opportunities with which industrial societies are confronted so as to better understand how problems may be solved and opportunities seized. The program is designed to direct students to the historical, comparative, and analytical study of what industrial societies have in common and how they differ.

In order to achieve a better understanding of these issues, students must in the program design their interdisciplinary plan of study in consultation with their faculty adviser. Within individual study plans, particular emphasis is placed on the institutions and values that have shaped, and sometimes created, the emergence of contemporary events. Students will also study the means available for planning and problem solving in addition to examining the effects of current issues on the global scene.

For a detailed description of the program and course of studies, please obtain a brochure from the Group Major Office.

Declaration of Major. UC Berkeley students must declare the major not later than the semester in which they are completing their sixty-first unit. Unless declaring well before reaching the maximum number of unit limitations for the units, they must complete the lower division courses and lower division courses must be enrolled in only one third. Students transferring in their junior year may wait until their second semester at the University before declaring. Students must also have completed two of the lower division prerequisites and be in the process of completing a third.

Students will be admitted to PEIS if their grade-point average in courses relevant to the major is at least 3.2. These would include courses from: Business Administration, Economics, Political Science, History, Mathematics, Statistics, City Planning, Public Policy, Industrial Psychology, and related Resource, Geography, and Anthropology courses. In addition, the Faculty Committee reserves the right to review transcripts, statements of purpose, and to interview any student seeking admission to the major with a grade-point average of less than 3.2. In reviewing these candidates, the Committee will consider factors such as: a) demonstrated interdisciplinary interest, independent research work, special projects, etc.; b) extra-curricular academic activities such as work, internships, participation in student conferences; c) demonstrated ability to clearly and intelligently state legitimate reasons for interest in the major in a five-page statement of purpose.

Advising. In the major, great importance is assigned to the advising function. The purpose of advising is to give students' personal interests the appropriate academic orientation within the major's intellectual goals. When declaring, students must devise a plan of courses to complete the major to be discussed and approved by a major adviser. Changes in the plan must also be approved by an adviser.

Lower Division. 19 units.

Economics 1. Introduction to Economics (3); History 5. Modern European History (4), and History 7B. U.S. History from the Civil War to the Present (4); Political Science 2. Comparative Politics (4); Statistics 140A (4), 20, 21, 41-44 and 142; or Anthropology 138(4), optional: Mathematics 1A-1B (4-4) (Required only of students taking Economics 101A-101B to satisfy the methodology requirement. Must be taken in addition to the other lower-division requirements, not in lieu of them.)

Introductory courses on data processing and computer science are strongly recommended.

Upper Division. 30-36 units, including no more than three courses offered outside the College of Letters and Science.

Methodology. 10 units.

Economics 100A-100B (5-5) or Economics 101A-101B (5-5).

Introductory Sequence. 7-8 units.

Political Science 123B or History 120A (4) or 161 or Economics 115 (3) and Political Science 120A (4) or 126A (4) or 126B (4).

Fields of Concentration. 22 to 28 units as follows:

I. Models of the Industrial State: three one-semester courses.


Note: Courses on specific regions not listed above may also be chosen with the approval of a major adviser.

II. Systems of Interdependency: one one-semester course.

Agriculture and Resource Economics 231; Anthropology 148; Biological 150; Business Administration 170, 171, 175; Development Studies 100; Economics 111B, 115, 162, 181, 182, 183; History 130A, 130B, 162A, 162B; Field Studies 196; Interdepartmental Studies 180; Military Affairs 121, 125; Political Science 120, 128A, 128B, 129B, 129C, 137A.

III. Planning and Policy Making: one one-semester course.

Business Administration 112, 190; City and Regional Planning 110, 112, 127, 250; Economics 123, 136, 152, 153, 156, 171, 172, 173; Geography 110; Mass Communications 103; Political Science 125, 139B, 182, 184, 185, 187A, 187C; Public Policy 170, 173, 174, 176, 177, 179, 180, 181, 184, 185, 189.

IV. Additional Field Courses: minimum one one-semester course.

Resource Management:

Human: Agricultural and Resource Economics 141; Anthropology 115; Business Administration 150, 151, 152, 154, 156, 163, 164; Conservation and Resource Studies 110, 115, 150, 151, 163, 169; Economics 125, 155, 156; Energy and Resources 100; Geography 101, 120, 125, 130, 131, 132, 135, 158; Environmental Science 150; Political Science 125; Public Policy 181; Sociology 125.

Course additions and deletions are frequently made within fields. Consult the program brochure for updated information.

Honor Program. Students accepted into the honors program will enroll in Political Economy of Industrial Societies H195A-H195B. Senior Honors Seminar (4-4), the topic of which will be expressly designed for students in the group major. The topic may change from year to year. Students will write a thesis under the supervision of the seminar instructor. Please consult with the Group Major Office concerning current eligibility requirements.

Upper Division Courses

100-100B. Scope and Methods of Research. (4-4). Prerequisite: 100A. Three hours of lecture and one hour of discussion per week. A two-semester course. 100A is not prerequisite to 100B. Introduction to research methods available for the collection, interpretation, and use of information critical to the solution of problems which characterize industrialized and newly industrialized societies. The first semester focuses on methodological
topics; the second considers the issues. A major paper is required. (F,SP)

195A-H195B. Senior Honors Thesis. (4-4). Formerly H195A-195B. Credit and grade to be awarded upon completion of the sequence. Two 2-hour seminars per week. Semester Prerequisites: Consent of the department and completion of the undergraduate major requirements. The honors student is required to write a thesis on research performed in the H195A-H195B course. The thesis will be reviewed by a member of the faculty committee and approved by a selected group of the same committee. (F,SP)

197. Field Studies. (1-4). Formerly 197. May be repeated for credit. Must be taken on a passed/not passed basis. Regular individual meetings. Semester Prerequisites: Upper division standing and consent of instructor. Supervised experience relevant to specific aspects of Political Economy of Industrial Societies in off-campus organizations. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-4). Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. Group meetings, to be announced. Semester Prerequisites: Written permission of the department and approval by a faculty adviser. Enrollment restricted by regulations of the college. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-4). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. Individual meetings, to be announced. Semester Prerequisites: Written permission of the department and approval by a faculty adviser. Enrollment restricted by regulations of the college. (F,SP)

Department of Political Science

Office of the Chair

Political Science

Department Office, 210 Barrows Hall, 642-6323

Professors:

Robert A. Scalapino, Ph.D.
Robert A. Kagan, Ph.D.
Martin Landau, Ph.D.
Eugene O. Lee, Ph.D.
Carl G. Rosberg, D.Phil.
Hanna Pitkin, Ph.D.
Michael P. Rogin, Ph.D.
Nelson W. Polsby, Ph.D.

Associate Professors:

Jacob Citrin, Ph.D.
Judith E. Gruber, Ph.D.
Patricia R. Brown, Ph.D.

Acting Assistant Professor:

Aka Yaya Sowonko, Ph.D.

Lecturers:

Pat Hatcher, M.A.
Leo Rose, Ph.D.

The Major

Students entering Berkeley after the Spring Quarter, 1983 and wishing to major in political science will fulfill the requirements of the Current Program. All other students will have the option to graduate under the requirements of either the Current Program or the Transitional Program.

Berkeley in the academic year 1983-84 with more than 30 units of credit will likewise have the option to graduate under either the Current or Transitional Program. Any questions about which program applies in particular cases should be addressed to the department's Undergraduate Secretary.

Current Program. Required for students declaring the major after May 4, 1984. The major in political science at Berkeley consists of a minimum of 14 courses: (a) four lower division courses. Political Science 1, 2, 3, and 4 (equivalent courses approved by the department and acceptable in lieu of these); (b) the lower division courses (or their equivalents) are required as prerequisites to declaring the major; (b) two history courses, one in American history and one in Western European history, to be selected from the following list and to be taken prior to or at the time of entrance into the major: I. American History: History 7A-7B, 17A-17B, 141B, 142, 144A, 153A-153B, 154A-154B (or their equivalents); II. European History: History 4A-4B, 5, 112A-112B, 116A-116B, 118B, 139, 138B (or their equivalents); (c) eight upper division political science courses from those three unit offerings 100-189 (or their equivalents).

Transitional Program. Applies only to students declaring the major before May 4, 1984. The major in political science at Berkeley consists of a minimum of 11 courses: (a) three lower division courses. Political Science 1, 2, and 3 (equivalent courses approved by the department and acceptable in lieu of these); (b) two upper division political science courses of three credits or more; (c) more students must satisfy a "course requirement" by taking at Berkeley (1) two semester courses or (2) three quarter courses or (3) one semester and two quarter courses from the following list, distributed so that at least one such course comes from each of the designated groups: Group I. 112A-112B, 120A-120B, 131, 132A-132B, 134A-136B, 137A-137B-137C, 139A-139B, 140A-140B; Group II. 101, 102, 103, 104, 105, 115, 115A-115B, 116A, 161, 162, 154A-154B, 170, 171, 175A, 180, 187A.

For the Transitional Program two provisions apply: (1) Students may petition to have up to two courses from other departments accepted to satisfy major requirements, provided that they are upper-division courses offered in the College of Letters and Science and that students obtain letter grades in the courses (the department adviser reviews these petitions for approval). (2) Up to two courses of at least three units credit or more in the major may be partially satisfied by the major. If the major has fewer than 11 course units credit, the department may accept in lieu of the major requirements from political science courses numbered 197, 198, 199, 189, and 187.

Honors Program. The departmental preference of Political Science Honors is as follows: Seniors with an overall grade point average of 3.0 or higher and a 3.3 GPA or higher in the major may apply for admission to the honors program through the Undergraduate Office. However, students may not graduate with honors unless they have a GPA of 3.3 or higher overall and in the major on their record at the time of graduation. Students with honors in the political science major must complete a seminar and a thesis under one of the following options: (1) two semesters of H190A-H190B, or (2) one semester of H192 (following or in conjunction with a regular lecture course), or (3) one to two semesters of H195A-H195B, or (4) one to two semesters of graduate coursework requiring a research paper. Admission of undergraduate students to graduate seminars and courses requires the permission of the instructor.

Further Information. For updated information on the major, honors program offerings, undergraduate course content and faculty scheduling, contact the Undergraduate Office 210A Barrows Hall. See the undergraduate program for 1983-84 for the abbreviated courses.

Higher Degrees. Inquiries should be addressed to the departmental Graduate Office, 210B Barrows Hall.

Lower Division Courses

1. Introduction to American Politics. (4). Formerly 1. Three hours lecture and one or two hour discussion per week. An introductory analysis of the structure and operations of the American political system, primarily at the national level. (F,SP)

2. Introduction to Comparative Politics. (4). Formerly 2. Three hours lecture and one or two hour discussion per week. The variety of political forms, the theory of political differentiation and development, and politics in industrialized democracies, communist systems and developing nations. (F,SP)

3. Introduction to Empirical Analysis and Quantitative Methods. (4). Formerly 3. Three hours lecture and one or two hour discussion per week. Analytical and methodological problems of political inquiry, with an emphasis on quantification and measurement. (F,SP)

4. Introduction to Political Theory. (4). Formerly 4. Three hours lecture and one or two hour discussion per week. An approach to the understanding of politics through the perspectives and language of the political theorist. (F,SP)

20. National Security Policy. (3). Formerly 52. Three hours of lecture per week. Analysis of the evolution, development, and formulation of U.S. National Security Policy. Fundamental concepts of national interest; the translation of these concepts into specific policy objectives and supporting programs, the relationship to foreign policy, and current national security problems. (SP)

41. Freshman Seminar. (3). Formerly 41. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. Topics, experimental in nature, will vary from year to year. (F,SP)

90. Experimental Course. (1-3). Variable Semester Prerequisites: Consent of instructor. Topics, experimental in nature, will vary from year to year, so syllabus not available. (F,SP)

Upper Division Courses

100. American Institutions. (3). Formerly 100. Three hours lecture per week. Semester Prerequisites: Consent of instructor. A survey of the powers, structure, and operations of government, primarily at the national level. (For non-majors) (SP)

American Politics

101. Labor, Professions, and Bureaucracy. (3). Two 1½-hour lectures per week. 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 the impact of events on public policy. The historical roots of the "service sector;" structural determinants of occupational choice; the structure, functions, and power of labor unions, business enterprises, and professions; work reform movements and economic democracy. (SP)

102. The American Executive. (3). Formerly 102. Three hours of lecture per week. 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 the impact of events on public policy. The historical roots of the "service sector;" structural determinants of occupational choice; the structure, functions, and power of labor unions, business enterprises, and professions; work reform movements and economic democracy. (SP)

103. Congress. (3). Formerly 103. Three hours of lecture per week. 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 the impact of events on public policy. The historical roots of the "service sector;" structural determinants of occupational choice; the structure, functions, and power of labor unions, business enterprises, and professions; work reform movements and economic democracy. (SP)

104. Political Parties. (3). Formerly 104. Three hours of lecture per week. The institutional environment within which American politics takes place. Concept and history of parties in the American context: their origins and development. Party organization and structure. State, national, and local party systems and their variations. Nominations and elections. One directed research paper will be required. (F,SP)
Political Science

105. The Politico, (3). Formerly 105. Three hours of lecture per week. The nature of politics, the education of politicians, the structure of ambition, and the ethical values of social behavior in the political world. Sessions with elected officials and party workers on their vocation. Direct field research. (SP)

106. Social Groups and Political Power, (3). Formerly 106. Three hours of lecture per week. Private power and public policy; the nature and courses, strategy and tactics of group power within the context of the American institutional setting. Business, agriculture, labor, the military, black protest and other significant loci of power. (F)

107A. The Policy Process, (3). Formerly 152. Three hours of lecture per week. How policy is "made" in the United States. How issues get on the political agenda, the role of legislatures, executives, courts, bureaucrats, interest groups, and parties in formulating public policies; policy implementation and policy evaluation. (F)

107B. Public Policy Doctrines, (3). Formerly 187. Three hours of lecture per week. History, principles, and impact of public policy in the United States in areas like education, social welfare, taxation, business regulation, racial discrimination, employment, environment, and consumer protection. Range of topics will vary. (SP)

108. Selected Topics in American Politics, (3). May be repeated for credit with different topic and consent of instructor. Three hours of lecture per week. See departmental announcements. (F,SP)

109. Women and Politics, (3). Formerly 109A-109B. Three hours of lecture per week. Analysis of women in politics from a historical as well as theoretical perspective. This course will examine the strategy and tactics of women's political groups and the relationship between various stages of the women's movement and major political events. (SP)

Comparative Politics

112A. History of Political Theory, (3). Formerly 118A. Three hours of lecture per week. Major theories from the ancient Greeks to the modern period. Ancient and medieval political thought, including Plato, Aristotle, and St. Augustine. (F)

112B. History of Political Theory, (3). Formerly 118B. Three hours of lecture per week. Early modern political thought up to the French Revolution, including Machiavelli, Hobbes, Locke, and Rousseau. (SP)

112C. History of Political Thought, (3). Formerly 118C-118D. Three hours of lecture per week. Nineteenth and twentieth century political thought, including Burke, Utilitarianism, Marx, and contemporary thought. (SP)

113A-113B. American Political Theory, (3). Formerly 113A-113B. Three hours of lecture per week. Basic problems of political theory as viewed within the context of American history and institutions. (F,SP)

114. The Theorist and His Theory, (3). Formerly 114. May be repeated for credit on a different theorist with consent of instructor. Three hours of lecture per week. Semester Prerequisites: One semester of 112 or 113. Quarter Prerequisites: One quarter of 118 or 119. Intensive study of one great political theorist. Topic will vary with instructor. (F)


116. Selected Topics in Political Theory, (3). Formerly 116. May be repeated for credit with a different topic and consent of instructor. Three hours of lecture per week. Semester Prerequisites: One semester of 112 or 113. Quarter Prerequisites: One quarter of 118 or 119. Topics will vary with the instructor. (F,SP)

117. Political Theory in Nonwestern Societies, (3). Formerly 149C. Three hours of lecture per week. Political thought in Far Eastern, South Asian, and African societies. The impact of modern Western thought on traditional political theories and values. Emphasis on current ideological trends, nationalist movements, and the impact of modern Western and neo-Marxist thought. (F)

International Relations

120A. International Relations, (3). Formerly 120A. Three hours of lecture per week. Comparative foreign policy. (F,SP)

120B. International Relations, (3). Formerly 120B. Three hours of lecture per week. Semester Prerequisites: 120A. Three hours of lecture per week. (SP)


122. Public International Law, (3). Formerly 122. Three hours of lecture per week. Nature, sources, and function of international law, principal law-making and adjudicatory processes, treaties and executive agreements, jurisdiction, immunities; sea law; war; intervention, human rights, trade. (F)

123. Selected Topics in International Relations, (3). Formerly 123. May be repeated for credit with a different topic and consent of instructor. Three hours of lecture per week. Semester Prerequisites: 120A or 120B or consent of instructor: Quarter Prerequisites: 120A or 120B. See departmental announcements. Topic will vary with instructor. (F,SP)

124A. War and Politics in History, (3). Formerly 124A. Three hours of lecture per week. The nature and causes of war: the relationship of politics to war in history; historical varieties of strategic doctrine, the implementing of strategy, the endings of war. (F)

124B. Politics and Military Strategy, (3). Formerly 124B. Three hours of lecture per week. The interrelationships among military strategy, technology, science, relationships between strategic doctrine, national security concepts, and domestic politics. (SP)

125. Science, Technology and International Politics, (3). Formerly 125A. Three hours of lecture per week. Science, technology, and security in the study of international political behavior. (SP)

126A-126B. International Political Economy, (3,3). Formerly 126A-126B. Three hours of lecture per week. Semester Prerequisites: A is prerequisite to B. Quarter Prerequisites: 126A is prerequisite to B. Economic concepts in the study of international political behavior. Political concepts influencing the choice of economic policies. (F,SP)

127. American Foreign Policy, (3). Formerly 127. Three hours of lecture per week. Analysis of competing concepts of the American "national interest" operative since World War I. Wilsonianism, isolationism, the Open Door, the Monroe Doctrine, and the Good Neighbor Policy. Domestic issues: continentalism; the relation of national security, containment, and liberation to substantive policies and to the character of American democracy. (F)

128A-128B. The American Role in Asia, (3,3). Formerly 128A-128B. Two 1½-hour lectures per week. The role played by the United States in Asia from the 19th century to the present. Trends in U.S. policy, including evaluation of current policy alternatives in Japan, China, Korea, and Indochina. (F)

129A. Soviet Foreign Policy, (3). Formerly 129A. Two 1½-hour lectures per week. The evolution of policy from 1917 to the present. The impact of Soviet international alignment on Asia and Europe. (SP)

129B. Soviet Foreign Policy, (3). Formerly 129B. Two 1½-hour lectures per week. Semester Prerequisites: 129A or equivalent. Selected topics, such as the Cold War, detente relations among the super-powers; the Sino-Soviet dispute; Soviet policy in West and East Europe, Middle East, and Third World. (SP)

129C. Communist International Relations, (3). Formerly 129C. Three hours of lecture per week. The formation and evolution of international communism, the forms and functions of interstate and inter-state relations. The emergence of the Soviet bloc in Eastern Europe and the Sino-Soviet alliance. The collapse of unity in the world communist movement; the character and implications of polycentrism in that movement. (F,SP)

Empirical Theory and Quantitative Methods

131. Political Inquiry, (3). Formerly 131. Three hours of lecture per week. Introduction to the epistemological and methodological issues that characterize political science inquiry. The processes involved in theory generation in the social sciences; the discovery confirmation, and articulation of logical, empirical, normative truth claims. Research procedures in political science inquiry. (F)

132A-132B. Quantitative Methods for Political Science, (4,4). Formerly 132. Credit and grade to be awarded upon completion of the sequence. Three hours lecture and one hour discussion per week. Semester Prerequisites: 132A is a prerequisite to 132B. Comprehensive introduction to research methods, statistical analysis, and computer usage in the social sciences. Emphasis on critical analysis and interpretation of existing empirical research and individual student research projects. Meets basic methodological needs of all political and social science majors. (F,SP)

133. Selected Topics in Quantitative Methods, (3). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 131 or 132. See departmental announcements. Topic to vary with instructor. (F,SP)

Comparative Politics

136A. Theory in Comparative Analysis, (3). Three hours of lecture per week. Major themes in comparative analysis. Political system, culture, authority and other themes in the study of macro-politics. Subject matter will vary with instructor. For details consult departmental announcements. (F)

136B. Method in Comparative Analysis, (3). Formerly 140L. Three hours of lecture per week. The comparative method. Application of the comparative method in the field of comparative politics. Use of comparison in description, hypothesis-testing, and theory construction. Methodological issues in the two major traditions in comparative politics. (SP)

137A. Revolutionary Change, (3). Formerly 140J. Three hours of lecture per week. Theories of revolutionary change, rebellion, and revolution, strategies of revolution, terrorism, sources of revolutionary action. (F)

137B. Revolutionary Movements, (3). Formerly 140F. Three hours of lecture 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 crisis of modern capitalism, industrialism, and the theory of international relations. (SP)

137C. Intellectuals in Politics, (3). Formerly 119. Three hours of lecture per week. Intellectuals as a social group in the process of "modernization". Definitions of "intellectual", Renaissance antecedents, men of letters in the eighteenth century, the Romantic reaction. In-
10A. Modern Democracy. (3). Formerly 140A. Three hours of lecture per week. The development of parliaments, of equality before the law, the extension of suffrage, the emergence of mass parties and of national citizenship. Special emphasis will be placed on the structure of politics as it has changed in the course of democratic development. (F)

13B. The Industrial State. (3). Formerly 140D. Three hours of lecture per week. The evolution of the modern industrial state from its feudal origins. The emergence of the state and its economic and cultural policy; political leadership, political pressure groups, and functional groups. Political leadership, political organization, minority groups, the welfare state, political culture and politics, the role of experts and intellectuals. (SP)

18C. Comparison of Party Systems. (3). Formerly 191P. Three hours of lecture per week. The relationship between political parties and democracies; parliamentary system, party systems, institutions, groups and political culture. (SP)

18D. Comparative Political Economy. (3). Formerly 140E. Two 1/2-hour lectures per week. Semester Prerequisites: Two lower division courses in social sciences or history or consent of instructor: Quarter Prerequisites: Two lower division courses in social sciences or history. Political, social, cultural impact of economic growth in rich countries. Critical examination of major images of modern society—"industrial," "post-industrial," "mass," "consumer," etc. Analysis of convergence and divergence among market-oriented democracies emphasizing class structure, minority groups, the welfare state, popular culture and politics, the role of experts and intellectuals. (SP)

19A. Development Politics. (3). Formerly 140A-140B. Three hours of lecture per week. Modernization, development and political change. Relating general theoretical formulations to processes of political, economic, and social development within several third world contexts. (F)

19B. Development Politics. (3). Formerly 140C. Three hours of lecture per week. Political change and economic development. Major theories of development include economic growth, social change theory, and comparative politics in the light of contemporary experience. Political strategies of agrarian, industrial, educational, and regional development. (SP)

140A. Authoritarian Government. (3). Formerly 140G. Two 1/2-hour lectures per week. Authoritarianism in transitional and revolutionary societies. Tensions between personal and institutional power, legitimacy and efficiency, political ends and bureaucratic means. (F)

140B. Comparative Communism. (3). Formerly 140H. Two 1/2-hour lectures per week. The formation and evolution of communist regimes, organizational patterns; methods of economic modernization; education principles and practices, roles of economic groups in communist society; revolutionary tactics and strategy; foreign politics. Examples drawn from Asia, East Europe, Latin America. (SP)

140C. Selected Topics in Communist Politics. (3). Two 1/2-hour lectures per week. See departmental announcements. (F,SP)

Area Studies

141A. Soviet Politics. (3). Formerly 141A. Three hours of lecture per week. Introduction to Soviet politics. Political history of the USSR from Lenin through Brezhnev. Emphasis on policy priorities, and the nature of politics, as these evolved over time. Law, economics, and society as political factors. (SP)

141B. Soviet Politics. (3). Formerly 141B. Three hours of lecture per week. Selected themes in contemporary Soviet internal affairs; the nature of the Brezhnev era; elites and functional groups; political leadership, political succession, economic and ethnic policy; political stability and the future. (SP)

141C. East European Politics. (3). Formerly 141D. Two 1/2-hour lectures per week. A study of the political process in relation to social structure and national diversity. A comparison of communist and prewar political systems, and analysis of contemporary political developments. (F)

142A-142B. Middle East Politics. (3,3). Formerly 142A-142B. Two 1/2-hour lectures per week. The Middle East in world affairs, international relations and domestic political conditions of contemporary states in the Middle East; policies and strategies of major powers; supranational movements, regional political and security organizations. The area comprises Turkey, Iran, Afghanistan, Iraq, and the Arab countries. (F,SP)

143A-143B. Southeast Asian Politics. (3,3). Formerly 143A-143B. Two 1/2-hour lectures per week. The structure and evolution of political institutions in China, Japan, and Korea. Emphasis upon such topics as nationalism, political modernization, and ideology. (F,SP)

143C. Southeast Asian Politics. (3). Formerly 143D. Two 1/2-hour lectures per week. The impact of cultural variables on political behavior. The effect of Southeast Asian politics on the Indian influence, religious values, economic change, patron-client relations, and the psychological roots of colonialism. (F)

143D. Policy Problems of Southeast Asia. (3). Formerly 143E. Two 1/2-hour lectures per week. Subject will vary with instructor. (SP)

145A-145B. South Asian Politics. (3,3). Formerly 145A-145B. Three hours of lecture per week. A comparative analysis of development and change in the political systems of contemporary South Asia. (F,SP)

146A. African Politics. (3). Formerly 146A. Two 1/2-hour lectures per week. Introduction to African politics 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. Nation-building, political instability, "nation building" among the specific topics that are discussed. (F,SP)

146B. African Politics. (3). Formerly 146B. Two 1/2-hour lectures per week. In-depth analysis of several African states, focusing on the formation 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. (F,SP)

146C. Conflict and Change in Southern Africa. (3). Three hours of lecture 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 on pressures 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. (F,SP)

147A. Western European Politics. (3). Formerly 147A. Two 1/2-hour lectures per week. The origins and development of state and society in Western Europe from the Middle Ages to the Industrial Revolution. Feudalism, the estate society, absolutism, constitutionalism. State building, authority, and social relations. (F)

147B. Western European Politics. (3). Formerly 147B. Two 1/2-hour lectures per week. Western Europe from the constitutional to the corporate state. Patterns of industrialization and social conflict. Mass politics and party systems. Democratic and authoritarian paths to development. (SP)

147C. British Politics. (3). Formerly 144A-144B. Two 1/2-hour lectures per week. The British people and their country, government, parliament, cabinet, monarchy, administration, the courts. Region- alism and local government. Public policy. (SP)

147D. Southern European Politics. (3). Formerly 147D. Three hours of lecture per week. Nation-building, political development, and current politics in Southern European countries. Comparison with the politics of continental Europe. (SP)

147E. U.S.—EUROPEAN RELATIONS. (3). Formerly 147E. Three 1/2-hour lectures per week. A course which assumes no previous study of U.S.-European relations. This course will review the early history of the Atlantic Alliance, especially the creation of NATO, and the conflicts that were common between the U.S. and Europe in the 1950's and 1960's. It will also focus on more recent sources of conflict, including detente, crisis outside of the NATO area, military burden sharing, money and trade. (F,SP)

147F. The Politics of France. (3). Formerly 147F. Three hours of lecture per week. The development of French politics in the twentieth century. Political parties and institutions of government. Economic and foreign policies. (F)

147G. Government and Politics of Germany. (3). Formerly 147G. Three hours of lecture per week. (F)

148A-148B. Latin American Politics. (3,3). Formerly 148A-148B. Three 1/2-hour lectures per week. Political and social factors; groups and parties in Latin American countries. Basic characteristics of political processes in Latin America; problems of political development and modernization and political change. Comparative study of political systems, institutions, groups and political culture. (F,SP)

149. Selected Topics in Comparative Politics. (3). Formerly 148F. Three hours of lecture per week. See departmental announcements. (F,SP)

Public Law and Jurisprudence

150A. The American Legal System. (3). Formerly 150A. Two 1/2-hour lectures per week. The nature of the American legal system; the interrelationships of judges, lawyers, police, political officials, bureaucrats, press, and the general public; the political and social aspects of the legal process. (F)

150B. The American Legal System. (3). Formerly 150B. Two 1/2-hour lectures 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. (F)

153. Comparative Law. (3). Formerly 153A. Two 1/2-hour lectures per week. Development and agencies of legal growth since primitive times, and the interrelations between law and government. Early legal institutions of states and their influence on modern legal systems. (F)

157A-157B. Constitutional Law of the United States. (3,3). Formerly 157A-157B. Two 1/2-hour lectures per week. Fundamental principles of constitutional law, leading cases, causes, and consequences of legal decisions. A. The Federal System B. Civil Liberties (F,SP)

158. Selected Topics in Public Law and Jurisprudence. (3). Formerly 158A. Two 1/2-hour lectures per week. See departmental announcements. (F,SP)

Political Behavior

161. Public Opinion, Voting and Participation. (3). Formerly 161A. Three hours of lecture per week. The role of public opinion; electorate information; turnout and choice, political cleavages, the role of the mass public. (F,SP)

162. Communications and Politics. (3). Formerly 162 . Three hours of lecture per week. The role of mass communication, propaganda, political persuasion, and information campaigns in the political process. (F)

164A. Political Psychology and Involvement. (3). Formerly 164A. Three hours of lecture per week. Personality factors in political behavior; psychological roots of decision-making; leadership, psychological sources of political belief; conflict theory. (F)
Political Psychology and Implication. (3). Formerly 165. Three hours of lecture per week. Extreme belief, protest and violence, ideology socialization, political participation, recruitment to political activity and office. (SP)

164A-168B. Seminar in Political Behavior. (3,3). Formerly 164A-168B. Three hours of lecture per week. Semester Prerequisites: For advanced undergraduates and graduate students with consent of instructor. Review of major topics in political behavior through examination of theories, findings, and significant studies in the field. Topics: ideology, voting participation, party division, political conformity, tolerance, dissent, personality and group influence on political beliefs and conduct. (SP)

169. Selected Topics in Political Behavior. (3). Formerly 169. Three hours of lecture per week. See departmental announcements. (F,SP)

Sub-National Government and Politics

170. Comparative State Politics. (3). Formerly 170A. Two 1½-hour lectures per week. The role of the states in the federal system: the structure and operation of state government, including political institutions, parties, interest groups, and the determinants of policy outcomes. (SP)

171. California Politics. (3). Formerly 170B. Two 1½-hour lectures per week. An inquiry into the political environment of the state: its historical, economic, geographic, and social; its political institutions—government, parties, interest groups, and citizens; and the policies resulting from the interaction of environment and institutions. (F)

172. Federalism and Intergovernmental Relations. (3). Formerly 172. Three hours of lecture per week. The relationship of constitutional doctrine, federal grants-in-aid, and political thought to the organization and practice of intergovernmental relations. (F)

175A. Urban and Metropolitan Government and Politics. (3). Formerly 175A. Two 1½-hour lectures per week. The roles of various levels of government—local, regional, state, and national, in politics and policy-making in metropolitan regions. (F)

175B. Urban and Metropolitan Government and Politics. (3). Formerly 175B. Two 1½-hour lectures per week. Metropolitan regions: planning, decision-making, and administration. (SP)

177A-177B. Political Internship Program. (3,3). Formerly 197A-197B. Must be taken on a passed/not passed basis. Three hours lecture; 15-20 hours field work per week. Semester Prerequisites: Consent of faculty sponsor and department chairperson. Juniors and seniors only. Quarter Prerequisites: Consent of faculty sponsor and department chairperson. Juniors and seniors only. Supervised experience in field positions with California state and local governments for 15-20 hours per week, and coordinated course work. (F,SP)

178. Selected Topics in Sub-National Politics. (3). Formerly 178. Two 1½-hour lectures per week. See departmental announcements. (F,SP)

Public Organization, Administration, and Policy

181. Public Organization and Administration. (3). Formerly 181. Three hours of lecture per week. The methods used to manage the power of the bureaucracy in the American political system. An introduction to the theories of organizational behavior. The effects of administrative structure upon the creation and distribution of public benefits. (F,SP)

182. Public Policy and Administration in Developing Countries. (3). Formerly 182. Three hours of lecture per week. The political economy of policy-making and administration for economic development in selected developing countries. (F)

183. Administrative Behavior. (3). Formerly 186. Two 1½-hour lectures per week. The dynamics of public policy formulation, within bureaucratic organizations; the influence upon public organizations of the legislature and pressure groups; patterns of conflict within public organizations. (SP)

184. Public Finance and Budgeting. (3). Formerly 184. Three hours of lecture per week. Financial administration in the modern state—American, comparative, historical, federal, and implicit basis of governmental activity, the budget process in public administration; management devices to secure administrative accountability and political responsibility. (SP)

185. Public Policy and Decision Analysis. (3). Formerly 185. Three hours of lecture per week. Variations in decision-making and policy analytical approaches, concepts of rationality in politics, analysis of the political uses of policy analysis, game theory, bargaining as applied to policy issues. (F)

186. Development of Civil Services. (3). Formerly 186. Two 1½-hour lectures per week. A comparative examination of the origins, evolution, and contemporary character of selected national administrative systems. The primary emphasis is on European administration. (F)

187A. Seminar: Bureaucracy and the Modern State. (3). Formerly 187A. Three hours of seminar per week. A review of the rise of the modern bureaucracy, its implications for the character of the state and the nature of social relations, and the opportunities, problems, and moral dilemmas it creates. (F)

187B. Seminar: Executives and Choice. (3). Three hours of lecture per week. Topics will vary with instructor. (SP)

187C. Seminar: Technology and Politics. (3). Formerly 187C. Three hours of lecture per week. The relationship of technology to political behavior; scope of challenges of democratic governance of technical developments, the bases for technological dissent, roots and promises of technology assessment in the congressional setting, and alerts for the future in the development of public policy. (SP)

189. Selected Topics in Public Organization and Policy. (3). Formerly 189. Three hours of lecture per week. See departmental announcements. (F,SP)

Special Studies

H190A-H190B. Honors Seminars. (4;4). Formerly H190A-190B. Four hours seminar per week. Semester Prerequisites: Senior honors candidates and consent of instructor. Offerings vary from year to year. May be one or two semesters. Credit and grade awarded upon completion of thesis. Applications and details through the Undergraduate Office. (F,SP)

191. Experimental Courses. (3). Formerly 191. Three hours of lecture per week. See departmental announcements. (F,SP)

191S. Cal-in-the-Capital. (2). Must be taken on a passed/not passed basis. Two hours of seminar and one hour individual conference per week. Semester Prerequisites: Enrollment limited to those 70 students participating in the summer Cal-in-the-Capital program in Washington D.C. The course is designed to provide prospective interns with the opportunity to gain an understanding of the workings of federal and 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 credit and graduate standing. This class will make decisions of the students research skills. (SP)

191U. Model United Nations. (3). One 2-hour seminar per week and Model United Nations Conference (Regional). Semester Prerequisites: Enrollment limited to students interested in participation in the Model United Nations Conference and subject to the consent of the instructor. United Nations structure and procedures; foreign policy concerns of individual countries and regions; world and regional problems. (SP)

192. Honors Seminar. (4). Formerly 192. Three hours of lecture and 1 hour of conference per week. Semester honors seminar, or in conjunction with, a regular lecture course. Open only to students who have taken, or are taking, the related lecture course. (F,SP)

H195A-H195B. Senior Honors Thesis. (4,4). Formerly H195. Four hours each week, to be arranged. Semester Prerequisites: Senior honors candidates. Independent research and thesis. Satisfies thesis requirement for honors candidates. One or two semesters, at the instructor's option; if two semesters, credit and grade to be awarded upon completion of the sequence. Applications and details through Undergraduate Office. (F,SP)

196. Special Research Project. (2-3). Formerly 196. Regular individual research. Semester Prerequisites: Consent of faculty sponsor and department chair. Regular individual meetings with faculty sponsor required. Independent study of an advanced topic resulting in a substantial research paper. (F,SP)

197. Field Study in Political Science. (1-3). Formerly 197F. Must be taken on a passed/not passed basis. By arrangement with faculty. Semester Prerequisites: Course must be an extension of an existing Political Science course. Submission of study proposal by faculty sponsor to the department chairman one month in advance of the semester to be offered. Group studies of selected topics which vary from year to year. (SP)

199. Supervised Independent Study and Research for Undergraduates. (1-3). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. By arrangement with faculty. Enrollment is restricted by regulations listed on page 000. (F,SP)

Graduate Courses

A statement on admission to graduate work may be obtained from the graduate office in the department. Properly qualified undergraduates may be admitted to graduate courses or seminars with special permission of the instructor.

Comparative Analysis

Graduate Courses

200. Major Themes in Comparative Analysis. (4). Formerly 200. Three hours seminar per week. Subject and topics to be selected by student and instructor. See departmental announcements. (F)

201A-201B. Comparative Analysis of Industrial Democracies. (4,4). Formerly 201A-201B. Three hours seminar per week. The comparative study of politics in Western Societies. The place of parties, political structures, interest groups, and economic institutions. The relation between domestic political developments and the international system: the effect of economic development of political change. The effect of labor politics on national politics. (F)

202A. Theories of Development and Political Change. (4). Formerly 202A. Three hours seminar per week. Issues of social organization and political change. Theories of progress, development, modernization and dependence. (F)

202B. Theories of Development and Political Change. (4). Formerly 202B. Three hours seminar per week. Issues of social organization and political change. General theoretical formulations as they relate to processes of economic, social, and political change in the context of several third World countries. (SP)

203. Comparative Analysis of Communist Societies. (4,4). Formerly 203A-203B. Three hours seminar per week. An analysis of the interrelations between Communist systems with particular reference to institutional and ideological differences, presented at an advanced level for graduate students. Discussion and papers required. (F)
204. Problems of Generation Succession. (F, 4). Formerly 205. Three hours seminar per week. Analysis and comparative study of the relations and conflicts between generations. (SP)

205. The Nation-Building Process. (F, 4). Formerly 205. Three hours seminar per week. The nation-state is the most significant political unit in the contemporary world. This course focuses on its origins, essential characteristics as well as on different patterns of national development, the relation of national development to modernization, the role of internal and external factors in the national development process and current challenges to the national definition of political life. (F)

206. Comparative Politics of Peasant Societies. (F). Formerly 206. Three hours seminar per week. The role of the state in modernization is a key topic in development of public opinion in peasant societies, the role of interpersonal communication in the diffusion of critical economic and political innovations to the village level. (SP)

207. Revolutionary Change. (F). Formerly 207A-207B. Three hours seminar per week. Analysis and comparative study of the occurrence of various forms of revolution in society. Materials are drawn from political philosophy, systems theory, and empirical research. (SP)

208. Development Policy. (F, 4). Formerly 208A-208B. Three hours seminar per week. Students from other disciplines are welcome. Major theories of development in growth economics, social change, and comparative politics. Political strategies of agrarian, industrial, educational, and regional development and the distributive outcomes associated with general results of development. (F)

209A. Comparative Political Economy. (F). Formerly 209. Emphasis on three models of modern society—"post-industrial," "mass," and "corporative," as they apply to countries labelled capitalist and socialist, 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. (F)

209B. Comparative Public Policy. (F, 4). Formerly 209B. Two hours seminar and one hour conference per week. Contrasting national responses to similar social problems among rich countries. Students will compare two or more nations similar in economic level but different in culture and politics to explore (a) the development or effects of the welfare state; (b) divergence in public policies (e.g., regarding labor, the family, health, safety, the environment, the media); or (c) problems of political legitimacy and the fiscal crisis. (SP)

Political Theory

213. American Political Theory. (F). Formerly 213A-213B. Three hours seminar per week. Semester Prerequisites: 112A or consent of instructor. Basic problems of political theory will be examined within the context of American political development. (F)

214. Themes in Western Political Theory. (F). Formerly 214A-214B. Course may be repeated for credit. Three hours seminar per week. Themes to be specified by instructor. (F)

218. Contemporary Theory and Political Science. (F, 4). Formerly 218A-218B. Three hours seminar per week. The properties of theory—both classical and contemporary—as employed in the discipline. Theoretical selections will vary with each offering. (F)

217. Politics and Culture. (F). Formerly 275A-275B. Three hours seminar per week. An examination of the interaction of politics, political personality, and culture, now specifically with focus on American materials. Research papers will be written and discussed during the semester. (F)

218A-218B. Colloquium in Political Theory. (4-4). Formerly 218A-218B. Credit and grade to be awarded upon completion of seminar. Three hours seminar per week. An intensive examination of the nature of political theory and the enterprise of theorizing about politics, with attention to selected aspects of social science theory and contemporary philosophy. (F)

219. Symposium in Political Theory. (F). Formerly 212. Course may be repeated for credit with consent of instructor. Three hours seminar per week. Forum for the presentation of original work in political theory. (F)

International Relations

220A. Theories of International Relations. (F, 4). Formerly 220. Three hours seminar per week. Semester Prerequisites: Previous work in international relations. Origin and application of major concepts featured in study of international relations. Relation of various strands of political and social theory to international relations. (F)

220B. Theories of International Relations. (F). Formerly 223. Three hours seminar per week. Semester Prerequisites: 220A. The construction of theories in the field of international relations. (F)

221. International Organization. (F). Formerly 226A. Three hours seminar per week. Evolution of international institutions in response to changes in knowledge and international political conditions in fields of economic relations, science and technology, education, welfare, and security. Emphasis on role of conflict as reflected in United Nations and specialized agencies, regional organizations, and common markets. (SP)

222. Nationalism and Imperialism. (F). Formerly 222B. Three hours seminar per week. Three themes in the field of nation-building illustrated with Western and non-Western case studies. (SP)

225A-225B. International Political Economy. (F, 4). Formerly 225A. Three hours seminar per week. Semester Prerequisites: Introductory courses (graduate or undergraduate) in international relations, foreign policy, international organizations and political economy. The creation, maintenance, transformation, and decay of international arrangements designed to manage or regulate interstate activities relating to trade, money, resource use, technology, and physical environment. (F)

227A-227B. International Relations and Foreign Policy. (F, 4). Formerly 227. Three hours seminar per week. Convergence and interaction among national foreign policies in international politics, the nature of national decision-making in foreign policy, comparison of diplomatic bargaining, military and other behavioral styles in international politics. (F)

228. National Security Policy. (F, 4). Formerly 228A-228B. Three hours seminar per week. Evolution of doctrine, especially since World War II; the role of Congress and the Executive Branch in the making of security policy; arm and arms control; the use of military force; and present and future problems of national security. The major powers on the United Nations. (SP)

229. Soviet Foreign Policy. (F). Formerly 229C. Three hours seminar per week. Soviet perceptions, priorities, policy toward West and East Europe, Third World, the Sino-Soviet conflict. (F)

229B. Soviet-American Relations. (F). Formerly 229B-229B. Three hours seminar per week. The nature of the Cold War, and the factors that facilitated the rise of the Cold War; changes in the complexion of Soviet-American relations during the 1970s: the future of super-power collaboration and conflict. (SP)

229C. Communist International Relations. (F). Formerly 229C. Three hours seminar per week. The evolution of the world communist movement. Collapse of communism, and the character of polycentrism in world communism. Relationship among Sino-Soviet conflict, Eurocommunism, and Soviet relations with the non-communist world. (SP)

Empirical Theory and Quantitative Methods

231A. Quantitative Analysis in Political Research. (F). Formerly 231A. Three hours seminar per week. Semester Prerequisites: 132A-132B or Statistics 130A. Introductory course in the analysis of political data. (F)

231B. Quantitative Analysis in Political Research. (F). Formerly 231B. Three hours seminar per week. Semester Prerequisites: 231A or equivalent. Topics from multi-equation causal modeling and introductory econometrics, with special emphasis on procedures applicable for political data. (F)

231C. Econometrics for Political Science. (F). Formerly 231C. Three hours seminar per week. Semester Prerequisites: 231B or equivalent. Econometric theory and applications at a more advanced level than 231B. Special emphasis on simultaneous estimation and its extensions. Selected topics from factor analysis, scaling theory, analysis of covariance structures, and Bayesian methods. (SP)

232. Formal Models of Politics. (F). Formerly 232. Three hours seminar per week. Mathematical models in political learning, bargaining, and democratic theory. Topics from game theory, collective choice theory, and mathematical psychology. (F)

235. Introduction to Research Methods. (F). Formerly 235. Three hours seminar per week. Overview of methods of political research. Theories, concepts, variables, statistical analysis, research design, quantitative and qualitative methodology. Basic data collection techniques. Approaches to data analysis. Provides an overview of different statistical techniques, but does not teach statistics per se. (SP)

Area Studies

241A. Soviet Politics. (F, 4). Formerly 241A. Three hours seminar per week. The historical roots of Soviet Communism. The strains of industrialization and political development from the revolution through the Stalinist period. Cross reference to other national models of communism and revolutionary change. (F)

241B. Soviet Politics. (F, 4). Formerly 241B. Three hours seminar per week. Quarter Prerequisites: SELECTED TOPICS OF SOVIET COMMUNIST LITERATURE, SEE CATALOGUE FOR FULL DESCRIPTION. Selected topics of Soviet politics in comparative perspective. Leninism as organization theory and revolutionary strategy, Stalinism as a model of nation-building, modernization and totalitarianism, de-Stalinization as a dilemma of liberalization, political succession, the character of contemporary Soviet policy-making; military policy, integration, social stratification and political stability. (SP)

241C. East European Politics. (F). Formerly 241C. Three hours seminar per week. Semester Prerequisites: 141C or equivalent or consent of instructor. The governments of East Europe (defined as the area between Poland, East Germany and West Germany) with emphasis on growing ideological and institutional diversity. The relationship between national tradition, social structure and political change. (SP)

242. Politics and Diplomacy in the Middle East. (F) Formerly 242A-242B. Three hours seminar per week. Semester Prerequisites: 142A or 142B or consent of instructor. Major themes of politics and international relations in the Middle East; Policy formulation, general principles, and certain theoretical underpinnings. The Arab-African, Israel, Afghanistan, Iran and Turkey are among the areas to be examined. The seminar will be used as a basis for oral presentation and a term paper are expected. (F)

243A. Chinese Domestic and Foreign Policies. (F). Formerly 243A. One 3-hour discussion per week. A focus upon domestic and foreign policies of the PRC, developed from reading major recent works. Students will be asked to participate in class discussions and to take an active role in class discussions. (F,SP)

243B. Japanese and Korean Domestic - Foreign Policies. (F). Formerly 243B. One 3-hour discussion per week. An emphasis upon the interaction between domestic and foreign policies of these two Northeast Asian nations. Each week a single issue will be devoted to the study of a recent monograph and the exploration of the broader issues raised in that work. A seminar paper and class discussions are required. (F,SP)

244A. China. (F, 4). Formerly 244A. Three hours seminar per week. Analysis of the politics of China.
Political Behavior
261. Voting Behavior, Public Opinion and Participation. (4). Formerly 262A-262B-262C. Three hours seminar per week. Examination of the basic literature on American voting behavior and public opinion and student research on individually selected topics in this field. (SP)

262. Voting Behavior, Public Opinion and Participation. (4). Formerly 262A-262B-262C. Three hours seminar per week. Examination of the basic literature on American voting behavior and public opinion and student research on individually selected topics in this field. (SP)

American Government and Politics
271A-271B. American Government. (4-4). Formerly 271A-271B. Credit and grade to be awarded upon completion of the sequence. Three hours seminar per week. Overview of the American political system. The system in comparative perspective. Social and demographic foundations of American government and politics. The American system in light of democratic theory. (F)


273. Urban Politics. (4). Formerly 277A-277B. Three hours seminar per week. Politics and policy-making in American cities. Historical, economic and social context of cities. Major urban institutions and levels of government in urban affairs. (SP)

274. Comparative State Politics. (4). Formerly 274A-274B. Three hours seminar per week. Comparison of the principles, operations, and outcomes of politics within American states. (F)

275. Principles of Policy Analysis. (4). Formerly 254. Three hours seminar per week. The study of American policy formation, public policy evaluation, policy-making and implementation, including the role of social science research in policy making. (SP)

276. Federalism and Intergovernmental Relations. (4). Formerly 277A-277B. Three hours seminar per week. Class covers traditional national-state relations and changes in federalism brought about by increased national activity since the New Deal. (F)

Public Organization, Administration, and Policy
280A. Public Organization Theory. (4). Formerly 280A. Three hours seminar per week. A survey of the literature of organization and management theory, emphasizing the major writers and distinctive contributions of various disciplines. (F)

280B. Public Policy and Decision Making. (4). Formerly 280C. Three hours seminar per week. The process of public policy formulation, governmental planning and programming, and administrative decision-making. (SP)

280C. Public Policy and Decision Making. (4). Formerly 280C-280D. Three hours seminar per week. The process of public policy formulation, governmental planning and programming, and administrative decision-making. (F)

281A-281B. Budgeting. (4-4). Formerly 284A-284B-284C. Three hours seminar per week. Budgeting in diverse contexts—from ancient to modern times, local, state and national governments, poor and rich countries. Topics include budgetary strategy, and calculations, program budgeting, state power and financial capability, decentralization, diffusion of financial norms and technology. The emphasis is on comparative analysis. (F)

282. Management Information Systems. (4). Formerly 284A since Spring 1983. Three hours seminar per week. This course deals with the problem of converting data into information, and the use of information in policy design and implementation. Major issues will be considered in the context of organizational theory and policy analysis. (F,SP)

283. Bureaucratic Politics. (4). Formerly 287A-287B. Three hours seminar per week. The role of bureaucracies and bureaucrats in policy making, including consideration of individual incentives, interagency relations, bureaucratic-legislative relations, bureaucratic-executive relations and the problem of democratic control. (F)

287. Development Administration. (4). Formerly 287A-287B. Three hours seminar per week. The problems of administering economic development programs in poor countries. Particular emphasis is placed on rural development, the problems of relating bureaucratic structures to peasant communities, and the relevance of organization theory to non-Western administration. (F)

288. Technology and Public-Policy. (4). Formerly 288. Three hours seminar per week. The structure of science and politics, public problems and technological change; the governance of science and technology, and the administration of science and technology. (SP)

289. Research Topics in Public Organization. (4). Formerly 289A-289B-289C. Three hours seminar per week. Content of course will alternate between budgeting and information systems. (F,SP)

Special Studies
290. Dissertation Research. (4). Formerly 290. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour seminar per year. 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, writing and presentation of results of completed research. Presentations by graduate students working on their dissertations. (F,SP)

291. Experimental Course. (4). Formerly 291. Course may be repeated for credit. Three hours seminar per year. Semester Prerequisites: Consent of instructor. Topics, experimental in nature, will vary from year to year. (F,SP)

292. Directed Advanced Study. (4-8). Formerly 292. Course may be repeated for credit. By arrangement with faculty. Semester Prerequisites: Consent of instructor and graduate advisor. Open to qualified graduate students wishing to pursue special studies and research under direction of a member of the staff. (F,SP)

296. Dissertation Research. (4-12). Formerly 296. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. By arrangement with faculty. Open to qualified students advanced to candidacy for the Ph.D. degree. (F,SP)

299. Independent Study in Preparation for the M.A. Essay. (4-8). Formerly 299. Credit to be awarded upon completion of the M.A. essay. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. By arrangement with faculty. Open only to qualified first-year graduate students working toward the M.A. degree. (F,SP)

602. Individual Study for Doctoral Students. (4-12). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. By arrangement with faculty. Individual study in consultation with the major field adviser, intended to provide opportunity for qualified students to prepare themselves for final comprehensive 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
398. Professional Preparation for Teaching Assistants. (4). Formerly 398. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. By arrangement with faculty. Special study under the direction of a staff member with emphasis on the teaching of undergraduate courses in political science. (F,SP)
404. Research Skills. (1-4). Formerly 404. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. By arrangement with faculty. Individual research work under supervision of faculty members. Open to students engaged in supervised research projects in Political Science. (F,SP)

Interdepartmental Studies Courses

Lower Division Courses

IDS1. Technology and Society. (3). Formerly 1. Three 1-hour lectures per week. Role of technology in the solution of social problems. Historical development of modern technology. Examples of technological systems: communications, data processing, materials, energy generation. Sponsoring Departments: Political Science and EECS. (F)

IDS33A-33B. American Studies. (4-4). Formerly 33A-33B. Three hours of lecture and one hour of discussion per week. Admission by interview with the two instructors during preregistration. The class examines significant issues and ideas in American Studies, drawing on material from history, literature, political science, philosophy, and other fields. A special subject is chosen for each term, and students read primary sources, fictional and nonfictional. (F,SP)

IDS201. Study of Developing Nations. (4-4). Formerly International Studies 101. Three hours of lecture per week. A study of the impact of major world political, social, and economic factors on developing nations, with emphasis on the developing nations of South and Southeast Asia. Enrollment is limited to twelve students. (F,SP)

5. Seminar in Population. (2). New Courses since Spring 1983. Three 1-hour lectures per week. Enrollment is limited to twelve students. (F,SP)


Population Studies

Office, Graduate Group in Demography, 2334 Piedmont Avenue, 642-9880

Advisors: Mr. Hammel, Mr. Wachter, Mr. Lee.

There is no undergraduate major program in Population Studies. The Division of Special Programs does, however, offer undergraduate courses on the subject of population. A listing of the faculty and description of the graduate program are given under Demography, in the Special Studies section of the catalog. Senior undergraduates are eligible to enroll in the graduate courses if otherwise qualified.

Lower Division Courses

5. Seminar in Population. (2). New Course since Spring 1983. Three 1-hour lectures per week. Enrollment is limited to twelve students. The class examines significant issues and ideas in American Studies, drawing on material from history, literature, political science, philosophy, and other fields. A special subject is chosen for each term, and students read primary sources, fictional and nonfictional. (F,SP)

Upper Division Courses

100. Introduction to Population Theory. (3). New Course since Spring 1983. Two 1-1/2 hour lectures per week. Population structure and change in developed and developing countries, and in the past. Social and economic consequences for development, resources, employment, households, social security, etc. The influence on fertility, mortality and migration, of social, economic, technological and policy factors. (F)

105. World Population Problems. (3). Formerly 100. Three 1-hour lectures per week. An introductory course in demography. Dimensions, causes, consequences of world and regional population change. Population dynamics (mortality, fertility, migration) in relation to development, urbanization, resources, environment, population structure, family organization, and public policy. (SP)


Psychology

Department Office, 3210 Tolman Hall, 642-5292


Associate Professors: Karen K. DeVos, Ph.D. Enrico Jones, Ph.D. Mary S. Main, Ph.D. Christina Maslach, Ph.D. Assistant Professors: Marc S. Breedlove, Ph.D. Barbara A. McElroy, Ph.D. Seth D. Roberts, Ph.D. Philip E. Tetlock, Ph.D. Adjunct Professors: Ravenna M. Nelson, Ph.D. Margaret T. Singer, Ph.D.

John S. Watson, Ph.D. Sheldon Zeedyk, Ph.D. Irene E. Hargiss, Ph.D. Frank A. Beach, Ph.D. Hubert S. Coffey, Ph.D. Rhema F. Jarrett, Ph.D. Catherine Landreth, Ph.D. (Emeritus) Jennifer Water Macfarlane, Ph.D. (Emerita) Donald N. Macklin, Ph.D. (Emeritus) Bertow F. Richle, Ph.D. (Emeritus) Alex C. Sherriffs, Ph.D. (Emeritus) Reid D. Tududden, Ph.D. (Emeritus)

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 complicated situations.

The major aims to give basic and well-rounded coverage of most of the major established fields of psychology. The areas covered include social, developmental, biological, comparative, differential, industrial, quantitative, clinical, and cognitive psychology, learning (human and animal), perception, personality, and psycholinguistics.

The fact that psychology is so diverse means, however, that all students cannot be expected to enroll in courses that are within the expertise or primary interest of a single faculty or department. This is true at Berkeley, where the emphasis is upon empirical research and theoretical analysis of fundamental aspects of animal and human behavior. Since this is our experience that students who are interested in the major often have been exposed to introductory courses with emphases different from those presented at Berkeley, prospective majors are strongly urged to examine closely our upper division course offerings to see if they are consonant with their interests in psychology. A peusal of these courses will reveal, for example, that certain popular topics are not covered. Thus, if students wish training in counseling psychology, mental retardation, or humanistic psychology, they are advised to study at some other program. The major attempts to give basic and well-rounded knowledge and principles. It should be emphasized that the undergraduate program in psychology does not prepare a student for a position as a professional psychologist. However, it provides important basic knowledge and principles.

The undergraduate major to seek to examine closely our upper division course offerings to see if they are consonant with their interests in psychology. A peusal of these courses will reveal, for example, that certain popular topics are not covered. Thus, if students wish training in counseling psychology, mental retardation, or humanistic psychology, they are advised to study at some other program. The major attempts to give basic and well-rounded knowledge and principles.

The undergraduate program in psychology does not prepare a student for a position as a professional psychologist. However, it provides important basic knowledge and principles.
has little or no background in psychology is advised to defer application until such time as appropriate undergraduate coursework has been completed.

Graduate Training Programs. The graduate program is designed for doctoral students interested in pursuing advanced study and conducting original research in psychology. New admissions are restricted to candidates for the Ph.D. Students are accepted for the Fall Semester only. Detailed information concerning admission, financial aid, and degree requirements is available from the Student Services Office, Department of Psychology, University of California, Berkeley, Berkeley, CA 94720.

Graduate training is organized around seven major areas of study. Formal graduate training, including the selection and evaluation of students and the development and maintenance of training programs, is the primary responsibility of faculty members who have grouped themselves in the following areas: biological, comparative, developmental, personal, quantitative, and social. The core of each training program is a set of proseminal courses. These courses are designated as "decade" courses (i.e., 200, 202, 220, etc.) and are offered every year or every other year. They are intended to provide the core content necessary for a student to become an effective scholar and researcher in the area of specialization. Students are expected to complete these with one of the area programs and to complete the core sequence for that area. Depending upon the area, additional course requirements might consist of (1) courses on methodology, experimental design, and statistical analysis, (2) courses selected from other areas either within or outside of the Psychology Department, (3) advanced courses and seminars in the area of specialization, and (4) individual study and research (296 and 299). Most programs require a major research or theoretical paper by the end of the second year of graduate study. All students are required to serve at least two semesters as Teaching Assistant in order to be eligible for the award of the Ph.D. degree. The final requirements of all programs consist of the successful passing of the Qualifying Examination, taken taken as a student in their third year, and the submission and approval of the dissertation.

General Psychology

Lower Division Courses

1. General Psychology. (3). Formerly 1. Two 1-hour lectures and one 1-hour discussion per week. Introduction to the principal areas, problems, and concepts of psychology as well as general trends. Not offered 1984-85.

2. Introduction to Research and Data Analysis in Psychology. (3). Formerly 101A. Students who have completed a college level course in statistics will not receive credit for Psychology 5. Three 1-hour lectures and one 2-hour discussion per week. Semester Prerequisites: Second-year high school algebra or consent of instructor. Primarily for majors and prospective majors. Analyses of experimental data including central tendencies, variability, correlation, testing of hypotheses and decision making. (F)

3. The Psychology of Stress, Coping, and Adaptation. (3). Formerly 2. Two 1-hour lectures and one 1-hour discussion per week. Course deals with the concept of stress in social science and medicine and its history; it will examine the relations among stress, emotion and thought; the concept of coping and its possible impact on adaptation outcomes such as morale, social functioning and physical health; and the possibilities of stress management. Not offered 1984-85.

4. Psychology of Gender. (3). Formerly 191R. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 or consent of instructor. Quarter Prerequisites: 1. Examination of various factors in the development of feminine and masculine roles, including personality, social processes, biology, and culture. Not offered 1984-85.

5. Minority Issues in Psychology. (3). Formerly 192. Course may be repeated once for credit. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 or consent of instructor. Quarter Prerequisites: 1. A consideration of psychological theory and practice on issues related to minority groups in the United States. (SP)

6. Theory of Psychological Measurement. (3). Formerly 104. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 101 or consent of instructor. Quarter Prerequisites: 101A-101B. Introduction to the methodology of psychological measurement with emphasis on the notion of reliability, validity, and homogeneity. Correlational methods including multivariate regression and contribution to path analysis and special commercial techniques will be emphasized. Not offered 1984-85.

7. Introduction to Multivariate Psychological Experiments. (4). Formerly 105. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 101 or consent of instructor. Quarter Prerequisites: 101A-101B. General techniques for analyzing psychological experiments yielding multiple measurements of observations. Emphasis on multivariate prediction methods, factor and component analysis, discrimination and classification, multivariate analysis of variance, and latent class and structural analysis. (F)

8. Topical Seminars in Quantitative Psychology. (3). Formerly 106. May be repeated for credit with a different topic and permission of instructor. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. For a precise schedule of offerings check with the Student Services Office each semester.

9. Test Theory. (3). Semester Prerequisites: 104 recommended. (SP)

10. Factor Analysis. (3). Semester Prerequisites: 105 recommended. (SP)

11. Psychological Scaling. (3). Semester Prerequisites: 104 and 105 recommended. (SP)

12. Path Models and Causal Analysis. (3). Semester Prerequisites: 104 and 105 recommended. (SP)

Biological Psychology

Upper Division Courses

110. Introduction to Biological Psychology. (3). Formerly 110. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 and biological prerequisites for the major or consent of instructor. Quarter Prerequisites: 1 and biological prerequisites for the major. Survey of relations between behavioral and biological processes. Topics include sensory and perceptual processes, neural maturation, neural bases of motivation, learning. (F)

111. Sensory Processes: Vision. (3). Formerly 111. Two 2-hour lectures per week. Semester Prerequisites: 110 or consent of the instructor. Quarter Prerequisites: 106A-106B, 106C, 106D. Structure and function of visual perception, adaptation, brightness and color vision, binocular vision, object detection in relation to anatomy and physiology of the visual system. (F)

111L. Laboratory in Vision. (2). Formerly 111L. Two 2-hour laboratories per week. Semester Prerequisites: Concurrent enrollment in 111 and consent of instructor. Quarter Prerequisites: 111. Various experiments carried out in visual psychophysics and perception; observation of physiological studies of single cell responses. (F)

112. Sensory Processes: Hearing. (3). Formerly 112. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 and biological prerequisites for the major or consent of instructor. Lectures cover a broad range of topics related to the psychology of hearing and the physiology of the auditory system. Not offered 1984-85.

112L. Laboratory in Hearing. (2). Formerly 112L. Two 2-hour laboratories per week. Semester Prerequisites: Concurrent enrollment in 112 and consent of instructor. Quarter Prerequisites: 112. Laboratory research on selected topics in hearing.

113. Biological Clocks: Physiology and Behavior. (3). Formerly 190A. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: 113. Laboratory research on selected topics in biological clocks that generate daily, lunar, seasonal and

114. Biology of Learning and Neural Plasticity. (3). Formerly 114. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor; 101 recommended. Theoretical and experimental analysis of fundamental processes and properties of neighboring systems related to the growth and maturation of the nervous system. Not offered 1984-85.

115. Introduction to Comparative Psychology. (3). Formerly 115. Students not currently enrolled in this course or IDS 122 will receive no credit for 115. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. A critical evaluation of the effects of psychological variables on the learning and use of language, influence of language behavior on psychological processes; special attention to psychological applications of modern linguistic theory and to social psychological aspects of language behavior.

116. Hormones and Behavior. (3). Formerly 117. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Completion of biological prerequisites for the major and consent of the instructor; a course in mammalian physiology recommended. Formerly 110A and 110B or the equivalent. A survey of contemporary psychological approaches to problems of human disabilities including mental disorders, behavior changes following human brain injury and disease, and mental subnormality. Emphasis on nervous system models of these problems and areas of potential application of basic research development. (SP)

117. Biological Psychology and Problems of Human Dysfunctions. (3). Formerly 118. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 110A or equivalent. Quarter Prerequisites: 100A-100B-100C or the equivalent. A survey of contemporary psychological approaches to problems of human disabilities including mental disorders, behavior changes following human brain injury and disease, and mental subnormality. Emphasis on nervous system models of these problems and areas of potential application of basic research development. (SP)

118. Topical Seminar in Biological Psychology. (3). Formerly 119. Course may be repeated for credit with a different topic and with consent of instructor. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor; 101 recommended. A course designed to extend major focus on core research problems and topics in the field of biological psychology.

119. Drugs and Behavior. (3). New Course since Spring 1983. Two 1-hour lectures per week. Semester Prerequisites: 1 and 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 complex mental processes such as attention, motivation, learning and memory. (F)

Cognitive Psychology

Upper Division Courses

120. Introduction to Cognitive Psychology. (3). Formerly 126. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 101 or equivalent statistics course recommended but not required. Course focuses on research concerning human processing of visual, auditory, and symbolic information; object recognition and classification; perception and comprehension of language; attention; theoretical model and experimental techniques in the study of imagery and other cognitive processes. Not offered 1984-85.

121. Animal Learning. (3). Formerly 121. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 101 is recommended. Quarterly prerequisites: 101A-101B is recommended. Theoretical and experimental analysis of classical conditioning, instrumental conditioning, and discrimination learning. Additional topics of current interest in the area of animal learning will also be considered. (SP)

122A. Introduction to Human Learning and Memory. (3). Formerly 122A. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 recommended. Quarter Prerequisites: 101A-101B is recommended. Theoretical and experimental analysis of human learning and memory; short-term and long-term memory; coding and retrieval processes; transfer and interference; mechanisms of forgetting. (?)

122B. Advanced Topics in Human Learning and Memory. (3). Formerly 122B. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor; 101 recommended. Detailed analysis of special problems in human learning and memory. (SP)

123. Concepts and Categories. (3). Formerly 126. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor; 101 recommended. Theoretical constructs and experimental methods in the study of human cognition with particular emphasis on the nature of concepts and categories. Topics will include concept structure, prototypes, conceptual organization, meaning, thought, and cross-cultural comparisons. (SP)

124. Psycholinguistics. (3). Formerly 124. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: An introductory course in linguistics or consent of instructor. Quarter Prerequisites: 1 and a one-quarter introductory course in linguistics. 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 applications of modern linguistic theory and to social psychological aspects of language behavior.

125. Second Language Learning and Bilingualism. (3). Formerly 125. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Basic process and structure in second language acquisition, including development of "inter-languages." Processing of linguistic information by bilinguals (perception, recall, translation); structure of bilingual discourse. (SP)

126. Perception. (3). New Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. 101 recommended. An introduction to psychological constructs and experimental procedures in visual and auditory perception. Topics will include psychophysics, perception of patterns, motion, and texture; pattern recognition, and perceptual attention. (F)

127A. Human Problem Solving and Thinking. (3). New Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 and completion of all other lower division prerequisites for the major or consent of instructor. Principles, theories and research findings regarding the nature of problem solving, decision-making and intellectual creativity; cognitive processes and personality correlates of effective thinking; convergent and divergent functioning. Not offered 1984-85.

127B. Facilitating Human Problem Solving. (3). New Course since Spring 1983. Two 1-hour lectures per week. Semester Prerequisites: 127A and consent of instructor. Survey of theories and research regarding the malleability and improvement of problem-solving cognitive processes, fostering effective decision-making and creative functioning; developmental correlates of change; methodologies and techniques of intervention and assessment of their effectiveness. Educational and industrial applications. Not offered 1984-85.

128. Topical Seminars in Cognitive Psychology. (3). Formerly 128. Course may be repeated for credit with a different topic and consent of instructor. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor. For a precise schedule of offerings check with the Student Services Office each semester. (FSP)

Clinical Psychology

Upper Division Courses

130. Clinical Psychology. (3). Formerly 130. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 or consent of instructor. A practical and empirical approach to the exploration of psychological dysfunction. 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. Not offered 1984-85.

131. The Child in Family and School. (3). New Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 or consent of instructor. Theorizing and research focusing on mental health and dysfunction of children in their two major social settings. (SP)

132. Community Psychology. (3). Formerly 132. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 130 or 131, or consent of instructor. Quarter Prerequisites: 130 or 131A-131B. Study of mental health problems from a social psychological perspective, with particular concern for ecological, epidemiological and sociological factors. Critical examination of emerging methods of community intervention, including prevention. Will be offered every other year.

133. Minority Mental Health. (3). Formerly 136. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 130 or 131, or consent of instructor. Overview of concepts and research findings relevant to understanding, and the development of intervention with the particular mental health problems of ethnic minority communities. Will be offered in alternate years. Not offered 1984-85.

134. Field Experience in Clinical and Social Change. (3). New Course since Spring 1983. Course may be repeated for credit. Five hours of field work and two hours discussion with instructor per week. Semester Prerequisites: 130 or 131, or consent of instructor. Small discussion of issues involved in mental health work. Students must be involved in at least five hours per week of work in a mental health setting approved by the instructor. In a given semester, a specific focus must be decided for the course. Check with the Student Services Office each semester. (SP)

138. Topical Seminars In Clinical Psychology. (3). Formerly 138. Course may be repeated for credit with a different topic and consent of instructor. One 3-hour meeting per week. Semester Prerequisites: 130 or 131, or consent of instructor. For a precise schedule of of-
Personality Psychology
Upper Division Courses

150. Psychology of Personality. (3). Formerly 150. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: Consent of instructor. Examines stress theory and research from clinical field and laboratory settings dealing with the physiological issues involved in adjustment to life stresses. Not offered 1984-85.

151. Laboratory in Personality Research. (3). Formerly 151. One 3-hour laboratory per week. Semester Prerequisites: Consent of instructor. Demonstrations and exercises in the methods of personality assessment. (SP)

152. Stress and Adjustment. (3). Formerly 152. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

153. Topical Seminars in Personality. (3). Formerly 153. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor. For a precise schedule of offerings check with the Student Services Office each semester. (F)

Social Psychology
Upper Division Courses

160. Social Psychology. (3). Formerly 160. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

161. Interpersonal Processes. (3). Formerly 161. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

162. Attitudes, Beliefs, and Influence Processes. (3). Formerly 162. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

163. Small Group Structure and Processes. (3). Formerly 163. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

165. Language in Social Interaction. (3). Formerly 165. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

Industrial-Organizational Psychology
Upper Division Courses

180. Industrial-Organizational Psychology. (3). Formerly 180. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)

Personnel Psychology. (3). Formerly 182. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Examines stress theory and research involving the effects of tests and questioning. (SP)
Semester Prerequisites: 180 and 101 or consent of instructor. Quarter Prerequisites: 180 and 101A-101B. Emphasis on psychological contributions in the development of techniques and practices in personnel selection and development. (SP)

188. Topical Seminars in Industrial-Organizational Psychology. (3). Formerly 188. May be repeated for credit with a different topic and consent of instructor. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor. For a precise schedule of offerings check with the Student Services Office each semester. Not offered 1984-85.

Special Course Offerings

Upper Division Courses

190. Cluster Seminars. (1). Formerly 190. Must be taken on a pass/no pass basis. One 2-hour meeting per week. Semester Prerequisites: Psychology major and admission to the cluster program. Weekly discussion on different methods and aims of contemporary psychology. (F)

H195A-H195B. Special Study for Honors Candidates. (1-8). Formerly H195A-H195B. Credit and grade awarded upon completion of the two-semester sequence. May be repeated for credit up to 10 units total. Individual conferences. Semester Prerequisites: Open only to seniors in psychology in the Honors Program. Independent study and preparation of an honors thesis under the supervision of a faculty member. (F,SP)

197. Field Study in Psychology. (1-3). Formerly 197. May be repeated for credit. Must be taken on a pass/no pass basis. Individual conferences. Semester Prerequisites: 1; appropriate upper division work in psychology (to be determined by instructor). Consent of instructor. Supervised experience relevant to specific aspects of psychology in off-campus settings. Individual and/or group meetings with faculty. Enrollment is restricted by regulations of the Berkeley Division listed elsewhere in this catalog. (F,SP)

198. Directed Group Study. (1-3). Formerly 198. May be repeated for credit. Must be taken on a pass/no pass basis. Individual conferences. Semester Prerequisites: Consent of instructor. Group study of a selected topic or topics in psychology. Enrollment is restricted by regulations of the Berkeley Division listed elsewhere in this catalog. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. May be repeated for credit. Must be taken on a pass/no pass basis. Individual conferences. Semester Prerequisites: Consent of instructor. Enrollment is restricted by regulations of the Berkeley Division listed elsewhere in this catalog. (F,SP)

Graduate Courses

Graduate standing and the consent of the instructor are prerequisites for all graduate offerings. (Undergraduates may enroll only upon approval of a faculty adviser and consent of the instructor.) Courses beginning each decade are designated as proseminars and are designed to provide the background essential for students planning to concentrate in any area of specialization. These proseminars are sufficiently general, however, for students from other areas of Psychology to obtain breadth of training in complementary areas of study. (Most proseminar courses are self-contained and may be taken separately. For most courses time is planned primarily for first and second year graduate students in Psychology.)

Quantitative Psychology

Graduate Courses

200A. Supervised Independent Study and Research. (1-3). Formerly 199. May be repeated for credit. Must be taken on a pass/no pass basis. Individual conferences. Semester Prerequisites: Consent of instructor. Enrollment is restricted by regulations of the Berkeley Division listed elsewhere in this catalog. Not offered 1984-85.

Graduate Courses

200B. Proseminar: Regression and Test Theory. (3). Formerly 200B. One 3-hour lecture per week. Correlational analysis, regression analysis, phi coefficients, reliability, validity, latent trait models; test theory. Not offered 1984-85.


201A-201B. Design and Analysis of Psychology Experiments. (3). Formerly 201A-201B. One 3-hour lecture per week. Design and statistical analysis of psychology experiments are examined from an intuitive and practical point of view. 201A may be taken by itself and considers the most common designs found in psychology experiments. 201B is a continuation of 201A and covers the design and analysis of more complicated experimental designs. (SP)

205A-205B. Data Analysis. (3;3). Formerly 205A-205B. Three-hour lecture and one-hour discussion lecture per week. Students will need to work through problems (homework). A general data analytic course that emphasizes design issues and problems, from pure experimental research through field studies. Techniques of ANOVA and multiple regression/correlation will be presented as analytical models for both lab and field research. Not offered 1984-85.

208A. Measurement of Individual Differences. (4). Formerly 208A. Three 1-1/2-hour lectures per week. An introduction to classical test theory. Emphasis will be placed on concepts of reliability of measurement and assessment of validity through alternative criteria and item analysis. Either Education 208A, an equivalent graduate course, or Psychology 208A will be offered in alternate years. (F)

208B. Modern Mental Test Theory. (4). Formerly 208B. Three 1-1/2-hour lectures per week. Semester Prerequisites: 208A or Education 208A. Development of latent trait and item response theory by way of standard models such as the normal ogive, logistic, etc. Laserfield's latent class models will be discussed as will be special topics in strong true theory. Tailored testing will be introduced. Either Education 208B, an equivalent course, or Psychology 208B will be offered in alternate years. (SP)

208C. Psychological Scaling. (4). Formerly 208C. Three 1-1/2-hour lectures per week. An introduction to the measurement of psychological value. Emphasis will be placed on psychological judgment. Topics will include Weber's Law, Fechner's Law, Thurstone scaling, signal detection theory, psychophysics, perception, and use of category ratings vs. magnitude estimation, the ratio-difference controversy, cross modality matching, theories of contextual effects. (F)

208D. Factor Analysis. (4). Formerly 208D. Three 1-1/2-hour lectures per week. Introduction to factor and component analysis. Rotation and transformation problems will be dealt with. Fitting the factor analytic model via statistical procedures will be addressed. Factorial indeterminacy issues will be introduced. Not offered 1984-85.

208E. Test Construction. (4). Formerly 208E. Three 1-1/2-hour lectures per week. Semester Prerequisites: 200E or Education 208B; 208D or Education 208D recommended. Issues in the development, validation and evaluation of procedures for assessing traits and measuring educational or occupational competencies. Questionnaire development as well as more traditional forms of item development, and Likert Scales will be discussed along with the usual form of item construction as dichotomous pass-fail or agree-disagree elements in a test. item test calibration procedures based on item response theory will be used. Either 208E or Education 208E or

208F. Mathematical Psychology. (4). Formerly 208F. Three 1-1/2-hour lectures per week. This course will focus on the use of mathematical models in judgment and decision-making. Topics will include functional measurement, conjoint measurement, scale-free tests, scale convergence, multidimensional scaling, etc. Normative vs. descriptive models of decision-making will also be addressed. (SP)

208G. Introduction to Linear Models. (4). Formerly 208G. Three 1-1/2-hour lectures per week. This course will be primarily concerned with correlation, regression, and related topics (e.g. the use of dummy coding, trend analysis, relations to factor analysis and analysis of variance, problems in interpretation.) The course will also provide an introduction to path analysis and linear structural models. Not offered 1984-85.

209. Quantitative Seminar. (1). Formerly 209. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-1/2-hour meeting per week. Semester Prerequisites: Graduate standing or consent of instructor. Reports and discussions of original research in the area of quantitative 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 quantitative graduate program. (F,SP)

Biological Psychology

210A. Proseminar: Sensory Processing. (3). Formerly 210A. One 3-hour lecture per week. A discussion of selected topics in sensory physiology and psychophysics. (F)

210B. Proseminar: Animal Behavior. (3). Formerly 210B. One 3-hour lecture per week. A consideration of the biologically based specific behaviors, mainly of mammals. Included are discussions of reproductive behavior, social behavior, feeding, sleep, behavioral rhythms. (F)

210C. Proseminar: Biology of Learning. (3). Formerly 210C. One 3-hour lecture per week. An examination of learning involving the neural processes that underlie the capture, storage, and retrieval of information. Observations and concepts not only from behavioral and clinical investigators but also from neighboring fields including neurochemistry, neuroanatomy, and neurophysiology. (SP)

210D. Proseminar: Perception. (3). Formerly 210D. One 3-hour lecture per week. This course will cover both the classical literature on visual perception and the more recent information-processing material. An attempt will be made to relate these studies to our knowledge of the physiological bases of vision. Not offered 1984-85.

211. Hormones and Behavior. (3). Formerly 211. One 3-hour lecture per week. An examination of the neural processes that underlie hormone secretion and the capture, storage, and retrieval of information. Observations and concepts not only from behavioral and clinical investigators but also from neighboring fields including neurochemistry, neuroanatomy, and neurophysiology. (SP)

212. Biological Clocks and Animal Behavior. (3). Formerly 212. One 3-hour lecture per week. Semester Prerequisites: 210A-210B-210C. A consideration of the role of circadian processes in photo-periodic time measurement and on seasonal reproductive and hormonal involvement in non-reproductive processes, including eating, social behavior, learning and memory. Emphasis on mammals. To be offered alternate years. Not offered 1984-85.


219. Biological Seminar. (1). Formerly 219. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-1/2-hour meeting per week. Semester Prerequisites: Graduate standing or consent of instructor. Reports and discussions of original research in the area of biological 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 biological graduate program. (F,SP)
Cognitive Psychology

220A. Proseminar: Concepts and Categories. (3). Formerly 220A. One 3-hour lecture per week. Theoretical constructs and experimental methods in the study of human and animal thought with particular emphasis on the nature of concepts and categories. Topics will include category structure, prototypes, conceptual organization, meaning, thought, and cross-cultural comparisons. (SP)

220B. Proseminar: Conditioning and Discrimination Learning. Formerly 220C. One 3-hour lecture per week. Classical and instrumental conditioning and discrimination learning, with material taken both from human and animal literature, but with emphasis on the animal work. (SP)

220C. Proseminar: Human Learning and Memory. Formerly 220D. One 3-hour lecture per week. Theoretical and experimental analysis of human learning, transfer, and memory. Stress will be given to the learning and retention of verbal materials. (F)


220E. Proseminar: Perception. (3). New Course since Spring 1983. One 3-hour lecture per week. Principal theoretical constructs and experimental procedures in visual and auditory perception. Topics will include psychophysics, perception of color, space, shape, and motion, pattern recognition, and perceptual attention. (SP)

222. Cognitive Seminar. (1). Formerly 222. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting per week. Semester Prerequisites: Graduate standing or consent of instructor. Reports and discussions of original research in the area of cognitive psychology. Must be taken in conjunction with 222A-222B. Limited to second and third year clinical psychology students or consent of instructor. Reports and discussions of original research in the area of cognitive psychology. Not all participants need report in any given semester, but all are expected to attend and to enter into the discussions. Required course for all students in the clinical graduate program. (F,SP)

Clinical Psychology

230. Proseminar: Clinical Psychology. (3). Formerly 220A. One 3-hour lecture per week. Examination of major theoretical and historical themes in the development of clinical psychology, with special attention to concepts of mental health and psychopathology, models of intervention and clinical research, and emerging professional roles and institutions. Will be offered in alternate years. (SP)

231A. Normality and Pathology: Psychopathology. (3). New Course since Spring 1983. One 3-hour lecture per week. Theories and principles of normal development and functioning, psychopathology, implications for theories of intervention. To be offered every other year. (SP)

231B. Normality and Pathology: Ego Psychology. (3). Formerly 220K. One 3-hour lecture per week. Examination of theory and research on ego structure and functions within the context of psychoanalytic thought. Both the self-system and executive functions will be studied in the writings of classic psychoanalysts, psychoanalytic ego psychologists, object-relations theorists, as well as other contemporary positions. Research on ego development, perception-cognition, and fantasy will be examined. Will be offered every other year. (SP)

231C. Normality and Pathology: The Child in Family and School. (3). Formerly 230C. One 3-hour lecture per week. Analysis of both competence and dysfunction of children in their major social settings. To be offered every other year. (F)

231D. Normality and Pathology: Minority Mental Health. (3). New Course since Spring 1983. One 3-hour lecture per week. Overview of concepts and research findings relevant to understanding, and contributing to the solution of the particular mental health problems of ethnic minority communities. Will be offered every other year. (SP)

232A-232B. Theory and Method of Clinical Assessment. (2,2). Formerly 231A-231B. Credit and grade to be awarded upon completion of the sequence. One 2-hour lecture per week. Semester Prerequisites: Must be taken in conjunction with 232A-232B. First year status as graduate student in clinical psychology or consent of instructor. Principles and methods of clinical interviewing, intellectual, objective, and projective personality assessment. Required of all first-year clinical students. (F,SP)

233A-233B. Laboratory in Clinical Assessment. (1,1). Formerly 233A-233B. Credit and grade to be awarded upon completion of the sequence. One 2-hour lecture per week. Examination of the major theories of psychotherapy and personal change. Orientations that will be covered include psychoanalytic techniques, behavioral and cognitive-behavioral techniques, the humanistic schools, and systems theory. Will be offered every other year. (F)

234A. Theories of Intervention: Individual Therapy. (3). Formerly 232A. One 3-hour lecture per week. Examination of major theories of psychotherapy and personal change. Orientations that will be covered include psychoanalytic techniques, behavioral and cognitive-behavioral techniques, the humanistic schools, and systems theory. Will be offered every other year. (F)

234B. Theories of Intervention: Child and Family Therapy. (3). Formerly 234A. One 3-hour lecture per week. Analysis of major approaches to promoting developmental change in children, couples and families. To be offered every other year. (SP)

235. Clinical Research. (3). Formerly 232B. One 3-hour lecture per week. Strategies of research in clinical issues; clinical methods of gathering and interpreting data; case examples from the research in progress of major participants in the seminar. To be offered every other year. (SP)

236. Professional Issues: Ethics. (3). Formerly 220K. One 3-hour lecture per week. An in-depth analysis of ethical issues in clinical research and intervention. To be offered every other year. (SP)

237A. Intervention: Adult Individual Therapy. (1). Formerly 401A-401B-401C. Course may be repeated for credit. One 1-hour lecture per week. Semester 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). Formerly 236. One 1-hour lecture per week. Semester Prerequisites: Limitation 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). Formerly 235. Course may be repeated for credit. One 1-hour meeting per week. Semester Prerequisites: Limited to second and third year clinical psychology students or consent of instructor. Consultation, program evaluation, program development, and prevention in community settings. (F,SP)

237D. Intervention: Supervision. (1). Formerly 235. Course may be repeated for credit. One 1-hour meeting per week. Semester Prerequisites: Limited to second and third year clinical psychology students or consent of instructor. The teaching of supervisory skills for clinical and social intervention. (F,SP)

237E. Intervention: Clinical Decision Making. (1). Course may be repeated for credit. One 1½-hour meeting per week. Semester Prerequisites: Limited to second and third year clinical psychology students or consent of credit. One 1½-hour meeting per week. Participant sections in decisions about providing psychological services to individuals, families, groups and social systems. (F,SP)

239. Clinical Seminar. (1). Formerly 239. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting every other week. Semester Prerequisites: Graduate standing or consent of instructor. Reports and discussions of original research in the area of clinical 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 clinical graduate program. (F,SP)

Developmental Psychology

240A. Proseminar: Early Cognitive Development. (3). Formerly 240A. One 3-hour lecture per week. Broad coverage of theory, methods, and research findings primarily concerning human cognitive development in the first two years of life. Specific content areas to be emphasized will include learning processes, memory, and sensory-motor intelligence. Not offered 1984-85.

240B. Proseminar: Human Ethology and Early Social Development. (3). Formerly 240B. One 3-hour lecture per week. The work of current British and American ethologists will be reviewed. Emphasis will be placed on generality of research findings. 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 clinical graduate program. (F,SP)

240C. Proseminar: Socialization and Personality Development. (3). Formerly 240C. One 3-hour lecture per week. Stages and structures of reasoning from sensorimotor action schemes in infancy through formal operations in adolescence and adulthood, with focus upon the progressive construction of logical and physical concepts. Also relevant, development of self and social skills, and the socialization process. Research methods and developmental problems will be emphasized. (F)

240D. Proseminar: Cognitive Development. (3). Formerly 240D. One 3-hour lecture per week. One 1½-hour meeting every other week. The focus of the course is on the antecedents and correlates of personality development and early social behavior. Classical and contemporary theories will be surveyed (particularly parent-child relationships and peer influences) and relevant research findings reviewed. Research methods and developmental problems will be emphasized. (SP)

240E. Proseminar: Language Development. (3). Formerly 240E. One 3-hour lecture per week. Child language development within the theoretical and methodological framework of psycholinguistics. Review of phonological, grammatical, semantic, and pragmatic development, considered in relation to developmental models, with special attention to interaction between linguistic and cognitive development and to the development of language within communicative contexts. Not offered 1984-85.

240F. Proseminar: Development of Behavior Problems. (3). Formerly 240F. One 3-hour lecture per week. Extensive coverage of theoretical and research literature pertaining to the development of a broad range of behavior problems, their origins, diagnoses, and treatment. Relationships between normal behavior and emotional maladjustment will be stressed, and modern (including preventative) treatment methods are discussed and evaluated. Not offered 1984-85.

249. Developmental Seminar. (1). Formerly 249. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting every other week. Semester 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. Perspectivess in Personality: Overview. (3). Formerly 250A. One 3-hour lecture per week. Introduces the perspectives and research programs of graduate psychology to faculty 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. (F)

250B. Perspectives in Personality: Personality Development. (3). Formerly 250B. One 3-hour lecture per week. Deals with the development of personality and has three primary foci: (1) development of gender roles; (2) sex-differentiated socialization patterns affecting personality development in males and females; and (3) psychological sex differences. (SP)


250D. Perspectives in Personality: Abnormal Personality. (3). Formerly 250D. One 3-hour lecture per week. Treats empirical approaches in psychopathology and abnormal personality with emphasis upon: (1) reevaluation of treatment modalities; (2) the relationship between person and social context, and (3) the implications of alternative conceptualizations for the choice of research methodologies.

250E. Perspectives in Personality: Trends and Issues. (3). Formerly 250E. One 3-hour lecture per week. Considers historical trends and current discussions regarding such topics as: (1) the concept of disposition; (2) person by environment transactions; (3) observational assessment of persons, and (4) personality systematics; (5) personality development and concepts of structure, and (6) implications of personality system - social system interactions.

250F. Perspectives in Personality: Folk Perspectives. (3). Formerly 250F. One 3-hour lecture per week. Takes up folk perspectives on personality, and in particular measures and methods of assessment attentive to the qualities, attributes, talents, and dispositions considered in the everyday evaluations people make of self and others. Comparisons are made with other approaches.

250G. Perspectives in Personality: Intrapyschic Experience. (3). Formerly 250G. One 3-hour lecture per week. Approaches personality as the study of intrapsychic experience and addresses general theoretical issues in intrapsychic methodology; what alternatives are there? (2) how do people differ in intrapsychic experience and why? (3) how does intrapsychic experience influence theorizing and personality?

250H. Perspectives in Personality: Stress and Coping Processes. (3). Formerly 250H. One 3-hour lecture per week. Explores the ways stress and coping processes affect health, functioning and morale as reflected in current models and research. Focuses on human psychological studies of coping and adaptation. Occasionally may deal with theories of affect and its links to cognition. (F)

250I. Perspectives in Personality: Cognitive-Perceptual Processes. (3). Formerly 250I. One 3-hour lecture per week. Deals with a number of areas where the relationship between personality and cognitive-perceptual processes is important, e.g., cognitive style, repression.

250J. Perspectives in Personality: Cognitive Approaches. (3). Formerly 250J. One 3-hour lecture per week. Surveys cognitive view of personality, with special attention given to G. A. Kelly's psychology of personal constructs.

251A-251B. Personality Assessment. (5-5). Formerly 251A-251B. Three hours lecture and 3-5 hours laboratory per week. Semester Prerequisites: Ph.D. candidates in personality psychology or consent of instructor. Lectures and laboratory work on personality assessment, including the history and background of assessment and the design of an assessment program, conducting an assessment, and case conferences, preparation of research reports, and methods of data analysis. Not offered 1984-85.

252A-252B. Personality Assessment of the School-Age Child. (5-5). Formerly 252A-252B. One hour individual supervision; two 3-hour field labs and one 3-hour lecture/discussion per week. Primarily for first-year graduate students. Assessment of the child, integrating the methods of observation, mental and personality testing, and interview. Individual supervision. Not offered 1984-85.

259. Personality Seminar. (1). Formerly 259. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour meeting per week. Semester 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.

Social Psychology

260A-260B. Proseminar Course in Social Psychology. (3). Formerly 260A-260B-260C. One 3-hour lecture per week. Extensive coverage of theoretical and research literature. Topics include history and systems, attitudinal and attitude change, interpersonal processes, motivation, social interaction, small groups, and organizational behavior. Required course for all students in the social graduate program. (F,SP)

281. Research Methods in Social Psychology. (3). New Course since Spring 1983. One 3-hour lecture per week. Survey of various research methodologies that have been developed for studying human social behavior, including experiments, quasi-experiments, self-report methods, and content analysis. Required course for all students in the social psychology graduate program. Not offered 1984-85.

289. Social Seminar. (1). Formerly 289. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-1/2 hour meeting per week. Semester Prerequisites: Graduate standing or consent of instructor. Reports and discussion 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. (F,SP)

Special Course Offerings

290. Seminars. (2). Formerly 290. Course may be repeated for credit. One 2-hour meeting per week. (F,SP)

290A. Measurement. (2).

290B. Biological. (2).

290C. Comparative. (2).

290D. Learning. (2).

290E. Perception. (2).

290F. Thinking. (2).

290G. Language and Communication. (2).

290H. Developmental. (2).

290I. Personality. (2).

290J. Social. (2).

290K. Clinical. (2).

290L. Differential. (2).

290M. Industrial. (2).

290N. Mathematical Models in Learning and in Psychology. (2).

290O. Analysis of Variance Techniques. (2).

290P. Additional Seminars On Special Topics To Be Announced. (2).

290Q. Cognition. (2).

292. Survey of Department of Psychology Programs. (1). New Course since Spring 1983. Must be taken on a satisfactory/unsatisfactory basis. One 1-1/2 hour seminar per week. Semester Prerequisites: Graduate standing in the department. Discussion with department chair of intellectual history of department; discussion with each program chair of the nature of the subfield and the research activities in the field at Berkeley. Required of all incoming graduate students. (F)

298. Directed Study. (1-12). Formerly 298. Course may be repeated for credit. Individual conferences. Special study under the direction of a member of the staff. (F,SP)

299. Research. (1-12). Formerly 299. Course may be repeated for credit. Individual conferences. (F,SP)

602. Individual Study for Doctoral Students. (1-6). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Individuals in consultation with the major field advisor, 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

612. A Seminar in the Presentation and Teaching of Psychological Material. (2). Formerly 300. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour lecture per week. Principles and methods of the presentation of psychological material in lectures, demonstrations, publication, etc., with emphasis on the teaching of undergraduate courses in psychology.

401A-401B. Clinical Internship (Off Campus). (1-12;1-12). Formerly 402A-402B-402C. Credit and grade to be awarded on completion of the internship. The clinical internship is a supervised practical experience. To qualify for the choice of research methodologies.

IDS204. Animal Behavior Research Reviews. (1). Formerly 269. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1/2 hour meeting per week. Semester Prerequisites: Graduate standing or consent of instructor. Reports and discussion of original research in the area of animal behavior. 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. (F,SP)

Graduate Courses

IDS203. Developmental Neurobiology Review. (1). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of Instructor. Discussion of research papers and original research reports on current problems in developmental neurobiology, including cell lineage, axonal pathfinding, synaptic connectivity, and competition. Sponsoring Departments: Zoology, Psychology, and Zoology. Not offered 1984-85.

IDS204. Animal Behavior Research Reviews. (1). Formerly 204. Course may be repeated for credit. One 1/2 hour seminar per week. Semester Prerequisites: Graduate standing; basic course in animal behavior; consent of instructor. Reports and discussion of original research or views, completed or in progress. Not all participants need report, but all are expected to attend and enter into the discussions. Sponsoring Departments: Zoology and Psychology. (F)

IDS235. Cognitive Science Research Discussion. (1). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-1/2 hour meeting per week. Semester Prerequisites: Student must be in Cognitive Science, Entomology, or Philosophy, or in a course associated with the Cognitive Science Program. The students will interchange on the Cognitive Science-related research that they are carrying on as R.A.'s with the aim of broadening both their experience and the
Religious Studies

Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-2628

Advisers: Gerard Caspari (Christianity), William Brinner (Islam, Judaism), Michel Strickman (Buddhism), P.S. Jaini (Hinduism), Mark Juergensmeyer (cross-cultural and thematic studies).

Group Major in Religious Studies

The religious studies major provides opportunities for securing a broad background in the liberal arts while allowing for a focus on a thematic concern or a particular religious tradition. It views religion from a global perspective, and combines aspects of the humanities and the social sciences.

The major is open to anyone concerned about the religious landscape of the world. It is particularly suitable for those who have a religious background or are pursuing a religious vocation. Members of the major will be challenged to view religion multi-culturally and from critical as well as appreciative perspectives.

Most of the courses available for the program are religion-related courses taught within such departments as History, Sociology, and Near Eastern Studies. As a supplement to these, the program offers a small number of courses sponsored by Religious Studies, including thematic topics of religion and the introductory courses (one of which surveys the world's religious traditions, and the other of which introduces the study of religious phenomena theoretically).

The major group in religious studies is administered through the Division of Special Programs. Students are referred to that office for study list filing and other administrative matters.

Lower Division Requirement: Religious Studies 200A or Graphic Design 110A (Comparative Symbolism). (3)

Upper Division Requirement: Two methodological courses from the following: Anthropology 150 (Religion and Anthropology), Philosophy 126 (Philosophy of Religion), Sociology 112 (Sociology of Religion), Religious Studies 190 (Topics in the Study of Religion) when topic is methodological.

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 secretary at the beginning of each semester for a current list of courses on topics in religion).

Fields of Emphasis: Buddhism: At least nine units from the following: Oriental Languages 121A-121B, 125, 126, South Asian 131. Additional courses: Oriental Languages 140A-140B, (Chinese) 145, South Asian 127, 140, 160. Recommended: students intending to do graduate work in Buddhism should study Tibetan, Chinese or Sanskrit.

Hinduism: At least nine units from the following: South Asian 121, 127, 140, 141, 155. Additional courses: History of Art 136A-136B, South Asian 122, 129, 131, 160. Recommended: students intending to do graduate work in Hinduism should study Sanskrit.


Christianity: At least eleven units from the following: Religious Studies 120A, or History 185A, Religious Studies 120B or History 156A (when topic is Petriotic), Religious Studies 120B or History 156B (when topic is Medieval). Religious Studies 115. Additional courses: Classics 125, English 107, English 110A-110B, History 108B, History 109B, Near Eastern Studies 131A-131B, 132, 134, Philosophy 152, 182, 184, Religious Studies 190 (when topic is Christian). Recommended: students intending to do graduate work in Christianity should study Latin, Greek, and German.

Honors Program: Students majoring in either Area Studies or General Studies 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 a culmination of one or two semesters of the sequence, Religious Studies 190A-190B, the thesis to be approved by both the adviser and the student's thesis director, if these are different.

Lower Division Courses

90A-90B. Introduction to Religious Studies. (3-3). Formerly 90A-90B-90C. Three hours lecture per week. Two semester sequence designed as a survey of major religious traditions and an introduction to major themes in the comparative study of religions. Methodology and theoretical issues in the history and study of Religion will be interwoven with the exploration of intercultural religious phenomena, such as ritual, myth, the concept of the sacred, religious community, and ethical guides. (F,SP)

Upper Division Courses

115. Mysticism. (3). Formerly 115. Three hours lecture per week. Courses in the literature and papyri of various mystical traditions, including readings of scripture, lyrical and mystical traditions, as opportunities for the study of cognitive functioning. Discussion of mystical injury, and other forms of neurological damage. Case presentations of patients alternate with discussions of research strategies for evaluation of cognitive functioning, as approaches for the study of cognitive functioning. Sponsoring Departments: Education and Psychology. (SP)

Rhetoric

Department Office, 2125 Dwinnelle Hall, 642-1415

Professors: Robert L. Belcho, Ph.D., William F. Brinton, Ph.D., Seymour B. Chaitman, Ph.D., Leonard Nathan, Ph.D., Robert L. Robinson, Ph.D., Barbara Shapiro, Ph.D.

Assistant Professors: David Cohen, Ph.D., J.D., Daniel M. Feinberg, Ph.D., Arthur J. Quinn, Ph.D., Todd W. Willy, Ph.D.

Assistant Professors: Vincent P. Bynack, Ph.D., J.J. Bridget Connelly, Ph.D.


Major Advisers: Ms. Connelly (S), Mr. Feinberg (F), Mr. Willy.

Graduate Adviser: Mr. Cohen.

Rhetoric defines the communicative relationship between author and audience. This approach to
written and spoken communication, of whatever type, necessitates the consideration of the author’s intention to persuade, entertain, or inform his audience through some form of discourse. Modern rhetoric adapts classical theories of persuasion to all forms of discourse, and is also concerned with the extension and development of rhetorical theory itself.

The aim of the Department’s undergraduate program is to educate majors who are sophisticated readers in a wide range of discourse, who can present and defend their positions persuasively, whether orally or in writing, and who are prepared to develop effective arguments in the areas studied, once the relevant knowledge has been acquired. Students in the major progress from the mastery of basic skills to the study of theory and history and complete their work with refinement of both in courses applying theory to the analysis of texts. Graduate courses deal with rhetorical theory, its history, and its applications to special topics.

Major Program

Undergraduate courses in Rhetoric are grouped into three categories: theory and history of rhetorical practice; fictive discourse; argumentative and declarative discourse. For the major, students must fulfill the following courses: Rhetoric 1A-1B (or 10), 30, 32A, and 32B, plus a total of nine upper-division courses. These must include Rhetoric 100, 101, and at least one course from each of the three categories:

I. Theory and History of Rhetorical Practice. Theory courses explore the major efforts to establish a philosophical basis for rhetorical practice. History courses familiarize the student with rhetoric as a continuous part of Western intellectual tradition from the Classical period to our own time. Rhetoric 105A-B-C-D-E, 121A, 126, 129, 164, 166, 168.

II. Fictive Discourse. These courses examine the ways in which modes such as lyric poetry, the novel, and the film achieve their special impact on audiences: Rhetoric 111, 120, 121B, 122, 124, 125, 127, 128, 135, 142, 143, 144, 156.

III. Argumentative and Declarative Discourse. These courses provide methods for analyzing the persuasive strategies employed in various kinds of argument including legal, political, philosophic, historical, and religious voices from Archaic periods to the present. Rhetoric 101A-B-C-D-E, 127, 132, 145, 152, 153, 145, 152, 160, 161, 162, 163, 165, 172, 173, 175.

Rhetoric 1A-1B (or 10), and 30 are prerequisite to all upper-division courses unless otherwise specified. A grade of C- or better in courses 30, 32A and 32B is required to pass or receive credit toward completion of the major program.

Passed or Not Passed. No course taken passed or not passed may be used to satisfy a requirement for the major.

Honors Program. A thesis is required of all majors seeking to earn the B.A. degree with honors. Three upper-division courses in Rhetoric 100, 101, and at least five graduate courses in Rhetoric are required of Rhetoric majors. (F,SP)

Graduate Program

The Department of Rhetoric offers programs leading to both the M.A. and Ph.D. degrees. Students are admitted to the graduate program in the Fall Semester. The three or four semesters are spent preparing for the M.A. oral examination, a one 1/2-hour examination covering the major areas of study within the department. Predoctoral students with a B+ average from the department must pass the M.A. oral review with a recommendation for continued graduate work by the end of their second year of study. For the M.A. degree in Rhetoric, seven semester courses are required of which at least five must be graduate courses in Rhetoric. They must include the following: Rhetoric 200A-B-C-D-E, and F, "Principles of Rhetorical Invention"; Rhetoric 205, "Contemporary Rhetorical Criticism"; Rhetoric 210, "Explanatory and Oratory Interpretation." In addition, the M.A. candidate must enroll in Rhetoric 200A, "Problems in Teaching Rhetoric," although this course may not be counted toward the major. The M.A. candidate must have specific course requirements beyond those for the M.A. degree except for Rhetoric 215. Each M.A. or Ph.D. candidate is also required to serve an apprenticeship in the Rhetoric Department for one year and to complete successfully Rhetoric 301A-B, "Pedagogical Practice." Opportunities for continued employment beyond the requirement are available. Individual programs for all graduate students are carefully planned in conference with the graduate adviser.

Teacher Training

There are opportunities for majors of senior standing to assist professors in teaching certain courses through a special tutorial program. Training and experience in an area of specialization can be an essential part of the program leading to M.A. and Ph.D. degrees. The structure of teacher training in the graduate programs makes it possible for able students to seek promotion to the rank of Teaching Associate.

Lower Division Courses

1. The Craft of Writing. (4). Formerly 1A. Three 1-hour lecture and discussion meetings per week plus individual conferences. Semester Prerequisites: Subject A or examination. Rhetorical approach to reading and writing argumentative discourse. Close reading of selected texts; written themes developed from class discussion and analysis of rhetorical strategies. (F,SP)

2. The Craft of Writing. (4). Formerly 1B. Three 1-hour lecture and discussion meetings per week plus individual conferences. Semester Prerequisites: 1A or equivalent. Rhetorical approach to the analysis of texts. Semester Prerequisites: Any 1A-1B sequence or upper division standing. Intensive practice in argumentative writing, mainly on topics of current concern. (F,SP)

11. The Practice of Poetry. (1). Formerly 111. One 1-hour meeting per week. A rhetorical approach to composing poetry. Students expected to read their work aloud and receive criticism concerning effective tone in terms of the writer’s intention. (SP)

12. Lyric Voice in Western Poetic Tradition. (3). Formerly 120. Three 1-hour lectures per week. Rhetorical analysis of the lyric voice from Archilochos and Sappho to the present. (F)

12A-12B1. Rhetoric of Fiction. (3,3). Three 1-hour lectures per week. Semester Prerequisites: A is prerequisite to B.

12C. Definition and techniques of narrative, including voice, point of view, time orders, and related matters. B. Context and Content: Interpretation of authorial intentionalities in selected works of modern fiction, in terms of their cultural and historical contexts. (F,SP)

12D. Rhetoric of Drama. (3). Formerly 122. Three 1-hour lectures per week. Semester Prerequisites: 30. Examination of the way character is created in drama by repetitive rhetorical patterns and the ways themes are defined by manipulation of such patterns. (F)

12E. Rhetoric of Poetry. (3). Formerly 124. Three 1-hour lectures per week. Semester Prerequisites: 30. The functions of language in literature, especially poetry; the literary symbol; and the nature and function of figures of speech and overall poetic structures. (F)

12F. Rhetoric of Modern Poetry. (3). Formerly 125. Three 1-hour lectures per week. A rhetorical approach to broad selection of important twentieth-century poems from Yeats to such contemporaries as Ashbery and Stafford, and including works from such European poets as Rilke, Valery, Eliot, and Milosz. (SP)

12G. Rhetoric of Symbolism. (3). Formerly 126. Three 1-hour lectures per week. Semester Prerequisites: 30. The functions of language in literature, especially poetry; the literary symbol; and the nature and function of figures of speech. (SP)

12H. Film Auteurs. (4). Formerly 127. Three 1-hour lectures per week plus viewing sessions. The concept of style and stylistics in general, and the stylistic study of film in particular. Theoretical work, with concentration on one or two directors. (F)

12I. Novel into Film. (4). Formerly 128. Three 1-hour lectures per week plus viewing sessions. Close examination of the adaptation of written fiction to the cinema. Focus on creation of themes arising from the transformation of five novels, which will be read, into their filmed versions. (SP)

12J. Theories of Film. (4). Formerly 129. Three 1-hour lectures per week plus viewing sessions. Semester Prerequisites: 120A. Three UC film courses; One LC film course, preferably a recent survey of film by Eisenstein, Arnhem, Krasauer, Bazin, Metz, and others. Only one or two films will be analyzed in great depth to test the power of various theories. (F)

13. Political Oratory. (3). Formerly 130. Three 1-hour lectures per week. Theory and practice of deliberative oratory, with emphasis on the study of actual speeches
from Thucydides, the Attic orators, Cicero, Sallust, Tacitus, and 18th and 19th centuries British and American parliamentary orators. (SP)

131. Rhetoric of Religious Discourse. (3). Formerly 137. Three 1-hour lectures per week. Consideration of the rhetoric of hemeneutics or biblical interpretation with special emphasis on the mythical, symbolic, and allegorical language as the bearer of persuasive intention. (F)

135. Rhetoric of Narrative Genres in Non-Literate Societies. (3). Formerly 135. May be repeated for credit with written consent of three 1-hour lectures per week. Investigation of the rhetorical and cultural principles common to various genres of narrative, both prose and poetic, in non-literate societies. Mythic, epic and folk narratives considered as well as written works from cultures in transition. (SP)

142. The Lyric Mode. (3). Formerly 142. Three 1-hour meetings per week. Semester Prerequisites: 32A and either 32B or 144. Qualities of various lyric modes developed through oral reading; advanced study of the tradition in major American and English literary periods. (F)

143. The Narrative and Dialogic Mode. (3). Formerly 143. Three 1-hour meetings per week. Semester Prerequisites: 32A and either 32B or 144. Qualities of narrative and dialogic modes developed through oral reading of literature. (F)

144. Readers' Theater. (3). Formerly 144. Three 1-hour meetings per week. Semester Prerequisites: 32A. Understanding of literary genres through group performances. (SP)

150. Rhetoric of Contemporary Politics. (3). Formerly 150. Three 1-hour lectures per week. Examination of the characteristics of rhetoric as a variety of manifestations of modern politics. Emphasis on building a theoretical foundation for critically observing and participating in the contemporary political process. (F)

152. Rhetoric of Constitutional Discourse. (3). Formerly 152. Three 1-hour meetings per week. The rhetorical context of The Federalist. Examines the tradition of Anglo-American constitutional argumentation in the eighteenth century, its sources, and its implications. Readings include Locke, Hume, Montesquieu; pamphlets of the American Revolution; Antifederalist writings. (F)

153. American Political Rhetoric. (3). Formerly 153. Three 1-hour lectures per week. A survey of the ways in which Americans have discussed their existence as a distinct nation and their public, political rights and obligations. Readings cover from the seventeenth to the twentieth centuries and include sermons, novels, philosophy, social theory, autobiographies. (F)


155. Rhetoric of Imperialism. (3). Formerly 155. Three 1-hour lectures per week. Analysis of rhetorical patterns in official and public documents relating to English, French, and German imperial expansion policies in the 19th century; special attention to Middle Eastern and African spheres of interest. (F)

156. Rhetoric of the Political Novel. (3). Formerly 156. Three 1-hour lectures per week. Investigation of major 19th and 20th century works of fiction in which political stances are exploited as dominant themes; close reading of authorial viewpoints and rhetorical strategies. (F)

160. Introduction to the Rhetoric of Legal Discourse. (3). Formerly 160. Three 1-hour lectures per week. The application of rhetorical methodology to all categories of legal texts. (F)

161. Rhetoric of Legal Argumentation. (3). Formerly 161. Three 1-hour lectures per week. Analysis of the special features of argument and values in legal argumentation; emphasis on the interplay of interpretation and policy in the definition of social values through legal persuasion. (F)

162. Rhetoric of Legal Proof. (3). Formerly 162. Three 1-hour lectures per week. Examination of the development and contemporary practice of persuasive strat-
ments. Narrative generally used as model for other kinds of texts. (SP)

266. Values and World View. (3). Formerly 266. Three hours seminar per week. Semester Prerequisites: Graduate status. Structural analysis of cultural patterns of communication; cultural dynamics of speech behavior; criteria of credibility in different cultures; relations of verbal to non-verbal behavior. (F)

280. Translation of Poetry. (3). Formerly 280A-280B. Three hours seminar per week. Semester Prerequisites: Graduate standing and approval of instructor. Theory and practice of poetic translation from a rhetorical perspective (authorial intention, intended audience, stylistic effects) and will do a selection of translations of a non-English poet and an introduction justifying the mode of translation. (F)

295. Special Study. (1-3). Formerly 295. May be repeated for credit up to a total of 6 units. Individual tutorial. Semester Prerequisites: Approval of graduate adviser. Open to qualified graduate students wishing to pursue special topics under the direction of a member of the staff. (F,SP)

299. Directed Research. (1-9). Formerly 299. May be repeated for credit. Individual tutorial. Semester Prerequisites: Approval of graduate adviser. Open to qualified graduate students wishing to do special research under the direction of a member of the staff. (F,SP)

601. Individual Study for Master's Students. (1-5). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual arrangement. Semester Prerequisites: Graduate status. Individual study for degree or language examinations in consultation with staff member. (F,SP)

602. Individual Study for Doctoral Students. (1-5). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual arrangement. Semester Prerequisites: Graduate status. Individual study in consultation with faculty director as preparation for degree examinations. (F,SP)

Professional Courses

300. Problems in Teaching Rhetoric. (4). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three 1-hour class practice sessions and one 1-2 hour discussion per week. Semester Prerequisites: Appointment as a Teaching Assistant. (SP)

300A. Introduction to Teaching Argumentative Writing and Rhetorical Analysis. (4). Course may be repeated for credit.

300B. Instruction in Teaching Public Speaking. (4). Course may be repeated for credit.

300C. Instruction in Teaching Oral Interpretation. (4). Course may be repeated for credit.

301A-301B. Pedagogical Practice. (4-4). Formerly 301A-301B. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three 1-hour discussions per week plus individual conferences. Semester Prerequisites: Teaching appointment. Supervised classroom teaching. (F,SP)

302. Teaching Public Speaking. (2). Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour discussions per week. Semester Prerequisites: Graduate status. Instruction in techniques for teaching public speaking and coaching debate teams. Students will discuss materials on the reading list and observe sessions. Professional credit. 1C. One short paper (of 10 pp. in length) will be required. (F,SP)

Romance Philology

Program Office, 4125 Dwinelle Hall, 642-2184

Professors:
Jerry R. Cragoeck, Ph.D. (Chair)
Ruggiero Stefanini, Dottore in Letters
Jrupesh J. Dua, Sr. Ph.D.
Charles B. Fauphehr, Ph.D. (Deans)
Ronald N. Waxpo, Ph.D. (Emunet)
Yakov Moltel, Ph.D.

Associate Professor:
Suzanne Fleischman, Ph.D.

Assistant Professor:
Danuta Shanzer, Ph.D.

Graduate Adviser: Ms. Fleischman.

Graduate Courses

200. Linguistic History of the Roman Empire. (3). Formerly 200. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: The spread of Latin over the Western Mediterranean area, and its gradual change into the Romance dialects, with emphasis on substrata and superstrata. (F)

201. Late Latin Language and Literature. (3). Formerly 201. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: The internal history of colloquial Latin and Late Latin, down to the Carolingian period, on the basis of original sources. (F,SP)

202. General Romance Linguistics. (3). Formerly 202. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Problems of methodology in historical linguistics applied to the major and minor Romance languages. (F)

203. Old Provencal. (3). Formerly 203A-203B. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: A history of the Old Provencal (or Occitan) literary language and its component dialects, combining historical grammar and reading of texts. (F,SP)

204. Problems in Romance Morphology and Syntax. (3). Formerly 204. May be repeated for credit. Three hours of seminar per week. Semester Prerequisites: Consent of instructor: Problems and methods in diachronic morphology and their interrelations. Topics vary from year to year. (F)

205. From Romance Dialect Geography to Sociolinguistics. (3). Formerly 205. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Classical and experimental methods of eliciting, recording, and interpreting dialects, with equal attention to regional and social dialects. (F)

207. Hispano-Romance Dialectology. (3). Formerly 207. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Problems and methods in the study of the major linguistic areas of the Iberian Peninsula, in diachronic and synchronic projection. (SP)

208. Romance Ethnology. (3). Formerly 208. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Assumptions and techniques in the study of Romance ethnology. (F)

209. Studies in Italo-Romance. (3). Formerly 209. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: General survey and specific research projects in the field of Italian Dialectology following diachronic, synchronic, and socio-linguistic approaches. Attention will be given to connections with surrounding Romance areas such as Friulian, Rheto-Romance, Sardinian. (SP)

211. Highlights in the History of Romance Linguistics. (3). Formerly 211. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Major schools and scholars that dominated the scene over a century and a half (1800-1950) and the vital problems raised by them. (SP)

212. The Romance Epic. (3). Formerly 212. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Problems in the study of French, Spanish, and Provençal epic: origins, development, textual transmission, style, structure, themes, and relations to other genres. (SP)

213. Old Catalan. (3). Formerly 213. Three hours of lecture per week. Semester Prerequisites: Consent of instructor: Reading and analysis of selected texts from the first documents of the Catalan language to the works of the major authors of the XV century. (SP)

299. Special Advanced Study. (1-12). Formerly 299. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Variable. Individual research. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Variable. Semester Prerequisites: For candidates for doctoral degree. 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)

Related Courses in Other Departments

Classics


Comparative Literature


English


French


German

173. Gothic

Italian


Linguistics


Spanish and Portuguese


Portuguese 150. Introduction to Portuguese Linguistics.


Scandinavian

Department Office, 1305 Dwinelle Hall, 642-4484

Professors:
Eric O. Johannesson, Ph.D. (Chair)
Jere J. Larson, Ph.D.
James L. Larson, Ph.D.

Department Office, 1305 Dwinelle Hall, 642-4484

Professors:
Eric O. Johannesson, Ph.D. (Chair)
Jere J. Larson, Ph.D.
James L. Larson, Ph.D.
The Major

Lower Division. Four courses from the following course sequences: Scandinavian 1A-1B; 3A-3B; 4A-4B; 11A-11B; 13A-13B; 14A-14B; or the equivalents.

Upper Division. Eight upper division courses, including at least one advanced language course, Scandinavian 101, 103, or 104, or the equivalents; two literature courses from one of the following sequences, Scandinavian 141A-141B; 143A-143B; 144A-144B; and one history course, Scandinavian 123, 127, or 128.

Honors 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.

Graduate Program

Aims of the Program. The graduate program in Scandinavian is designed for future scholars and teachers in the fields of Scandinavian language and literature. The program leads to the Master of Arts and Doctor of Philosophy in Scandinavian. The Department is ready to entertain proposals for alternate or interdisciplinary programs from students with special interests in areas such as art, 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. Students studying a second Scandinavian language should complete 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. General requirements: 24 units in Scandinavian, including at least 12 graduate units. All students must complete Scandinavian 200A-200B. Courses from other departments may be accepted with the consent of the graduate adviser. Students will prepare a major and a minor field, the major field to be studied comprehensively. Students presenting a Scandinavian literature as a major field, for example, must work in three periods: Middle Ages, Reformation to Romanticism, and Realism and external history of Scandinavian culture and civilization. These students will be required to take two examination papers and a thesis. Students completing the requirements for a minor field will be required to complete a major examination paper and the equivalent of one of the five special examinations in their major field. The student's knowledge of both the major and the minor fields with emphasis upon the literature in the major language.

The Ph.D. in Scandinavian. General requirements: an M.A. in Scandinavian, or the equivalent; students must complete two semesters of work in Old Norse, pass the departmental requirement in two foreign languages, and submit three field papers as examples of their scholarly ability. Much of the coursework at the Ph.D. level will be advanced tutorial stressing independent work and scholarly skills. Students will present three subjects at their qualifying examinations, a major and two minors. Upon passing the qualifying examination the student is advanced to candidacy and begins dissertation research.

Lower Division Courses

1A. Elementary Swedish. (5). Formerly 1A. Five 1-hour sessions per week. Elementary grammar, conversation. (F)

1B. Elementary Swedish. (5). Formerly 1B. Five 1-hour sessions per week. Semester Prerequisites: 1A. Elementary grammar, conversation, easy prose reading. (SP)

3A. Elementary Norwegian. (5). Formerly 3A. Five 1-hour sessions per week. Elementary grammar, conversation. (F)

3B. Elementary Norwegian. (5). Formerly 3B. Five 1-hour sessions per week. Semester Prerequisites: 3A. Elementary grammar, conversation, easy prose reading. (SP)

4A. Elementary Danish. (5). Formerly 4A. Five 1-hour sessions per week. Elementary grammar, conversation. (F)

4B. Elementary Danish. (5). Formerly 4B. Five 1-hour sessions per week. Semester Prerequisites: 4A. Elementary grammar, conversation, easy prose reading. (SP)


12. Intermediate Norwegian. (5). Formerly 13A-13B. Language instruction. Five 1-hour sessions per week. Semester Prerequisites: 3B. Intermediate grammar, extensive reading, conversation, composition. (F)


75. Scandinavian Culture and Society. (3). New Course since Spring 1983. Three 1-hour lectures/discussions per week. Course to concentrate upon four historical periods: the Viking Age, the Baroque (emphasis on scientific and political developments), the late nineteenth century (emphasis on artistic developments), and the twentieth century (emphasis on the politics and culture of the welfare state). (F)

Upper Division Courses

101. Advanced Swedish. (5). Formerly 101A-101B. Language instruction. Five 1-hour sessions per week. Semester Prerequisites: 11 or the equivalent. Grammar review, reading, conversation, composition. (SP)

103. Advanced Norwegian. (5). Formerly 103A-103B. Language instruction. Five 1-hour sessions per week. Semester Prerequisites: 13 or the equivalent. Grammar review, reading, conversation, composition. (SP)

104. Advanced Danish. (5). Formerly 104A-104B. Language instruction. Five 1-hour sessions per week. Semester Prerequisites: 14 or the equivalent. Grammar review, reading, conversation, composition. (SP)

107. Plays of Ibsen. (3). Formerly 107. Three 1-hour lectures/discussions per week. Reading and discussion of Ibsen's major plays. (F)

108. Strindberg. (3). Formerly 108. Three 1-hour lectures per week. Reading and discussion of Strindberg's major works; emphasis on his dramas and his significance. (F)

109. 20TH Century Scandinavian Drama. (3). Formerly 109. Three 1-hour lectures per week. Reading of modern Scandinavian dramas in translation. (SP)

110. H.C. Andersen. (3). Formerly 110. Three 1-hour lectures per week. Emphasis on tales and stories, but some attention will be given to Andersen's novels, travels, and autobiography. (SP)

112. Knut Hamsun. (3). Formerly 112. Three 1-hour lectures/discussions per week. Readings and discussion of Hamsun's major novels. Some attention will be given to Hamsun's essays and articles. (SP)

114. Ibsen Dinesen. (3). Formerly 114. Three 1-hour lectures/discussions per week. Readings and discussion of Dinesen's best stories and tales. (SP)

120. The Novel in Scandinavia. (3). Formerly 120. Course may be repeated for credit. Three 1-hour lectures/discussions per week. Readings and discussion of the great Scandinavian novels; the development of the novel. (SP)

123. Viking and Medieval Scandinavia. (3). Formerly 123. Three 1-hour lectures/discussions per week. Internal and external history of Scandinavian culture and civilization from the late 8th century to the 15th century. (F)

125. Old Norse Literature. (3). Formerly 125. Three 1-hour lectures/discussions per week. Reading and discussion of some of the Icelandic sagas and selections from the Eddas and skaldic verse. (SP)

127. Scandinavia From 1520-1800. (3). Formerly 127. Three 1-hour lectures per week. Scandinavian society, history, and culture from the Reformation through the Enlightenment. (SP)

128. Scandinavia From 1800-1950. (3). Formerly 128. Three 1-hour lectures per week. Scandinavian society, history, and culture from the Napoleonic Era to the years after World War II. (F)

141A. Introduction to Swedish Literature. (3). Formerly 141A. Three 1-hour lectures per week. Semester Prerequisites: 15 units lower division Swedish or equivalent. Quarter Prerequisites: 20 units lower division Swedish or equivalent. Reading and analysis of representative works from 1700-1870. (SP)

141B. Introduction to Swedish Literature. (3). Formerly 141B. Three 1-hour lectures per week. Semester Prerequisites: 15 units lower division Swedish or equivalent. Quarter Prerequisites: 20 units lower division Swedish or equivalent. Reading and analysis of representative works from 1870 to World War I. (F)

143A. Introduction to Norwegian Literature. (3). Formerly 143A. Three 1-hour lectures/discussions per week. Semester Prerequisites: 15 units lower division Norwegian or equivalent. Quarter Prerequisites: 20 units lower division Norwegian or equivalent. Reading and analysis of representative works from 1900 to the present. (SP)

144A. Introduction to Danish Literature. (3). Formerly 144A. Three 1-hour lectures per week. Semester Prerequisites: 15 units lower division Danish or equivalent. Quarter Prerequisites: 20 units lower division Danish or equivalent. Reading and analysis of representative works from 1700 to the present. (SP)

144B. Introduction to Danish Literature. (3). Formerly 144B. Three 1-hour lectures per week. Semester Prerequisites: 15 units lower division Danish or equivalent. Quarter Prerequisites: 20 units lower division Danish or equivalent. Reading and analysis of representative works from 1870 to the present. (SP)

145. Senior Seminar. (2). Formerly 145. Course may be repeated for credit. One 2-hour meeting per week. Semester Prerequisites: 141A-141B, 143A-143B, or 144A-144B. Intensive study of a single topic, several reports, a longer paper. (F,SP)

150. Scandinavian Myth and Religion. (3). Formerly 150. Three 1-hour lectures per week. Religious beliefs and practices during the Viking Age in Scandinavia and their manifestations in later traditions. (SP)

162. The Heroic Tradition in Northern Europe. (3). Formerly 162. Three 1-hour lectures per week. History, mythology, and literature of the late Viking Age relating to Scandinavian epics and traditions to those of England and Germany. Emphasis is on the cult of the hero. (F)

165. Scandinavian Folklore. (3). Formerly 165. Three 1-hour lectures per week. Scandinavian folklore, emphasizing oral narrative traditions (ballads, folktales, legends). Proverbs, riddles, folk belief and custom, music, and Finno-Ugric materials may also be considered. (SP)

175. Kierkegaard. (3). Formerly 175. Two 1½-hour lectures per week. Analysis and discussion of Either/Or, Concluding Unscientific Postscript, Fear and Trembling. (SP)
189. Ingmar Bergman and the Swedish Film. (3). Formerly 189. One screening and two 1/2-hour lectures per week. Bergman's film production with emphasis on both cinematic and dramatic development. Attendance will also be paid to early Swedish films that influenced Bergman, as well as the reaction against him in the 1960s. (F)

198. Group Study for Advanced Undergraduates. (2-4). Formerly 188. Course may be repeated for credit. Must be taken on a pass/not-passed basis. Directed study. Semester Prerequisites: Two years study of one Scandinavian language. Advanced readings and interpretation of Scandinavian texts. (F,SP)

199. Independent Study and Research. (2-4). Formerly 189. Course may be repeated for credit. Must be taken on a pass/not-passed basis. Directed study. Semester Prerequisites: Two years study of one Scandinavian language. Courses in Scandinavian literature, culture, or history. Supervised study; restricted enrollment. (F,SP)

Graduate Courses

200A. Introduction to Graduate Study in Scandinavian. (3). Formerly 200A. Credit and grade to be awarded upon completion of the sequence. Two 1/2-hour sessions per week. A problem-oriented course concerned with major areas of graduate study in Scandinavian linguistics and philosophy, folklore, history, literary criticism, lectures, discussion, writing of short papers. (F)

200B. Introduction to Graduate Study in Scandinavian. (3). Formerly 200B. Credit and grade to be awarded upon completion of the sequence. Two 1/2-hour sessions per week. A problem-oriented course concerned with major areas of graduate study in Scandinavian linguistics and philosophy, folklore, history, literary criticism, writing a critical research paper. (SP)

201A. Old Norse. (3). Formerly 201A. Three 1-hour lectures per week. Quarter Prerequisites: An A.B. degree with an undergraduate major in Scandinavian. An introduction to the language of medieval Iceland and Norway. Grammar, vocabulary, language rephrasing, and texts. (F)

201B. Norse Literature. (3). Three 1-hour lectures. Semester Prerequisites: 201A or the equivalent. Quarter Prerequisites: 202. Literary production of early Iceland and Norway. Reading of representative texts in the original. (F)

202. Medieval Scandinavian Literature. (3). New Course since Spring 1982. Two 1/2-hour lectures per week. Quarter Prerequisites: Consent of instructor. Three 1-hour lectures per week. Semester Prerequisites: 201A or 201B or the equivalent. Grammar, lexicology, ballads. Emphasis on Denmark and Sweden. (SP)

205. Runology. (3). Formerly 205. Course may be repeated for credit with the consent of the instructor. Three 1-hour lectures per week. Semester Prerequisites: 201A or 201B or the equivalent. Reading and interpretation of inscriptions in the elder and younger futharks. Some attention will be paid to English runes. (F)

206. Norse Poetry. (3). Formerly 206. Course may be repeated for credit. Three 1-hour lectures per week. Quarter Prerequisites: 202 or 205 or the equivalent. Examination and analysis of major works from the Eddic and skaldic traditions. Investigation of selected topics. (F)

210. Graduate Reading. (2-4). Formerly 210. Course may be repeated for credit with consent of graduate advisor and instructor. Must be taken on a satisfactory/unsatisfactory basis. Lecture. Graduate lecture course covering broad areas and directing students in wide reading. May be offered by any faculty member either semester. (F,SP)

220. Seminar on Norse Sages. (3). Formerly 220. Course may be repeated for credit. Three 1/2-hour seminars per week. Reading and discussion of major prose texts. Course will normally focus on one or two of the main saga genres (royal, family, legendary, courtly, episcopal). (SP)

233. Early Scandinavian History and Culture. (3). Formerly 233. Course may be repeated for credit. One 3-hour seminar per week. Historical topics from the Viking Age to the Reformation; emphasis is on extraliterary sources. (F)

234. Reformation Through the 18TH Century. (3). Formerly 234. Two 1/2-hour lectures per week. Reading and analysis of representative literary and cultural work. (F)

235. Romanticism in Scandinavia. (3). Formerly 235. One 3-hour lecture per week. Reading and analysis of representative works. (SP)

236. Realism in Scandinavia. (3). New Course since Spring 1982. Course may be repeated for credit. One 3-hour meeting per week. Reading and discussion of major texts from the period 1870-1900. Several oral reports and one substantial paper. (SP)

240. Modern Scandinavian Literature. (3). Formerly 240. Course may be repeated for credit. Three 1-hour lectures/discussions per week. Reading and analysis of representative works. Topics vary from semester to semester. (F,SP)

250. Scandinavian Philology and Linguistics. (3). Formerly 250. Course may be repeated for credit. One 2-hour lecture per week. Investigation of selected topics. (SP)

251. Seminar in Scandinavian Literature. (3). Formerly 251. Course may be repeated for credit. One 3-hour seminar per week. Investigation of selected authors, topics, or problems. (SP)

257. Special Study. (2-12). Formerly 257. Course may be repeated for credit. Tutorial. Designed to explore a restricted field involving the writing of a report. May not be substituted for available seminars. (F,SP)

259. Dissertation Writing. (1-12). Formerly 259. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Supervised study. (F,SP)

601. Individual Study for M.A. Candidates. (1-4). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Supervised study. (F,SP)

602. Individual Study for Doctoral Candidates. (1-8). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Supervised study. Individual study in consultation with the major field advisor to prepare qualified students for the Ph.D. May not be used to meet unit or residence requirements for the master's degree. (F,SP)

Science and Mathematics Education

Group Office, 4533 Tolman Hall, 642-4206

Faculty:

Marvin C. Covington, Ph.D. (Psychology)
Marian D. Diamond, Ph.D. (Physiology-Anatomy)
Kathleen M. Fisher, Ph.D. (Genetics, UC Davis)
Alan J. Friedman, Ph.D. (Physics and Astronomy Education, Hall of Science)
Bernard G. Gilliss, Ph.D. (Chancellor's Professor and Dean, Graduate School of Education)
Leon A. Herkin, Ph.D. (Mathematics, Botany)
William A. Jensen, Ph.D. (Botany)
Robert Kaplan, Ph.D. (Physics)
Robert J. Knott, Ph.D. (Science Education and Acting Assistant Director, Lawrence Hall of Science)
Watson H. Luehmann, Ph.D. (Botany) (Vice Chancellor, Undergraduate Education)
Marcia C. Linn, Ph.D. (Research Psychologist, Lawrence Hall of Science, and School of Education)
Lawrence F. Lowery, Ed.D. (Education)
Jerold E. Marsden, Ph.D. (Mathematics)
John Ogbo, Ph.D. (Anthropology)
B. A. Miles, Ph.D. (Arts and Humanities, Lawrence Hall of Science, Education)
Herbert D. Thier, Ph.D. (Physical Sciences, Lawrence Hall of Science)
Jennifer White (Dir. of Lawrence Hall of Science)
Richard M. White, Ph.D. (Department of Computer Science, Lawrence Hall of Science)
Brian T. Watson, Ph.D. (Computer Science, Lawrence Hall of Science)
M. I. Charles Woodson, Ph.D. (Education and Computer Sciences)

Description of the Program

The Group in Science and Mathematics Education offers a graduate program designed to allow students to pursue advanced training in one of the natural sciences with the pursuit of central interests in the area of education. Students enrolled in the program will be expected to attain in their chosen scientific discipline a degree of competence comparable to that of a departmental Ph.D. candidate in that discipline. Their thesis research will consist of some project dealing with the development of improved instruction approaches or the development of Instructional models. Upon satisfactory completion of their studies and thesis work, students will obtain the degree of Ph.D. in science (or mathematics) education.

Admission Requirements

Requirements for admission to the program are an excellent academic record in an area of science, engineering, or mathematics, and a bachelor's degree in one of these disciplines. Teaching experience and an introductory knowledge of psychology, education, or statistics are helpful but not required. More detailed information about the program and its requirements can be obtained from the Group office.

Graduate Courses

210. Practicum in Science and Math Education Research and Development. (1-4). Formerly 210. Course may be repeated for credit. One unit of credit for each four hours of student effort per week. One 2-hour meeting per week. Semester 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 argument research with discussion of readings and interaction with guest speakers. (F,SP)

220A. Introduction to the Psychological Bases for Science and Mathematics Educ. (3). Formerly 220A. One 3-hour lecture/discussion per week. Semester Prerequisites: Consent of instructor. An overview of psychological theory pertinent to research and development in science and math education. The course will include topics from development, cognitive, social, and differential psychology. (F)

220B. Research Design in Science and Mathematics Education. (3). Formerly 220B. One 3-hour lecture/discussion per week. Semester Prerequisites: Consent of instructor or the instructor. Quarter Prerequisites: 220A. Survey of experimental, quasi-experimental, and ethnographic methods in science and mathematics education research; critical evaluation of published research papers; and development of proposal for research project. Emphasis on process of formulating, criticizing, and refining research plans. (SP)

220C. Instructional Design in Science and Mathematics Education. (3). Formerly 220C. One 3-hour lecture/discussion per week. Semester Prerequisites: Consent of instructor or the instructor. Quarter Prerequisites: 220A. Survey of literature on design of instruction in science and mathematics, including the development of computer assisted instruction, evaluation of methods and development of instruction modules for topics in science and mathematics. (SP)

229. Research Seminar and Colloquium. (1). Formerly 229. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour lecture/discussion per week. Semester Prerequisites: Consent of instructor. Discussion of current education research carried on by students, faculty, and guest speakers. A written analysis of several presentations required. (F,SP)

241. Successful Instruction in Educational Research. (1-3). Formerly 241. Course may be repeated for credit. One unit of credit for each four hours of student effort per week. Individual conferences with instructor. Development of thesis proposal under supervision of faculty mentor. (F,SP)

295. Research. (1-12). Formerly 295. Course may be repeated for credit. One unit of credit for each four hours
Major Programs

Most undergraduate programs emphasize Russian, but students may choose Czech, Polish, or Serbo-Croatian as their special field of study. For all students, the major includes an introduction to the cultural history and the literatures of other Slavic peoples and requires at least one year of study in two and literature courses (in the case of Russian emphasis majors, the Slavic 45-46 sequence) before declaring the Slavic major.

Lower Division. 26 units.

Emphasis on Russian: courses 1, 2, 3, 4 or their equivalents, courses 151-152, 161-162, and if possible. Emphasis on Czech, Polish, or Serbo-Croatian: courses 1 and 2 or their equivalents; 10 units of the relevant Slavic language (25AB, 26AB, or 27AB); two of the following courses: 37, 38, 39, 45, 46.

Upper Division. 26 units. Emphasis on Russian: sequence 103AB, courses 120, 130, 181 and one other course in the 180-series; one course numbered from 133 through 149; one course from the 140, 150, 160, or 170 series. Emphasis on Czech, Polish, or Serbo-Croatian: the relevant language in the sequence (115AB, 116AB, or 117AB); the relevant literature, Readings and Topics courses (150-151-152, 160-161-162, or 170-171-172); one 3-unit course in the relevant series; one 3-unit elective; one 3-unit course on the literature of another Slavic area.

Hons Programs. With the approval of the major adviser, Slavic students with an overall grade-point average of 3.3 or higher and an average of 3.3 or higher in the courses completed in the major may apply for admission to the honors program. This program includes course H195, in which a thesis is written, and four units, in addition to those required for the major, in a Slavic language or in a literature course conducted in the language of study. Successful completion of the honors program requires a minimum grade of B+ in both of these endeavors and a 3.3-grade-point average or higher in the major. Interested students should first discuss their honors course options and thesis proposal with the major adviser, to whom the application for the honors program is to be submitted, and with the faculty member who will direct the thesis. The application will include a preliminary statement of the topic to be investigated and the membership of the student's honors committee. An honors committee consists of the director of the thesis and one additional faculty member invited by the student in conjunction with the director.

Non-Degree Programs. In recognition of achievements of students who complete a substantial number of courses in the Department as part of an organized program of study, the Department offers a non-degree program. The programs in Russian Language and Literature, Russian Language Studies, or Slavic in Czech, Polish, or Serbo-Croatian require a minimum of two years of language study and appropriate additional coursework. Further information about these programs may be obtained from the Department.

Admission to Graduate Study

Candidates for higher degrees must have completed the undergraduate major program in Slavic languages and literature or received equivalent training. Prospective and current students are encouraged to acquire a background in other related fields; European languages and literatures (especially French, German, Italian, and English), literary history, Russian and Western European intellectual history are useful for candidates in literary studies; for those in linguistics, preparation in French, German, Greek or Latin, and in general and comparative linguistics is desirable.

New students admitted to the Ph.D. program with an M.A. in Slavic, or a related field, from another institution are required to pass this Department's M.A. comprehensive examinations for permission to proceed to the Ph.D. program. Continuing students who have earned the M.A. degree from this Department may be recommended for admission to the Ph.D. program following successful performance on the M.A. comprehensive examinations and demonstrated aptitude for advanced work.

Graduate Programs

M.A. and Ph.D. programs are offered in Russian, Polish, Czech, and Serbo-Croatian, each with an emphasis in literature or linguistics. Detailed descriptions of requirements are available from the Department. Both the M.A. and Ph.D. degrees require work in two Slavic languages or literatures, of which one must be Russian. Three Slavic languages are required of linguists in the Ph.D. program.

M.A. Course Requirements. Literature Program: a proseminar in literary scholarship, descriptive grammar of the major language, history of the literary language, Old Church Slavic, one year of a second Slavic language, and three literature courses in the major field, at least one of which must be a seminar. Linguistics Program: a seminar in linguistic scholarship, descriptive and historical grammar of the major language, history of the literary language, Old Church Slavic, comparative Slavic linguistics, three semesters of a second Slavic language, and one literature course.

All candidates for the M.A. must demonstrate advanced proficiency in their major language, pass a French or German reading examination, and complete the written and oral comprehensive examinations.

Ph.D. Requirements. Literature Program: in consultation with the graduate adviser, coursework will be planned to prepare for the Ph.D. written and oral qualifying examinations on the history of the major Slavic literature, its relations with other European literatures, and the history of a second Slavic literature. In addition, the student will take one semester of a second Slavic language at the advanced level.

Linguistics Program: in consultation with the graduate adviser, coursework will be planned in preparation for the Ph.D. written and oral qualifying examinations on the structure of the major language, its history, including the history of the literary language, and general Slavic and Indo-European linguistics. In addition, the students will undertake coursework in advanced descriptive grammar in their major language, advanced comparative Slavic linguistics, and two semesters of a third Slavic language.

All candidates for the Ph.D. must pass the Department's French and German reading examinations, three comprehensive written examinations, and an oral qualifying examination.

Instruction in teaching methodology is provided for teaching assistants and prospective teachers of Russian, Polish, Czech and Serbo-Croatian.

Slavic

Lower Division Courses

37. Languages and Peoples of Eastern Europe. (3). Formerly 37. Three hours of lecture per week. An introduction to Eastern Europe (including the USSR), its languages and cultures. No knowledge of a foreign language required. (F,SP)

38. Seminar for Lower-Division Students. (3). Course may be repeated once for credit. Three hours of class meetings per week. Variable topics involving the cultural histories, languages, or literatures of Slavs. Coursework will include library research and one or more papers. No knowledge of a foreign language required. Topic for Spring 1985: Utopia in Slavic Literatures. (SP)
99. Individual Study. (1-4). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences. Semester Prerequisites: 3.0 GPA. Supervised independent study for lower division students with a minimum 3.0 GPA. (F,SP)

Upper Division Courses

140. Twentieth Century Slavic Literary Criticism. (3). Formerly 139. Three 1-hour lectures per week. Symposium on deconstruction, formalism, the Prague School, Structuralism, and Marxism in literary theory.

141. Polish-Russian Literary and Cultural Relations. (3). Three 1-hour lectures per week. A survey of the mutual relations between the Polish and Russian literary and cultural traditions from the Middle Ages to the present. Special attention on the key periods of the Counter-Reformation and Romanticism. The origin and development of persistent cultural cliches will be traced with a view to understanding present-day conflicts.

147. Slavic Folklore. (3). Formerly 147. Course may be repeated for credit once with permission 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 is required.

149. Theory and Practice of Translation. (3). Formerly 149. Three 1-hour lectures per week. Semester Prerequisites: Reading knowledge of at least one foreign language. Lectures and assigned readings on translation theory. Critical reports on selected English prose translated. Class discussions of translations prepared by members of the class. (SP)

190. Undergraduate Seminar. (4). Formerly 190. Course may be repeated for credit with consent of instructor. One 2-hour seminar per week and individual consultations. Semester Prerequisites: Two years of the appropriate Slavic language. Close reading of one or more major pieces of Slavic fiction in the original language. In addition to a close reading of the text, student will read some criticism and write a research paper. (SP)

H195. Honors Seminar. (4). Formerly H195A-195B. Individual conferences. Semester Prerequisites: Overall and major grade point average of 3.3. Study of a research topic selected by the student in consultation with the faculty advisor, to culminate in the writing of a thesis. See Experimental description of the Honors Program. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences. Semester Prerequisites: Overall GPA of 3.0. Course Prerequisites: Completion of 56 units; 3.0 GPA. (SP)

Czech

Lower Division Courses

26A-26B. Introductory Czech. (6B). Formerly 26A-26B-26C. Five 1-hour meetings per week. Semester Prerequisites: 26A is prerequisite to 26B. Beginner's course. Sequence beginning Fall. (F,SP)

Upper Division Courses

116A-116B. Advanced Czech. (4-4). Three hours of meeting per week. Semester Prerequisites: 26B is prerequisite to 116A; 116A is prerequisite to 116B. Quarter Prerequisites: 26C. Formerly 116 and 117A. Sequence beginning Fall semester. (F,SP)

180. Survey of Czech Literature. (3). Formerly 180A-180B. Three 1-hour lectures 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. (F)

161. Readings in Czech Literature. (4). Formerly 117B. Three hours of meeting per week. Semester Prerequisites: 116A. Quarter Prerequisites: 117A. Selected readings in Czech, tailored to the academic interests of students enrolled.

162. Topics in Czech Language and Literature. (3). New Course since Spring 1983. Three hours of meeting per week. Semester Prerequisites: 116A (may be taken concurrently). Studies in Czech literature or linguistics, or conversation, depending on the needs of the students enrolled.

166. Czech Poetry. (3). Three hours of lecture per week. Selected topics in Czech poetry.

Polish

Lower Division Courses

25A-25B. Introductory Polish. (15,5). Formerly 25A-25B-25C. Five 1-hour meetings per week. Semester Prerequisites: 25A is prerequisite to 25B. Beginner's course. Sequence beginning Fall. (F,SP)

Upper Division Courses

115A-115B. Advanced Polish. (4-4). Three hours of meeting per week. Semester Prerequisites: 25B is prerequisite to 115A. 115A is prerequisite to 115B. Quarter Prerequisites: 23C. Formerly 108 and 108A. Sequence beginning Fall semester. (F,SP)

150. Polish Literature and Intellectual Trends. (3). Formerly 150A-150B. Three 1-hour lectures per week. A survey of the major writers, works, and trends of the Polish literary tradition from the Middle Ages to the present. Special attention devoted to the Renaissance, the age of Romanticism and the modern period. No knowledge of Polish required. (SP)

151. Readings in Polish Literature. (4). Formerly 109B. Three hours of meeting per week. Semester Prerequisites: 115A. Quarter Prerequisites: 109A. Selected readings in Polish tailored to the academic interests of students enrolled.

152. Topics in Polish Language and Literature. (3). New Course since Spring 1983. Three hours of meeting per week. Semester Prerequisites: 115A (may be taken concurrently). Studies in Polish literature or linguistics, or conversation, depending on the needs of the students enrolled. (F)

154. Polish Literature of the Twentieth Century. (3). New Course since Spring 1983. Three hours of lecture per week. An investigation of Polish poetry, prose and drama in the 20th century. The course will discuss the following topics: Polish modernism of the turn of the century, the literature of Independent Poland, Polish literature during World War II and in People's Poland, as well as Polish literature in emigration. No knowledge of Polish required.

156. The Polish Theater. (3). Formerly 156. Three hours of lecture per week. Readings in Polish drama "drawn from the Renaissance to the present. No knowledge of Polish required.

Russian Language

Lower Division Courses

1. Elementary Russian. (5). Formerly 1 and a portion of 2. Five 1-hour meetings and 2 hours of language laboratory per week. Beginner's course. (F,SP)

2. Elementary Russian. (5). Formerly a portion of 2 and 3. Five 1-hour meetings and 2 hours of language laboratory per week. Semester Prerequisites: 1, 144, or equivalent. Quarter Prerequisites: 1 and part of 2 or equivalent. (F,SP)

3. Intermediate Russian. (5). Formerly 4 and a portion of 5. Five 1-hour meetings and 1 hour of language laboratory per week. Semester Prerequisites: 2, 14B, 21A, or equivalent. Quarter Prerequisites: 3 or equivalent. (F,SP)

4. Intermediate Russian. (5). Formerly a portion of 5 and 6. Five 1-hour meetings and 1 hour of language laboratory per week. Semester Prerequisites: 3, 14C, or equivalent. Quarter Prerequisites: 4 and part of 5 or equivalent. (F,SP)

13. Russian Conversation. (2). Formerly 13. May be repeated for credit once, up to a total of 4 units. Two 1-hour meetings and 1 hour of language laboratory per week. Semester Prerequisites: 3 (which may be taken concurrently). Quarter Prerequisites: 4. Life and language in the Russian's world. (F,SP)

14. Self-Paced Russian. (1-5). Individual conferences and laboratory work. Self-paced Learning equivalent to Slavic 1 through 4 or Slavic 21A-21B. 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 requirement. No units beyond those contracted for are completed, credit will be given. (F,SP)

14A. Self-Paced Russian. (1-5). Formerly 14A and a portion of 14B. (F,SP)

14B. Self-Paced Russian. (1-5). Formerly a portion of 14B and all of 14C. Semester Prerequisites: 14A or equivalent. (F,SP)

14C. Self-Paced Russian. (1-5). Formerly 14D and a portion of 5. Semester Prerequisites: 14B or equivalent. (F,SP)

14D. Self-Paced Russian. (1-5). Semester Prerequisites: 14C or equivalent. Formerly a portion of 5 and all of 6. (F,SP)

21A-21B. Intensive Russian. (10-10). Formerly 21A-21B-21C. Five 2-hour meetings and one 2-hour language laboratory per week. This sequence is equivalent to Slavic 1 through 4 and 14A-14B-14C-14D and qualifies for admission to 103A. Sequence begins Fall semester. (F,SP)

40. Reading in Russian: First Course. (3). New Course since Spring 1983. Three hours of meeting per week. Semester Prerequisites: 2: Selected texts in contemporary Russian to develop practical vocabulary, knowledge of conditions, use of bilingual dictionary, other reading skills. (SP)

Upper Division Courses

102. Readings in Specialized Russian. (3). Formerly 102. May be repeated for credit once. Three hours of class meetings per week. Semester Prerequisites: 4, 14D, 21B, or equivalent. Quarter Prerequisites: 6 or equivalent. Selected reading may be selected (scientific and technical), journalistic and business style to familiarize the student with the peculiarities of vocabulary, grammar, and phraseology. (F,SP)

103A-103B. Advanced Russian. (4-4). Formerly 103A-103B-103C. Four 1-hour meetings per week. Semester Prerequisites: 4, 14D, 21B or equivalent. Quarter Prerequisites: 6 or 21C. Sequence begins Fall semester. (F,SP)

104. Advanced Russian Composition. (3). Three hours of class per week. Semester Prerequisites: 103B or equivalent. Emphasis on writing, translation, and lexical analysis. (F,SP)

120. Advanced Russian Conversation. (2). Formerly 120-129-120C. Course may be repeated for credit. Two 1-hour meetings and one hour of language laboratory per week. Semester Prerequisites: 4, 14D, 21B or equivalent. Quarter Prerequisites: 103 Exploring Russian culture through oral communication. (F,SP)

Russian Literature

Lower Division Courses

39. Great Writers of Russian Literature. (3). Formerly 39. Three 1-hour lectures per week. Readings in English of representative texts from the Russian literary tradition. (F,SP)

45. Nineteenth-Century Russian Literature. (3). Three 1-hour lectures per week. Formerly 45 and a portion of 46. 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)

46. Twentieth-Century Russian Literature. (3). Three 1-hour lectures per week. Formerly a portion of 46 and 47. Development of Russian literature from 1900 to the present. Required of students majoring in Slavic and congress literature. No knowledge of Russian required. Prerequisite: admission to the Slavic major and recommended for prospective graduate students. (SP)

Upper Division Courses

130. Medieval Russian Culture. (3). Formerly 130. Three hours of lectures per week. Introduction to Eastern Orthodox culture of Old Russia, including literature, painting, and other visual arts.

133. The Foreign Contexts of Russian Literature. (3). Formerly 133. Course may be repeated once with consent of instructor. Three 1-hour lectures per week. Subject matter may be dealing with Slavic and Russian and other European literatures in the late 19th and early 20th centuries. See Departmental announcement for description.

134A. Gogol. (3). Formerly 134A. Three hours of lecture per week. Gogol's complete fiction and plays.

134B. Turgenev and Goncharov. (3). Formerly 134B. Three 1-hour lectures per week. The heyday of Russian Realism in a great variety of novel literature and the development of the Russian novel.

134C. Dostoevsky. (3). Formerly 134C-134D. Three 1-hour lectures per week. Survey of the writer's principal artistic works, treated in relation to his life and to developments in Russian and European literature.

134D. Tolstoy. (3). Formerly 134E-134F. Three 1-hour lectures 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.

134E. Chekhov. (3). Formerly 134G. Three hours of lecture per week. Great master of the modern short story and drama. (SP)

134N. Studies in Russian Literature. (3). Formerly 134N. Course may be repeated once with consent of instructor. Three 1-hour lectures per week. Subject matter may be chosen with consent of instructor. See Departmental announcement for description.

135. Masterworks of Russian Drama. (3). Formerly 135. Three 1-hour lectures per week. Development of Russian drama from its pre-literary forms through seventeenth-century religious drama, chivalric and neo-classical plays of the eighteenth-century, nineteenth-century romantic and realistic drama, and symbolist and absurdist plays of the twentieth-century.

Courses Requiring Knowledge of Russian

180. Studies in Russian Literature. (4). Formerly 180. Course may be repeated once with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 103A (which may be taken concurrently). Quarter Prerequisites: Knowledge of Russian. Subject may be chosen with consent of instructor. See Departmental announcement for description. Not scheduled.

181. Readings in Russian Literature. (4). Formerly 128A-128B. Three hours of lecture per week. Semester Prerequisites: 103A (which may be taken concurrently). Quarter Prerequisites: 103A-103B. Study and analysis of selected works of Russian literature: short story and short fiction from the eighteenth century to the present. Required for Russian-emphasis majors. (F)

182. Pushkin. (4). Formerly 181. Three hours of lecture per week. Semester Prerequisites: 103A (which may be taken concurrently). A survey of the writer's principal artistic works, treated in relation to his life and to developments in Russian and European literature. (F)

186. Nineteenth-Century Russian Literary Criticism. (4). Formerly 186. Three 1-hour lectures per week. Semester Prerequisites: 103A (which may be taken concurrently). Quarter Prerequisites: 103B. From Pushkin and the Romanticists through Belinsky, the radical critics (Chernyshevsky, Dobrolyubov, Pisarev), and the conservatists. Available SP 1985.

187. Russian Poetry. (4). Formerly 187A-187B. Course may be repeated once with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 103B (may be taken concurrently). Quarter Prerequisites: 103B. Russian poetry and versification (nineteenth and twentieth centuries). Variable topics; see Departmental announcement for description. (SP)

188. Russian Prose. (4). Formerly 188. Course may be repeated once with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 103B (may be taken concurrently). Quarter Prerequisites: 103C. Reading, analysis, and interpretation of representative authors from the nineteenth century to the present. (F)

Serbo-Croatian

Lower Division Courses

27A-27B. Introductory Serbo-Croatian. (6,4). Formerly 254-258B-25C. 27A: Three 2-hour meetings per week. 27B: Two 2-hour meeting per week. Semester Prerequisites: 27A is prerequisite to 27B. Beginner's course. Sequence beginning Fall semester. (F,SP)

Upper Division Courses

117A-117B. Advanced Serbo-Croatian. (4,4). Three hours of meeting per week. Semester Prerequisites: 27B is prerequisite to 117A; 117A is prerequisite to 117B. Three 1-hour lectures per week. Sequence beginning Fall semester. (F,SP)

170. Survey of Yugoslav Literatures. (3). Formerly 170A-170B. Three 1-hour lectures per week. Outline of major developments in Serbian (including Montenegro) and Croatian (including Dalmatian) literatures from the beginnings to the present. No knowledge of Serbo-Croatian required.

171. Readings in Yugoslav Literatures. (4). Formerly 113B. Three hours of meeting per week. Semester Prerequisites: 117A. Quarter Prerequisites: 113A. Selected readings in Serbo-Croatian, tailored to the academic interests of students enrolled. Not scheduled.

Topics in Serbo-Croatian. (3). New Course since Spring 1983. Three hours of meeting per week. Semester Prerequisites: 117A (may be taken concurrently). Studies in Serbo-Croatian literatures or linguistics, or conversation, depending on the needs of the students enrolled.

177. Folk Tradition in Contemporary Yugoslav Poetry and Fiction. (3). Formerly 177. Three 1-hour lectures per week. Serbo-Croatian heroic epic tradition and its integration into modern Yugoslav literature. No knowledge of Serbo-Croatian required.

179. Contemporary Yugoslav Short Story and Novel. (3). Formerly 179. Three 1-hour lectures per week. Close reading of the prose works of selected contemporary Yugoslav authors such as Andric and Krizek. Not scheduled.

Slavic Graduate Courses

Graduate Courses

200. Graduate Colloquium. (1). Must be taken on a satisfactory/unsatisfactory basis. Reports on current scholarly work by faculty and graduate students. (F)

204. Russian Composition and Style. (3). Formerly 225A-225B. Three 1-hour meetings per week. Semester Prerequisites: 103B. Quarter Prerequisites: 103C or equivalent. Essay-writing, analysis of texts, oral and written reports, and translation. (F)

205. Polish Composition and Style. (3). Formerly 229. Three 1-hour meetings per week. Semester Prerequisites: 115B. Quarter Prerequisites: 109B. Essay-writing, analysis of texts, oral and written reports, and translation.

206. Czech Composition and Style. (3). Formerly 229. Three 1-hour meetings per week. Semester Prerequisites: 115B. Quarter Prerequisites: 109B. Essay-writing, analysis of texts, oral and written reports, and translation.

207. Serbo-Croatian Composition and Style. (3). Formerly 229. Three 1-hour meetings per week. Semester Prerequisites: 117B. Quarter Prerequisites: 113B. Essay-writing, analysis of texts, and oral and written reports, and translation.

210. Old Church Slavic. (3). Formerly 210A-210B. Two 1/2-hour meetings per week. Semester Prerequisites: Reading knowledge of a modern Slavic language or consent of instructor. Quarter Prerequisites: Knowledge of a Slavic language. Introduction to Old Church Slavic with special attention to inflexional morphology. Assigned translations and sight reading of selected texts. (SP)

214. Readings in Old Russian. (3). Formerly 211. Two 1/2-hour meetings per week. Semester Prerequisites: Assigned translations and sight reading of selected Old Russian literary texts. (F)

215. Readings in Old Polish. (3). Formerly 229. Two 1/2-hour meetings per week. Semester Prerequisites: Consent of instructor. Assigned translations and sight reading of selected Old Polish literary texts.

216. Readings in Old Czech. (3). Formerly 229. Two 1/2-hour meetings per week. Semester Prerequisites: Assigned translations and sight reading of selected Old Czech literary texts.

217. Readings in Old South Slavic Texts. (3). Formerly 229. Two 1/2-hour meetings per week. Semester Prerequisites: Compiled translations and sight reading of selected Old South Slavic texts.

220. Introductory Comparative Slavic Linguistics. (3). Formerly 220. Two 1/2-hour lectures per week. Semester Prerequisites: 210. Introduction to Proto-Slavic, Slavic sound correspondences, sound changes, cognates, prosody. Overview of Common Slavic historical phonology and prosody; introduction to Common Slavic historical morphology. (SP)

221. Advanced Comparative Slavic Linguistics. (3). Formerly 220. Two 1/2-hour lectures per week. Semester Prerequisites: 210. Advanced knowledge of the modern language. Assigned translations and sight reading of selected works of Old Slavic literature. (SP)

222. Introductory Descriptive Grammar of Slavic Languages. (3). Course may be repeated for credit. Three 1-hour lectures per week. Semester Prerequisites: Knowledge of the language. Morphology, phonology, morphology, and syntax of a modern Slavic language; Czech, Polish, Russian, or Serbo-Croatian; see Departmental announcement for topic. Recommended for prospective teachers. (SP)

223. Advanced Descriptive Grammar of Slavic Languages. (3). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Appropriate preparation in 222 or equivalent. Morphosyntax, semantics, pragmatics of a modern Slavic language; Czech, Polish, Russian, or Serbo-Croatian; with particular attention to recent theoretical literature. See Departmental announcement for topic.

230. Historical Grammar of Slavic Languages. (3). Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 210. Historical phonology, morphology, and syntax of a Slavic language; Czech, Polish, Russian, or Serbo-Croatian. Some coverage of dialectology. See Departmental announcement for topic. (F)

231. History of Slavic Literary Languages. (3). Three hours of lecture per week. Semester Prerequisites: Advanced knowledge of the modern language; 210. Analysis of language and style of a Slavic literary language (Czech, Polish, Russian, or Serbo-Croatian) from the beginnings to the present, with emphasis on periods of particular significance. See Departmental announcement for topic.

240. Russian Oral Tradition. (3). Formerly 229. Three 1-hour lectures per week. Semester Prerequisites: Much of the reading is in non-standard Russian and requires a good command of the language. Quarter Prerequisites: Good command of Russian. Major emphasis will be
241A-241B. Old Russian Literature. (3:3). Formerly 230A-230B. Three 1-hour lectures per week. Semester Prerequisites: Reading knowledge of Old Russian. Early Russian literature from the beginnings to 1700. A. Kievan and early Muscovite literature. B. Late Muscovite and seventeenth-century Russian literature (F).


243. The Russian Novel and Literature of Western Europe. (3:3). Formerly 233A-233B. Two 1½-hour lectures per week. The development of the nineteenth-century Russian novel, its links with Western literary works and movements.

251. Advanced Study of Polish Literature. (3). Course may be repeated for credit. Three hours of lecture per week. Advanced studies in Polish literary history and literary analysis. Variable topics; see Departmental announcement.

252. Advanced Study of Czech Literature. (3). Course may be repeated for credit. Three hours of lecture per week. Advanced studies in Czech literary history and literary analysis. Variable topics; see Departmental announcement.

270. South Slavic Oral Tradition. (3). Formerly 299. Three 1-hour lectures per week. Oral epic songs of the South Slavs.

271. Advanced Study of Yugoslav Literatures. (3). Course may be repeated for credit. Three hours of lecture per week. Advanced studies in Yugoslav literatures and linguistics. Variable topics; see Departmental announcement.


281. Proseminar: Aims and Methods of Literary Scholarship. (3). Formerly 281. Three hours of seminar per week. Course designed for new graduate students in literature. Introduction to modern literary theory and criticism, with topics of textual analysis; methods of bibliographical research. (F)

282. Proseminar: Aims and Methods of Linguistic Scholarship. (3). Formerly 282. Three hours of seminar per week. Course designed for new graduate students in Slavic linguistics. A survey of general and Slavic linguistic philology, semantics, and the relation of linguistic to literary studies. Methods of research and critical analysis. Current issues and goals of research. (F)

288. Special Study for Graduate Students. (2-8). Formerly 298. Course may be repeated for credit. Individual conferences. Preliminary exploration of a restricted field involving research and a written report. (F,SP)

299. Directed Research. (2-8). Formerly 299. Course may be repeated for credit. Individual conferences. The application of methodological principles and key concepts of the social sciences to specific problems in contemporary society. (F,SP)

301. Slavic Teaching Methods. (3). Formerly 301. Course to be repeated for credit each semester of employment. Must be taken on a satisfactory/unsatisfactory basis. Group and individual conferences. Course on practical teaching methods, grading, testing, and design of supplementary course materials. Required of all teaching assistants and associates in Slavic. (F,SP)

East European Studies

Lower Division Courses

1A-1B. Introductory Hungarian. (5:6). Students who have taken 5 units of 10A will receive no credit for 1A. Students who have taken 10 units of 10A will receive no credit for 1B. Three hours of class meeting per week. Semester Prerequisites: Consent of instructor. (F,SP)

2A-2B. Introductory Armenian. (5:6). Students who have 5 units of credit for 10F will receive no credit for 2A. Students who have 10 units of credit for 10F will receive no credit for 2B. Three hours of class meeting per week. Semester Prerequisites: Consent of instructor. (F,SP)

3. Introductory Bulgarian. (1-5). Course may be repeated for credit up to a maximum of 10 units. Individual or class meetings. Semester Prerequisites: Consent of instructor. Formerly 10C. Maximum enrollment five units per semester.

4. Introductory Lithuanian. (1-5). Course may be repeated for credit up to a maximum of 10 units. Individual or class meetings. Semester Prerequisites: Consent of instructor. Formerly 10D. Maximum enrollment five units per semester.

5. Introductory Georgian. (1-5). Course may be repeated for credit up to a maximum of 10 units. Individual or class meetings. Semester Prerequisites: Consent of instructor. Formerly 10E. Maximum enrollment five units per semester.

Upper Division Courses

100. Readings in Hungarian. (2). Two hours of class meeting per week. Semester Prerequisites: Consent of instructor. (F,SP)

145. Studies in East European Literatures. (3). Formerly 145. Course may be repeated for credit with consent of instructor. Three 1-hour lectures per week. Variable subject matter; see Departmental announcement. No knowledge of foreign language required.

Graduate Courses

285. Studies in East European Literatures and Linguistics. (2-4). Formerly 285. Course may be repeated for credit. Group or individual conferences. Semester Prerequisites: Consent of instructor. Course content and class hours vary. Advanced studies in non-Slavic East European literature and linguistics.

Social Science

Field Major Office, Division of Special Programs, 301 Campbell Hall, 642-0108

Professor: William B. Slottman, Ph.D. (Associate Dean)

Visiting Lecturers: Gerald J. Cavanaugh, Ph.D., Kathleen Moran, Ph.D., Robert Ehrlich, Ph.D., Gary P. Wren, Ph.D., Kenneth L. Kain, Ph.D.

Field Major in Social Science: the Major Program

The field major in social science is especially designed for those students who wish to acquire a liberal arts education in the social sciences. The major combines breadth—courses drawn from a number of disciplines—with an individual area of concentration tailored to the needs of the individual student. Students are encouraged for developing their own program of studies with the advice and approval of a member of the staff who will act as their official adviser. The field major is administered by a Faculty Advisory Committee and is one of the programs of the Division of Special Programs.

Lower Division Requirements. One year of Western Civilization (SP 44 or equivalent). The list of courses that can be used to fulfill the requirement is available in the Special Programs Office.

Upper Division Requirements. 30 units distributed among the following courses:


2. Social Science 103A-103B, "Theory, Methods, and Applications of the Social Sciences," the core course for juniors.

3. Social Science 190, "Problems in the Social Sciences: Senior Thesis." Upon entering the major, each student must define an individual area of concentration that will provide a focus for work in the major and will prepare the way for the senior thesis project.

Honors Program. Upper division students with an overall grade point average of 3.3 and a grade point average of 3.5 in the major may, upon approval of the adviser, enroll in the honors program. H195 will be substituted for Social Science 190. Each honors candidate must submit a detailed research proposal with a preliminary bibliography to the prospective thesis supervisor. The student must also obtain the prior agreement of a faculty member (in addition to the supervisor) to read and evaluate the completed thesis.

Area of Concentration. The Social Science Field Major is especially devised for those students who wish to acquire a liberal arts education in the social sciences. The major combines breadth—courses drawn from a number of disciplines—with an individual area of concentration tailored to the needs of the individual student. Students are responsible for developing their own program of studies with the advice and approval of a member of the staff who will act as their official adviser. The courses listed above must be taken coherently to each other.

Upper Division Courses

101. Problems in the Social Sciences. (3). May be repeated for credit if topic changes. Two ½-hour lectures per week. Semester Prerequisites: Completion of 103A-103B; at least 9 UD units in history and other social sciences. Application of the methods of the Social Sciences to a problem in history, the other social sciences, or an immediately related area. (F,SP)

103A. Theories, Methods, and Applications of the Social Sciences. (3). Formerly 103A. Two ½-hour lectures per week. Introduction to the methodological principles and key concepts of the social sciences. (F,SP)

103B. Theories, Methods, and Applications of the Social Sciences. (3). Formerly 103B. Two ½-hour lectures per week. Application of the methodological principles and key concepts of the social sciences to specific problems in contemporary society. (F,SP)

190. Senior Thesis. (4). Formerly 190A-190B. Individual conferences. Semester Prerequisites: Senior standing; completion of 103A-103B; at least 9 UD units in history and other social sciences. The preparation and presentation of a senior thesis pertaining to the student's
industrial sociology, methodology, political sociology, social stratification, sociology of culture, of health and medicine, of law, of religion, and urban sociology.

Applications are considered once a year for fall semester admission only. Candidates for admission must apply by February 1. Those applying for a fellowship, who must apply by December 1. Applications are available from the Graduate Assistant of the Department of Sociology, 410 Barrows Hall, Berkeley, CA 94709, or at Box 955, Princeton, NJ 08540. Applicants are encouraged to take the Graduate Record Examination administered in October rather than waiting for the December examination. The undergraduate major need not have been in sociology. The character and depth of the individual's prior education and experience are more important than the actual field of study.

M.A. Degree Requirements. Nine courses taken for a letter grade are required, as follows:

The student must pass Sociology 201 (Theory) and must fulfill the methods requirement. For most students, fulfillment of the methods requirement is by passing with a grade of B or better Sociology 271A and 271B, and by the submission of a satisfactory methods paper.

At least two courses in the Sociology 290 series. A maximum of three courses may be taken as 205s in counting toward the nine courses. And a minimum of two courses of work taken in Sociology 299 and in upper division and graduate courses of other departments may be counted toward the nine courses. With permission of the personal adviser and the Graduate Adviser, one additional course from these categories may be applied to the nine course requirement. No units in Sociology 301, 401, 601, or 602 may be counted toward the nine course requirement. No courses for the M.A. may be taken satisfactory/unsatisfactory.

In the fall and until February 1. Applicants should submit a cumulative GPA of 3.3 in the major are required. To graduate with honors, a grade-point average of 3.3 overall and 3.5 in the major are required.

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. A student must have successfully completed Sociology 1 and 5 as well as anthropology courses or logic prior to entrance into the major. Students who have received credit for more than two upper division courses must substitute another core course for Sociology 1.

Upper Division. A student must take the following courses: Sociology 10A-10B, Sociological Theory, and at least two courses from the following areas: (a) at least one course in each of the following fields, and at least two courses in the following areas:

2. Three courses from the following core list: 110, 111, 112, 113, 116, 125, 130, 131, 140, 150, 170, 180.
3. Four elective upper division or graduate courses. One of these must be selected from the category of Sociology 197, 198, 199, or courses taken in other departments. Of the four courses, one may be taken pass/no pass. Written approval is necessary for courses taken in other departments to be counted for major credit.

4. One 90 or 190.

Honors Program. Majors who enter their senior year with a 3.3 grade-point average overall and a 3.3 grade-point average in the major major in the honors program. After conferring with a major adviser, by taking Sociology H194A (or H194A-H194B), Senior Honors Thesis.

Students who plan to go on to graduate work in sociology or related disciplines and professions are strongly urged to take both Sociology 105 and 106.

The Graduate Program

Facilities for graduate study and research, leading to M.A. and Ph.D. degrees, include courses, seminars, and research training under faculty supervision in the areas of comparative institutions, demography, deviance, educational sociology, industrial sociology, methodology, political sociology, race relations, social psychology, social stratification, sociology of culture, of health and medicine, of law, of religion, and urban sociology.

Applications are considered once a year for fall semester admission only. Candidates for admission must apply by February 1. Those applying for a fellowship, who must apply by December 1. Applications are available from the Graduate Assistant of the Department of Sociology, 410 Barrows Hall, Berkeley, CA 94709, or at Box 955, Princeton, NJ 08540. Applicants are encouraged to take the Graduate Record Examination administered in October rather than waiting for the December examination. The undergraduate major need not have been in sociology. The character and depth of the individual's prior education and experience are more important than the actual field of study.

M.A. Degree Requirements. Nine courses taken for a letter grade are required, as follows:

The student must pass Sociology 201 (Theory) and must fulfill the methods requirement. For most students, fulfillment of the methods requirement is by passing with a grade of B or better Sociology 271A and 271B, and by the submission of a satisfactory methods paper. (More details are available from the department's graduate assistant.)

At least two courses in the Sociology 290 series. A maximum of three courses may be taken as 205s in counting toward the nine courses. And a minimum of two courses of work taken in Sociology 299 and in upper division and graduate courses of other departments may be counted toward the nine courses. With permission of the personal adviser and the Graduate Adviser, one additional course from these categories may be applied to the nine course requirement. No units in Sociology 301, 401, 601, or 602 may be counted toward the nine course requirement. No courses for the M.A. may be taken satisfactory/unsatisfactory.

Deadlines for Completion. During the first three semesters of residence, the student is expected to complete (a) the theory and methods requirements, including a paper in each of these areas; (b) at least three additional papers on sociological subjects written for instructors other than those for whom the theory and methods papers were written. The papers need not be written as assignments in sociology courses; if not, however, the paper must be submitted for appraisal to a member of this department's faculty.

As noted above, the department requires satisfaction for all courses with a grade of B or better. In the sociology department, a student is expected to complete at least one course in each specialization area (with a grade of B or better) and to prepare an honors thesis that is passed with grade B or better. In addition, the student must complete the following requirements:

2. Three courses from the following core list: 110, 111, 112, 113, 116, 125, 130, 131, 140, 150, 170, 180.
3. Four elective upper division or graduate courses. One of these must be selected from the category of Sociology 197, 198, 199, or courses taken in other departments. Of the four courses, one may be taken pass/no pass. Written approval is necessary for courses taken in other departments to be counted for major credit.

4. One 90 or 190.

The honors program. Majors who enter their senior year with a 3.3 grade-point average overall and a 3.3 grade-point average in the major major in the honors program. After conferring with a major adviser, by taking Sociology H194A (or H194A-H194B), Senior Honors Thesis.

Students who plan to go on to graduate work in sociology or related disciplines and professions are strongly urged to take both Sociology 105 and 106.

The graduate program facilities for graduate study and research, leading to M.A. and Ph.D. degrees, include courses, seminars, and research training under faculty supervision in the areas of comparative institutions, demography, deviance, educational sociology, industrial sociology, methodology, political sociology, race relations, social psychology, social stratification, sociology of culture, of health and medicine, of law, of religion, and urban sociology.

Applications are considered once a year for fall semester admission only. Candidates for admission must apply by February 1. Those applying for a fellowship, who must apply by December 1. Applications are available from the Graduate Assistant of the Department of Sociology, 410 Barrows Hall, Berkeley, CA 94709, or at Box 955, Princeton, NJ 08540. Applicants are encouraged to take the Graduate Record Examination administered in October rather than waiting for the December examination. The undergraduate major need not have been in sociology. The character and depth of the individual's prior education and experience are more important than the actual field of study.

M.A. Degree Requirements. Nine courses taken for a letter grade are required, as follows:

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2. Three courses from the following core list: 110, 111, 112, 113, 116, 125, 130, 131, 140, 150, 170, 180.
3. Four elective upper division or graduate courses. One of these must be selected from the category of Sociology 197, 198, 199, or courses taken in other departments. Of the four courses, one may be taken pass/no pass. Written approval is necessary for courses taken in other departments to be counted for major credit.

4. One 90 or 190.

The honors program. Majors who enter their senior year with a 3.3 grade-point average overall and a 3.3 grade-point average in the major major in the honors program. After conferring with a major adviser, by taking Sociology H194A (or H194A-H194B), Senior Honors Thesis.

Students who plan to go on to graduate work in sociology or related disciplines and professions are strongly urged to take both Sociology 105 and 106.
A foreign language may be required by the student's qualifying examination committee if deemed necessary for the dissertation research. Before formal admission to the Ph.D. program, a student must have written and received approval by the proposed committee of a dissertation prospectus. Within a period of no more than five years from the date of admission, students are expected to complete and file their dissertation. Under special circumstances, students in the Graduate Division an extension of candidacy if the extension has been approved by the dissertation committee chairperson and the Graduate Adviser. Lower Division Courses

1. Introduction to Sociology. (4). Formerly 1. Not open to students who have taken 3. Two hours of lecture and two hours 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 3 is prerequisite for other sociology classes; students not considering a sociology major are directed to 3. (F,SP)

3. Principles of Sociology. (3). Not open to students who have taken 1. Three hours of lecture per week. An overview of sociology for students who will not major in sociology. Introduces students to the study of fundamental problems of groups and society—social organizations, culture, interaction processes, and social behavior—and the dynamics of modern society. Satisfies prerequisite for other sociology courses, but not for major. (F,SP)

5. Evaluation of Evidence. (4). Formerly 5. Three hours of lecture and two hours discussion per week. Introduces students to 15 different methodological problems in assessing data relating to social life. Topics to be covered include: posing a sociological problem, gaining access to data, measuring, establishing correlation and causation connection among data, and relating data to theoretical context. (F,SP)

90. Freshman/Sophomore Seminar. (Course may be repeated for credit. Two hours of seminar per week and eight one-hour conferences. Semester Prerequisites: Must be a freshman or sophomore. Selected specific topics in sociology will be covered in seminar format as a way of introducing students to the process of sociological inquiry. (F,SP)

Upper Division Courses

101A. Sociological Theory. (5). Formerly 157A. Three hours of lecture and two hours discussion per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. History of sociology thought as a source of present-day problems and hypotheses. (F)

101B. Sociological Theory. (5). Formerly 157B. Three hours of lecture and two hours discussion per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. History of sociological thought as a source of present-day problems and hypotheses. (SP)

105. Introduction to Sociological Methods. (5). Formerly 105A-105B. Three hours of lecture and two hours discussion per week. Semester 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 or SP)

106. Intermediate Sociological Methods. (5). Three hours of lecture and two hours discussion per week. Semester Prerequisites: 105. Quarter Prerequisites: 105A. This course will cover more technical issues in quantitative research methods introduced in 105, and will include, according to discretion of instructor, a practicum in data collection and/or analysis. Recommended for students interested in graduate work in sociology or research careers. (SP)

110. Organizations and Institutions. (3). Formerly 120: Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Administrative organizations and voluntary associations; major social institutions in industry, government, religion, and education. (F or SP)

111. Sociology of the Family. (3). Formerly 130. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Systematic and comparative analysis of family structure and change: marriage, reproduction, child-rearing, marital dissolution. (F,SP)

112. Sociology of Religion. (3). Formerly 146. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Systematic and comparative analysis of family structure and change: marriage, reproduction, child-rearing, marital dissolution. (F,SP)

113. Sociology of Education. (3). Formerly 124. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. The role of formal education in modern society. Educational systems in relation to the religious, cultural, economic, and political forces shaping their character. (F) or (SP)

114. Sociology of Law. (3). Formerly 119. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. A consideration of forms, causes, and controls of deviant behavior. (F)

116. Industrial and Occupational Sociology. (3). Formerly 129. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. The labor force; social control within and of occupations and professions (professionalization, professional associations vs. labor unions, codes of ethics, legal controls); social structure of the work-place, work experience of the participants, relation of both to community and society. (F)

117. Sport As a Social Institution. (3). Formerly 116. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Analysis of sport as social institution, its structure and functions; methods, social patterns, and social roles of coaches, athletes, fans— their interrelationships and complexities; current turmoil in sport and the ideological struggle which has emerged. (F)

118. Comparative Institutions. (3). Formerly 142. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. History of sociological thought as a source of present-day problems and hypotheses. (SP)

125. Urban Sociology. (3). Formerly 160. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Analysis of processes in world urbanization; metropolitan areas; location and types of cities, social and demographic characteristics of urban populations. (F)

126. Population. (3). Formerly 123. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Analysis of processes in world urbanization; metropolitan areas; location and types of cities, social and demographic characteristics of urban populations. (SP)

130. Social Stratification. (3). Formerly 132. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Recent trends in occupational stratification; social classes in local communities and the nation as related to interest organizations. (F) or (SP)

131. Ethnic and Race Relations. (3). Formerly 110A-110B. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or 3 or consent of instructor. The role of race and ethnicity in contemporary trends in the relations among minority groups and the majority in the U.S. (F)

132. Selected Topics in Ethnic and Race Relations. (3). Formerly 110C. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. There will be variation in focus of attention, depending on instructor in charge. Possibilities include consideration of the specific group, the position of the group in depth of specific theoretical literature, or an examination of race relations from an international comparative approach. (SP)

133. Gender and Society: The Sociology of Women. (3). Formerly 151. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Historical and comparative analysis of women’s varying roles, statuses, and life opportunities. Consideration of the historical movement, past and present, of specific social problems and social policies, and the present day as a struggle over conflicting definitions of women’s “nature” and potential. (F) or (SP)

134. Gender and Society: The Sociology of Men. (3). Formerly 153. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. The position of men in American society examined from standpoints of socialization and role analysis; group structure, politics, and social change, and personal experience. (SP)

135. Gender and Society: Sexual Diversity and Social Change. (3). Formerly 150. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. An examination and analysis of the significance of homosexuality in contemporary U.S. society. Included: traditions of Western thought and the role of institutions, patterns of social change, contemporary social/political movements, socialization and the development of individual identity, and the implications of evolving public attitudes. (SP)

140. Political Sociology. (3). Formerly 115. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Political processes in organized groups, the social bases of power. The role of social classes, occupational classes, and political and religious groups, and the influence of cultural values. (F)

141. Social Movements and Political Action. (3). Formerly 149. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Social movements, the formation and play of public opinion, and the behavior of interest groups. (SP)

142. Sociology of War and Conflict. (3). Formerly 152. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Political processes in organized groups, the social bases of power. The role of social classes, occupational classes, and political and religious groups, and the influence of cultural values. (SP)

143. Policy, Economy, and Society. (3). Formerly 115. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Focus on three major themes of the contemporary United States: government, religion, and education. (SP)

150. Social Psychology. (3). Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. An examination of the approaches in social psychology. The approaches may include: symbolic interactionism, neo-behaviorism, psy-
172. Development and Modernization. (3) Formerly 178. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Quarter Prerequisites: 1 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

198. Directed Group Study for Undergraduates. (1-4) Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences. Semester Prerequisites: 1 or 3 and consent of instructor. Group studies of selected topics which vary over time. (F,SP)

199. Supervised Independent Study and Research. (1-4) Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences. Semester Prerequisites: 1 or 3 and consent of instructor. Quarter Prerequisites: 1 and consent of instructor. Enrollment is restricted by regulations on page 00. (F,SP)

Graduate Courses

201. Sociological Theory. (3) Formerly 227A. Two lecture hours per week. Semester 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. (F) or (SP)

202. Advanced Study in Sociology Theory. (3) Formerly 229. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. 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 such 202 before taking the qualifying examination. (F) or (SP)

203. Chinese Sociology. (3) Formerly 215. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

204. Social Structure of Communist Societies. (3) Formerly 184. Three hours of lecture per week. Semester Prerequisites: 1 or 3 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

205. Supervised Preparatory Course Work. (3) New Course since Spring 1983. Individual conferences, as well as class attendance. Semester Prerequisites: Consent of instructor. Course may be repeated for credit. Individuals interested in graduate study in sociology must take at least one such 205 before taking the qualifying examination. (F) or (SP)

206. Race and Ethnic Relations. (3) Formerly 231. Course may be repeated for credit. Must be taken on a passed/not passed basis. Two hours of seminar per week. Semester Prerequisites: 1 or 3 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

207. Urban Sociology. (3) Formerly 232. Course may be repeated for credit. Must be taken on a passed/not passed basis. Two hours of seminar per week. Semester Prerequisites: 1 or 3 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

208. Family and Life Cycle. (3) Formerly 233. Course may be repeated for credit. Must be taken on a passed/not passed basis. Two hours of seminar per week. Semester Prerequisites: 1 or 3 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)

209. Comparative Politics. (3) Formerly 234. Course may be repeated for credit. Must be taken on a passed/not passed basis. Two hours of seminar per week. Semester Prerequisites: 1 or 3 or consent of instructor. Major theoretical perspectives on structural changes in new nations. Factors and conditions influencing transformation of sociocultural systems. Major theoretical perspectives on social change and modernization and the sources of these changes; the processes through which they spread; their meaning for individuals and institutions. (F,SP)
271A-271B. Methods of Sociological Research. (3,3). Formerly 271A-271B. Credit and grade to be assigned at the end of each semester. Two hours of lecture per week. Semester Prerequisites: Consent of instructor. A two-semester sequence course introducing logic and analytic techniques commonly employed in sociological research. The methodological problems encountered in field work, historical and comparative inquiry, experimental research, and survey analysis. Both qualitative and quantitative approaches discussed, with emphasis on quantitative techniques. (F,SP)

272. Studies in Sociological Research Methods. (3,3). Course may be repeated for credit. Two hours of lecture per week. Semester Prerequisites: Consent of instructor. Courses under this number involve pursuing graduate study in subfields of sociological research methods. Consult departmental catalog for amplified current descriptions. (F,SP)

272A. Logic of Inquiry. (3,3). Formerly 272A. (SP)

272B. Survey Research. (3,3). Formerly 273A-273B. (F,SP)

272C. Comparative and Historical Research. (3,3). Formerly 274A-274B. (SP)

272D. Advanced Quantitative Research. (3,3). Formerly 276.

272E. Participant Observation. (3,3). Formerly 275A-275B.

272F. Mathematical Sociology. (3,3). Formerly 276.

272G. Structural Equation Models. (3,3). Formerly 277A-277B.

272H. Demographic Methods. (3,3). Formerly 279A-279B.


273. Advanced Seminars in Research Methods. (3,3). Formerly 270. Course may be repeated for credit. Two hours of seminar per week. Seminar in advanced sociological research methods. (F,SP)

273A. Survey Research. (3,SP)

273B. Comparative-Historical Research. (3,3).

273C. Participant Observation. (3,3).

273D. Mathematical Sociology. (3,3).

273E. Demographic Methods. (3,F,SP)

280. Advanced Study in Substantive Sociological Fields. (3,3). Course may be repeated for credit. Two hours of lecture per week. Semester Prerequisites: Undergraduate preparation in the field; completion of a 208 in the field or an equivalent determined by the instructor. Courses under this number involve pursuing graduate study in substantive sociological subfields. The courses presume familiarity with the fields of study. Consult departmental catalog for current descriptions. (F,SP)

280A. Law and Deviance. (3,3). Formerly 212 and 219. (SP)

280B. Race and Ethnic Relations. (3,3). Formerly 210A-210B. (SP)

280C. Political Sociology. (3,3). Formerly 260A-260B-260C. (F)

280D. Organizations. (3,3). Formerly 244. (F)

280E. Industrial Sociology. (3,3). Formerly 229.

280F. Family and Life Cycle. (3,3). Formerly 231 and 257. (F or (SP)

280G. Social Stratification and Class Analysis. (3,3). Formerly 232. (SP)

280H. Development and Modernization. (3,3). Formerly 235A. (F) or (SP)

280I. Religion. (3,3). Formerly 246.

280J. Urban Sociology. (3,3). Formerly 262A-262B. (SP)

280K. Social Psychology. (3,3). Formerly 265A-265B, 206 and 208. (SP)

280L. Gender. (3,3). Formerly 252. (SP)

280M. Culture. (3,3). New Course since Spring 1983.

280N. Education. (3,3). Formerly 222.

280O. Health and Medicine. (3,3). Formerly 254 and 255. (F or (SP)

280P. Area Studies. (3,3). Formerly 261A-261B and 265. (F or (SP)

280Q. Seminar. (3,3). Formerly 290. Course may be repeated for credit. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Advanced study in modern sociological topics. The specific topics will be announced at the beginning of each semester. (F,SP)

298. Directed Group Studies for Graduates. (1-9). Formerly 298. Course may be repeated for credit. Group conference. Semester Prerequisites: Consent of instructor. Group studies of selected topics which vary from year to year. (F,SP)

299. Individual Study and Research. (1-9). Formerly 299. Course may be repeated for credit. Individual conferences. Semester Prerequisites: Consent of instructor. For students engaged in individual research and study. Course may be substituted for available graduate lecture courses or 290. (F,SP)

601. Individual Study for Master's Students. (1-12). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester 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). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. 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. (3,3). Formerly 301. Units may not be used to meet unit or residency requirements for either the master's or doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. (F,SP)

401. Professional Training: Research. (3,3). Formerly 401. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Not applicable. Units may not be used to meet unit or residency requirements for either the master's or doctoral degree. (F,SP)

South and Southeast Asian Studies

Department Office, 1203 Dwinelle Hall, 642-4564

Professors:

George F. Dales, Ph.D.
Robert P. Goldman, Ph.D.
George Hart, III, Ph.D.

Associate Professors:

Bruce R. Pratt, Ph.D.
Barad A. van Nooten, Ph.D.

Assistant Professor:

Karine Schomer, Ph.D.

Visiting Lecturers:

Kausalya Hart, M.A.
Usha R. Jain, M.A.

Major Advisers: Hindi-Urdu, South Asian Civilization, Ms. Schomer; Sanskrit, Mr. Goldman; South Asian Archaeology, Mr. Das; Tamil, Mr. Hart; Malay-Indonesian, Mr. Chiu.

Graduate Advisers: B.A. van Nooten, A. Sweeney.

The Department offers programs of both undergraduate and graduate instruction and research in the languages and civilizations of South and Southeast Asia from the most ancient period to the present.

The program maintains a balance between ancient and modern studies, between linguistic and cultural disciplines. Programs of study thus can be devised to fit the needs of students with a wide range of interests. Opportunities exist for a limited number of students to participate in both archaeological projects and language training programs in South Asia. The Departmental programs are enriched by the resources of the Center for South and Southeast Asia Studies, the South and Southeast Asia Library Service, and are closely related to the interdisciplinary Group in Buddhist Studies Ph.D. program.

Major Program

A major is offered in South and Southeast Asian studies with emphases in South Asian language, archaeology, or civilization and Southeast Asian language (Malay-Indonesian).

South Asia

General requirements for the South Asian emphases are: lower division: (1) South Asian 1A-1B; (2) South Asian 5A-5B.

In addition, specific requirements for each South Asian emphasis are as follows:

I. South Asian Language

A. Hindi-Urdu: (1) Hindi-Urdu 1A-1B; (2) Hindi-Urdu 100A-100B; (3) South Asian 124; one other South Asian literature course in translation or one advanced Hindi-Urdu literature course; (4) South Asian 127; South Asian 131; (5) Six upper division units to be chosen from Lists I through V below; (6) Linguistics 5 is recommended.

B. Sanskrit: (1) Sanskrit 100A-100B; (2) Sanskrit 101A-101B; (3) nine upper division units to be chosen from Lists I through V below; (4) Linguistics 5 is recommended; (5) South Asian 127 and South Asian 131 are optional.

C. Tamil: (1) Tamil 1A-1B; (2) Tamil 100A-100B; (3) South Asian 127; South Asian 131; (4) 12 upper division units to be chosen from Lists I through V below; (5) Linguistics 5 is recommended.

II. South Asian Archaeology

(1) 10 lower division units of a South Asian language or Sanskrit 100A-100B; (2) South Asian 100A-110 (formerly 193A-193B); Anthropology 2; Near Eastern Studies 123A-123B; Anthropology 133 or Archaeology 134; prerequisite, consent of instructor; (3) nine upper division electives to be chosen from Lists I through V below.

III. South Asian Civilization

(1) Sanskrit 100A-100B plus 15 upper division units or one year of a modern South Asian language (10 lower division units) plus 16 upper division units to be distributed as follows: a) one literature course from List I below; b) one course in religion or philosophy from List II below; c) one course in history or social science from List III below; d) one course in the fine arts from List IV below; (2) remainder of required upper division units (either 15 or 18 as indicated above) to be selected from Lists I through V below.
List III. History and Social Science: South Asian 108, 130; History 114A-114B, Anthropology 184; Political Science 144A, 144B.


List V. Archaeology: Relevant courses in Anthropology, Geography, Geology, Statistics, or other departments as the student's specific field of archaeology requires.

With written permission from the student's adviser, other relevant courses may be substituted for not more than two of the courses listed above, particularly in the event that certain of these courses may not be offered each year or new courses may be added to the curriculum. For the language emphases, a minimum of two upper division courses in literature in translation must be taken in fulfillment of the general upper division requirement.

Southeast Asia

Southeast Asian Language: Malay/Indonesian

General requirements for the Southeast Asian language emphasis are: lower division: Southeast Asian 100A-100B; (3) Malay/Indonesian 132; Southeast Asian 122, 123, 124; (4) six upper division units to be chosen from Lists I through III below.

List I. Religion and Philosophy: South Asian 127, 129, 131, 140, 155

List II. Social Science: Anthropology 160, 161 (with consent of instructor); Anthropology 185, 186; Geography 163; Political Science 143C, 143D.

List III. Fine Arts: History of Art 137; Music 133A, 140 (with consent of instructor).

With written permission from the student's adviser, other relevant courses may be substituted for not more than two of the courses listed above, particularly in the event that certain courses may not be offered each year or new courses may be added to the curriculum.

Honors Program. To be eligible for admission to the honors program, a student 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 contact the department 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. Additional information on the honors program is available in the departmental office, 1203 Dwinelle.

Graduate Program

Programs of graduate study and research leading to the M.A. degree are offered with emphases in Hindi and Urdu, Malay/Indonesian, Sanskrit, South Asian civilization, and Tamil. Programs leading to the Ph.D. degree are offered with emphases in Malay/Indonesian, Modern Indo-Aryan: Hindi and Urdu, Sanskrit, South Asian archaeology, and Tamil.

Degrees. All students admitted to programs leading to a graduate degree will be expected to have, in addition to a B.A. or its equivalent, some formal academic background in South or Southeast Asian languages and area studies. Students should in general be prepared to have undergone training equivalent to that required of the departmental major in one of the various areas. M.A. candidates with insufficient preparation may be required to make up deficiencies without credit toward the M.A. unit requirement.

The M.A. degree is offered under Plan II (see Index under Graduate Division) which requires the student to take courses totaling at least 24 upper division and graduate units, of which at least 12 must be graduate. The distribution of courses is determined in consultation with the student's adviser and the graduate adviser. Two reading requirements must be met. These include a reading examination in a non-South or Southeast Asian language which the student and graduate adviser decide is relevant to the student's program, i.e., Dutch, French, German, Japanese, Russian. For the Malay/Indonesian emphasis, the student shall take a reading exam in Dutch. The language required for admission to the M.A. program cannot be offered for this reading requirement. In addition, first-year proficiency in a second area-related language other than the first language is required for the M.A. emphasis. In the event that the student has learned the language in question in a university course, the student must pass a reading examination in the second area-related language by the end of the first year or within one additional year after first-year proficiency in the first area-related language is demonstrated.

As part of the M.A. requirement, the student must pass a reading examination in a non-South or Southeast Asian language which the student and the graduate adviser decide is relevant to the student's program, i.e., Dutch, French, German, Japanese, Russian. For the Malay/Indonesian emphasis, the student shall take a reading exam in Dutch. The language required for admission to the M.A. program cannot be offered for this reading requirement. In addition, first-year proficiency in a second area-related language other than the first language is required for the M.A. emphasis. In the event that the student has learned the language in question in a university course, the student must pass a reading examination in the second area-related language by the end of the first year or within one additional year after first-year proficiency in the first area-related language is demonstrated.

Students must then successfully complete three written examinations, one in the general field and two in areas of specialization (toward which they have directed their reading and coursework) and a final oral examination.

Exempt in unusual circumstances, a student must complete the M.A. program in at most four semesters. Further information about University degree regulations can be found in this catalog.

The general prerequisites for admission to the Ph.D. program are that a student must have completed the appropriate field courses by the time of the comprehensive examinations. Students without an M.A. degree must normally be advised to apply for admission to the M.A. program, even though their eventual goal is the Ph.D. degree. At the conclusion of the M.A. program, the student will be informed as to whether they are eligible for admission to the Ph.D. program. Students with an M.A. degree from another university will be expected to make up deficiencies within a year of admission, or, in the case of the M.A. degree in the department, for the comprehensive examination.

The Ph.D. degree is offered according to Plan A (as of Fall 1984). Beyond the course requirements for the M.A. degree, the student will complete a course in Indo-Aryan or Indo-European linguistics. In addition, they must demonstrate second-year proficiency in a second area-related language. For the Malay/Indonesian emphasis, the language is to be chosen from: Sanskrit; Arabic; Javanese, Balinese, or other major Indonesian language; Thai. This requirement may be satisfied by passing a reading examination or by taking a satisfactory grade (B- or better) in relevant coursework. For the Malay/Indonesian emphasis, the language to be chosen from: Sanskrit; Arabic; Javanese, Balinese, or other major Indonesian language; Thai. This requirement must be met before a student can take the qualifying examinations. The foreign language requirement is normally met by passing a reading examination in each language. This requirement must be met before a student can take the qualifying examinations.

Before being admitted to candidacy for the Ph.D., a student must demonstrate competence in the languages in his or her program, and must pass a written and oral qualifying examination in three fields of specialization. One of these fields may be in an area of study outside the department, to be decided in consultation with the graduate adviser. Examples of fields outside the department are Hindi literature, Dravidian linguistics, Vedic, Prakrit, the Sanskrit language. Programs leading to the Ph.D. degree are classical Malay literature, traditional drama, oral literature, Indonesian literature, Malaysian literature, dialect studies; outside the department, rhetoric, anthropological, sociology, near eastern studies, East Asian linguistics, East Asian art. Students must consult with the graduate adviser and submit a "statement of field," indicating how they will prepare themselves through reading and coursework for the qualifying examinations. The examinations will be administered by a committee appointed by the Graduate Council.

After admission to candidacy, the student will complete the Ph.D. dissertation according to Plan A. The dissertation will conform to procedures and regulations set by the Graduate Division and the Graduate Council.

South and Southeast Asian

Upper Division Courses

H195. Senior Honors. (3). Formerly H195. Semester course: Consent of instructor. To be eligible for admission to the honors program, a student must have attained a 3.5 grade-point average 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 contact the department 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. Additional information on the honors program is available in the departmental office, 1203 Dwinelle.

H195A. South Asian Studies. (3). Formerly H195A.

H195B. Tamil. (3). Formerly H195B.

H195C. Hindi-Urdu. (3). Formerly H195C.

H195D. Malay/Indonesian. (3). Formerly H195D.

H195E. Southeast Asian Studies. (3). Formerly H195E.

H195F. Sanskrit. (3). Formerly H195F.

197. Field Studies in South and Southeast Asia. (1-3). Formerly 197. May be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences and supervised experience required for the Master's examination. Regular individual meetings with faculty sponsor and written reports required. (F,S,P)

198. Directed Group Study for Upper Division Students. (1-4). Formerly 198. 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 units limit per term. (F,S,P)

198A. South Asian Studies. (1-4). Formerly 198A.

198B. Tamil. (1-4). Formerly 198B.

198C. Hindi-Urdu. (1-4). Formerly 198C.

198D. Malay/Indonesian. (1-4). Formerly 198D.

198E. Southeast Asian Studies. (1-4). Formerly 198E.

198F. Sanskrit. (1-4). Formerly 198F.

199. Supervised Independent Study and Research. (1-4). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. Four units limit per term. (F,S,P)

199A. South Asian Studies. (1-4). Formerly 199A.

199B. Tamil. (1-4). Formerly 199B.

199C. Hindi-Urdu. (1-4). Formerly 199C.

199D. Malay/Indonesian. (1-4). Formerly 199D.
South Asian

Lower Division Courses

1A. Introduction to the Civilization of India. (3). Formerly 10A. Three 1-hour classes per week. Readings, lectures, and discussions in the culture and civilization of India from the Indus Valley and Brahmanic civilization to the advent of the Jain and Buddhist scriptures in the 6th century B.C.E. Emphasis on the evolution of Hinduism, Buddhist and Jain thought, and selection of texts from each religious tradition. (SP)

1B. Introduction to the Civilization of India. (3). Formerly 10B. Three 1-hour classes per week. Readings, lectures, and discussions in the culture and civilization of India from the Indus Valley and Brahmanic civilization to the advent of the Jain and Buddhist scriptures in the 6th century B.C.E. Emphasis on the evolution of Hinduism, Buddhist and Jain thought, and selection of texts from each religious tradition. (SP)

5A. Great Books of India. (4). Formerly 15A. Three 1-hour classes and one 1-hour discussion section per week. Reading and composition based on selected works of Indian literature ranging from the ancient Sanskrit epics to modern Indian and Western authors. Weekly composition on texts and topics discussed in class. (F)

5B. India in the Writer's Eye. (4). Formerly 15B. Three 1-hour classes and one 1-hour discussion section per week. Reading and composition based on selected works of Indian literature ranging from the ancient Sanskrit epics to modern Indian and Western authors. Weekly composition on texts and topics discussed in class. (SP)

108. Psychology and Traditional India. (3). Formerly 108. Three 1-hour classes 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 philosophy of psychology and culture, and selected works from the psychoanalytic literature. (F)

110A-110B. Origins of South Asian Civilization. (3,3). Formerly 193A-193B. Three 1-hour classes per week. Semester Prerequisites: South Asian 1A. Three 1-hour lectures per week. A. Archaeology of the Neolithic through the Harappan civilization. Survey of archaeological evidence in Pakistan, India, and, from Neolithic period through the rise and decline of South Asia's first urban civilization. B. Post-Harappan to the emergence of Buddhism. Survey of archaeological evidence in Pakistan and India from demise of the Indus civilization to the rise of urbanization in the Ganges Valley, including period of Persian, Greek, and Roman contacts. (F)

121. Classical Indian Literature. (3). Formerly 121. Three 1-hour classes per week. A study of selected mythological texts from classical Sanskrit literature: epics, drama, and lyric poetry. (SP)

122. Folklore and Religion in India. (3). Formerly 122. Three 1-hour classes per week. A study of selected mythological texts from classical Sanskrit literature: epics, drama, and lyric poetry. (SP)

130. History and Structure of South Asian Languages. (3). Formerly 129. Three 1-hour classes per week. Prerequisites: South Asian 131 or consent of instructor. Lecture and discussion of the development of linguistic systems of traditional India. (SP)

137. Cinema and Society: India. (3). Formerly 137. Three 1-hour classes per week. A study of major traditions of oral literature in the Indian sub-continent: song, folk drama, tale, myth and epic. Readings in translations, from every major oral literature, with emphasis on cultural context of story-telling, especially ritual and performance. (SP)

141. Religion in South India. (3). Formerly 141. Two 1-hour classes per week. A study of religion in South India. (SP)

143. Folklore of India. (3). Formerly 143. Three 1-hour classes per week. A study of major traditions of oral literature in the Indian sub-continent: song, folk drama, tale, myth and epic. Readings in translations, from every major oral literature, with emphasis on cultural context of story-telling, especially ritual and performance. (SP)

149. Studies in South Asian Languages. (4). Formerly 149. Three 1-hour classes per week. Survey and discussion of the major traditions of oral literature in the Indian sub-continent: song, folk drama, tale, myth and epic. Readings in translations, from every major oral literature, with emphasis on cultural context of story-telling, especially ritual and performance. (SP)

155. Philosophies of India. (3). Formerly 155. Two 1-hour classes per week. A study of the major traditions of philosophical thought in Indian subcontinent: Hinduism, Buddhism, Jainism, and Sikhism. Readings in translations, from every major philosophical tradition, with emphasis on cultural context of story-telling, especially ritual and performance. (F)

160. Jainism and Other Heterodox Systems. (3). Formerly 160. Three 1-hour classes per week. Semester Prerequisites: South Asian 131 or consent of instructor. Lecture and discussion of the development of the main heterodox systems. (F)

172. Ethnicity and Folklore of the Himalayan Region. (3). Formerly 172. Three 1-hour classes per week. A study of the major traditions of oral literature in Himalayan region. Readings, lectures, and discussion will focus on the influence of religious and cultural traditions of the Himalayan region. (SP)

201. Readings in Jaina Sanskrit Texts. (3). Formerly 201. Three 1-hour classes per week. Readings in selected translations from the Jain scriptures—The Vedas, the Upanishads, and the Epics including the Gita. These will be supplemented by critical writings of modern scholars on Hindu scripture and the formation of various cults within the tradition. (F)

290B. Tamil (1-5). Formerly 290.

290C. Hindi-Urdu (1-5). Formerly 290.

290D. Malay-Indonesian (1-5). Formerly 290.

290E. Southeast Asian Studies (1-5). Formerly 290.

290F. Sanskrit (1-5). Formerly 290.

294. Department Colloquium in South and Southeast Asian Studies. (3). Formerly 294. Three 2-hour seminar per week. Preparation and discussion of research papers in the area of South or Southeast Asian Studies. Topics are chosen each year in consultation with faculty and students, and are normally reserved for students directly engaged in writing the doctoral dissertation. (FS,SP)

299A. South Asian Studies (1-8). (F,SP)

299B. Tamil (1-8). (F,SP)

299C. Hindi-Urdu (1-8). (F,SP)

299D. Malay-Indonesian (1-8). (F,SP)

299E. Southeast Asian Studies (1-8). (F,SP)

299F. Sanskrit (1-8). (F,SP)

601. Individual Study for Masters Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a Master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for Master's degree. Individual study for the comprehensive or language requirements in consultation with the graduate advisor. (FS,SP)

601A. South Asian Studies (1-8). (FS,SP)

601B. Tamil (1-8). (FS,SP)

601C. Hindi-Urdu (1-8). (FS,SP)

601D. Malay-Indonesian (1-8). (FS,SP)

601E. Southeast Asian Studies (1-8). (FS,SP)

601F. Sanskrit (1-8). (FS,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Semester Prerequisites: For candidates for doctoral degree. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D. (FS,SP)

602A. South Asian Studies (1-8). (FS,SP)

602B. Tamil (1-8). (FS,SP)

602C. Hindi-Urdu (1-8). (FS,SP)

601D. Malay-Indonesian (1-8). (FS,SP)

602E. Southeast Asian Studies (1-8). (FS,SP)

602F. Sanskrit (1-8). (FS,SP)
classes per week. The aim of the seminar is to give the student a firsthand acquaintance with Jaina doctrine and practice through selections from both canonical and non-canonical sources, notably the Acaranga, Uttsara, Samayasara, and Tattvarthasutra, and relevant commentaries in Sanskrit. (SP)

210. Panini and the Indian Linguistic Tradition. (3). Formerly 210. Course may be repeated for credit. Three 3-hour classes per week. Semester Prerequisites: Some familiarity with the elements of an Indian language or consent of instructor. Quarter Prerequisites: Some familiarity with linguistics and/or the elements of an Indian language. The linguistic description and analysis of Sanskrit as created and developed by the Sanskrit grammarians. (SP)

212. Indian Philosophical Texts. (3). Formerly 212. Course may be repeated for credit. Two 1 1/2-hour classes per week. Semester Prerequisites: Some knowledge of Sanskrit. Reading of Sanskrit texts on Indian philosophy (e.g., Sankara or other Vedanta and Mimamsa) for students with some knowledge of Sanskrit. (SP)

215A-215B. Readings in Indian Buddhist Texts. (3). Formerly 215A-215B-215C. Course may be repeated for credit. One 1-hour class and one 2-hour class per week. Semester Prerequisites: 215A is prerequisite to 215B and 215C. Consent of instructor. Quarter Prerequisites: One year of Sanskrit. A survey of the origins and development of the Abhidharma texts and commentaries in Pali and Sanskrit. (SP)

220. Great Cities of Ancient Northern India. (3). Formerly 220. Course may be repeated for credit. Two 1 1/2-hour classes per week. Semester Prerequisites: 1A-1B or equivalent history course or consent of instructor. Formerly 210-215A-215B. Course may be repeated for credit. Three 1-hour classes per week. Semester Prerequisites: Consent of instructor. This course will examine the role of contemporary literature in Indonesian/Malaysian society. Emphasis on the socio-political aspects of this literature in historical context and major trends in the modern periods, with emphasis on the classical literature, drama, oral literature; modem literature and expository prose, exploring a variety of literary forms and styles. Systematic study of grammatical and lexical problems arising from these readings. Advanced exercises in composition. (F,SP)

223. The Hindi Novel. (3). Formerly 223. Course may be repeated for credit. Three 1-hour classes per week. Semester Prerequisites: Two years of Hindi or equivalent. Study of the tradition of the novel in Hindi. The course will center on the critical reading of one complete major Hindi novel. Other readings will include criticism, literary history and translations of other novels. (SP)

Hindi-Urdu

Lower Division Courses

1A-1B. Introductory Hindi and Urdu. (F). Formerly 1A-1B. Five 1-hour classes plus one 1-hour laboratory per week. Hindi and Urdu writing systems. Survey of grammar. Graded exercises and readings drawn from Hindi and Urdu literature, leading to mastery of grammatical structures and essential vocabulary and achievement of the basic reading and writing competence. (F,SP) Sequence begins (F)

2. Conversational Hindi-Urdu. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in Introduction to Hindi-Urdu. Practice of spoken Hindi-Urdu as a supplement to Intermediate Hindi-Urdu. (F,SP)

Upper Division Courses

100A-100B. Intermediate Hindi and Urdu. (5). Formerly 100A-100B. Five 1-hour classes plus 1 hour laboratory per week. Semester Prerequisites: 1A-1B. Representative readings in Hindi and Urdu literature and expository prose, exploring a variety of literary forms and styles. Systematic study of grammatical and lexical problems arising from these readings. Advanced exercises in composition. (F,SP)

102. Conversational Hindi-Urdu-Second Year. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 100A-100B. Practice of spoken Hindi-Urdu as a supplement to Intermediate Hindi-Urdu. (F,SP)

Graduate Courses

210. Modern Urdu Literature. (3). New Course since Spring 1983. Course may be repeated for credit. One 3-hour meeting per week. Semester Prerequisites: Two years of Hindi and/or Urdu and a knowledge of Urdu script. Readings in nineteenth and twentieth century Urdu prose literature in a variety of genres. Selected articles in literary criticism will be read. (F,SP)

215. Urdu Poetry. (3). Formerly 215. Course may be repeated for credit. Two 1 1/2-hour classes per week. Semester Prerequisites: Two years or equivalent of Hindi/Urdu. Reading and analysis of Urdu poetry from both the classical and the modern periods, with emphasis on the classical Urdu ghazal. (SP)

220. The Hindi Short Story. (3). Formerly 220. Course may be repeated for credit. Three 1-hour classes per week. Semester Prerequisites: Two years of Hindi or equivalent. Reading and analysis of representative modern Hindi short stories. Emphasis on the evolution of the Hindi short story genre. (F)

221. Hindi Bhakti Poetry. (3). Formerly 221. Course may be repeated for credit. Three 1-hour classes per week. Readings in the medieval bhakti poets of the Hindi language, including Bhagavata Purana, Tulsidas, readings in 20th century Hindi poetry. (F)

223. The Hindi Novel. (3). Formerly 223. Course may be repeated for credit. Three 1-hour classes per week. Semester Prerequisites: Two years of Hindi or equivalent. Study of the tradition of the novel in Hindi. The course will center on the critical reading of one complete major Hindi novel. Other readings will include criticism, literary history and translations of other novels. (SP)

Malay/Indonesian

Lower Division Courses

1A-1B. Introductory Indonesian. (5). Formerly 1A-1B. Five 1-hour classes plus one 1-hour laboratory per week. Survey of grammar, graded exercises, and readings drawn from Indonesian literature, leading to a mastery of basic grammatical patterns, essential vocabulary and achievement of basic reading and writing competence. (F,SP)

2. First Year Indonesian Malay Conversation and Composition. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 1A or 1B. Practice in spoken and written Indonesian Malay as a supplement to Introductory Indonesian. (F,SP)

Upper Division Courses

100A-100B. Intermediate Indonesian and Malay. (5). Formerly 100A-100B-100C. Five 1-hour classes plus 1 hour laboratory per week. Semester Prerequisites: 1A-1B. Representative readings in Malay and Indonesian literature and expository prose, exploring a variety of literary forms and styles. Systematic study of grammatical and lexical problems arising from these readings. Advanced exercises in composition. (F,SP)

102. Second Year Indonesian Malay Conversation and Composition. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 100A or 100B. Practice in spoken and written Indonesian/Malay as a supplement to Intermediate Indonesian and Malay. (F,SP)

132. Readings in Modern Indonesian and Malaysian Literature. (3). Formerly 132. Three 1-hour classes per week. Semester Prerequisites: Two years of Malay/Indonesian or consent of instructor. Quarter Prerequisites: Three years of Malay/Indonesian literature and Malaysian literature of the twentieth century. Selected texts will be studied, including such genres as the novel, the short story, and poetry. (F,SP)

133. Third Year Indonesian Malay Conversation and Composition. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 132. Practice in spoken and written Indonesian/Malay as a supplement to Readings in Modern Indonesian and Malaysian Literature. (F,SP)

Graduate Courses

210A-210B. Seminar in Malay Literature and Oral Traditions. (3). Formerly 210. Course may be repeated for credit with consent of instructor. Three 1-hour classes per week. Various aspects of Malay language and literature, history and development of the language, classical literature, drama, oral literature, dialect studies, the literature of Indonesia and Malaysia, and dialectal studies. Applies various theoretical approaches to the study of the language and literature. (F)

Sanskrit

Lower Division Courses

15. Conversational Sanskrit. (2). New Course since Spring 1983. Three 1-hour classes per week. Semester Prerequisites: To be taken in conjunction with 1A-1B. This intermediate level seminar is to be selected through consultation of students and instructor. (SP)

Southeast Asian

Lower Division Courses

10A-10B. Introduction to the Civilization of Southeast Asia. (3). Formerly 200. New Course since Spring 1983. Three hours of lecture per week. Readings, lectures and discussion of the culture and civilization of mainland Southeast Asia. Subjects discussed will include art, architecture, social evolution, and religion. (F)

15. Exploring the Malay World. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Consent of instructor. Discussion of research into a major sector of Southeast Asian archaeology. Subject to be selected through consultation of students and instructor. (SP)

100A-100B. First Year Indonesian Malay Conversation and Composition. (2). Formerly 100A-100B-100C. Five 1-hour classes per week. Semester Prerequisites: 1A-1B. Representative readings in Indonesian and Malay literature and expository prose, exploring a variety of literary forms and styles. Systematic study of grammatical and lexical problems arising from these readings. Advanced exercises in composition. (F,SP)

102. Second Year Indonesian Malay Conversation and Composition. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 100A or 100B. Practice in spoken and written Indonesian/Malay as a supplement to Intermediate Indonesian and Malay. (F,SP)

132. Readings in Modern Indonesian and Malaysian Literature. (3). Formerly 132. Three 1-hour classes per week. Semester Prerequisites: Two years of Malay/Indonesian or consent of instructor. Quarter Prerequisites: Three years of Malay/Indonesian literature and Malaysian literature of the twentieth century. Selected texts will be studied, including such genres as the novel, the short story, and poetry. (F,SP)

133. Third Year Indonesian Malay Conversation and Composition. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 132. Practice in spoken and written Indonesian/Malay as a supplement to Readings in Modern Indonesian and Malaysian Literature. (F,SP)

Graduate Courses

210A-210B. Seminar in Malay Letters and Oral Traditions. (3). Formerly 210. Course may be repeated for credit with consent of instructor. Three 1-hour classes per week. Various aspects of Malay language and literature, history and development of the language, classical literature, drama, oral literature, dialect studies, the literature of Indonesia and Malaysia, and dialectal studies. Applies various theoretical approaches to the study of the language and literature. (F)

Sanskrit

Lower Division Courses

15. Conversational Sanskrit. (2). New Course since Spring 1983. Three 1-hour classes per week. Semester Prerequisites: Concurrent enrollment in Elementary
Sanskrit. Practice of spoken Sanskrit as a supplement to Elementary Sanskrit. (F,SP)

Upper Division Courses
100A-100B. Elementary Sanskrit. (5-5). Formerly 100A-100B-100C. Three 1/2-hour classes per week. Elements of Sanskrit grammar and practice in reading Sanskrit texts. (F,SP)

101A-101B. Intermediate Sanskrit. (5-5). Formerly 101A. Three 1/2-hour classes per week. Semester Prerequisites: 100B. Readings from the Sanskrit epics and Puranas; introduction to the Karya style of classical Sanskrit poetry; readings in the Strasras. (F,SP)

103. Conversational Sanskrit-Second Year. (2), New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 101A-101B. Practice of spoken Sanskrit as a supplement to Intermediate Sanskrit. (F,SP)

Graduate Courses
200A-200B. Sanskrit Literature. (3-3). Formerly 200, 201 and 202. Course may be repeated for credit. Two 1/2-hour classes per week. Semester Prerequisites: 101B or equivalent. Quarter Prerequisites: 103 or equivalent. Additional offerings in Sanskrit literature, including Sanskrit orate poetry with emphasis on the canons of poetic analysis of the Indian aesthetic tradition. (F,SP)

203. Vedic Sanskrit. (3). Formerly 203. Course may be repeated for credit. Three 1-hour classes per week. Semester Prerequisites: 101B or equivalent. Quarter Prerequisites: 103. Readings from the Rigveda and other Vedic texts, including Brahmanas and Upanishads. Knowledge of German and/or French is recommended. (F,SP)

204. Introduction to Vedic Ritual. (3). Formerly 204. Course may be repeated for credit. One 5-hour lecture per week. Semester Prerequisites: Two years of Sanskrit or consent of instructor. The main types of domestic (ghya) and Srauta rituals. Sources for the study of the ritual. The Vedic schools and their principal texts. The Soma sacrifice. The principal recitations, chants and offerings. With discussion of representative textual passages and recordings. (SP)

206. Middle Indic. (3). Formerly 206. Course may be repeated for credit. Three 1-hour classes per week. Semester Prerequisites: 101B or equivalent. Quarter Prerequisites: 105 or 106. Introduction to Middle Indic. An intensive study of texts in one or more of the Praikrit dialects, Pali, or Apabhramasas. (F)

Tamil
Lower Division Courses
1A-1B. Introductory Tamil. (5-5). Formerly 1A-1B-1C. Five 1-hour classes 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)

2. Conversational Tamil. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in Introductory Tamil. Practice of spoken Tamil as a supplement to Introductory Tamil. (F,SP)

Upper Division Courses
100A-100B. Intermediate Tamil. (5-5). Formerly 100A-100B-100C. Five 1-hour or three 1/2-hour classes per week. Semester Prerequisites: 101B. Readings from modern Tamil fiction; practice in speaking and composition. Consideration of advanced topics in grammar. (F)

102. Conversational Tamil-Second Year. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 100A-100B. Practice of spoken Tamil as a supplement to Intermediate Tamil. (F,SP)

Graduate Courses
210A-210B. Seminar in Tamil Literature. (3-3). Formerly 210A-210B-210C. Course may be repeated for additional credit with consent of instructor. Three 1-hour classes per week. Semester Prerequisites: 100B.

Readings in advanced Tamil. The exact texts to be determined by the needs of the student. (F)

Thai
Lower Division Courses
1A-1B. Introductory Thai. (5-5). Formerly 1A-1B-1C. Five 1-hour classes per week. Survey of grammar, graded exercises, readings drawn from Thai literature, leading to a mastery of basic grammatical patterns, essential vocabulary and achievement of basic reading and writing competence. (F)

2. Conversational Thai. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in Introductory Thai. Practice of spoken Thai as a supplement to Introductory Thai. (F,SP)

Upper Division Courses
100A-100B. Intermediate Thai. (5-5). Formerly 100A-100B-100C. Five 1-hour or three 1/2-hour classes per week. Semester Prerequisites: 1B. Representative readings in Thai literature and expository prose, exploring a variety of literary forms and styles. Systematic study of grammatical and lexical problems arising from these readings. Advanced exercises in composition. (F)

102. Conversational Thai-Second Year. (2). New Course since Spring 1983. Two 1-hour meetings per week. Semester Prerequisites: Concurrent enrollment in 100A-100B. Practice of spoken Thai as a supplement to Intermediate Thai. (F,SP)

180. Advanced Study in Thai. (1-5). New Course since Spring 1983. Course may be repeated for credit. One to five hours of class meetings per week. Semester Prerequisites: Knowledge of Thai. Selected readings in Thai literature, from early poetic works to modern fiction. (F,SP)

Spanish and Portuguese
Department Office, 4326 Divisadero Hall, 642-0471
Professors:
Arthur L. Akkins, Ph.D. G. Arnold Chayes, Ph.D. Jerry R. Cordcock, Ph.D. (Chair)
José Durand, Doctor en Filosofía
Charles B. Faulhaber, Ph.D. Luis A. Murillo, Ph.D. John H. R. Pott, Ph.D.
John K. Walsh, Ph.D. Luis Monge, licenciado en Derecho, LLD. (Emeritus)
Associate Professor:
Milton M. Avendaño, Ph.D. Dru Dougherty, Ph.D. Francine R. Massiello, Ph.D.
Assistant Professors:
Emilie L. Bergmann, Ph.D. Anthony J. Cascieri, Ph.D.
M. Gwen Kirkpatrick, Ph.D. (Emeritus)
Major Advisers: Option A: Mr. Durand, Mr. Walsh; Option B: Mr. Avendaño, Dr. Chayes.

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 structures and history of one of both of these languages and a critical understanding of the development and achievements of their literatures in the Old World and in the New World, to training in advanced study and independent research. The Department's policy is to maintenance a balanced strength between language and literature and between Peninsular and Hispanic-American facets of a unified field.

The Major in Spanish
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 enroll in the program must present evidence (by examination or otherwise) that their preparation includes the equivalents of Spanish 4 and Portuguese 4.

Upper Division. A minimum of 28 units of upper-division work in the Department, including the core courses Spanish 100, 101B, 123A-123B, 124A-124B, and 147A-147B. Four additional upper-division courses, including two courses among Spanish 104A-104B and 107A-107B, but excluding Portuguese 101, Portuguese 122A-122B or Portuguese 126A-126B to be completed before enrollment in any elective course in Portuguese or Brazilian literature, respectively. Students are required to complete two courses (upper- or lower-division) specifically related to the major, but outside the Department, unless these courses would bring the total work for the major to more than 60 units.

Honors Program. To be admitted to the honors program in Spanish, Option A or Option B, students shall have completed at least two semesters of work on this campus with an overall grade-point average of at least 3.3 and a grade-point average of at least 3.3 in courses in the major. Students must also have the approval of the major adviser in consultation with other members of the Department.

Students admitted to the honors program shall complete, preferably before the next fall term, the seven core courses for either Option A or Option B, or give evidence, by special examination, of equivalent preparation. Students passing an examination in lieu of any of the required courses with a grade of at least 3.3 shall have completed the corresponding requirement for the major, though without obtaining unit credit.

Students in the honors program shall complete the special honors course or two graduate courses, preferably in sequence, which require the writing of a major research paper. The special honors course (Spanish H195A-H195B for Option A, Portuguese H195A-H195B for Option B) shall be offered each semester. This course shall consist of independent study and the writing of a thesis under the direction of an appropriate member of the Department.

L & S: Spanish and Portuguese / 245
Graduate Program

Preparation for Graduate Study. Students who may wish to pursue work toward advanced degrees in the Department of Spanish and Portuguese should note that one year of college Latin (or equivalent) is prerequisite for such work, while a minimum of one year of college Latin (or equivalent) is strongly recommended. They should also be able to demonstrate a knowledge of Romance Languages and Literatures requires a reading knowledge of Latin, and that the Ph.D. degree program in Hispanic Literatures requires a reading knowledge of Latin, French, and one additional modern foreign language pertinent to Hispanic scholarship.

Students other than Berkeley A.B. Spanish majors applying for admission to graduate work in the Department of Spanish and Portuguese should have an undergraduate preparation reasonably approximating that of the undergraduate major in Spanish at Berkeley.

The M.A. Program. The requirements for an M.A. degree in Spanish are an A.B. degree with a major in Spanish equivalent to the undergraduate major in Spanish at the University of California, Berkeley (Option A), an elementary knowledge of Latin, a reading knowledge of another language, 24 units of post-baccalaureate work in the Department of Spanish and Portuguese at Berkeley, of which at least 18 units must be in strictly graduate level (200 series) courses, including Spanish 202A and 202B, and the passing of a comprehensive written and oral examination. The examination covers all periods and genres of Spanish and Spanish American literature, and covers the linguistic structure of the language. The Department of Spanish and Portuguese also collaborates in the doctoral program in Romance Philology.

The Ph.D. Programs. The Department of Spanish and Portuguese administers the following doctoral programs:

I. The program in Romance Languages and Literature (with emphasis in Spanish). This program requires for admission an A.B. degree with a major in Spanish approximately equivalent to the undergraduate major in Spanish at Berkeley (Option A). No specific courses are required, but students, in consultation with a graduate adviser, will lay out a program designed to prepare them for the Qualifying Examination. Students will be placed on the historical continuity of Hispanic scholarship, and the student's knowledge of selected collateral literatures pertinent to the main field. For further details on the requirements for the M.A. degree in Spanish and the two doctoral programs administered by the Department of Spanish and Portuguese, see the Graduate Division section of this catalog, and consult the Graduate Assistant in the Department of Spanish and Portuguese.

Spanish

Lower Division Courses

1. Elementary Spanish (5). Formerly 1 and a portion of 2. Five 1-hour classes and 1 1/2-hours of laboratory per week. Beginners' course. (F,SP)

1G. Beginning Spanish for Graduate Students. (5). Formerly 1G and a portion of 2G. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three 1-hour classes per week. Preparation for the Graduate Reading Exam. (F)

2. Elementary Spanish. (5). Formerly a portion of 2 and 3. Five 1-hour classes and 1 1/2-hours of laboratory per week. Semester Prerequisites: 1 or equivalent. Quarter Prerequisites: 1 with grade of A or B. Continuation of 1. (F,SP)

2G. Beginning Spanish for Graduate Students. (5). Formerly 2G. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three 1-hour classes per week. Preparation for the Graduate Reading Exam. (SP)

3. Intermediate Spanish. (5). Formerly 4 and a portion of 5. Five 1-hour classes and 1 1/2-hours of laboratory per week. Semester Prerequisites: 2 or equivalent. Quarter Prerequisites: 2. 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)

4. Intermediate Spanish. (5). Formerly 5 and a portion of 25. Five 1-hour classes and 1 1/2-hours of laboratory per week. Semester Prerequisites: 3 or equivalent. Quarter Prerequisites: 3. Continuation of 3. Three 1-hour classes and 1 1/2-hours of laboratory per week. (F,SP)

3. Intermediate Spanish. (5). Formerly 4 and a portion of 5. Five 1-hour classes and 1 1/2-hours of laboratory per week. Semester Prerequisites: 2 or equivalent. Quarter Prerequisites: 2. 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)

8. Spoken Spanish. (4). Five 1-hour lecture/discussion meetings per week. Semester Prerequisites: 2 or equivalent. Course designed to increase vocabulary and to improve listening comprehension, pronunciation, comprehension, and speaking fluency by means of oral expression practice. Some reading/laboratory work required. Not open to native speakers. (F,SP)

14A-14B. Individualized Instruction in Elementary Spanish. (1-5;1-5). Formerly 14A-14B-14C. Split grading may be granted if warranted by circumstances. In any given semester, students may complete additional units beyond original contract. Hours to be determined on a flexible basis. Semester Prerequisites: Open to any student whose program, including this course, meets the minimum study list requirement. This series of two courses consists of the material of Spanish 1-2, each course offering five units of credit. Students may enter at the beginning of any level for which they are qualified. (F,SP)

25. Reading and Analyzing Literary Texts. (3). Formerly 25. Three 1-hour classes per week. Semester Prerequisites: 4 or equivalent. Quarter Prerequisites: 5. Introduction to literary concepts, terminology, and theory with application to poetic, dramatic, and prose texts. Required of Majors. (F,SP)

26. Advanced Spoken Spanish. (3). Three 1-hour classes per week. Semester Prerequisites: 25 or equivalent. Course designed to develop control of oral communication skills at an advanced level, by means of practices of conversation and presentation in class. Some reading and writing, laboratory attendance, required. Not open to native speakers. (F,SP)

40. Hispanic Culture. (2). Formerly 40. One 2-hour meeting per week. Semester Prerequisites: Freshman or sophomore standing. A study of Hispanic culture from its origins until modern times. This course will familiarize students with the structures of people through significant areas of cultural expression, including literature and the visual arts. Within this context, emphasis will be placed on the historical continuity of Hispanic culture and on the traditions of Hispanic societies. Enrollment will be limited. (SP)

70. Spanish for Bilingual Students, First Course. (3). Formerly 70. Three 1-hour classes and one 1-hour laboratory per week. Semester Prerequisites: Consent of instructor. An elementary course for students whose native language is Spanish. (F,SP)

71. Spanish for Bilingual Students, Second Course. (3). Formerly 71. Three 1-hour classes and one 1-hour laboratory per week. Semester Prerequisites: 70 or consent of instructor. Quarter Prerequisites: 70. An intermediate course for students whose native language is Spanish. (F,SP)

Upper Division Courses

100. Introduction to Spanish Linguistics. (2). Formerly 100. Two hours of lecture per week Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)

102A. Advanced Grammar and Composition. (2). Formerly 101. Two 1-hour classes per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)

102B. Advanced Grammar and Composition. (2). Formerly 102. Two 1-hour classes per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)

104A. Survey of Spanish American Literature. (3). Formerly 104A. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (SP)

104B. Survey of Spanish American Literature. (3). Formerly 104B. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. 1880 to the present. (F,SP)

107A. Survey of Spanish Literature. (3). Formerly 107A-107B. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. 1880 to the present. (SP)

107B. Survey of Spanish Literature. (3). Formerly 107C. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. 1700 to the present. (F,SP)

108. Spanish Ballads. (2). Formerly 108. Two 1-hour classes per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (FSP)

109. Spanish Drama of the 16th and 17th Centuries. (3). Formerly 109. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)

110. The Generation of '98. (3). Formerly 110. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)
111A-111B. Cervantes. (3-3). Formerly 111A-111B. Three hours of lecture/seminar per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Analysis and discussion of selected works by Unamuno, Azorín, Valle-Inclán, etc.

117A. Phantatisms. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. An overview of the culture of Spain, through emphasis on selected topics. (SP)

117B. Controversies Initiated by Las Casas and changes. Two or three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. An overview of the culture of Spain, through emphasis on selected topics. (F)

117C. Developments in Spain's literature since 1939. (SP)

118A-118B. A Survey of Latin American Literature. (2-2). Three hours of lecture per week. (SP)

119A. Major Poets of the Golden Age. (2). Formerly 131. Course may be repeated for credit as topic varies. Two or three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25.

120A-120B. The Spanish Novel Since 1850. (2). Formerly 120A-120B. Two hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Analysis and discussion of selected twentieth-century novels as translated.

121A-121B. Spanish Authors in Translation. (2). Formerly 121A-121B. Three hours of lecture per week. Reading and discussion of selected Spanish authors, in English translation.

122A-122B. Supplementary Work in Upper Division Hispanic Literatures. (2-2). Two hours of lecture per week. Spring 1883. Course may be repeated for credit. To be arranged. Semester Prerequisites: 25 and consent of major adviser. Students with partial credit in upper division Hispanic literature courses may satisfy the remaining portion under this heading. (F,SP)

123A-123B. Modern Spanish Prose Fiction. (3-3). Formerly 123. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)

125. Spanish Phonetics. (2). Formerly 125. Two 1-hour classes and one 1-hour laboratory per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Training in phonetic transcription; exercises in laboratory; contrasting (English-Spanish) phonetics.

126A. Medieval Spanish Literature. (3-3). Formerly 126. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25.

127. Eighteenth Century Spanish Literature. (3-3). Formerly 127. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25.

128. Contemporary Spanish Literature. (3-3). Formerly 128. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Developments in Spain's literature since 1939. (SP)

130. Twentieth-Century Spanish American Poetry. (3-3). Formerly 130. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25.

131. The Spanish American Short Story (Twentieth Century). (2). Formerly 131. Course may be repeated for credit when topic changes. Two hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Brief panorama of...beginning with Modernism, emphasis on two or three different types, e.g., fantastic, realistic, humorous, etc. Course may be repeated for credit as topic varies.

133. Spanish Avant-Garde Literature. (3-3). Formerly 133. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Experiments in the novel, poetry, and theater during the 1930's; include Ultraismo, gen. of '27, anti-realist narrative, Valle-Inclán, esperpento.

135. Studies in Hispanic Literature. (2-3). Formerly 135. Course may be repeated for credit when topic changes. Two or three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Topic for Fall 1984: García Lorca and his circle. Topic for Spring 1985: Caribbean Literature. (F)

136. The Indian in Spanish American Literature. (3-3). Formerly 161A-161B. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Controversies initiated by Las Casas and their social and literary repercussions.

142. The Spanish American Novel in English Translation. (2-2). Formerly 142. Two hours of lecture per week. Discussion of the Spanish-American novel from its beginnings...reading and discussion of selected twentieth-century novels as translated.

147. Spanish Authors in Translation. (2). Formerly 147. Two hours of lecture per week. Reading and discussion of selected Spanish authors, in English translation.

148. Supplementary Work in Upper Division Hispanic Literatures. (2-2). Two hours of lecture per week. Spring 1883. Course may be repeated for credit. To be arranged. Semester Prerequisites: 25 and consent of major adviser. Students with partial credit in upper division Hispanic literature courses may satisfy the remaining portion under this heading. (F,SP)

161. Studies in Spanish Cinema, (3). Two 1/2-hour lectures and discussion per week. (In English) Analysis and discussion of Bunuel's films in their socio-cultural context. The course will analyze works from his different periods—surrealist, Mexican, Spanish, late films—centering on the author's world vision as expressed in his images, themes and cinematic language. (SP) 1985 Only.

179. Advanced Course in Hispanic Linguistics. (2). Formerly 179. Course may be repeated for credit when topic changes. Two hours of lecture/seminar per week. Semester Prerequisites: 100 or consent of instructor. Quarter Prerequisites: 25. Topic for 1984-85: Spanish of the Americas. (SP)

185. Senior Course in Hispanic Literature. (2). Formerly 185. Course may be repeated for credit when topic changes. Two hours of lecture/seminar per week. Semester Prerequisites: Restricted to majors in Spanish with 20 units university-work, including 15 upper division units in Spanish or Spanish American literature. (SP)

H195A-H195B. Spanish Honors Course. (3;3). Formerly H195A-195B. Credit and grade to be awarded upon completion of the sequence. Individual conferences. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. (F,SP)

199. Supervised Independent Study and Research. (1-14). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual conferences. Semester Prerequisites: Senior honors status plus preparation and 25. Quarter Prerequisites: 25. Enrollment restricted by regulations...restricted to senior honor students, etc. (F,SP)

Graduate Courses

201. Contrastive Linguistic Analysis. (2). Formerly 201. Two hours lecture per week. A study of grammatical structure, with emphasis on the contrastive analysis of selected aspects of English, Spanish, and Portuguese. Recommended preparation for the linguistics part of M.A. examination.

202A. History of Ibero-Romance. (2). Formerly 202A-202B. Two hours lecture per week. (F)

202B. History of Ibero-Romance. (2). Formerly 202B and 205. Two hours lecture per week. Semester Prerequisites: 202A. (SP)

208. Seminar in Hispanic Linguistics. (2). Formerly 208. May be repeated for credit when topic changes. One 2-hour seminar per week. (SP)

225A. Spanish Modernism. (3). Formerly 225A. Three hours of lecture per week. Semester Prerequisites: 25 or equivalent. Quarter Prerequisites: 25. Analysis and discussion of selected works by Molina, Gradez, Cela, etc. (F)

226. Spanish Romanticism. (2). Formerly 225B. Two hours of lecture per week. (SP)

227A. The Spanish Novel Since 1850. (2). Formerly 227A-227B. Two hours lecture per week.
Spanish and Portuguese

Professional Courses

301. Teaching Spanish in College. (3). Formerly 301.
Must be taken on a satisfactory/unsatisfactory basis.
Two class hours on foreign language teaching and
learning per week with additional required particip-
Emphasis on the problems of language instruction in
the Department of Spanish and Portuguese. Required
of all new Teaching Assistants. (F)

302. Practicum in College Teaching of Spanish and
Portuguese. (2-6). Formerly 302. May be repeated for
credit. Must be taken on a satisfactory/unsatisfactory
basis. Three to six hours of classroom teaching with
regular supervision per week; evaluation confer-
ences. (F,SP)

Portuguese

Lower Division Courses

1. Elementary Portuguese. (5). Formerly 1 and a portion
of 2. Five 1-hour classes and 1½-hours of laboratory per
week. Beginner's course. (F,SP)

2. Elementary Portuguese. (5). Formerly a portion of
2 and 5. Three 1-hour classes and 1½-hours of laboratory per
week. Semester Prerequisites: 1 or equivalent. Quarter Prerequisites: 1 with grade of A or B. Continuation of 1. (F)

3. Intermediate Portuguese. (5). Formerly 4. Five 1-
hour classes and 1½-hours of laboratory per week. Sem-
ster Prerequisites: 2 or equivalent. Quarter Prerequisites:
3. Continuation of 2. (F,SP)

4. Intermediate Portuguese. (5). Formerly 5. Five 1-
hour classes and 1½-hours of laboratory per week. Sem-
ster Prerequisites: 3 or equivalent. Quarter Prerequisites:
2, Continuation of 4. (F,SP)

lecture/discussion meetings per week. Semester Prerequisites:
2 or equivalent. Quarter Prerequisites: 3 or equivalent. Course designed to increase vocabulary and to improve listening comprehension, pronunciation, accuracy, grammar control, and speaking fluency by means of oral expression practice. Some reading/labor-
atory work required. Not open to native speakers. (F,SP)

Upper Division Courses

101. Portuguese for Advanced Students. (3). Formerly
101. Three 1-hour classes per week. Semester Prerequisites:
Credit of 16-20 units or equivalent of another romance
language, or consent of instructor. Quarter Prerequisites:
Credit of 16-20 units or equivalent of another romance
language. An intensive course for students with no previous study of Portuguese. (F)

102. Advanced Grammar and Composition. (3). For-
merly 102. Three 1-hour classes per week. Semester Prerequisites:
4 or equivalent; 20 units or equivalent of Portuguese or another romance language. Quarter Prerequisites:
5 or equivalent. (F,SP)

114. Contemporary Brazilian Novel. (3). Formerly 114.
Three hours of lecture per week. Semester Prerequisites:
Twenty units or equivalent of Portuguese or another
romance language. Quarter Prerequisites: 5 or equivalent,
or twenty units of another romance language. (SP)

120. Sixteenth Century Portuguese Theater. (3). For-
merly 120. Three hours of lecture per week. Semester Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Quarter Prerequisites: 5 or equivalent or 20 lower division units of another romance language.

122A-122B. Survey of Portuguese Literature. (3,3).
Formerly 122A-122B-122C. Three hours of lecture per week. Semester Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Quarter Prerequisites: 5 or equivalent or 20 lower division units of another romance language.

123A-123B. Survey of Brazilian Literature. (3,3). For-
merly 123A-123B. Three hours of lecture per week. Semester Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Quarter Prerequisites: 5 or equivalent, or twenty lower division units of another romance language. (F,SP)

125. Camoes. (3). Formerly 125. Three hours of lecture
per week. Semester Prerequisites: Twenty units or
equivalent of Portuguese or another romance language. Quarter Prerequisites: 5 or equivalent, or twenty lower division units of another romance language.

135. Studies in Luso-Brazilian Literature. (2-3). For-
merly 135. Course may be repeated when topic changes.
Two or three hours of lecture per week. Semester Prerequisites:
Twenty units or equivalent of Portuguese or another
romance language. Quarter Prerequisites: 5 or equivalent, or 20 lower division units in another romance
language. Topic for 1984-85: Contemporary Bra-
zilian Theater. (SP)

143. Brazilian Poetry (In English Translation). (2).
Formerly 143. Two hours of lecture per week. Open to
students in all departments of the University. No knowl-
edge of Portuguese necessary.

144. Brazilian Novel (In English Translation). (2).
Formerly 30C-30D. Two hours of lecture per week. Open
to students in all departments of the University. No knowledge of Portuguese necessary.

150. Introduction to Portuguese Linguistics. (2).
Formerly 150. Two hours of lecture per week. Semester Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Consent of instructor. Quarter Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Special tutorial or seminar on selected topics. (F,SP)

H195A-H195B. Portuguese Honors Course. (3,3).
Formerly H195A-195B. Credit and grade to be awarded upon completion of the sequence. Individual conferences. Semester Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Honors Thesis. (F,SP)

199. Supervised Independent Study and Research. (2-
3). Formerly 199. Course may be repeated for credit.
Must be taken on a pass/fail basis. Individual conferences. Semester Prerequisites: Twenty units or equivalent of Portuguese or another romance language. Restricted to senior honor students with an adequate prepara-
tion for the subject proposed for special study, and by previous arrangement with members of the de-
partmental staff. (F,SP)

Graduate Courses

201. Contrastive Linguistic Analysis. (2). Formerly 201.
Two hours of lecture per week. Semester Prerequisites:
Spanish 201. A study of grammatical structure, with emphasis on the contrastive analysis of selected aspects of English, Spanish, and Portuguese. Rec-
ommended as preparation for the linguistic part of the M.A. exam. Students may not receive credit for both Portuguese 201 and Spanish 201.

275. Critical and Stylistic Studies of a Single Author
or Period or Genre in. (2). Formerly 220 and 275. May
be repeated for credit. One 2-hour seminar per week.

286. Special Study for Graduate Students. (2-4). For-
merly 286. May be repeated for credit. Individual con-
ferences. Semester 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. (2-6). Formerly 299.
May be repeated for credit. Sections 1-20: letter grading;
sections 21-40: S/U grading. Individual conferences. Semester Prerequisites: Restricted to students writing doctoral dissertations. (F,SP)

Catalan

Lower Division Courses

1. Elementary Catalan. (5). Formerly 1. Five 1-hour
classes and 1½-hours of laboratory per week. Beginners
course.

2. Elementary Catalan. (5). Formerly 2. Five 1-hour
classes and 1½-hours of laboratory per week. Semester Prerequisites: 1 or equivalent. Continuation of 1.

Upper Division Courses

101. Catalan for Advanced Students. (3). Formerly
101. Three 1-hour classes per week. Semester Prerequisites:
Credit for 16-20 units or equivalent of another romance
language, or consent of instructor. Quarter Prerequisites:
Credit for 16-20 units or equivalent of another romance language. An intensive course for students with no previous study of Catalan. (SP)

102. Readings in Catalan. (3). Formerly 102. Course
may be repeated for credit when readings change. Three
1-hour classes per week. Semester Prerequisites: 1 or 2 or 101 or equivalent, or consent of instructor. Quarter Prerequisites: 1 and 2 or 101 or equivalent. Selected readings in Catalan prose and poetry.

103. Survey of Modern Catalan Literature. (3). Course
may be repeated for credit as topic varies. Three 1-
hour lectures per week. Semester Prerequisites: 1 or 2 or 101 or consent of instructor. An introduction to
modern Catalan literature from the nineteenth century Renaixenca to the present.

Special Programs

Division Office, 301 Campbell Hall, 642-0108
Professor: William B. Stottman, Ph.D.
Associate Professor: William V. Nestrick, Ph.D.

The mission of the Division of Special Programs is to
develop and administer interdisciplinary and interdis-
ципinary courses and programs in the College of
Letters and Science that do not belong to a single
department. At present it administers the field majors
in the humanities and the social sciences and the
group majors in environmental sciences, film, ge-
netics, mass communications, Middle Eastern
studies, neurobiology, religious studies, and wom-
en's studies. For complete descriptions of the Special
Programs majors and major courses, please see
the courses section of this catalog. For additional
information please contact the Special Programs
office.

Please Note: Pending approval by the Academic
Senate, beginning in Fall 1984, all courses will be added to the Western Civilization sequence:
44C and 44D. The former will cover the Enlight-
enment (1700-1815) and the latter will continue from
1815 to the present. 44A will cover Hoomeric
and Classical Greece, Rome in its transition from
republic to empire, and parts of the Old Testament;
44B will include the New Testament, readings in
Medieval literature (St. Augustine and Dante) and
the history and literature of the Renaissance. For
further information please contact the Special Pro-
grams office.

Lower Division Courses

44A. Topics in Western Civilization. (5). Formerly 44A-
44B-44C. Four hours of lecture and two hours of dis-
cussion per week. Semester Prerequisites: Completion of 34A. A requirement for Freshmen only.
Quarter Prerequisites: Completion of Subject A require-
ment. Hoomeric and Classical Greece, Rome in its tran-
sition from republic to empire, and the world of the Old
Testament. The course will meet in small groups for
discussion. Lectures, discussions and reading assign-
ments will involve interdisciplinary approaches with an
emphasis on the development of skill in writing. (F)

44B. Topics in Western Civilization. (5). Formerly 44A-
44B-44C. Four hours of lecture and two hours of dis-
cussion per week. Semester Prerequisites: Completion
44D. Topics in Western Civilization. (4). Three hours of lecture and two hours of discussion per week. Semester Prerequisites: Recommended: 44A, 44B, and 44C. Sophomores only. From the industrial revolution to the present; the world of Jane Austen, Beethoven and David to that of Kafka, Shoenberg and Picasso; from ranks and orders to mass society, readings include novels, poets, and theorists like Marx and Freud. (SP)

Statistics

Department Office, 367 Evans Hall, 642-2781


Assistant Professors: David J. Damon, Ph.D. Feng-Shu Peng, Ph.D. Charles Seimetz, Ph.D. Kenneth W. Wachtel, Ph.D.

Senior Lecturer: Julia P. Shaffer, Ph.D.

Statistical Laboratory

Leo Breiman, Ph.D. (Director)

Major Adviser: Mr. Hodges.

Service Courses. The department offers a variety of introductory service courses, differing both in mathematical level and in topics emphasized.

Courses 2 and 5 require only high school algebra; course 5 has more emphasis on probability than does 2. Courses 20, 21, 25, require some calculus; 20 is a general course; 21 is intended for business students; 25 is intended for engineers.

Course 31A-131B is a year upper division sequence, emphasizing inference methods used in social and life sciences. Course 134 is a thorough beginning probability course. Course 135 treats inference concepts used in engineering and physical sciences.

The Major

Lower Division Courses.

Required: Mathematics 1A-1B and 50A-50B. Recommended: Statistics 5 or 20. Familiarity with computer programming is very useful in statistical work.

Upper Division Courses. Statistics 101, Statistics 102, and Mathematics 112 (or 113B). Three courses from Statistics 150, 151A, 151B, 152, 153, 154, 155, and 156, including at least one course with a laboratory component. Course 31A-131B is a year upper division sequence, emphasizing inference methods used in social and life sciences. Course 134 is a thorough beginning probability course. Course 135 treats inference concepts used in engineering and physical sciences.

Honors Program. Students with an overall 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.

Engineering Mathematical Statistics. The College of Engineering with the cooperation of the Department of Statistics offers a curriculum in engineering mathematical statistics leading to the degree of Bachelor of Science. Major Adviser: Mr. Thomasian (see section on Program of Study in Engineering Science).

Preparation for Graduate Study. Those interested in the graduate statistics major should include in the undergraduate courses a strong foundation in mathematics, computer science, and statistics. For Ph.D. degrees of the theoretical type, Mathematics 104, 105, 112, or 113C, and 156 are required. 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, 112 are required. It is recommended that all students acquire familiarity with computer programming and statistics, e.g., in the Applied Statistics Laboratory, and that they acquire fluency in French, German, or Russian.

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 document "Requirements for Higher Degrees in Statistics," available upon request from the Department Graduate Secretary. For specific details the appropriate Graduate Department Adviser should be consulted.

Lower Division Courses

2. Introduction to Statistics. (4). Formerly 2. Three 1-hour lectures and two 1-hour laboratories per week. Semester Prerequisites: One quarter of calculus. (Students who have completed a calculus course will receive only partial credit.) Quarter Prerequisites: One quarter of calculus. Ideas for estimation and hypothesis testing are discussed. (SP)


20. Introduction to Probability and Statistics. (4). Formerly 20. Three 1-hour lectures and two 1-hour laboratories per week. Semester Prerequisites: One semester of calculus. (Students who have completed a calculus course in probability will receive only partial credit.) Quarter Prerequisites: One quarter of calculus. Descriptive statistics, probability models and related concepts of Bernoulli trials, Binomial distribution, Poisson distribution. Confidence intervals, tests of significance, controlled experiments vs. observational studies, correlation and regression. (F,SP)


Upper Division Courses


102. Introduction to the Theory of Statistics. (5). Formerly 100B-100C. Three 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: 101. Quarter Prerequisites: 100A. Properties and realism for probability models used in statistics, including the normal, t, chi-square, and F distributions. Statistical inference, including point and interval estimation and hypothesis testing. (SP)

131A-131B. Statistical Inferences for Social and Life Scientists. (4,4). Formerly 130A-130B-130C. Students who have completed a course in probability and statistics (or course 200A-200B) and Mathematics 104, 112 are required. It is recommended that all students acquire familiarity with computer programming and statistics, e.g., in the Applied Statistics Laboratory, and that they acquire fluency in French, German, or Russian.

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 document "Requirements for Higher Degrees in Statistics," available upon request from the Department Graduate Secretary. For specific details the appropriate Graduate Department Adviser should be consulted.

Lower Division Courses

2. Introduction to Statistics. (4). Formerly 2. Three 1-hour lectures and two 1-hour laboratories per week. Semester Prerequisites: One quarter of calculus. (Students who have completed a calculus course will receive only partial credit.) Quarter Prerequisites: One quarter of calculus. Ideas for estimation and hypothesis testing are discussed. (SP)


20. Introduction to Probability and Statistics. (4). Formerly 20. Three 1-hour lectures and two 1-hour laboratories per week. Semester Prerequisites: One semester of calculus. (Students who have completed a calculus course in probability will receive only partial credit.) Quarter Prerequisites: One quarter of calculus. Descriptive statistics, probability models and related concepts of Bernoulli trials, Binomial distribution, Poisson distribution. Confidence intervals, tests of significance, controlled experiments vs. observational studies, correlation and regression. (F,SP)
250 / L & S: Statistics

152. Sampling Surveys. (4). Formerly 166. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 166. Quarter Prerequisites: 100A or 130, 132, or 135B. Common nonparametric tests such as the sign, Wilcoxon, Kruskal-Wallis and rank correlation tests, and joint estimates and confidence intervals derived from these tests. Exact and asymptotic distribution theory, both in randomization and population models. (F)

154. Elements of Nonparametric Inference. (4). Formerly 160. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 122, or equivalent. Quarter Prerequisites: One of 100C, 130C, 132, or 135B. Common nonparametric tests such as the sign, Wilcoxon, Kruskal-Wallis and rank correlation tests, and joint estimates and confidence intervals derived from these tests. Exact and asymptotic distribution theory, both in randomization and population models. (F)

155. Bayesian Inference. (3). Formerly 161A. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: Statistics 102 or equivalent. Quarter Prerequisites: 100B and 100C. Calculation of conditional expectation and distribution. Structure of decision problems. Conjugate families for standard distributions. Linear models. Discrete distributions. Definiteness theorem. Optimal stopping and other design problems. (SP)

191. Experimental Courses in Probability and Statistics. (1-3). Formerly 191. Course may be repeated for credit. Recent developments of interest to the instructor. Not offered 1984-85. (F,SP)

H195. Special Study for Honors Candidates. (1-4). Formerly H196. Course may be repeated for credit. (F,SP)

198. Directed Study for Undergraduates. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a pass/failed basis. Semester Prerequisites: A special terminal project. Special tutorial or seminar on selected topics. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a pass/failed basis. (F,SP)

200A-200B. Introduction to Probability and Statistics. At an Advanced Level. (4,4). Formerly 200A-200B. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: Two years of calculus and one semester of linear algebra. Quarter Prerequisites: Two years of calculus and one course (also linear algebra). Probability spaces, random variables, distributions and probability theory and statistics, central limit theorem, Poisson processes, transformations involving random variables, estimation, confidence intervals, hypothesis testing, and interpretation of large sample theory for categorical models, decision theory. 200A: (F,SP)


206A-206B. Stochastic Processes. (3,3). Formerly 261, 263, 265. Course may be repeated for credit with the consent of the instructor. The content of this course changes from year to year. Course topics will be selected from: the general theory of processes, sample function properties, weak convergence, Brownian motion, diffusions, Levy processes, Markov processes, martingales, Gaussian processes and further topics. 206A: (F) 206B: (SP)

210A-210B. Advanced Theory of Statistics. (3,3). Formerly 210A-210B-210C. Three 1-hour lectures per week. Semester Prerequisites: A year of upper division probability and statistics. A course in linear algebra. A survey of mathematical statistics: in particular both small and large sample theory. The use 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)


216A-216B. Theory of Nonparametric Inference and Robust Methods in Statistics. (3,3). Formerly 216A-216B. Three 1-hour lectures per week. Semester Prerequisites: 210, or equivalent. Quarter Prerequisites: 210A-210B-210C. Theoretical properties of significance tests, estimators and confidence procedures when no specific parametric model is believed to be exactly valid. Typical topics are rank tests, robust estimation, estimates of densities and regression functions, asymptotic optimality. 216A: (F) 216B: (SP)

217A-217B. Asymptotic Methods in Statistics. (3,3). Formerly 217A-217B-217C. Three 1-hour lectures per week. Semester Prerequisites: 205, and 210B or 200B. Quarter Prerequisites: 205, and 210B or 200C. Theory and methods for handling a large number of observations. Topics include asymptotic versions of normal families, sufficiency, minimax and admissible procedures, empirical measures, maximum likelihood and Bayes estimates, first and higher order efficiency. 217A: (F) 217B: (SP)

220A-220B. Linear Models. (4,4). Formerly 220A-220B. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: Matrix 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 of hypothesis distributed errors. Large sample theory for non-normal linear models. Two and higher way layouts. Residual analysis. Effects of departures from the underlying assumptions. Robust alternatives to least squares. Not offered 1984-85.

225. Large Sample Theory for Applied Statistics. (5). Formerly 250, 255. Three hours of lecture and one hour of laboratory per week. Semester Prerequisites: Calculus (at least one year, preferably 3 semesters) one year of probability and Statistics at the undergraduate level, with the use of advanced mathematics, to asymptotics. Emphasis is on intuitive understanding rather than proofs. Topics include: Limits, order comparisons, convergence in probability and in law, with applications to: approximate variances, normal approximations to distribution, sample size determination, variance stabilizing transformations. There will be particular emphasis on robustness and asymptotic efficiency. (F)


240. Nonparametric and Robust Methods. (4,4). Formerly 240. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: A graduate course in Statistics. Computer-based statistical methods for exploring the structure of multivariate data. Selecting, fitting, checking and simplifying models; robust and nonparametric methods; interactive techniques; use of graphical devices; illustrations with real and simulated data. 242A: (F) 242B: (SP)

244. Statistical Computing. (4). Formerly 267. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 242 or consent of instructor. Course focuses on computer-based methods and techniques of time series analysis, spectral theory, linear filters, estimation of spectra, estimation of transfer functions, design, system identification, vector-valued stationary processes, model building. (F)

245. Applied Statistical Processes. (3,3). Three 1-hour lectures per week. Semester Prerequisites: 102 or equivalent. Quarter Prerequisites: One of 100C, 130B, 132, 135A, or 200C. Frequency-based techniques of time series analysis, spectral theory, linear filters, estimation of spectra, estimation of transfer functions, design, system identification, vector-valued stationary processes, model building. (F)

246. Analysis of Time Series. (4). Formerly 246. Three 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 242 or equivalent. Quarter Prerequisites: One of 100A, 134A, 200A, or 200F. (SP) Not offered 1984-85.

250A. Special Stochastic Processes. (3). Formerly 252. (SP)

250B. Stochastic Models of Natural Phenomena. (3). Formerly 257.


260. Topics in Probability and Statistics. (3,3). Formerly 261. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: 102 or 132 or 200B or 200F or consent of instructor. Quarter Prerequisites: One of 100A, 134A, 200A, or 200F. (SP) Not offered 1984-85.

260A. Asymptotic Methods for Stochastic Processes. (3). (SP)

260B. Experimental Design. (3).

260C. Gambling Theory. (3).

260D. Information Theory. (3).

260E. Multivariate Analysis. (3).

260F. Personal Probability and Bayesian Statistics. (3).

260G. Sampling Surveys. (3).

260H. Sequential Design and Analysis. (3).

260I. Statistical Decision Theory. (3).

260J. Other Topic. (3).

262. Recent Advances in Probability and Statistics. (3). Formerly 281. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. (SP)

272. Statistical Consulting. (3). Formerly 278C. Course may be repeated for credit. Must be taken on a sat-
The Statistical Laboratory

A substantial number of research assistants are students and faculty. VAX 11/750 computer, high resolution graphics displays available. The Statistical Laboratory also manages the computer center. Since that time the Laboratory has been engaged in weather control, health and environmental programs. Research activity in the Statistical Laboratory includes problem solving, simulation, and development, guidance of laboratory courses, course development, supervised practice teaching. (F,SP)

391A. Experimental Course in Teaching Elementary Statistics. (1-4). New Course since Spring 1983. Must be taken on a pass/fail basis. Ten to twelve hours of meetings with instructors per week. Semester Prerequisites: Consent of instructor only. Experimental course in teaching elementary statistics. For tutors working under close supervision of instructor in a self-paced course. (SP)

The Subject A Department offers courses in subject A 1, 20, or 30 is determined by examination. An intensive course for non-native speakers of English. This course is designed to develop proficiency in expository writing preparatory to work in Subject A 30. (F,SP)

Courses for Non-Native Speakers of English

Office, Building T-2241, 642-9757

Enrollment in Subject A 1, 20, or 30 is determined by performance examination. (See Index). Subject A 5A-35B are electives. Auditors are not permitted.

30. English Composition. (2). Two units of baccalaureate credit, but counted as four workload units on the study list. Three 1-hour lecture/discussion classes per week. Semester Prerequisites: Placement by examination. An intensive course for non-native speakers of English to develop proficiency in expository writing preparatory to work in Subject A 1. (F,SP)

Professional Courses

300. Professional Preparation: Teaching of Probability and Statistics. (2-4). Formerly 300. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One to two hours of lecture and 2-4 hours of laboratory per week. Semester Prerequisites: Graduate standing, appointment as a teaching assistant, or consent of instructor. Description, problem review, and development, guidance of laboratory courses, course development, supervised practice teaching. (F,SP)

Women's Studies

Group Major Office, Division of Special Programs, 301 Campbell Hall, 642-6202

Director: Carolyn Porter; Major Adviser: Gloria Bowles

Group Major in Women's Studies

The Women's Studies major at Berkeley offers students the opportunity to participate in the feminist critique of the existing disciplines and to develop a new interdisciplinary study which brings to light the neglected contributions of women of various colors and classes to all societies. Feminist study also explores new alternatives for women and men in our society.

The major provides both theoretical and practical perspectives on the functioning of gender in social life. Majors enter professional schools (e.g. law and social work) and take advanced degrees in women's studies and the social sciences and humanities; others are engaged in careers in health, counseling, teaching, government, and community work.

Major Program

Prerequisite for admission to the major: Women's Studies 10, Introduction to Women's Studies (4).

Lower Division. Women's Studies 20, Major Feminist Thinkers (3).

Upper Division. Each student must take fewer than 30 and not more than 36 units of upper division work from the list below:

Core Curriculum. Women's Studies 101, Feminist Critical Theory (3); Women's Studies 102, Feminist Perspectives in Social Science (3); Women's Studies 110, Theories of Women's Studies (4); History 136, Women in American Society (4); Women's Studies 195, Minor Thesis (4).

Additional Requirements. These courses will be selected in consultation with an adviser in order to provide an intellectual coherence that can be applied to the thesis.

A. Ethnic Studies. One Ethnic Studies course, chosen from the following list: Afro-American Studies 153A, Images of Black Women in Literature: Slavery to the 20th Century (3); Afro-American Studies 153B, Contemporary Images of Black Women in Literature (3); Asian American Studies 151, Asian Women in America (3); Chicano Studies 145, La Chicana (3); Ethnic Studies 147, Three World Women: The Native American, African American, and Native American Women (3), Native American Women (3).

B. One Women's Studies 100 course, Special Topics (3).

C. Two electives, to be chosen from the following lists: Humanities Courses: Afro-American Studies 100, Images of Black Women in Literature: Slavery to the 20th Century (3); Afro-American Studies 153B, Contemporary Images of Black Women in Literature (3); Comparative Literature 40, Women and Literature (3); Comparative Literature 185, Women's Perspective in Literature (3); English 151G, Major Authors, when a woman writer is being considered (4); English 171, Literature and Sexuality (4); English 175, Women Writers (4); French 41, Women's Voice in French Literature (3); French 150, Women in French Literature (3); German 385, Feminist Perspectives in Literature (3); History, when relevant; Women's Studies 199, Supervised Independent Study (1-4).
Courses for Non-Majors

In addition to freshman seminars, the Department offers a series of courses for students who are not specializing in zoology. These courses consider the general principles of animal biology from a variety of viewpoints, ranging from molecular and cell biology through behavior and evolution. Courses also cover areas different from subsequent major courses providing a useful supplement for students considering on majoring in Zoology.

The Major

Lower Division. Biology 1A, 1B; Chemistry 1A, 1B, 8A; Mathematics 16A; Physics 8A, 8B. More extensive pre-professional courses may be substituted for those listed, at the student's option. Recommended: German, French, additional mathematics, statistics, chemistry, biochemistry, and basic courses in other biological sciences.

Upper Division. Twenty-four units of upper division zoology courses, as explained below:

(a) The minimum coursework indicated in the five categories below must be included:

- Genetics. One of the following Genetics courses: 100A-100B, 102, 105, 110.
- Cell Biology. One of the following: 104, 110.
- Organismal Form and Function. 105 or 106 plus one of the following: 120, 121, 124, 128, 135, IDS 122.
- Animal Diversity. One of the following pairs of courses: 107-108; 166/165L-108; 166/166L-161. Bodega Marine Lab summer courses may be substituted: 162 for 108, and 167 for 166L.
- Population and Community Biology. One of the following: 109, 140, 141, 142.

(b) Two semesters of laboratory and field experience, one semester selected from Group A and one semester from Group B: Group A 105, 106, 110L, 115, 124, 129, 131. Group B 107, 108, 135L, 144, 162, 163, 164, 165, 166L, 167, Biology 100.

Seniors with a B average or better in courses in the major are encouraged to seek faculty sponsorship for independent study and research under course 199, and to participate in the seminar in Zoology (195).

Note. Transfer students with 56 to 70 units must already have had General Chemistry and General Biology. Those with 71-80 units must have had, in addition, Organic Chemistry.

Honors Program. Students with an overall grade-point average of 3.3 or higher and a grade-point average of 3.3 or higher in the major may apply at the beginning of the senior year to the professor in charge of the Thesis Course (Zoology 199) for admission to the honors program. Students accepted in the honors program will complete the seminar in Zoology (195) and prepare a thesis (Zoology 196). In order to graduate with honors students must finish their work with a 3.3 grade-point average or higher overall and in the major.

Graduate Degrees in Zoology. Those planning to enter graduate study in Zoology are expected to have the equivalent of a major in zoology or biology. However, those with other appropriate backgrounds are encouraged to enter the program. Candidates for advanced degrees must pass a departmental examination in German, French, or Russian (another language may be acceptable if it is of scientific importance). The general principles of animal biology from a variety of viewpoints, ranging from molecular and cell biology through behavior and evolution. Courses also cover areas different from subsequent major courses providing a useful supplement for students considering on majoring in Zoology.

The Department of Zoology presents a broad overview of animal biology, ranging from cell and molecular biology to ecology and ethology, and including intensive offerings in vertebrate and invertebrate zoology. The zoology major may be entered after a basic year's study in zoology. Students may be supported by courses in chemistry and physics. The "core" of the upper division major program consists of a selection of courses representing the areas of study: (1) genetics and cell biology; (2) organismal form and function; (3) organismal diversity; and (5) population biology. These courses represent the common ground upon which more specialized senior programs and graduate study may be developed.
pass an oral qualifying examination. The crucial part of the Ph.D. program is the thesis, based upon original research in which the candidate demonstrates the ability to conduct independent study and to incorporate findings in a thesis. The thesis teaching assistant is normally required as part of the Ph.D. program in zoology. Details of the Ph.D. program may be obtained from the department office.

Research Facilities

The Museum of Vertebrate Zoology is a research institute and repository for specimens and information relating to the higher vertebrate animals and has a large and growing collection of mammals, birds, reptiles, and amphibians. Research activities center on problems in evolutionary biology, with emphasis on systematics, ecology, functional morphology, genetics and cytogenetics, biogeography, and conservation. The museum serves many educational functions and houses a number of graduate students. The museum also operates the Frances Simes Huntington Natural History Reservation, in upper Carmel Valley. The flora and fauna of the 1700-acre tract are completely protected for study of ecological relations in undisturbed communities. Qualified graduate students and guest workers may pursue advanced studies and use the facilities of the Museum and reservation under the sponsorship of a member of the Museum faculty. Interested students may contact the director of the Museum, 2593 Life Sciences Building, or Dr. James R. Griffin, in charge of Huntington Reservation, Carmel Valley, California.

The Cancer Research Laboratory is a research institute which carries on a research, teaching, and service program designed to foster faculty, doctoral, and postdoctoral students' participation in cancer research. The central research program represents a multidisciplinary approach to an understanding of the cellular and molecular transformation and includes investigators in other parts of the University, as well as the Laboratory staff. Graduate student and postdoctoral research programs are supported in various areas of tumor biology: cytology, endocrinology, immunology, tumor virology, genetics, histo-pathology and somatic cell genetics. The laboratory also houses a major source of inbred mouse strains. Those interested in the laboratory's program may communicate with the Director, 200 Earl Warren Hall.

Lower Division Courses

1. Topics in Zoology. (1). Must be taken on a passed/not passed basis. One 2-hour discussion per week. Semester Prerequisites: Preferentially open to freshmen; consent of instructor is required. Reading and discussion of the literature on particular topics in the field of Zoology. (F,S,P)

10. Animal Biology. (3). Formerly 10. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Open to all students, but designed for those not specializing in Zoology. Principles and concepts of animal biology introduced through selected topics at the cellular, organismal, and population levels of organization. Not offered 1984-85.

11. Animal Diversity. (4). Formerly 1. Three hours of lecture and two hours of laboratory per week. A survey of various areas of animal biology: cytology, endocrinology, immunology, tumor virology, genetics, histo-pathology and somatic cell genetics. The laboratory also houses a major source of inbred mouse strains. Those interested in the laboratory's program may communicate with the Director, 200 Earl Warren Hall.

14. Primate Biology. (2). Two hours of lecture per week. An introduction to the order of mammals of which we are members. Special emphasis on ecology, behavior, and reproductive biology. (F)

15. The Biology of Behavior. (3). Formerly 10. Students who have taken 135 or IDS 122 will receive no credit for 15. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Open to all students; designed for those not specializing in Zoology. Principles of biology as they relate to animal behavior, with broad coverage of animal groups. Special attention will be paid to the emerging discipline of behavioral ecology. (F)

Upper Division Courses

104. Cell Biology. (3). Formerly 104. Three hours of lecture and one hour discussion per week. Semester Prerequisites: Biology 1: An introductory survey of cell 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; the cell cycle; organelle biogenesis. (F)

105. Developmental Biology. (3). Formerly 105. Three hours of lecture; one hour discussion; plus two 3-hour laboratories per week. Semester Prerequisites: Biology 1: 104 recommended. Quarter Prerequisites: Biology 1: 104 or 105 recommended. An introduction to the principles and processes of embryonic and post-embryonic development, stressing mechanisms of cell and tissue interactions, morphogenesis and regulation of gene expression during differentiation. Selection of topics from a number of self selected laboratories. (F)

106. Evolutionary and Functional Vertebrate Anatomy. (5). Formerly 106. Three hours of lecture; one hour discussion; plus two 3-hour laboratories per week. Semester Prerequisites: Biology 1: Zoology 11 (or equivalent) and 104 recommended. Quarter Prerequisites: Biology 1: 104. The structure and function of vertebrates; analysis of patterns of evolution of vertebrates using morphological data and the comparative method. (SP)

107. Natural History of the Vertebrates. (5). Formerly 107A-107B. Three hours of lecture; one 3-hour lab; one 4-hour field trip per week, plus special field projects. Semester Prerequisites: Biology 1. Biology of the vertebrates exclusive of fish. (SP)

108. Invertebrate Zoology. (5). Formerly 108. Three hours of lecture and two 3-hour laboratories per week. Semester Prerequisites: Biology 1A. Quarter Prerequisites: Biology 1. An introductory survey of the biology of invertebrates, stressing natural history, comparative functional morphology, phylogeny, and some aspects of physiology. The laboratory includes invertebrate diversity and functional morphology, and field study of the natural history of local marine invertebrates. (SP)

109. Invertebrate Zoology. (5). New Course since Spring 1983. Three hours of lecture and two 3-hour labs per week plus 12 hours of lecture and eight 3-hour labs. Semester Prerequisites: Biology 1 or consent of instructor and enrollment in Biology 100 for Spring, 1984. Same as Zoology 108, but with lectures and labs of last five weeks given in parallel with regular lectures and labs during the first ten weeks. Comprehensive final exam in the tenth week. Open only to students signed up to take Biology 100 in Spring 1984. (SP)

109. Animal Evolution. (3). Formerly 109. Two hours of lecture and one hour discussion per week. Semester Prerequisites: Biology 1 or equivalent. A course in evolutionary theory, with emphasis on basic process, selection theory, adaptive responses, and patterns of speciation and phylogenesis. (F)

110. Cytology. (3). Formerly 110. Three hours of lecture and one hour discussion per week. Semester Prerequisites: Biology 1: Cell structure, function, and evolution. Methods of studying cells and their organelles from a historical perspective. Mitosis, meiosis, sex determination, introduction to cytogenetics, chromosomes changes in evolution. (SP)

110L. Cytology Laboratory. (2). Formerly 110L. Two 3-hour laboratories per week. Semester Prerequisites: A course in cytology, cell biology, or genetics. Microscopic study of cell types and organelles; determination of the cell cycle; selected staining and preparatory methods. Not offered 1984-85.

112. Cellular Aspects of Development. (2). New Course since Spring 1983. Two 1-hour lectures per week. Semester Prerequisites: 104 or equivalent. Some knowledge of neurobiology would be useful. An examination of embryonic development as it affects and is effected by the actions and properties of individual cells. Functional emphasis will be placed on the developmental processes of the nervous system, with special emphasis on the relationship of the cellsurface to control of intracellular activities. A comparative approach is used in uncovering regulatory mechanisms of fertilization, lymphocyte activation, cell cycles, hormonal stimulations, cell secretion, cell-cell interactions, and cell-cell communication. Not offered 1984-85.

115. Cell/Developmental Biology Laboratory. (4). Two 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: 104 or 105 or equivalent. (Designed for advanced undergraduates and beginning graduate students.) Quarter Prerequisites: 104 or 105 recommended. An intermediate level course in the analysis of the classical problems of cell and developmental biology, including methods of biochemical analysis of cells, optical microscopy, tissue culture, microinjection and microsurgery on embryos. (SP)

117. Cellular Analysis of Morphogenesis. (3). Formerly 117. Three hours of lecture and one hour discussion per week. Semester Prerequisites: 115 and consent of instructor. Quarter Prerequisites: 115. A course in cell biology which deals with understanding the cellular mechanisms and control in the development form. Not offered 1984-85.

118. Tumor Biology. (3). Formerly 181. Three hours of lecture per week. Semester Prerequisites: Open to seniors and graduate students; or by consent of instructor. Lectures, assigned reading, and individual reports on biological aspects of experimental cancer research. (SP)


120. Biology of Chemical Mediation. (3). Formerly 120A-120B. Three hours of lecture and one hour discussion per week. Semester Prerequisites: Biology 1; Organic Chemistry recommended. Hormonal and par-ahormonal mechanisms with emphasis on general principles and comparative vertebrate endocrinology. (SP)

121. Neurobiology. (3). Formerly 136. Three hours of lecture per week. Semester Prerequisites: Biology 1. An introductory course designed to provide a general background of current current knowledge of the nervous system. Critical properties of nerve cells, cell to cell junctions, and simple circuits are analyzed. Operation of these components in sophisticated nervous systems, and the understanding of complex nervous phenomena are then considered. (F)

124. Invertebrate Physiology. (5). Formerly 124-124L. Two hours of lecture and three 3-hour laboratories per week. Semester Prerequisites: Biology 1 or consent of instructor. 126 or 157 or a course in Entomology or Zoology is highly recommended. Quarter Prerequisites: Biology 1: 108 or 157 or course in Entomology or Physiology is strongly advised. Topics in the comparative physiology of the major invertebrate groups, introducing the concepts of respiration, circulation, salt and water balance, nervous and hormonal control, general physiological regulation and sense organs. Semi-independent individual laboratory problems, oral and written experimental reports, attention paid to developing skills in scientific presentation. (F)
Three hours of lecture per week. Semester Prerequisites: Senior standing and Biology 1. Functional morphology in terms of mechanical design principles; basics of fluid and solid mechanics with examples of their biological implications. Emphasis on the dependence of mechanical behavior on the structure of molecules, tissues, structural elements, whole organisms, and habitats. Not offered 1984-85.

128. Physiological Ecology. (3). Formerly 131. Three 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Biology 1A-1B, or equivalent. Comparative physiology of the vertebrates with emphasis on adaptation to the various aspects of the physical environment, such as temperature, water, ions, and gases. (SP)

129. Vertebrate Reproductive Biology. (4). Formerly 156 -156L. Two 1/2-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: Biology 1. Quarter Prerequisites: Biology 1 or equivalent. Biology of pro- cestrous and metamorphosis. General and comparative aspects of parasitism. Laboratory emphasizes biology, including morphology, identification, life cycles, with experience of living materials; selected experi- ments. Lectures and papers will be taken from the literature as required; no examinations. (F)

161. General Animal Parasitology. (5). Formerly 156 -156L. Two 1/2-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: Biology 1. Quarter Prerequisites: Biology 1 or equivalent. Biology of proc- cestrous and metamorphosis. General and comparative aspects of parasitism. Laboratory emphasizes biology, including morphology, identification, life cycles, with experience of living materials; selected experi- ments. Lectures and papers will be taken from the literature as required; no examinations. (F)

162. Biology of Marine Invertebrates. (7). Formerly 157. Full-time study at Bodega Marine Lab (lectures, field work, and individual study projects). Semester Prerequisite: Biology 1 or 11 or consent of instructor. Full-time field-oriented study, marine invertebrates, including aspects of systems, development, morphology, physiology, behavior, ecology and evolution of inverte- brate types. (SP)

163. Mammalogy. (4). Formerly 163. Two 1-hour lectures and two 3-hour laboratories per week plus two 3-day field trips. Semester Prerequisites: Biology 1A-1B. Quarter Prerequisites: 107A-107B. Advanced course in the biology of mammals. Not offered 1984-85.

164. Ornithology. (4). Formerly 164. Two 1-hour lectures and two 3-hour laboratories per week plus one weekend field trip. Semester Prerequisites: 107. Advanced course in the biology of birds. (F)

166. An introduction to the diversity of fishes with em-}
218. Tumor Biology Research Reviews. (1). Formerly 262. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Basic course in biology of neoplasia; graduate standing and consent of instructor. Review and discussion of original research and defense of research proposals. (F,SP)

219. Seminar On Biology of Neoplasia. (1). Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Presentation and discussion of current research in biology of neoplasia. (F,SP)

220. Special Topics in Biology of Chemical Mediation. (2). Formerly 222. Course may be repeated for credit. One 2-hour lecture per week. Semester Prerequisites: Consent of instructor. Topics will vary from year to year. Not offered 1984-85.

221. Seminar in Comparative Endocrinology. (2). Formerly 211. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Topics to vary. (F)

222. Seminar in Marine Biology. (2). Formerly 228. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Topics to vary (SP)

223. Seminar in Physiological Ecology. (2). Formerly 231. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Topics to vary. Not offered 1984-85.

224. Seminar in Integrative Neurobiology. (2). Formerly 236. Course may be repeated for credit. One 2-hour meeting per week. Semester Prerequisites: Consent of instructor. Reports and discussion of current research literature. Not offered 1984-85.

225. Seminar in Animal Behavior. (2). Formerly 237. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 135 or consent of instructor. Quarter Prerequisites: 135 or equivalent. Topics to vary. Report and discussion of current literature. Not offered 1984-85.

226. Seminar in Animal Ecology. (2). Formerly 244. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 140 or141 or equivalent and consent of instructor. Quarter Prerequisites: 140, 141 or equivalent. (F,SP)

227. Ecological Research Reviews. (1). Formerly 245. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1/2-hour seminar per week. Semester Prerequisites: Graduate standing and consent of instructor. Reports and discussions of original research. (F,SP)

228. Seminar in Marine Ecology. (2). Formerly 246. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Participation will involve the preparation and presentation of a seminar. The topics for each quarter will be determined prior to the first meeting and announcements will be posted. Not offered 1984-85.

229. Genetic Ecology. (2). Formerly 248. Two 1-hour lectures per week. Semester Prerequisites: An upper division course in Genetics and one in Ecology (140 or equivalent). Lectures and discussions concerning the relationship between the genetic composition of populations and ecological processes. Specific topics will depend on the faculty offering the course. Not offered 1984-85.

230. Invertebrate Review. (1). Formerly 251. Course may be repeated for credit. One 1-hour seminar per week. Semester Prerequisites: 108 (or equivalent); senior or graduate standing; consent of instructor. Quarter Prerequisites: 108 or equivalent. Reports and discussion of original research in invertebrate Zoology. (F,SP)

231. Seminar in Invertebrate Zoology. (2). Formerly 259. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 108 or 157 or 124 and consent of instructor. Quarter Prerequisites: 108A-108B and 157 or 124-124L. Topics in a selected area of invertebrate biology. Individual seminar reports on topics selected in consultation with the instructor, and centered around a currently-active field of invertebrate biology, which will vary from year to year. Not offered 1984-85.

232. Seminar in Evolutionary Biology of the Ver- tebrates. (2). Formerly 260. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Graduate standing; consent of instructor. Presentation and discussion of results of original research by students, faculty, and visitors. (F,SP)

233. Seminar On Parasitism. (2). Formerly 252. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Review and discussion of topics of current interest and importance in intimate animal associations. Not offered 1984-85.

234. Evolutionary Cytogenetics. (3). Formerly 262. Two hours lecture and three hours laboratory per week. Semester Prerequisites: Genetics 100A, 102 or equivalent; cytology recommended; graduate standing or consent of instructor. Quarter Prerequisites: Genetics 100, 102 or equivalent; cytology recommended. Chromosome rearrangements (including their relationship to rearrangements in DNA) and changes in chromosome number are considered in terms of fitness, stability, segregation, transmission, and effect on gene action. Evolutionary implications in the population level are stressed in the context of adaptation, speciation, and phylogenesis. Not offered 1984-85.

235. Advanced Mammalian Biology Reviews. (1). Formerly 263. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1/2-hour seminar per week. Semester Prerequisites: Graduate standing; consent of instructor. Review of current research activities and literature concerning the biology of amphibians and reptiles. Not offered 1984-85.

236. Seminar in Biology of Amphibians and Reptiles. (1). Formerly 265. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Genetics 100A, 102 or equivalent; cytology recommended; graduate standing or consent of instructor. Review of current research activity and literature concerning the biology of amphibians and reptiles. (F,SP)

237. Biology of Fishes. (2). Formerly 266. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 166 or consent of instructor. Quarter Prerequisites: 166 or equivalent. Topics will vary from year to year depending on the group but will be functional aspects of fish biology, such as behavior, physiology, ecology, zoogeography, evolution, and fish as a resource. Not offered 1983-84.

238. Seminar On Speciation in Vertebrates. (2). Formerly 267. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 107, graduate standing or consent of instructor. Quarter Prerequisites: 107; professional level of technical literature in speciation and isolating mechanisms in vertebrates, with emphasis on current literature. Not offered 1984-85.

239. Vertebrate Review. (1). Formerly 268. Course may be repeated for credit. One 1-hour seminar per week. Review of current literature on ecology and evolution of higher vertebrates. Offered irregularly. (F,SP)

240. Seminar On Evolutionary Theory and Methods. (2). Formerly 269. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Graduate standing or consent of instructor. Reviews of problems of speciation and evolutionary theory and methods currently being worked out in research. Not offered 1984-85.

241. Seminar In Teaching of Evolutionary Biology. (2). Formerly 270. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Graduate standing or consent of instructor. Discussion of topics covering the TA's practice of teaching, and of current literature on theories and methods of science teaching at the university level. (F)

242. Preparation In Graduate Teaching. (3). Formerly 301. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour meeting per week. Semester Prerequisites: Graduate standing or consent of instructor. Designed for teaching assistants. Discussion of questions and problems in the TA's practice of teaching, and of current literature on theories and methods of science teaching at the university level. (F)

243. Principles and Concepts of Modern Zoology. (1). Formerly 294. Must be taken on a satisfactory/unsatisfactory basis. One hour lecture/discussion per week. Semester Prerequisites: Graduate standing and consent of instructor. Beginning graduate students are expected to attend. (F)

244. Special Study for Graduate Students. (1-4). Formerly 296. Course may be repeated for credit. Individual conferences. Reading or other advanced study by arrangement with a staff member. (F,SP)

245. Research. (1-12). Formerly 298. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Reading or other advanced study by arrangement with a staff member. (F,SP)

246. Individual Study for Master's Students. (1-8). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Individual study for the comprehensive examinations, 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)

247. Individual Study for Doctoral Students. (1-8). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Individual study in consultation with the graduate adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F,SP)

Professional Courses

248. Preparation In Graduate Teaching. (3). Formerly 302. Course may be repeated for a maximum of six units. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Biology 1 or 11, or Zoology 110. Genetics 102 strongly recommended. Quarter Prerequisites: Biology 1 or 11, or Zoology 1, or Entomology 100. Genetics 102 strongly recommended. An introduction to comprehensive exam preparation, study strategies, and the organization of nervous systems, and of the behavior mediated by these systems. When appropriate these questions are illustrated with examples drawn from the invertebrate and vertebrate literature. Circuit, networks, or system analogs and analysis will be emphasized where these approaches lend clarity. Sessomotor integration is discussed in small systems or neurons (SP)
IDS200L. Neurobiology Laboratory. (4). Formerly 201L. Two 6-hour laboratories plus one 3-hour demonstration per week. Semester Prerequisites: IDS 200A-200B. IDS 200B may be taken concurrently. (Quarter Prerequisites: in quarter 100B only first laboratory. Sponsorship of the student by the Department of Neurobiology is recommended. Intended to provide the student with a working knowledge of current anatomical, physiological, and biophysical techniques in neurobiology through demonstrations, exercises, and individual research problems. Topics include synaptic transmission, excitable membranes, sensory reception, and circuits of neurons generating behavior. Sponsoring Departments: Zoology, Physiology, and Biophysics. (SP)

IDS202. Neurobiology Review. (1). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1-hour seminar per week. Semester Prerequisites: Zoology 121 or equivalent. Discussion of research papers and original research reports on current problems in neurobiology. (F,SP)

IDS203. Developmental Neurobiology Review. (1). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Discussion of research papers and original research reports on current problems in developmental neurobiology, including neural pathology, neural cell function, and neural interactions and competition, and compatibility. Sponsoring Departments: Zoology and Psychology. (F)

IDS204. Animal Behavior Research Reviews. (1). Formerly 204L. Course may be repeated for credit. One 1/2-hour seminar per week. Semester Prerequisites: Graduate standing in basic course in animal behavior; consent of instructor. Reports and discussions of original research or views, completed or in progress. Not all participants need report, but all are expected to attend and enter into the discussions. Sponsoring Departments: Zoology and Psychology. (F,SP)

IDS205. Developmental Review. (1). Formerly 205. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. A seminar devoted to the analysis of major problems in animal and plant embryology-cell type determination, patterning, cell and tissue interactions, and mechanisms of morphogenesis with emphasis on regulations and integration of developmental events at the cellular, molecular and tissue levels of organization. Sponsoring Departments: Molecular Biology and Zoology. (SP)

IDS282. Tumor Biology Seminar. (1). Formerly 282. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring Departments: Biomedical and Environmental Health Sciences, Zoology, Physiology, and Microbiology. (F,SP)

Professional Courses

IDS407. Introduction to Scientific Diving. (4). Formerly 407. Two 4-hour lectures, one 9½-hour pool lab plus one 7-hour ocean laboratory per week. Semester Prerequisites: Swimming test, free diving test, and Medical exam, CPR and basic first aid as prescribed by the US Navy Diving Control Board and consent of the instructor. Diving physics, physiology, medicine, rescue, first aid, re-compression, air tables, waves, currents, navigation, matching, pressure, environmental salination, marine life, research methods, life support equipment and University regulations. Leading to University certification to use underwater life support apparatus for study or research under University auspices. Sponsoring Department: Zoology, Botany, and Biology. (SP)

The School of Library and Information Studies offers a basic curriculum at the graduate level, lasting one calendar year, leading to the Master of Library and Information Science degree, which qualifies the holder for professional service in libraries and other information activities. It offers a postmaster's program leading to the Certificate in Library and Information Studies. The School offers a program leading to the Ph.D. degree for students interested in advanced research and teaching in librarianship and the information sciences, and a program leading to the professional doctorate, the D.L.I.S., for students interested in a design-oriented preparation for administrative positions in libraries or other information services. Admission to the degree programs is contingent upon successful completion to graduate standing. The School also offers undergraduate courses for non-majors in Librarianship.

For further details on the School's programs, consult the Announcement of the School of Library and Information Studies.

Bibliography

Lower Division Courses

1. Methods of Library Use. (3). Formerly 1. Three hours of lecture per week. Students will learn how to approach the U.C. library's resources in a systematic way to meet their needs, via lecture, section, problem sets examinations and a term paper. They will learn to extend these techniques to future independent research. (F,SP)

Upper Division Courses

104. The Book As an Artifact. (3). Formerly 104. Two 1½-hour lectures per week. A survey of the history of writing and the manuscript and printed book, with emphasis on letter forms, typesetting, papermaking, printing, processes, bookbinding, and book design. (F,SP)

105. The Hand-Printed Book and Its Historical Context. (2). Formerly 105. May not be taken for credit toward the MLIS or if 205 and/or 220 are also taken. One hour of lecture and three hours of laboratory per week. Semester Prerequisites: 104 or consent of instructor. Practical experience in methods of book printing prior to 1900 including production of work on a hand-press. Hand composition and press-work in Bancroft Library Press Room. Readings and discussions on printing history and problems associated with hand-press printing. (F,SP)

128. Survey of Children's Literature. (3). Formerly 128. Two 1½-hour lectures per week. Children's literature as a genre of literature. Its role in the lives of children. Historical perspective milestones and the current scene in publications. All types of books read by children will be included. (F,SP)

141. Information Access and Retrieval: Problems and Protocols. (3). Formerly 141. Two 1½-hour lectures per week. Key problems of information retrieval. Intended as introduction for students with engineering, science, or professional school backgrounds. Includes: design principles for document and data retrieval, binary, weighted, and statistical indexing techniques; retrieval evaluation; relevance, amount, utility, indexing, vocabulary control. (F,SP)

179. Special Topics in Library and Information Studies. (1-3). Formerly 179. Course may be repeated for credit as topic varies. One 3-hour lecture per week.

Specific topics, hours, and credit vary from section to section and from year to year. (F,SP)

199. Individual Study. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a pass/ not pass basis. Individual study under faculty supervision. (F,SP)

Graduate Courses

200. Introduction to Information Service. (3). Formerly 200. Three 1-2-hour meetings per week. Semester Prerequisites: 210 must be taken concurrently. Search strategy for finding information; selection and evaluation of information sources; trade, academic, and professional bibliographic and reference works; use of online information sources. 200 and 210 are required of all beginning MLIS students in their first semester. (F)

205. Principles of Information Retrieval. (3). Formerly 205. Three hours of lecture per week. Semester Prerequisites: 205 and/or consent of instructor. The design and evaluation of information retrieval systems with emphasis on techniques that can be implemented on a computer. Types of retrieval systems; automatic indexing; clustering techniques; measures of retrieval effectiveness; retrieval experimentation methodology; introduction to question-answering systems. (SP)

206. Advanced Topics in Information Retrieval. (3). Formerly 206. Three hours of lecture per week. Semester Prerequisites: 205 or consent of instructor. Quarter Prerequisites: 205. Topics include: analysis of relevance, utility, and other fundamental concepts; probabilistic approaches to indexing, query formulation and output ranking; logical, linguistic, and cognitive science issues in the design of information retrieval systems. (F)

207. Expert Information Systems. (2). Formerly 207. Three 1½-hour lectures per week. Semester Prerequisites: 205 or consent of instructor. Quarter Prerequisites: 205. Survey and analysis of computerized "expert" systems which supply information responses to user queries. Applications of logic, linguistics and cognitive science which bear on the design of knowledge-based library search. (F)

210. Cataloging and Classification. (3). Formerly 210, 211 and a portion of 212. Three hours of lecture per week. Semester Prerequisites: 280 or consent of instructor. Survey of cataloging and classification and the design of data elements and access points in the creation of bibliographic records; use of thesauri, codes, and classification schemes according to standard library practice; forms, structure, and internal aspects of cataloging and readable communication formats. 200 and 210 are required of all beginning MLIS students in their first semester. (F)

217. Analytical and Descriptive Bibliography. (2). Formerly Library Information Studies 217. Two 1-hour lectures per week. Semester Prerequisites: 280 or consent of instructor. Analytical bibliography as a method of investigation of the book as a physical object. The method of descriptive bibliography based upon Bowers. A critical survey of the state of analytical and descriptive bibliography. (SP)

219. Special Topics in Cataloging and Classification. (2). Formerly Library Information Studies 219. May be repeated for credit, with change in content. Varies. Semester Prerequisites: Consent of instructor. Specific topics, hours, and credit vary from section to section, year to year. (SP)

220. Design and Implementation of Computer-Based Information Systems. (3). Formerly Library Information

School of Library and Information Studies

Office, 113 South Hall, 642-1464

Professors:
- Michael K. Buckland, Ph.D. (Emeritus)
- William S. Cooper, Ph.D.
- Raymond C. Swain, Ph.D.
- M.E. Maron, Ph.D.
- Patrick Wilson, Ph.D.
- John C. Dunton, Ph.D. (Emeritus)

Lecturers:
- Fredric John Mosher, Ph.D. (Emeritus)
- Ray E. Held, Ph.D. (Emeritus)
- Nancy A. Van House, Ph.D.

Assistant Professors:
- Michael D. Cooper, Ph.D.
- Mary J. Culnan, Ph.D.
- Merly Key Dogan, Ph.D.
- Edward A. Wight, Ph.D. (Emeritus)

Associate Professors:
- Michael E. Maron, Ph.D. (Emeritus)
- Fredric John Mosher, Ph.D. (Emeritus)
- Mary J. Culnan, Ph.D.
- Merly Key Dogan, Ph.D.

Graduate Courses

10. Computers and Information. (3). Formerly 10. Three hours of lecture per week. A nonmathematical introduction to computer concepts, programming, information retrieval, and databases (e.g., MELVYL). Reading, writing, and running of BASIC programs on a microcomputer. Impact of computer-based information systems: word processing, electronic mail, databases. No technical background required. (F,SP)
224. Organization of Nonbook Materials. (2). Formerly Library Information Studies 224. Two 1-hour lectures per week and 60 hours of supervised on-site activity. Students will design and implement an information retrieval system. Topics include: query language design, telecommunications concepts, and file organization. Students will design and implement an information retrieval system. (F) 225. Catalog Design. (3). Formerly Library Information Studies 225. Three hours of lecture per week. Semester Prerequisites: 210, 210, or consent of instructor. Quarter Prerequisites: 220, 210, 211, and 212. Focus on subject access options for bibliographical retrieval systems: content-oriented as contrasted with discipline-oriented organization of information. (SP) 226. Office Information Systems. (2). Formerly Library Information Studies 226. Two 1-hour lectures per week. The various components of professionally managed records and information systems, including records inventory and disposition techniques, vital records control, form management, correspondence systems, micrographics and storage, reports management, personal privacy protection, and rights of public access to information. (SP) 227. Information and Records Management Practice. (2). Formerly Library Information Studies 227. Two hours of lecture per week. An introduction to the creation, storage, and retrieval of non-bibliographic data. Information in its social context. The place of information services in government and nonprofit organizations, and private corporations. Mission, functions as applicable: Planning, organizing, staffing, budgeting, controlling. (SP) 228. Systems Analysis in Information Services. (2). Formerly Library Information Studies 228. One 2-hour lecture per week. Semester Prerequisites: 203, 210, or consent of instructor. Quarter Prerequisites: 220, 210, 211, and 212. Focus on subject access options for bibliographical retrieval systems: content-oriented as contrasted with discipline-oriented organization of information. (SP) 229. Special Topics in Reference and Bibliography. (1-3). Formerly Library Information Studies 229. May be repeated for credit, with change in content. One to three hours of lecture per week. Specific topics, hours, and credit vary from section to section and from year to year. (F) 230. Systems Analysis in Information Services. (2). Formerly Library Information Studies 230. One 2-hour lecture per week. Semester Prerequisites: 210, 235, or consent of instructor. Quarter Prerequisites: 210, 211, and 235. An introduction to information systems in office settings. Technological and organizational considerations relating to the creation, storage, and retrieval of non-bibliographical textual data will be emphasized. (SP) 231. Data Processing for Libraries and Information Management. (3). Formerly Library Information Studies 231. Two 1-hour lectures and two hours laboratory per week. An introduction to computer programming with emphasis on algorithm development and structured programming techniques for solving library and information center data processing problems, using the PL 1 programming language. (F) 232. Computer Manipulation of Bibliographic Data. (3). Formerly Library Information Studies 232. Two 1-hour lectures per week. Semester Prerequisites: 231, 235, or consent of assistant. Quarter Prerequisites: 233, 235, 236 and 255 recommended but not required. Quarter Prerequisites: 235; 230 and 255 recommended but not required. Development of computer programs to manipulate bibliographic data records using the MARC monograph and serials formats. Design and implementation of computer programs for selected acquisition, cataloging, and serials processing subsystems. (SP) 233. Survey of Popular Culture. (2). Formerly Library Information Studies 233. One 2-hour lecture per week. A social analysis of popular culture (magazines, books, films, TV, song lyrics, etc.). Censorship, selection, availability: authorship, readership, libraries. (F) 234. Information in Society. (2). Formerly Library Information Studies 234. Two 1-hour class meetings per week. Information in its social context. The place of library and information centers in information-gathering behavior and use. Societal and clientele needs and demands. Application of behavioral and social sciences to study and evaluation of information services. (SP) 250. Bibliography and Information Service. (3). Formerly 251A-251B-251C and 252. Three hours of lecture per week. Semester Prerequisites: 203, 210, 211, and 212. Focus on subject access options for bibliographical retrieval systems: content-oriented as contrasted with discipline-oriented organization of information. (F,SP) 251D. Bibliography and Information Service: Health Sciences. (2). Formerly Library Information Studies 251D. One 1-hour class meeting per week. Semester Prerequisites: 220. Search strategies, selection, and evaluation of information sources in health sciences. (F,SP) 251E. Bibliography and Information Service: Government Publications. (2). Formerly Library Information Studies 251E. One 1-hour class meeting per week. Semester Prerequisites: 220. Search strategies, selection, and evaluation of information sources in government publications. (F,SP) 251F. Bibliography and Information Service: Law. (2). Formerly Library Information Studies 251F. One 1-hour class meeting per week. Semester Prerequisites: 220. Search strategies, selection, and evaluation of information sources in law. (SP) 252A. Children's Literature. (3). Formerly Library Information Studies 252A. Two 1-hour lectures per week. Formerly Library Information Studies 265A. One 2-hour class per week. Semester Prerequisites: 265A or consent of instructor. Quarter Prerequisites: 265A, 266, 268. Historical development and critical analysis of folklore, legends, myths, and modern imaginative literature. Their role in library programs. (SP) 266. Evaluation of Services to Children and Young Adults. (2). New Course since Spring 1983. Ten hours of lecture and 60 hours of approved on-site activity per semester. Semester Prerequisites: 266 or consent of instructor. Quarter Prerequisites: 266 or consent of instructor. Organization, operation, and evaluation of library services for children and young adults in terms of their special needs; communication; educational, managerial, technical, and political considerations. Extensive analytical paper required. May satisfy the practicum requirement for the School of Library Services credential. Either 266 or 264 is required for the School Library Services credential. (F,SP) 268. College and University Libraries. (2,3). Formerly Library Information Studies 268. Students who have taken 262, 281, or 264 will receive only 2 units for 268. Three hours of lecture per week. General introduction to the organization and administration of college and university libraries and their place in the institutions they serve. Problems and practices with respect to government, collection development, budgetary and management functions as applicable: Planning, organizing, staffing, budgeting, controlling. (SP) 271. Management of Information Technology. (2). Formerly Library Information Studies 271. One 2-hour lecture per week. Implementation and management of computerized systems in libraries and information centers: planning, selection, procurement, staffing, supervision, costing, evaluation. Concepts of hardware, operating systems, programming languages, databases, distributed processing, and networks. Technological trends. (F) 272. Evaluation of Library and Information Services. (2). Formerly Library Information Studies 272. One 2-hour lecture per week. Semester Prerequisites: 230, or business administration 248 recommended. Quarter Prerequisites: 230, 270, or equivalent. An introduction to the methodology for evaluating libraries and other information systems and services. Topics to be covered include evaluation of the performance of library subsystems (cataloging, technical service, reference); user needs analysis; and cost-benefit analysis of these systems. (F) 274. Economics of Information. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: Course in economics or consent of instructor. Measurement and analysis of the role information plays in the economy and of the resources devoted to the production and distribution of information. Topics include the functioning of information markets and the reasons for market failures. (F) 276. Collection Development. (2). Formerly Library Information Studies 276. One 2-hour class meeting per week. General principles and procedures relative to the selection of materials: assessment of user needs, resource allocation, selection responsibility, budgetary control, acquisitions and review bibliography, ethical considerations, special applications to different kinds of libraries. (F) 277. Organizational Aspects of Information Systems. (2). Formerly Library Information Studies 277. Two 1-hour lectures per week. Semester Prerequisites: 10, 271, or Business Administration 248 recommended. Quarter Prerequisites: 232, 271, or Business Admin-
tion 248 recommended. Information systems frameworks. Relationship of information systems to decision-making in organizations. Long-range planning for information systems development. Behavioral issues. Individual research work. (F)

278. Use of Data Base Management Systems. (3). Formerly Library Information Studies 278. Two 1½-hour lectures per week. Semester Prerequisites: 230, 235, 236, or equivalent, or consent of instructor. Quarter Prerequisites: 230, 235, 236, or equivalent. Analysis of computer programs (DBMS) for the organization of and access to, information. Discussion of rational, hierarchical, and network data models. Design and implementation of a data base on several commercial DBMS. Selection and evaluation of DBMS. (F,SP)

279. Special Topics in Information Services. (1-3). Formerly Library Information Studies 279. May be repeated for credit, with change in content. One to three hours of class meeting per week. Semester Prerequisites: Consent of instructor. Topics in the evaluation, and technology of information services. Specific topics, hours, and credit vary from section to section and year to year. (F,SP)

280. Development of the Book. (3). Formerly Library Information Studies 280. Two 1-hour lectures and one 1½-hour seminar per week. Survey of the development of the book from the beginning of writing to today's computerized production methods. Emphasis placed on all aspect of the printed book. Laboratory work and field assignments. (F,SP)

282A. History of Printing and Publishing; Origins to 1700. (3). Formerly Library Information Studies 282A-282B-282C. Two 1½-hour lectures per week. Semester Prerequisites: 280. Historical, social, and technological study of the invention and spread of printing in the West and the development of the book and book trade during the transitional and modern periods. (SP)

283. Contemporary Publishing. (2). Formerly Library Information Studies 283. One 2-hour lecture per week. Survey of the publishing industry and the processes of publication; contemporary trends and problems. (F,SP)


287. Comparative and International Librarianship. (3). Formerly Library Information Studies 287. One 2-hour lecture per week. Semester Prerequisites: Consent of instructor. A general introduction to comparative and international libraries and the development of the library profession and information services in diverse countries and cultural systems. Social, cultural, and historical factors on the design and development of libraries and information services. (SP)

296Z. Design Seminar. (2-3). Formerly Library Information Studies 296Z. May be repeated for credit, with change in content. One to three hours of class meeting per week. Semester Prerequisites: Consent of instructor. Pre-dissertation experience in solution of planning and design problems and in presentation of results. Intended for D.L.S., Ph.D., and Certificate programs interested in library organization and management or systems analysis and automation. (F)

297. Field Study. (1-4). Formerly Library Information Studies 297. May be repeated for credit. Regular consultation with faculty supervisor. Individual or group study of specific problems in library and information service in the field. Individual and group meetings with faculty sponsor and reports required. Regular supervision as needed. Unit value depends on student workload. (F,SP)

298. Directed Group Study. (1-3). Formerly Library Information Studies 298. May be repeated for credit. Varies. Group study of specific problems in library and information studies under faculty direction. Group meetings with instructor. Reports required. Five to eight hours of work per week per unit. (F,SP)

299. Individual Study. (1-12). Formerly 299. May be repeated for credit. Varies. Individual study of topics in library and information studies under faculty supervision. (F,SP)

302. Individual Study for Doctoral Students. (1-5). Formerly Library Information Studies 302. May not be used for unit toward the D.L.I.S. degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. For candidates for doctoral degree. 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 D.L.I.S. degrees. (F,SP)

305. Professional Courses

303. Practicum. (1-4). Formerly Library Information Studies 303 Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Summer Prerequisites: Consent of instructor and approval of program chair. Practicum experience in the operations of a campus or off-campus library or information center, in tasks at or near the beginning professional level. On-the-job activities, conferences with agency supervisor and course instructor. Supplementary readings may be required. (F,SP)

310. Teaching Assistance Practicum. (1-6). Formerly Library Information Studies 310 Course may be repeated with change in content. Must be taken on a satisfactory/unsatisfactory basis. Four hours of work per week per unit including class time. Discussion, reading, preparation, and practical experience, under faculty supervision, in the problems and opportunities of teaching specific topics in library and information studies. (F,SP)

384. Special Practicum in School Libraries. (2). Formerly Library Information Studies 384. Six hours of practicum per week. Semester Prerequisites: 200, 210, 264, 265A, of which 264 may be taken concurrently. Quarter Prerequisites: 200, 210, 211, 264, 265A. Supervised participation in school libraries, elementary through secondary. Open only to those who hold a standard teaching credential. Either 266 or 384 is required for the School Library Services credential. (F,SP)

410. Research Skills Practicum. (1-4). Formerly Library Information Studies 410. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four hours of work per week per unit including class time. Individual research work under supervision of a faculty member. (F,SP)

College of Natural Resources

Office of the Dean, 101 Giannini Hall, 642-0542

Affairs); John R. Anderson, Ph.D. (Research); Don

The College of Natural Resources offers a variety of academic programs which focus on renewable natural resources. These embrace most of the physical, biological, technological processes that people use to produce and utilize the food, fiber, and other materials they require. The undergraduate majors fall in these distinct categories: programs in basic biology, professional and technical programs, and programs dealing with the social science of natural resources.

For students interested in basic biology, major programs are available in biroscience science, entomology, genetics, molecular plant biology, nutrition and food science, plant pathology, and plant and soil biology. These programs develop a broad foundation in the biological sciences and prepare students for work in fields such as biological, medical, veterinary, and agricultural research.

Professional programs in forestry (with options in forest, wildlife, and range management), nutrition and clinical dietetics, pest management, soil resource management, and forest products are available to students with interests in these specific professions.

For students whose interests in natural resources run in the direction of social and political science and who are concerned with public issues in the fields of population, renewable natural resources, resource economics, and environment, there are major programs in the social sciences and conservation and resource studies. Both emphasize flexible, interdisciplinary approaches and can be used to prepare for work or further study in a variety of academic programs such as law, public policy, and environmental planning.

Major Requirements. Detailed course requirements for each major, along with College requirements for the B.S. degree, are listed in the Announcement of the College of Natural Resources, available from the Dean’s Office, Student Affairs, 106 Giannini Hall, University of California, Berkeley; Berkeley, CA 94720.

Undergraduate Advisers. The undergraduate advisers for each major serve as the principal liaison officers between students and the College. They are available for consultation throughout the year. Advisers are prepared to discuss details of the requirements and planning of a program best suited to a student's individual needs. All students are encouraged to see their advisers as early as possible for advice in the planning of academic programs.

The advice should also be consulted concerning any special academic problems that may arise. In addition, the Office of the Dean may be consulted on any difficulties or on questions relating to records and regulations. It is open year-round, 8:15 a.m. to 4:45 p.m. weekdays, except during the noon hour and administrative holidays.

College of Natural Resources
Computerized enrollment will begin on this campus Spring, 1985. A Schedule Request Form will be mailed to each student around mid-October, 1984. A Schedule Request Form must be completed and submitted to the Office of Student Affairs, 106 Giannini Hall. The adviser’s signature on the Schedule Request Form is required prior to the Spring, 1985. A Schedule Request Form will be announced in the Spring, 1985 Schedule of Classes. Any changes in the program must be similarly announced.

Advanced Class Enrollment

Graduate Programs

Academic and professional graduate degree programs are available in agricultural and resource economics, comparative biochemistry, entomology, food science, forestry, genetics, nutrition, parasitology, plant pathology, plant physiology, plant and soil biology, range management, soil science, wildlife resource science, and forest products. In addition, an ad hoc interdisciplinary doctoral program is offered.

Inquiries regarding details of the various graduate programs may be directed to the appropriate graduate adviser in the chosen field. Names of advisers for the various graduate departments in the College are given in the graduate course section of this catalog.

Graduate Advisers. At the request of the Dean of the Graduate Division, each department or group nominates a graduate adviser who acts as a deputy of the Dean and is the person with whom students arrange programs of study and to whom they may go for advice.

Agricultural and Resource Economics

Department Office, 207 Giannini Hall, 642-3346

Professors:

Irina A. Adelman, Ph.D. (Emeritus)
Alison A. Alimonti, Ph.D.
Anthony C. Fisher, Ph.D.
Richard E. Just, Ph.D.
Gordon C. Rausher, Ph.B.
Donald R. Rose, Ph.D.
George M. Kuznets, Ph.D. (Emeritus)
Jean M. Lee, Ph.D. (Emeritus)

Associate Professors:

Peter Berck, Ph.D.
Sally K. Farb, Ph.D.
W. Michael Hanemann, Ph.D.

Assistant Professors:

James Chalffant, Ph.D.
David Zitterman, Ph.D.

Lecturer:

Pinhas Zisman, Ph.D.

Undergraduate Advisers: Peter Berck, James Boles, James Chalffant, Alain de Janvry, Sally Fairfax, Michael Hanemann, Richard Norgaard, Sherman Robinson.

Graduate Advisers: Jeffrey Perloff, Andrew Schmitz, David Zitterman.

Political Economy of Natural Resources

The object of the PENR major is to offer 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 water, and non-renewable resources such as land and minerals. The distinctive feature of the major is that it offers an approach to the study of agricultural and resource policies and programs through the lens of economics and political science.

The major is structured to ensure that students obtain a sufficient background in the natural and physical sciences (including the appropriate mathematics, statistics, and communication skills in order to approach resource-related issues in an effective and practical manner. Students who graduate from the major should be prepared to undertake a career in public or private agencies engaged in the planning or management of natural resources, or to enter a graduate school for further study in some program such as economics, law, public policy, or resources administration.

Lower division breadth requirements stipulate at least 20 semester units in social sciences and humanities (including one course in principles of economics, one course in political science or history, and one course in the natural sciences). Reading and composition courses in English 1A-1B, or Rhetoric 1A-1B; and at least 10 semester units in natural sciences (including Biology 11 or equivalent and one course in physical science). An upper division breadth requirement is the completion of at least 12 upper division courses selected from at least two different disciplines. Each course used to fulfill an upper division requirement must be passed with a grade of C- or better.

Graduate Programs

The Department of Agricultural and Resource Economics, one of several departments of graduate instruction and research in the College of Natural Resources, offers programs leading to the M.S. and Ph.D. degrees. An applicant should hold a degree (not necessarily a major) in the physical sciences (including mathematics) and have demonstrated strong scholarship potential.

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

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 preliminary examination. The second year of course work is determined in consultation with the graduate adviser. Some common elective fields include marketing, agriculture, and resource economics.

Research opportunities available within the Department include the Giannini Foundation Agricultural Economics Library, one of the most comprehensive and extensive libraries of its type.

Political Economy of Natural Resources Lower Division Courses

1. Introduction to Political Economy of Natural Resources

Formally. One 1.5-hour lecture and one 1-hour discussion sections per week. Introduction to theories of economic, political, and administrative systems affecting agriculture, environmental quality, and resource allocation over time. (F)

2. Political Economy of Growth and Institutions

Formally. Three 1.5-hour lectures and one 1-hour discussion per week. Historical institutions and thought: the relationships between historical conditions, ideologies, economic theories, economic policies, and the environment. Alternative theories of political economy, the state, and the place of nature in society. (SP)

Upper Division Courses

100. Microeconomic Theory with Application to Natural Resources

Two 1.5-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 1 or Economics 100A or 101A. Quarter Prerequisites: 100 or Economics 100A. Formerly 101 and 102 Theory underlying the optimal allocation of renewable and non-renewable resources. Theories of regulation and environmental transformation, intertemporal allocation, pollution control, and long-run scarcity. (F)

102. Government and Resources

Two 1.5-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 100 or Economics 100A or 101A. Quarter Prerequisites: 100 or Economics 100A. Theory of regulation and the interaction of the legal system with the economy, and taxes will be applied to agriculture and resources markets. The causes of market breakdowns will be examined. Theory of taxation and equity and equity in resource and tax policies will be discussed. (SP) Not offered 1984-85.

115. Modeling and Management of Biological Resources

Formally. Three 1.5-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Mathematics 16A-16B. Equilibrium and management models, simulation, and processes of the environment. Use of models to plan and analyze problems in agriculture, fisheries, forestry, and biological resource conservation. Maximum sustainable rent, economic injury thresholds, economics and genetics of resistance. (SP)

118. Linear Economic Models of Natural Resource Problems

Formally. Three 1.5-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Mathematics 16A-16B or statistics. An introduction to the use of linear economic models in the analysis of natural resource problems. (F)

141. Economics of the Food Systems

Formally. One 1.5-hour lecture and one 1-hour discussion per week. Semester Prerequisites: Economics 100A or 101A. Quarter Prerequisites: 1 or Economics 1, and 100 or equivalent. Introduction to agricultural and food systems. Agricultural production and demand. Price support, marketing orders, and other government programs. Nutritional policy including labeling, food safety, and food stamps. (F)

142. Advanced Topics in Agricultural Economics

Formally. One 1.5-hour lecture and one 1-hour discussion per week. Semester Prerequisites: 141 or consent of instructor. Quarter Prerequisites: 1 or Economics 1, and 100 or equivalent. Advanced topics in structure, tariff and quota policies, welfare analysis of trade, agricultural anti-trust, future markets. (SP)

151. Agriculture in Economic Development

Formally. One 1.5-hour lecture and one 1-hour discussion per week. Semester Prerequisites: 100 or Economics 100A or 101A. Quarter Prerequisites: 100 or Economics 100A. Role of agriculture in development and the impact of development on agriculture; food, population and resources; the transformation of traditional agriculture; policy issues in rural development. (F)
Graduate Courses

201. Issues and Concepts in Agricultural Economics. (3). Formerly 201. Two 1 1/2-hour lectures and one hour of discussion per week. Semester Prerequisites: Economics 201A or consent of instructor. (F,SP)

202. Production, Industrial Organization, and Regulation in Agriculture. (4). Formerly 202. Two 1 1/2-hour lectures and one hour of discussion per week. Semester Prerequisites: Economics 201A or equivalent. Basic concepts of micro and macro economics, production, and the economic organization of agriculture. Monopolistic competition, vertical integration, price discrimination, and economics of information with applications to food retailing, cooperatives, fisheries, and energy. (SP)

211. Econometrics: Statistical Foundations and Simple Equation Estimation. (4). Formerly 211 and 212. Two 2-hour lectures and one hour of discussion per week. Semester Prerequisites: Consent of instructor. Characteristic functions, transformations of random variable, small sample and asymptotic properties of estimators. Regression hypothesis testing in the general linear model; multicollinearity; heteroscedasticity; autocorrelation; and misspecification; errors in variables; random coefficient models; variance components models; nonlinear regression; and qualitative models. (F)

212. Econometrics: Multiple Equation Estimation. (4). Formerly 213. Two 2-hour lectures and one hour of discussion per week. Semester Prerequisites: 211. The general linear structural model and structural design; multiequation regression; seemingly unrelated regression; simultaneous estimation techniques; recursive models; nonlinear models; estimation techniques; and other treatments of qualitative variables in simultaneous equation models. (SP)

231. International Markets and Trade. (3). Formerly 232. Two 1 1/2-hour lectures per week. Semester Prerequisites: Economics 201A and Economics 201B. Comparison of alternative market structures for exhaustible resources. Extinction. Applications to fisheries and forests. Theory of pollution control policy. The role and structural changes in the food system. Analysis of economic processes which have contributed to low resource returns, commodity surpluses, and structural changes in the food system. Environmental cost-benefit analysis of underdevelopment in agriculture. Food and nutrition assistance programs, evaluation of food safety and protection. Not necessarily offered every semester. (F,SP)

242. Quantitative Policy Analysis. (3). Formerly 242. Two 1 1/2-hour lectures per week. Semester Prerequisites: Economics 201A and Economics 201B. Review of theories of commodity markets and demand supply analyses. Characteristics of potential students to prepare for the M.S. degree. (F,SP)

249. Agricultural, Food, and Resource Policy Workshop. (1). Formerly 249. May be repeated for credit. Must be taken on a pass/fail basis. Presentations and discussions on large and small farmers, consumers, the rural community, and the environment. California agricultural problems and policy. (F)

251. Agricultural Economics Development. (3). Formerly 251. Two 1 1/2-hour lectures per week. Semester Prerequisites: Consent of instructor. Orientation and role of agriculture in economic development. Food and nutrition in underdeveloped countries. Place and role of agriculture in economic development. (F)

252. Sectoral and Regional Planning in Economic Development. (3). Formerly 252. Two 1 1/2-hour lectures per week. Semester Prerequisites: Consent of instructor. Analysis and policy issues in agricultural development using sectoral and regional models of growth and development. (SP)

259. Rural Economic Development Workshop. (1). Formerly 259. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 2-hour seminars per week. Semester Prerequisites: Graduate standing and consent of instructor. Presentation and criticism of ongoing research by faculty and students. Not necessarily offered every semester. (F,SP)

260. Professional Preparation: Teaching of Political Economy of Natural Resources. (1-6). Formerly 260. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Approximately 4 hours of research per week per unit. Semester Prerequisites: Graduate standing and consent of instructor. (F,SP)

269. Natural Resource Economics. (1). Formerly 269. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Theory of optimal exploitation of exhaustible natural resources, with application to fossil fuels. Welfare analysis of alternative market structures for exhaustible resources. Econometric models of supply and demand for energy taxing policy. Bid theory and leasing policy. (SP)

271. Nutritional Economics and Policy. (3). Formerly 271. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour lecture per week. Semester Prerequisites: Economics 201A-201B or equivalent. Considers the role of nutrition in production, food selection, and choice. Students will prepare a research paper. Not necessarily offered every semester. (F,SP)

291. Advanced Topics in Environmental and Resource Economics. (2). Formerly 291. One 2-hour lecture per week. Semester Prerequisites: 100 or Economics 100A or Economics 100B. Formerly 291. Distributional effects of policy. Sources and their interrelationships. Location theory, land utilization, and water quality control. (F)

292. Advanced Topics in Development. (2). Formerly 292. Two 1 1/2-hour lectures and one hour of discussion per week. Semester Prerequisites: 100 or Economics 100A or Economics 100B. Formerly 292. Two 1 1/2-hour lectures and one hour of discussion per week. Semester Prerequisites: 211. The general linear structural model and structural design; multiequation regression; seemingly unrelated regression; simultaneous estimation techniques; recursive models; nonlinear models; estimation techniques; and other treatments of qualitative variables in simultaneous equation models. (SP)

293. Markets and Trade Workshop. (1). Formerly 293. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Discussion, problem review and development, and applied research by faculty, staff, and students. Not necessarily offered every semester. (F,SP)

294. Quantitative Policy Analysis. (3). Formerly 294. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Analysis and policy issues in agricultural development using sectoral and regional models of growth and development. Not necessarily offered every semester. (F,SP)

295. Agricultural Policy. (3). Formerly 295. Two 1 1/2-hour lectures per week. Semester Prerequisites: Consent of instructor. Economic processes which have contributed to low resource returns, commodity surpluses, and structural changes in the food system. Analysis of political economic systems and impact of various policies on large and small farmers, consumers, the rural community, and the environment. California agricultural problems and policy. (F)

296. Agricultural Food, and Resource Policy Workshop. (1). Formerly 296. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Presentation and criticism of ongoing research by faculty and students. Not necessarily offered every semester. (F,SP)

299. Individual Research. (1-12). Formerly 299. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Independent meetings with faculty sponsor and written reports required. Not necessarily offered every semester. (F,SP)

601. Individual Study for Master's Students. (1-12). Formerly 601. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser for qualified students to prepare for the various examinations required for the M.S. degree. May not be used for unit or residence requirements for the M.S. degree. (F,SP)

602. Individual Study for Doctoral Students. (1-12). Formerly 602. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for 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 Political Economy of Natural Resources. (1-6). Formerly 300. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One to two hours of lecture and one to two hours of discussion per week. Semester Prerequisites: Graduate standing, appointment as a teaching assistant or associate, or consent of instructor. Discussion, development, and guidance of discussion classes, course development, supervised practice teaching. (F,SP)

400. Professional Training in Research Methodology. (1-6). Formerly 400. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One to two hours of lecture and one to two hours of discussion per week. Semester Prerequisites: Consent of instructor. Research Assistantship appointment. Individual training for graduate students in planning and performing research under the supervision of a faculty advisor, intended to provide academic credit for the experience obtained while holding a Research Assistantship. (F,SP)

Academic credit for the experience obtained while holding a Research Assistantship. (F,SP)
Bioresource Sciences

Course requirements for the major include CRS 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 mathematics or statistics, a minimum of two courses in the biological sciences, and two in the social sciences. In addition, students must take two courses in each of two of the following areas: physical sciences, humanities, analytic reasoning; and two courses in the individual Areas of Interest. In the junior and senior years, students will concentrate on their Areas of Interest. A more detailed statement of major requirements is available from the department office.

Lower Division Courses

10. Environmental Issues. (4). Formerly 10A-10B-10C. Two 1-1/2-hour lectures and one 1-1/2-hour discussion per week. Relationship between human society and the environment; how they relate to pollution and environmental degradation. Students with weak backgrounds in chemistry should enroll for three units instead of two. (SP)

10L. Environmental Issues: Special Projects. (1). Formerly 10L-10M-10N. One 1-1/2-hour discussion per week. Semester Prerequisites: 10 (to be taken concurrently) or consent of instructor. Quarter Prerequisites: 10A-10B-10C. Group projects related to the 10 lecture series. (F)

40. Environmental Chemistry. (2-3). Formerly 40. Two 1-1/2-hour lectures and one 1-hour discussion per week. Additional 1-1/2-hour discussion for those students enrolling for three units. Physical and chemical properties of the environment; their interaction and degradation. Students with weak backgrounds in chemistry should enroll for three units instead of two. (SP)

40A. Environmental Biochemistry. (3). Formerly 40A. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 40 or consent of instructor. A critical analysis of human enzymatic processes and the deleterious effects of chemical and biochemical agents on human health and environment. Corequisite: 131. (F)

50. Environmental Biology. (3). Formerly 50. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: One course in introductory college biology recommended. Intended for nonscience majors. Basic biological and ecological principles discussed in relation to environmental disruptions. Human interactions with the environment; their meaning for animals and plants. Discussion of basic ecological processes as a basis for understanding environmental problems and formulating strategies for their solution. (SP)

60. Introduction to Conservation and Resource Studies (1). Formerly 60. Must be taken on a passed/not passed basis. Individual meetings. Semester Prerequisites: Lower division standing; (3.0 GPA or better), consent of instructor, adviser, and department chair. Usually restricted to CRS majors. Intended for exceptional students. Supervised independent study or research on topics relevant to CRS that are not covered in depth by other 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. (SP)

99. Supervised Independent Study and Research. (1-3). Formerly 99. Course may be repeated for credit. Must be taken on a passed/not passed basis. Individual meetings. Semester Prerequisites: Lower division standing; (3.0 GPA or better), consent of instructor, adviser, and department chair. Usually restricted to CRS majors. Intended for exceptional students. Supervised independent study or research on topics relevant to CRS that are not covered in depth by other 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. (SP)

Upper Division Courses

100. Environmental Problems: Principles and Methods of Analysis. (4). New Course since Spring 1983. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: One course in ecology; one course in mathematics or statistics; one course in a social science or economics. Analysis and comparison of frameworks that integrate natural and social science explanations of environmental problems. Case studies emphasizing physical, biological, social, economic, and value dimensions in the identification of causes and approaches to solutions. Required of CRS majors. (SP)

101. Urban Garden Ecosystems. (3). Formerly 101. Two 1-1/2-hour lectures and one 1-hour discussion/demonstration per week. Study of urban garden and recreation ecosystems, with emphasis on basic ecological concepts and techniques for managing plants and animal communities. (SP)

101L. Urban Garden Ecosystems Laboratory. (1). New Course since Spring 1983. Must be taken on a passed/not passed basis. One 3-hour supervised laboratory project per week. Semester Prerequisites: 101. Special projects. (F)

110. Ecosystemology. (3). Formerly 110. Two 1-hour lectures and one 1-hour laboratory per week. Semester Prerequisites: 100 or any ecology course or consent of instructor. Quarter Prerequisites: One quarter of 10A, 10B, or 10C, or any ecology course or consent of instructor. Introduction to the conceptual tools that underlie studies in ecological communities. An introduction to the use of concepts and models for the prediction and management of species interactions in which we are the dominant components, planning agents, indifferent observers; how to deal with complexity; the systems approach to problem solving; determining systems boundaries; ecological concepts; ecosystem management. (SP)

115. Environmental Philosophy and Ethics. (3). Formerly 115. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 100 or consent of instructor. A critical analysis of human interactions as physical, anthropocultural ecosystems with emphasis on the role of ideologies, beliefs, attitudes, and behavior. An examination of contemporary environmental literature and the philosophies embodied therein. (F)

116. Bioethics. (3). Formerly 116. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Exploration of the ethical dilemmas arising from recent advances in the biological sciences: genetic engineering, sociobiology, health care delivery, behavior modification, patients' rights, social or private control of research. (SP)

130. Environmental Policy, Administration, and Law. (3). Formerly 131. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: At least one course in political science, public policy, or environmental issues. Introduction to American political processes affecting development and implementation of environmental and resource policy. Emphasizes national and regional legislation and exercise of administrative discretion. Reviews key management programs; air and water quality, public forests, pesticide regulation, coastal zone protection. (SP)

131. Legal Aspects of Resource Development and Administration. (4). Formerly 130. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 130 and upper division standing. Semester Prerequisites: 131 or equivalent. Introduces legal concepts which structure public resources discussions. Review of history and institutional setting, discuss constitutional principles (property, federalism). Focus on selected resources: Forests, wildlife, water, energy and non-energy minerals. Evaluate strengths and limits of legal concepts. (SP)

132. Environmental Analysis. (4). Formerly 132 and 133. Three 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 137 or consent of instructor. Quarter Prerequisites: 131 or equivalent. Methodologies for describing and assessing human induced changes on environmental systems. Relationship to environmental planning and problem solving. Data collection, identification, interpretation, and evaluation of physical, ecological, and social impacts. (SP)

140. Environmental Health and Development. (2). Formerly 140. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Impact of environmental alterations resulting from development programs on human activities which affect the health of people in developed and less developed parts of the world. Case studies and mitigation measures of diseases associated with water storage utilization. Not offered 1983-84. (SP)

150. American Environmental and Natural Resource History. (3). Formerly 150. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. History of the natural and human environments as interconnected systems from the colonial
period to the present. Human factors—demographic, economic, social, technological, intellectual—promote the exploitation or conservation of natural ecosystems and their associated resource bases. (F)

151. Economic and Political History of Resources in Twentieth Century U.S. (3). Formerly 151. Two 1 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Development of U.S. capitalism with respect to its impact on resources and environment. Examination of the emergence and evolution of public efforts to regulate excessive resource exploitation and environmental degradation from the Progressive Era, New Deal, the Great Society to the present. (F)

160. Food and Nutrition Policy. (3). Formerly 160. Two 1 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Availability and utilization of food as affected by local, national, and international policies. Socioeconomic and other relevant factors in relation to current and projected nutritional problems. Emphasis on analysis of policies aimed at reduction of malnutrition. Not offered 1984-85.

163. Comparative Systems of Agricultural and Natural Resource Policy. (3). Formerly 163. Two 1 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Analysis of policy systems governing natural resource development in rural Third World. Emphasis on organization and function of agricultural and minerals development, with particular consideration of rural hunger, resource function of agricultural and minerals development, with particular consideration of rural hunger, resource transformation of indigenous peoples and their environment. Not offered 1984-85.

168. Natural Resource Policy and Indigenous Peoples. (3). Formerly 168. Two 1 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Critical analysis of the historical transformation of indigenous peoples and their environments in North America and the Third World. The origins and specific patterns of socio-economic problems in these areas, existing and alternative future development patterns. Not offered 1984-85.

169. Political Ecology. (3). Formerly 169. Two 1 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Consent of instructor. Analysis of ecological problems in the U.S. from the standpoint of their roots in contemporary political and economic processes and their potential solutions within the present political system. Special emphasis on U.S. policy regarding energy and agricultural development. Not offered 1984.

170A. Two 1 1/2-hour lectures per week. Semester Prerequisites: Consent of instructor. Upper division standing and consent of adviser, faculty sponsor and CRS department. Not offered 1984-85.

170B. Directed Group Studies for Advanced Undergraduates. (1-3). Formerly 198. Course may be repeated for credit. One 4-hour seminar per week. Enrollment is restricted by regulations listed in General Catalog. Supervised independent study and research specific to aspects of conservation and resource studies. (F, SP)

190. Seminar in Environmental Issues. (3). Formerly 190. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Upper division standing and consent of instructor. Interdisciplinary study of issues for advanced students. Designed to develop skills in critical analysis of specific issues. Enrollment restricted to each semester's 20 faculty and student interest. Major research project required. (F, SP)

191K. Agricultural Ecology. (2). New Course since Spring 1983. One 1 1/2-hour lecture and one 3-hour laboratory per week. Semester Prerequisites: Consent of instructor, undergraduate status, faculty sponsor. Framework for biological, technical, socio-economic and political processes that govern agroecosystem productivity and stability. Management techniques and farming systems' designs that sustain longterm production are emphasized. (SP)

194. Senior Seminar in Conservation and Resource Studies. (2). Formerly 194. Must be taken on a passed/not passed basis. One 4-hour seminar per week. Semester Prerequisites: Senior standing in CRS. 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 Area of Interest. Required final semester for all CRS majors. (F, SP)

195. Senior Thesis. (3-4). Formerly 195A-195B. Students who have successfully completed CRS 195 may petition for exemption from CRS 194. Three hours of laboratory/research work per week. Semester Prerequisites: Senior standing in CRS, 3.0 GPA. Subject must be approved by faculty sponsor during the last quarter of the senior year and course initiated in the first semester of the senior year. (F, SP)

196A. Internship in CRS—Field Module. (3-6). Passed/not passed credit to be awarded upon completion of 196B.1 to 40 hours per week at placement location for the academic year. Semester Prerequisites: Upper division standing; consent of adviser, faculty sponsor, and CRS department; normally restricted to CRS majors. Intern placement relevant to student's academic interests and career objectives. Must be approved by department early in preceding semester. See "Internship Guidelines," available in department office. (F, SP)

196B. Internship in CRS—Research/ Seminar Module. (2-4). 2-hour seminar per week; variable hours research analysis for five weeks. Semester Prerequisites: Upper division standing; consent of adviser, faculty sponsor, and CRS department; completion of CRS 196A. Quarter Prerequisites: Internship report, weekly seminar. 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)

197. Field Study in CRS. (1-3). Formerly 197. May be repeated for credit. Must be taken on a passed/not passed basis. Approximately 3 hours field study per week per unit. Semester Prerequisites: Consent of instructor, adviser, and department chair. Upper division standing. Usually restricted to CRS majors. Supervised experience aimed toward special aspects of conservation and research specific to aspects of CRS. Regular individual meetings with faculty sponsor and written reports required. (F, SP)

198. Directed Group Studies for Advanced Undergraduates. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. One hour of lecture/discussion per week per unit. Semester Prerequisites: Upper division standing; consent of instructor, adviser, and department chair. Study of special topics that are not covered in depth in regular courses in CRS. (F, SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Approximately 3 hours laboratory per week per unit. Semester Prerequisites: Consent of instructor, adviser, and department chair. Study of special topics that are not covered in depth in regular courses in CRS. (F, SP)

200. Seminar in Environmental Issues. (3). Formerly 200. Course may be repeated for credit. Three hours of lecture per week. Semester Prerequisites: Upper division standing and consent of instructor. Interdisciplinary study of issues for advanced students. Designed to develop skills in critical analysis of specific issues. Enrollment restricted to each semester's 20 faculty and student interest. Major research project required. (F, SP)

201. Agricultural Ecology. (2). New Course since Spring 1983. One 1 1/2-hour lecture and one 3-hour laboratory per week. Semester Prerequisites: Consent of instructor, undergraduate status, faculty sponsor. Framework for biological, technical, socio-economic and political processes that govern agroecosystem productivity and stability. Management techniques and farming systems' designs that sustain longterm production are emphasized. (SP)

204. Senior Seminar in Conservation and Resource Studies. (2). Formerly 204. Must be taken on a passed/not passed basis. One 4-hour seminar per week. Semester Prerequisites: Senior standing in CRS. 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 Area of Interest. Required final semester for all CRS majors. (F, SP)

Entomological Sciences

Department Office, 218 Wellman Hall, 642-6660

Professors:
John R. Anderson, Ph.D.
Leonardo E. Catagnaro, Ph.D.
John E. Casida, Ph.D.
Howard D. Davis, Ph.D.
John B. Dyke, Ph.D.
Loren A. Falcon, Ph.D.
John W. Franklin, Ph.D.
Andrew Gutiérrez, Ph.D.
Kenneth S. Hagen, Ph.D.
Edward R. Hart, Ph.D.
Carl B. Hufnagel, Ph.D.
Werner J. Loher, Ph.D.
Gordon W. Frankie, Ph.D.
Raymond D. Roelofs, Ph.D.
William M. Hoskins, Ph.D.
Isao Kubo, Ph.D.
George O. Poinar, Jr., Ph.D.
E. Gordon Linley, Ph.D.
Alexander H. Purcell, Ph.D.
Vince R. Millar, Ph.D.
Winston Jan A. A. Volney, Ph.D.
Stephen C. Welter, Ph.D.
Thomas E. Mittler, Ph.D.
George O. Poinar, Jr., Ph.D.
Charles H. Schaefer, Ph.D.
Charles G. Summers, Ph.D.

The Department of Entomological Sciences presents a diversified and highly interdisciplinary teaching and research program. This includes the following areas of emphasis:

Acarology: the biology, ecology and taxonomy of mites and ticks.

Agricultural Entomology: the study of insects and other arthropods that attack agricultural crops; their life histories, mode of injury, economics, distribution, and methods of control.

Aquatic Entomology: the taxonomy and ecology of insects inhabiting aquatic environments.

Biological Control: the regulation of populations by natural enemies, and the utilization of parasites, predators and pathogens for the control of insects pests and weeds.

Forest Entomology: the study of insects affecting forests and forest products; their life histories, mode of injury, economics, distribution, and control.

Insect Behavior: the physiological mechanisms of behavior, with emphasis on feeding, reproduction, orientation and circadian rhythms.

Insect Ecology: the relationships of insects to their biotic and physical environments, including insect behavior and population dynamics.

Insect Morphology: Insect functional anatomy, with emphasis at the tissue and cellular levels.

Insect Pathology: the principles of pathology and microbiology as applied to insects, the relation of insect diseases to insect control.

Insect Vectors of Plant Pathogens: the role of insects in the transmission and control of plant diseases with emphasis on plant viruses.

Insect Virology: the characterization, pathobiology, and utilization of insect viruses in the management of arthropod populations.

Medical/Veterinary Entomology: the role of insects and other arthropods in transmission and causation of diseases of humans and domestic animals.
Natural Resources: Entomological Sciences

102. Functional Insect Anatomy. (4). Formerly 102 and 102L. Two 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: 100 or consent of instructor. A survey of anatomical and physiological characteristics of insect organs. (F)

103. Insect Physiology. (2). Formerly Entomological Sciences 103L. Two 1-hour lectures per week. Semester Prerequisites: General biology, zoology, or entomology. Characteristics of physiological mechanisms, with emphasis on their uniqueness, diversity, and adaptiveness. (SP)

103L. Laboratory in Insect Physiology. (2). Formerly Entomological Sciences 103L. Two 3-hour laboratories per week. Semester Prerequisites: 103 (may be taken concurrently) and consent of instructor. Demonstrations and projects to illustrate salient features of insect physiological exercises and laboratory practices. (SP)

104. Systematic Entomology. (5). Three 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: 100. Formerly 101 and 104. Principles and practice of zoological taxonomy; identification and classification of insect families. (SP)

105. Insect Ecology. (4). Formerly Entomological Sciences 105. Two 1-hour lectures, one 1-hour discussion, and one 3-hour laboratory per week. Semester Prerequisites: A course in general entomology or consent of instructor. One mandatory overnight field trip. Ecology of insects: interactions with the physical environment; population and community dynamics; description of different insect community types. (SP)

106. Field Entomology. (1). Formerly Entomological Sciences 106. Course may be repeated for credit up to four times. One week involving 60 hours of lab work and one hour of lecture offered four times per year. Semester Prerequisites: 10, 100, or consent of instructor. Field observation, recording and interpretation of insect relationships to habitats, their behavior and plant-pest interactions. Collection and preparation of specimens with important biological data. (F,SP) Extracurricular course.

108. Biology of Aquatic Insects. (3). Formerly Entomological Sciences 108. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Introductory course in a biological science. Quarter Prerequisites: 100 or permission of instructor. Identification and ecology of aquatic insects, including their role as indicators of environmental quality. (F) To be offered every odd-numbered years.

110. Applied Entomology. (4). Formerly Entomological Sciences 110. Two 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: Introductory course in a biological science. Introduction to the identification and classification of beneficial and harmful arthropods. (F) To be offered odd-numbered years.

117. Pesticide Chemistry and Toxicology. (3). Formerly Entomological Sciences 117. Three 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Introductory course in organic chemistry and biology, or consent of instructor. Quarter Prerequisites: Chemistry 8A-8B or equivalent and one college level biology course, or consent of instructor. Chemical composition of pesticides and related compounds, their mode of action, resistance mechanisms, and environmental impact. (SP) To be offered odd-numbered years.

117L. Laboratory in Pesticide Chemistry and Toxicology. (1). Formerly Entomological Sciences 117L. One 3-hour laboratory per week. Semester Prerequisites: 117 (may be taken concurrently) and consent of instructor. Laboratory exercises to emphasize analytical, biochemical, and physiological techniques in the identification of pesticides. (SP) To be offered odd-numbered years.

119. Insect Behavior. (2). Formerly Entomological Sciences 119. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: 100, 102, and 103 recommended. An introduction to the study of insect behavior and its physiological and ecological correlates. (F) To be offered in odd-years.

119L. Laboratory in Insect Behavior. (1). Formerly Entomological Sciences 119L. One 3-hour laboratory per week. Semester Prerequisites: 119 (may be taken concurrently) and consent of instructor. Laboratories in laboratory sessions, including behavior, communication, reproductive behavior, circadian rhythms. (F) To be offered in odd-years.

130. Biological Control of Pests. (3). Formerly Entomological Sciences 130. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 100 or 110 and at least one course in microbiology. Principles of insect pathology and insect microbiology; infectious and noninfectious diseases of insects; diagnosis, therapy and microbial control. (SP)

150. Medical-Veterinary Parasitology. (3). Formerly Entomological Sciences 150. Two 1-hour lectures and one evening laboratory per week. Semester Prerequisites: Upper division standing or consent of instructor. Protozoan and helminth infections of man and domestic animals. Host-parasite interactions, epidemiology, pathogenesis, treatment and control. (SP)

150L. Medical-Veterinary Parasitology Laboratory. (2). Formerly Entomological Sciences 150L. Two 3-hour laboratories per week. Semester Prerequisites: 150 (may be taken concurrently) or Zoology 156. Protozoan and helminth infections of man and domestic animals. Laboratories for the identification of parasites, curatorial methods, and experimental techniques. (F)

153. Medical and Veterinary Entomology. (4). Formerly 153 and 153L. Two 1-hour lectures, one 3-hour laboratory, and one 3-hour insect management session per week. Role of insects and other arthropods in transmission and causation of diseases of humans and domestic animals; general and specialized techniques for managing species important to the health and welfare of humans and livestock; collection and identification of important species. (F)

163. An Introduction to Acarology. (3). Formerly 163 and 163L. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 100 or 110 or equivalent. Quarter Prerequisites: Biology 1A-1B or equivalent. An introduction to the ecology, biology, morphology, systematics, physiology and use of mites and ticks and their economic importance. The taxonomy, morphology and life cycles of representative mites and ticks will be surveyed in laboratories and demonstrations. (SP)

166. Vector-Pathogen Relationships. (2-4). Formerly Entomological Sciences 266. This course may be taken as a lecture for 2 units, or lecture and lab for 4 units. Two 1-hour lectures and two optional 3-hour laboratories per week. Semester Prerequisites: Consent of instructor. Biological relationships of plant pathogens and arthropods acting as vectors in the spread of plant diseases. Laboratory emphasis on rearing, manipulation, and use of vectorial insects in transmission of plant viruses and prokaryotes. (SP)

197. Field Studies in Entomology. (1-3). Formerly Entomological Sciences 197. Course may be repeated for credit. May be taken on a pass/no pass basis. One unit for three hours of work per week. Semester Prerequisites: Consent of instructor. Supervised experiences in off-campus organizations relevant to specific concentrations of entomology. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Studies for Advanced Undergraduates. (1-3). Formerly Entomological Sciences 198. Course may be repeated for credit. Must be taken on a pass/no pass basis. One unit for three hours of work per week. Semester Prerequisites: Consent of
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Week techniques and purposes of the scientific method in entomology, with emphasis on problem selection and the collection, evaluation, and presentation of data. Recommended for beginning graduate students. (F)

287. Seminar in Insect Physiology. (1, Formerly 287). Course may be repeated for credit. One 3-hour seminar per week. A 3-hour seminar held once a week for graduate students to discuss the advances in insect physiology through individually prepared papers by students. (SP)

288. Seminar in Parasitology. (1, Formerly 288). Course may be repeated for credit. One 3-hour seminar per week. A 3-hour seminar held once a week for graduate students to discuss the advances in parasite physiology through individually prepared papers by students. (SP)

291A. Research Reviews in Comparative Virology. (F, SP). Seminar to review and discuss original research by staff and students. (F, SP)

292. Seminar in Insect Bio-Organochemistry. (1, Formerly 292). Course may be repeated for credit. One 3-hour seminar per week. Three 1-hour lectures 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)

293. Seminar in Insect Pathology. (1). Formerly 293. Course may be repeated for credit. One 3-hour seminar per week. Three 1-hour lectures per week. A 3-hour seminar held once a week for graduate students to discuss the advances in insect pathology through individually prepared papers by students. (SP)

294. Seminar in Systematic Entomology. (1). Formerly 294. Course may be repeated for credit. One 3-hour seminar per week. A 3-hour seminar held once a week for graduate students to discuss the advances in systematic entomology through individually prepared papers by students. (SP)

295. Seminar in Insect Ecology and Biological Control. (1). Formerly 295. Course may be repeated for credit. One 3-hour seminar per week. A 3-hour seminar held once a week for graduate students to discuss the advances in insect ecology and biological control through individually prepared papers by students. (SP)

296. Seminar in Forest Entomology. (1, Formerly 296). Course may be repeated for credit. One 3-hour seminar per week. A 3-hour seminar held once a week for graduate students to discuss the advances in forest entomology through individually prepared papers by students. (SP)

298. Directed Group Studies. (1-6). Formerly 298. Course may be repeated for credit. Four hours of work per week per unit on part of student. Advanced study or research on topics that may vary from semester to semester. (SP, F)

299. Research in Entomology and Parasitology. (1-12). Formerly 299. Course may be repeated for credit. Four hours of work per unit per week on part of student. Original study on special topics in laboratory, field, and museum. Credit awarded according to work accomplished. (F, SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four hours of work per unit per week on part of student. Individual study for the comprehensive or language requirement in consultation with the field advisor. 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). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four hours of work per unit per week on part of student. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare for the various examinations required for candidates for the Ph.D. May not be used for unit or residence requirements for the doctoral degree. (F, SP)

Interdepartmental Studies Courses

Upper Division Courses

IDS120. Introduction to Comparative Virology. (3). Two 1-hour lectures and one 1-hour discussion per week. (Semester Prerequisites: Organic chemistry and elementary biology, or consent of instructor. Quarter Prerequisites: Biology 1A and Chemistry 8A. An introduction to virology concerned with viruses.)

IDS122. Animal Behavior. (3, Formerly 122. Three 1-hour lectures, one 1-hour demonstration, plus one hour discussion per week. (Semester Prerequisites: Students should have a strong background in elementary biology, or consent of instructor. Quarter Prerequisites: Biology 11 or Zoology 1, or Entomology 100. Genetics 102 strongly recommended. Quarter Prerequisites: Biology 1 or 11, or Zoology 1, or Entomology 100. Genetics 100 strongly recommended. An introduction to comparative animal behavior and behavioral physiology to students with an interest in the analysis of behavior genetics and development, learning aggression, reproduction, adaptiveness, physiological substrates. Sponsoring Departments: Entomological Sciences, Psychology, and Zoology. Not offered 1984-85.)

Forestry and Resource Management

Department Office, 145 Mulford Hall, 642-3765

Professors:

W. Wayne Wilcox, Ph.D.
Eugene Zavarin, Ph.D.
Robert C. Cockrell, Ph.D.
Fred E. Dickinson, Ph.D.
Edmund F. Hanks, Ph.D.
L.H. Heady, Ph.D.
N. H. Vaux, Ph.D.

Assistant Professors:

Reginald H. Barnett, Ph.D.
James W. Bartolome, Ph.D.
Claus J. Carr, Ph.D.
...(Emeritus)
...(Emeritus)
...(Emeritus)

Lecturer:

Donald Gasser, M.S.


Undergraduate Program

This major is the primary vehicle for students intending to enter the profession of forestry. Its objective is the education of men and women to manage forests and related wildlands to yield up to their full potential for the benefit of society.
capacity of wood, water, forage, wildlife habitat, recreational opportunities, and other desired environmental benefits.

More than one third of the upper division program is taken as a combination of restricted and free electives. A student should acquire a highly specialized or a broad knowledge of the field of forestry. In addition, with the assistance of an adviser, the student may develop specialized programs in such areas as forest ecology, silviculture, and forest management; range ecology and management; wildlife biology and management; watershed management and hydrology; recreation and park management; and resource economics and planning.

Courses to develop these interests are offered in the College by the Department of Forestry and Resource Management. Students also select appropriate courses given by other departments on campus in order to pursue individual interests, to study basic sciences or specialized fields not offered by the College, or to broaden understanding of human affairs. Advanced undergraduate courses in forestry are offered by the Department of Forestry and Resource Management.

Licensing. Completion of the Bachelor of Science degree with a major in forestry provides four years of credit toward meeting the requirement of seven years of qualifying education and/or professional experience for licensing as a professional forester in the state of California. Additional credit toward licensing may be earned by completion of the Master of Forestry degree. For further information concerning this, see the section on Graduate Program.

Completion of the major, with inclusion of all upper-division range science courses, qualifies the graduate for state and federal Range Conservationist positions.

Preparatory Program. During the freshman and sophomore years the student is expected to complete biology, 8 units; chemistry, 8 units; economics, 5 units; plane surveying, 3 units; English, 8 units; geology, 8 units; calculus, 6 units; statistics, 3 units; computer science, 3 units.

Summer Field Program. During the summer between the sophomore and junior years, the student majoring in Forestry must complete the ten-week Summer Field Program offered in Plumas County. This field program includes four courses totaling 10 semester units of credit which mark the beginning of the professional program. The student is introduced to the concepts and principles involved in land management, but the emphasis in the course is on concepts and principles along with the development of an understanding of the whole series of related ecological, social, and economic principles guiding the interaction. Integrative planning for simultaneous production of multiple outputs, social impact analysis. (SP)

The Junior and Senior Years. The program of the junior and senior years involves 60 semester units of work, consisting of a core of 35 units of courses required of all students in the major, a group of restricted electives totaling 11 to 19 units, and six or more units of free electives.

Each student in the major must select an option (Forest Management, Wildlife Management, Range Management) by the first semester of residence following the Summer Field Program and satisfy the Residence Electives Requirements established for that option.

After completion of the required Summer Field Program (Forestry 100A-100B-100C-100D), at least 40 units of the requirements for the major in Forestry must be completed in residence in not less than three semesters in the major.

Graduate Programs

The M.S. and Ph.D. degrees in Wildland Resource Science are available to students interested in careers in research and teaching. Specialization can be developed in one of several fields such as biometrics, terrestrial and aquatic ecology, economics, genetics, management science, photography, silviculture, sociology, soils, watershed, and wildlife fisheries. Alternatively, the coursework and dissertation research may be designed to develop knowledge in a combination of wildland resource disciplines. This approach may be useful in providing new knowledge or an innovative approach to the solution of forest and wildland resource problems.

The Master of Forestry degree is a graduate professional degree, granted through the Department of Forestry and Resource Management, and represents completion of professional education, fire management, wildlife biology and management; watershed management and hydrology; recreation and park management; and resource economics and planning.

Courses to develop these interests are offered in the College by the Department of Forestry and Resource Management. Students also select appropriate courses given by other departments on campus in order to pursue individual interests, to study basic sciences or specialized fields not offered by the College, or to broaden understanding of human affairs. Advanced undergraduate courses in forestry are offered by the Department of Forestry and Resource Management.

Licensing. Completion of the Bachelor of Science degree with a major in Forestry provides four years of credit toward meeting the requirement of seven years of qualifying education and/or professional experience for licensing as a professional forester in the state of California. Additional credit toward licensing may be earned by completion of the Master of Forestry degree. For further information concerning this, see the section on Graduate Program.

Completion of the major, with inclusion of all upperdivision range science courses, qualifies the graduate for state and federal Range Conservationist positions.

Preparatory Program. During the freshman and sophomore years the student is expected to complete biology, 8 units; chemistry, 8 units; economics, 5 units; plane surveying, 3 units; English, 8 units; geology, 8 units; calculus, 6 units; statistics, 3 units; computer science, 3 units.

Summer Field Program. During the summer between the sophomore and junior years, the student majoring in Forestry must complete the ten-week Summer Field Program offered in Plumas County. This field program includes four courses totaling 10 semester units of credit which mark the beginning of the professional program. The student is introduced to the concepts and principles involved in land management, but the emphasis in the course is on concepts and principles along with the development of an understanding of the whole series of related ecological, social, and economic principles guiding the interaction. Integrative planning for simultaneous production of multiple outputs, social impact analysis. (SP)

The Junior and Senior Years. The program of the junior and senior years involves 60 semester units of work, consisting of a core of 35 units of courses required of all students in the major, a group of restricted electives totaling 11 to 19 units, and six or more units of free electives.

Each student in the major must select an option (Forest Management, Wildlife Management, Range Management) by the first semester of residence following the Summer Field Program and satisfy the Residence Electives Requirements established for that option.

After completion of the required Summer Field Program (Forestry 100A-100B-100C-100D), at least 40 units of the requirements for the major in Forestry must be completed in residence in not less than three semesters in the major.

Graduate Programs

The M.S. and Ph.D. degrees in Wildland Resource Science are available to students interested in careers in research and teaching. Specialization can be developed in one of several fields such as biometrics, terrestrial and aquatic ecology, economics, genetics, management science, photography, silviculture, sociology, soils, watershed, and wildlife fisheries. Alternatively, the coursework and dissertation research may be designed to develop knowledge in a combination of wildland resource disciplines. This approach may be useful in providing new knowledge or an innovative approach to the solution of forest and wildland resource problems.

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Courses to develop these interests are offered in the College by the Department of Forestry and Resource Management. Students also select appropriate courses given by other departments on campus in order to pursue individual interests, to study basic sciences or specialized fields not offered by the College, or to broaden understanding of human affairs. Advanced undergraduate courses in forestry are offered by the Department of Forestry and Resource Management.

Licensing. Completion of the Bachelor of Science degree with a major in Forestry provides four years of credit toward meeting the requirement of seven years of qualifying education and/or professional experience for licensing as a professional forester in the state of California. Additional credit toward licensing may be earned by completion of the Master of Forestry degree. For further information concerning this, see the section on Graduate Program.

Completion of the major, with inclusion of all upperdivision range science courses, qualifies the graduate for state and federal Range Conservationist positions.

Preparatory Program. During the freshman and sophomore years the student is expected to complete biology, 8 units; chemistry, 8 units; economics, 5 units; plane surveying, 3 units; English, 8 units; geology, 8 units; calculus, 6 units; statistics, 3 units; computer science, 3 units.

Summer Field Program. During the summer between the sophomore and junior years, the student majoring in Forestry must complete the ten-week Summer Field Program offered in Plumas County. This field program includes four courses totaling 10 semester units of credit which mark the beginning of the professional program. The student is introduced to the concepts and principles involved in land management, but the emphasis in the course is on concepts and principles along with the development of an understanding of the whole series of related ecological, social, and economic principles guiding the interaction. Integrative planning for simultaneous production of multiple outputs, social impact analysis. (SP)

The Junior and Senior Years. The program of the junior and senior years involves 60 semester units of work, consisting of a core of 35 units of courses required of all students in the major, a group of restricted electives totaling 11 to 19 units, and six or more units of free electives.

Each student in the major must select an option (Forest Management, Wildlife Management, Range Management) by the first semester of residence following the Summer Field Program and satisfy the Residence Electives Requirements established for that option.

After completion of the required Summer Field Program (Forestry 100A-100B-100C-100D), at least 40 units of the requirements for the major in Forestry must be completed in residence in not less than three semesters in the major.

Graduate Programs

The M.S. and Ph.D. degrees in Wildland Resource Science are available to students interested in careers in research and teaching. Specialization can be developed in one of several fields such as biometrics, terrestrial and aquatic ecology, economics, genetics, management science, photography, silviculture, sociology, soils, watershed, and wildlife fisheries. Alternatively, the coursework and dissertation research may be designed to develop knowledge in a combination of wildland resource disciplines. This approach may be useful in providing new knowledge or an innovative approach to the solution of forest and wildland resource problems.

The Master of Forestry degree is a graduate professional degree, granted through the Department of Forestry and Resource Management, and represents completion of professional education, fire management, wildlife biology and management; watershed management and hydrology; recreation and park management; and resource economics and planning.
The properties of soil in relation to the influence of forest and wildland vegetation. The relationship of these soil properties to forest management, site assessment, growth productivity, erosion control, and the maintenance of forest and range productivity. (F) Odd years only.

121. Pedology. (2) Formerly 121. One 1-hour lecture and one 3-hour laboratory per week. The study of trees and associated woody species including their taxonomy, aecology, identification and ethological characteristics. (F)

122. Forest Influences. (3) Formerly 122. Two 1-hour lectures per week. Semester Prerequisites: 121. Semester Prerequisites: One course in biology. Quarterly Prerequisites: chemical principles of ecosystems, maintenance, management, and restoration. (F)

123A. Ecology of Forests and Wildlands. (2) Formerly 123A. Two 1-hour lectures per week. Semester Prerequisites: Ecology of ecosystems. Quarterly Prerequisites: Satellite course in biological science. Ecology of terrestrial ecosystems and their relationship to management programs. Includes population, community, and ecosystem levels of organization, followed by selected case studies. (F)

123B. Ecology of Forests and Wildlands. (2) Formerly 123B. Four 1-hour lectures and one 1-hour discussion per week for 7½ weeks. Semester Prerequisites: 123A. Ecology of terrestrial ecosystems. Field and laboratory ecological methods; one weekend field trip required (3 days). (F)

123C. Ecology of Forests and Wildlands. (2) Formerly 123C. Four 1-hour lectures and one 1-hour discussion per week for 7½ weeks. Semester Prerequisites: 123A. Quarter Prerequisites: 123A-123B. Field characteristics of the plant community and its role in the forest species. (SP)

124. Principles of Range Management. (3) Formerly 124. Two 1-hour lectures per week. Semester Prerequisites: 123A-123B. Quarter Prerequisites: 123A-123B-123C. Field characteristics of the plant community and the environment. Field characteristics of the plant community and the environment. Field characteristics of the plant community and the environment. (SP)

125. Principles and Practices of Silviculture. (4) Formerly 125. Three 1-hour lectures per week plus five Saturday field trips. Semester Prerequisites: 123A-123B-123C or course in community ecology. Quarter Prerequisites: 123A or course in community ecology. Principles and concepts of the ecological aspects of establishment, growth, composition, and quality of forest trees and stands. The manipulation of forest and the control of stand structure to enhance forest productivity. (F)

141. Principles of Range Management. (2) Formerly 141. Two 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: Four semester units of biology. Quarter Prerequisites: Six quarter units of biology. Use of native grazing lands according to Cardinal Principles for sustained animal production and various multiple uses. Application of plant ecology and physiology to grazing management and soil-vegetation manipulation to improve ranges and increase forage yield. (F)

141L. Principles of Range Management Laboratory. (2) Formerly 141L. Two 2-hour laboratories per week and at least one all-day field trip. Semester Prerequisites: 141L or equivalent. Field and laboratory exercises in animal distribution, grazing capacity, range planning; California range plants, and elements of range analysis such as reconnaissance, utilization and condition trend. Saturday field trip(s) required. (F)

142. Range Plants. (3) Formerly 142. Two 1-hour lectures plus one 3-hour laboratory per week. Systematic relationships, identification of range grasses, forbs and shrubs; their distribution, growth, form, values and responses to use. (SP)

143. Range Animal Nutrition. (2) Formerly 143. Two 1-hour lectures plus one 2-hour laboratory per week. Semester Prerequisites: General chemistry and biology of hunger principles of feeding practices of animals grazing rangelands. Coverage of important areas in ruminology: carbohydrate, protein, lipid, mineral, vitamin nutrition; composition of feeds: nutrient requirements. Sensory responses to feeds, etc. relative to environment and nutritional factors. Supplementation: ration formulation. (F) Odd years only.

144. Range Ecology, Improvements, and Management. (3) Formerly 144. Three 1-hour lectures per week. Semester Prerequisites: One course in ecology. The ecological basis for range management activities, considered in the context of western range ecosystem types. Specific range improvement and range management practices are discussed in the context of ecosystem processes. (SP)

170. Wildlife Ecology. (3) Formerly 170. Two 1-hour lectures per week. Introduction to wildlife ecology and its relationship to management programs. Includes population, community, and ecosystem levels of organization, followed by selected case studies. (F)

171. American Wildlife: Identification and Conservation. (2) Formerly 171. One 1-hour lecture and one 3-hour laboratory per week. Identification and life histories of wildlife in North America, with emphasis on species with important recreational value. The conservation of rare and endangered species is highlighted. (SP)

176. Advanced Wildlife Management. (3) Two 1-hour lectures per week plus one 2-hour laboratory per semester. Semester Prerequisites: 101 and 170. An advanced coverage of the principles, procedures, and techniques of managing terrestrial wildlife with an emphasis on North American forest and rangeland ecosystems. (SP)

177. Case Histories in Wildlife Management. (2) Formerly 177. Two 2-hour seminars per week. Semester Prerequisites: 170. Seminar format with presentation and discussion by each student, with long term paper requirement. Examination in depth of current issues in wildlife management. (SP)

178. Freshwater Ecology. (3) Formerly 178. Two 1-hour lectures and one ½-hour discussion, and one 3-hour laboratory per week. Semester Prerequisites: Five semester units of Biology; upper division standing. Quarter Prerequisites: Eight quarter units of Biology. Description of the biota and their interactions in lakes and streams. Outside reading for weekly discussion on topics of entrophication, thermal pollution, reservoirs, introduced species, spawning of salmonids. Laboratory is an independent research project. (SP)

198. Directed Group Study. (1-3) Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. Meetings to be arranged. Semester Prerequisites: Consent of instructor. Group study of special problems relating forestry and resource management. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-3) Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Consent of instructor. See regulations regarding restrictions. (F,SP)

Graduate Courses

201. Advanced Forest Sampling. (2) Formerly 201. Two 1-hour lectures per week. Semester Prerequisites: 101. Quarter Prerequisites: 101, 102. A semianalytical approach to the measurement of forest and wildland resources, estimations, sampling designs, remote sensing, and multiple parameter surveys. (SP)

202. Advanced Photographic Interpretation. (2) Formerly 202. One 3-hour lecture/discussion per week plus field trips to be arranged. A survey of current research in forest photo interpretation and related fields. An analysis of the practical forestry applications of multispectral and multiregion reconnaissance. Practice in the interpretation of aerial photography and other imagery of forested areas. (SP)

204. Advanced Forest Mensuration. (2) Formerly 204. One 2-hour lecture per week. Semester Prerequisites: 101, 104; Statistics 20; Statistics 161 is recommended. A study of the uses of research techniques in the measurement of forest stands and trees. Statistical and mathematical forest modeling techniques. (F)

205. Seminar On Fire As An Ecological Factor. (2) Formerly 205. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour laboratory per week. Effect of fire on ecology of forest and rangeland. (F)

209. Research Concepts and Methods. (3) Formerly 209. Two 1½-hour lectures/seminars per week. Semester Prerequisites: Basic courses in statistics. Conceptual and methodological bases of research design, data analysis, and interpretation. Case studies and individual projects critiqued. (SP)

210. Seminar in Advanced Forest Economics. (2) Formerly 210. One 2-hour lecture per week. Semester Prerequisites: Graduate level economic theory and/or advanced courses in economics, including assessment of non-market values, analysis of forest products demand and supply, models of inter-regional trade, national and regional impact assessment, intertemporal allocation of forest resources, and role of forestry in economic development. (F) Not offered Fall 1985.

211. Seminar in Analysis of the Forest Economy. (2) Formerly 211. Two 1-hour lectures per week. Semester Prerequisites: Eight semester units of economic theory, resource economics, or forest economics. Quarter Prerequisites: Twelve quarter units of economic theory, resource economics, or forest economics. Analysis of national and regional forest economics. Indirect economic impacts of forest policy change. Timber market, export goals. Applied econometrics and input/output analysis. (F)

212. Seminar in Forest Economics. (2) Formerly 212. Two 1-hour lectures per week. Semester Prerequisites: Eight semester units of economics, resource economics, or forest economics. Quarter Prerequisites: Twelve quarter units of economics, resource economics, or forest economics. Theory and practice of benefit-cost analysis in forestry, with special reference to evaluation of investment projects, resource development programs, and land-use planning. (F)

213. Advanced Forest Management. (3) Formerly 213. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 113 and 114. Application of mathematical programming and other analysis techniques to timber harvest scheduling. Comparative evaluation of even-aged systems. Contemporary forest management issues. (F)

214. Case Studies in Forest Management. (1-4) Formerly 214A-214B. May be repeated for credit. Minimum of 4 hours per week per unit. To be arranged. Semester Prerequisites: 101, 102, 113, 114, 125 and equivalent. Individual case studies involving the inventory, analysis, and management of forest resources. Intended for Master of Forestry students. (F,SP)

215. Seminar in Forest and Wildland Resource Policy Analysis. (3) Formerly 215. May be repeated for credit. Two 1½-hour lectures/seminars per week. Semester Prerequisites: Consent of instructor. The seminar addresses (1) methods of research and policy analysis, (2) policies and strategies, and (3) processes of policy formation. It proceeds through these phases for a specific policy problem selected each year. (SP)

217. Seminar in Sociology of Forest and Wildland Resources. (2) Formerly 217. One 2-hour lecture per week. Semester Prerequisites: Consent of instructor. Individual projects and group discussions concerning social constraints to resource planning and management. Application of sociocultural theories to
problems of managing wildland ecosystems. Students will examine topics of individual interest related to the management of wildlands. Emphasis will be on diversity, overlap and community similarity. Writing and presentation of research proposal required. (SP) May be repeated for credit. One 2-hour lecture per week. Semester Prerequisites: Genetics 110 or equivalent. A seminar course dealing with selected current topics in range ecosystem management, (F) To be offered every year. 275. Wildlife Management Planning. (2). One 2-hour lecture/meeting per week. Semester Prerequisites: 176. A review of the latest methodologies for developing wildlife management plans. Students will prepare and present wildlife management plans for specific situations. One 2-hour lecture per week. Open to qualified students from other departments. (SP) To be offered odd years only. 276. Seminar in Freshwater Ecology. (2). Formerly 278. One 2-hour lecture/seminar per week. Semester Prerequisites: Knowledge of biology, taxonomy, and ecology. Discussions and student presentations on topics or problems related to fisheries and aquatic ecology. Detailed analysis of data on secondary production and trout spawning. (F) 295. Individual Study. (1-7). Formerly 296. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor and graduate advisor. 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) 298. Directed Group Study. (1-3). Formerly 298. May be repeated for credit. Sections 1-5: S.U. Schedules 6-10: Letter graded. Meetings to be arranged. Semester Prerequisites: Consent of instructor: Readings and conferences under the direction of the faculty for qualified graduate students. (F,SP) 299. Individual Research. (1-12). Formerly 299. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor: Individual study for the comprehensive examination in consultation with the field advisor. (F,SP) 300. Supervised Teaching in Forestry and Resource Management. (1-6). Formerly 300. May not be used to satisfy unit or residence requirements. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor: Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified graduate students to perform various examinations required of candidates for the Ph.D. (F,SP) Professional Courses 302. Supervised Teaching in Forestry and Resource Management. (1-6). Formerly 300. May not be used to satisfy unit or residence requirements. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor and appointment as T.A. Supervised teaching experience in a departmental course. (F,SP) 303. Professional Training in Research. (1-6). Formerly 138.0. May not be used to satisfy unit or residence requirements. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. To be arranged. Semester Prerequisites: Consent of instructor and appointment as T.A. Supervised teaching experience in a department course. (F,SP)
of their constituents, including cellulose, hemicelluloses, lignin, and associated materials. (F)

135. Biological Deterioration of Wood. (2). One 2-hour lecture per week. Semester Prerequisites: Consent of instructor. Formerly WST 136. Study of the deterioration of wood in use by fungi, bacteria, and insects, and its control or prevention. (SP) Odd-numbered years.

141. Mechanical Processing of Wood. (2). Formerly WST 132. Two 1-hour lectures per week. The theory of converting logs into sawn, peeled, or other machine products. (SP) Odd-numbered years.

142. Bonding Processes for Wood. (3). Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: Consent of instructor. Formerly WST 137. Principles of bonding, survey of wood adhesives and bonding wood products. Chemistry, testing, and use and performance of various adhesive products, including finishes. (SP) Odd-numbered years.

143. Chemical Processing of Wood. (3). Formerly WST 135. Two 1-hour lectures plus one 3-hour laboratory per week. Semester Prerequisites: Consent of instructor or consent of instructor. Formerly WST 138. The technology and associated chemistry of processing wood and its derivatives, including: pulping, pulp bleaching, processing of liquid sugars and lignin, conversion to organic products, gasification to syngas, and other chemical conversions of wood. Energy and environmental aspects will be considered. (SP)

144. Process Control and Instrumentation for Forest Products. (2). Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Formerly WST 139. Principles of instrumentation and process control in forest products conversion processes, with special reference to lumber drying and preservative treatment processes. (SP) Even-numbered years.

145. Production Management in the Forest Products Industry. (2). Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Management problems, and methods for their solution, for typical plants of the forest products industry, with special reference to products, processes, and equipment. (SP) Even-numbered years.

198. Directed Group Study. (1-3). Formerly WST 198. May be repeated for credit. Must be taken on a pass/credit basis. Meetings to be arranged. Semester Prerequisites: Consent of instructor. Group study of special problems in forest products. (F,SP) Odd-numbered years.

231. Advanced Wood Anatomy. (2). Formerly Forestry 231. One 2-hour lecture per week. Semester Prerequisites: 131 or equivalent, and consent of instructor. Formerly Forestry 131. Review of current literature on wood anatomy, including ultrastructure of wood cell walls, reaction wood, and microbial attack. Open to qualified graduate students from other departments. (F) Even-numbered years.


233. Advanced Wood Mechanics. (3). Formerly Forestry 233. Three 1-hour lectures per week. Semester Prerequisites: 133. Quarter Prerequisites: Forestry 134 or equivalent. Formerly Forestry 134. Civil Engineering 130, or equivalent. Fracture of wood, methods of testing, and mechanical properties of wood. (SP) Odd-numbered years.

234. Chemistry of Polysaccharides, Lignin, and Extractives. (3). Formerly Forestry 234. Three 1-hour lectures per week. Semester Prerequisites: 134 (may be taken concurrently) or equivalent. Formerly 135. Formerly Forestry 135 or 136; or equivalent. Formerly WST 137. Quantitative aspects of polysaccharides, lipids, and associated materials occurring in plant material, with emphasis on woody plants. (SP) Odd-numbered years.

238. Special Topics in Wood Science and Technology. (1-3). May be repeated for credit. To be arranged. Minimum of 4 hours of work per week per unit. Semester Prerequisites: Consent of instructor. (F,SP)

238A. Wood Anatomy. (1-3). Formerly Forestry and Resource Management 238A. Advanced study in wood anatomy primarily for advanced graduate students. (SP)

238B. Wood Chemistry. (1-3). Formerly Forestry and Resource Management 238B. Advanced study in wood chemistry primarily for advanced graduate students. (SP)

238C. Chemical Processing of Wood. (1-3). Formerly Forestry and Resource Management 238C. Advanced study in chemical wood processing primarily for advanced graduate students. (SP)

238D. Wood Mechanics. (1-3). Formerly Forestry and Resource Management 238D. Advanced study in wood anatomy primarily for advanced graduate students. (SP)

238E. Wood Physics. (1-3). Formerly Forestry and Resource Management 238E. Advanced study in wood physics primarily for advanced graduate students. (SP)

238F. Physical/Mechanical Processing of Wood. (1-3). Formerly Forestry and Resource Management 238F. Advanced study in physical/mechanical processing of wood primarily for advanced graduate students. (SP)

238G. Wood Products Pathology. (1-3). Formerly Forestry and Resource Management 238G. Advanced study in wood product pathology primarily for advanced graduate students. (SP)

238H. Wood Adhesion and Adhesives. (1-3). Formerly Forestry and Resource Management 238H. Advanced study in wood adhesion and adhesives primarily for advanced graduate students. (SP)

238I. Production Management in the Forest Products Industry. (2). Formerly WST 238. Advanced study in forest production management primarily for advanced graduate students. (SP)

238J. Wood Formation and Quality. (1-3). Formerly Forestry and Resource Management 238J. Advanced study in wood formation and quality primarily for advanced graduate students. (SP)

239. Seminar in Wood Science and Technology. (1). Formerly 239. May be repeated for credit. Must be taken on a pass/credit basis. Meetings to be arranged. Formerly 239. May be repeated for credit. Must be taken on a pass/credit basis. Meetings to be arranged. Semester Prerequisites: Consent of instructor. Formerly WST 239. Advanced study in wood science and technology. (SP)

Genetics

Department Office, 345 Mulford Hall, 642-5404

Professors: Seymour Angel, Ph.D. Kenneth Paigen, Ph.D. (Chair) William J. Libby, Ph.D. Everett R. Dempster, Ph.D. (Emeritus)

Associate Professors: Michael Freeling, Ph.D. Zimmie Renee Surg, Ph.D. Karen A. Palais, Ph.D. Philip T. Spieth, Ph.D.

Assistant Professors: Robert S. Goodenow, Ph.D. William C. Taylor, Ph.D. Anthony Otsuka, Ph.D.

Undergraduate Adviser: P.T. Spieth.

Undergraduate Program

The major in genetics is designed to provide a broad foundation in biology, centered around a core of emphasis on genetics. The field of genetics encompasses most areas of biological research. Major requirements range from molecular to populational levels, and are designed to take advantage of the diversity of course offerings at Berkeley, allowing students with interests as varied as bacterial genetics, human genetics, or population biology to fulfill the requirements in a manner suited to their personal interests. The intent of the program is to be rigorous in the breadth of its requirements and flexible in the means of fulfilling them.

Requirements for the major are listed in the Announcement of the College of Natural Resources.

Graduate Programs

Administered by an interdepartmental group, this program offers graduate study at both the M.S. and Ph.D. levels. Genetics cuts across the conventional subdivisions of the biological sciences, requiring some familiarity with botany, zoology, bacteriology, biochemistry, and physiology. In addition, genetics has important applications in such diverse disciples as anthropology, forestry, nutrition, and molecular biology. Therefore, graduate work leading to the Ph.D. degree may be supervised by faculty members from the various departments where work related to genetics is being done.

The interdepartmental group arrangement allows students of genetics to approach their field from several points of view: some may study the more purely theoretical aspects of the subject; others may focus on its application in particular disciplines (in forensics, physiology, ecology). Genetics is also viewed as a unifying discipline; and each student, regardless of the area of specialization, must obtain a fundamental knowledge of genetics.

An undergraduate major in genetics or its equivalent in the biological sciences is the standard preparation. However, students with undergraduate degrees in such fields as mathematics, psychology, and chemistry are welcome, with the understanding that subject matter deficiencies must be removed early in the graduate work.

In addition to laboratory and other facilities for research, many field stations of the University are available for students interested in natural populations; and working relationships have been established with the San Francisco Medical Center, the UC Davis Genetics group, the Institute of Forest Genetics at Placerville, and the State Department of Public Health laboratories.

Lower Division Courses

10. Heredity, Evolution, and Society. (4). Formerly WST 10. Two hours of lecture and 2 hours of section per week. Semester Prerequisites: Primarily for students not specializing in biology major. Formerly WST 100A:Biology 1A-1B, Chemistry 8A. 100B: 100A (recom- mended that it be taken concurrently). 100C: Two hours of lecture and one hour of discussion per week. In-depth introduction to genetics, from molecular genetics to evolutionary genetics and dealing with a variety of organisms including Drosophila, bacteria, fungi, plants, and humans. Social implications of genetics and evolution. (F,SP)

Upper Division Courses

100A-100B. General Genetics. (2,5,2,5). Students with credit in 102 or 105 or 110 will receive one less unit in each part of 100. Semester Prerequisites: WST 100A-100B or consent of instructor. 100A: Biology 1A-1B, Chemistry 8A. 100B: 100A (recommended that it be taken concurrently). 100C: Two hours of lecture and one hour of discussion per week. In-depth introduction to genetics, from molecular genetics to evolutionary genetics and dealing with a variety of organisms including Drosophila, bacteria, fungi, plants, and humans. Required of majors, but open to non-majors. 100D: Mechanism of gene transmission and recombination: DNA elements. (F) 100B: Gene structure, function, and regulation in prokaryotes and eukaryotes. (F) 100C: Population genetics, evolution, and quantitative genetics. (SP)

100L. Genetics Laboratory. (3). Formerly 102. One 1/2-hour lecture and five hours of laboratory per week. Semester Prerequisites: 100A-100B or consent of instructor. Experimental techniques with particular emphasis on molecular approaches to classical genetics and modern concepts in human genetics. Enrollment limited. (SP)

102. Survey of General Genetics. (3). Formerly 102. Not open to students with credit in 100A-100B, 105 or 110. Three hours of lecture and 1 hour of section per
week. Semester Prerequisites: Biology 1A-1B or consent of instructor. Recommended: Chemistry 8A-8B. Quarter Prerequisites: Biology 1A-1B-1C. Recommended: Concepts and methods of genetics with equal emphasis upon transmission genetics, molecular genetics, and population genetics. (F)

105. General Human Genetics. (3). Formerly 105. Not open to students with credit in 100A-100B, 102, or 110. Three hours of lecture and one hour of section per week. Semester Prerequisites: Biology 1A-1B or consent of instructor. Quarter Prerequisites: Biology 1A-1B-1C. Molecular, Mendelian, developmental, and population genetics; cytogenetics and evolution. Emphasis on quantitative genetics and evolution. Special topics in section meetings such as gene conservation, breeding, genetic engineering, and evolution of resistance. (SP) Not offered 1984-85.

110. Resource Genetics. (3). Formerly 110. Not open to students with credit in 100A-100B, 102 or 110. Two hours of lecture and 1 hour of section per week plus occasional seminars. Semester Prerequisites: Biology 1A-1B or equivalent. Quarter Prerequisites: Biology 1A-1B-1C. Concepts and techniques of somatic genetics and molecular and biochemical genetics as a basis for genetic manipulation of plants. (F) Not offered 1984-85.

H193. Junior Honors Seminar. (1). Formerly H180. May be taken on a passed/not passed basis. One and one-half hour seminar per week. Semester Prerequisites: Consent of honors adviser. Introduction to honors program. Assigned topics, drawn from genetic research, to be prepared and presented by students for class discussion. (SP)

H194. Senior Honors Thesis. (1). Formerly H187. Must be taken on a passed/not passed basis. One and one-half hour seminar per week. Semester Prerequisites: One or more semesters of H185. Quarter Prerequisites: H185. Writing of honors thesis and oral presentation of research for discussion and criticism by fellow honors students. (SP)

H195. Research for Honors Program. (2-4). Formerly H185. Course may be repeated for credit. To be arranged. Semester Prerequisites: H183 and consent of honors adviser. May be arranged in individual research of literature or laboratory work as arranged with honors adviser and individual faculty. (F,SP)

198. Directed Group Study. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Consent of instructor. Individual student research on projects with individual faculty member. Subject to regulations on p. 0. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. Semester Prerequisites: Consent of instructor. Individual student research on projects with individual faculty member. Subject to regulations on p. 0. (F,SP)

Graduate Courses

200. Gene Expression. (3). New Course since Spring 1983. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: General genetics and molecular biology or biochemistry or consent of instructor.hlaseen:concepts and analyses of gene expression including isolation and characterization of regulatory mutations, gene regulation by DNA rearrangement, amplification and transposition, dosage compensation, paramutation, transvection, elements of eucaryotic transcription, and genetic analyses of development. (F)

205. Human Genetics. (2). New Course since Spring 1983. Two hours of lecture per week. Semester Prerequisites: General genetics and elementary probability or consent of instructor. Topics in human genetics. Development of theory based methods for determining the mode of inheritance of human diseases which do not show simple Mendelian inheritance. Emphasis on discussing the many diseases associated with human histocompatibility (HLA) system. (F) Not offered 1984-85.

210. Developmental Genetics. (2). Formerly 210. May be repeated for credit. Two hours of lecture per week. Semester Prerequisites: 100A or 102. Quarter Prerequisites: 100A-100B or 102. Three hours of lecture per week. Semester Prerequisites: General genetics and probability, or consent of instructor: Analysis of genetic variation among cell populations. Emphasis on cell populations and species. Emphasis on one- and two-locus mathematical models. (SP) Not offered 1984-85.

235A-235B. Clinical Aspects of Human Genetics. (3,3). Formerly 235A-235B. Three hours of lecture per week. Semester Prerequisites: 105 or equivalent. The clinical delineation of human genetic diseases, including chromosomal abnormalities and polygenic disorders. Genetic diagnoses, clinical management, and developmental aspects of disease states. (F,SP)

277. Genetics of Gene Regulation in Higher Organisms. (3). Formerly 277. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Use of specific biochemical-accessible gene systems—especially of maize, Drosophila, and mice—to understand rules of development and evolution. Extensive reading and criticism of primary experimental and theoretical sources. (F,SP)

290A. Graduate Seminar in Genetics: Molecular or Cellular Genetics. (1-3). Formerly 290A. May be repeated for credit. Four hours of lecture/lab per week. Semester Prerequisites: Consent of instructor. Graduate student presentations on topics selected for research in molecular, cellular, and developmental genetics. (F,SP)

290B. Graduate Seminar in Genetics: Developmental Genetics. (1-3). Formerly 290B. May be repeated for credit. Seminar. Semester Prerequisites: Consent of instructor. Graduate student presentations on selected topics of research in developmental genetics. (F,SP)

290C. Graduate Seminar in Genetics: Cytogenetics. (1-3). Formerly 290C. May be repeated for credit. Seminar. Seminar Prerequisites: Consent of instructor. Graduate student presentations on topics selected for research in cytogenetics and molecular organization of chromosomes. (F,SP)

290D. Graduate Seminar in Genetics: Population Genetics and Evolution. (1-3). Formerly 290D. May be repeated for credit. Seminar. Semester Prerequisites: Consent of instructor. Graduate student presentations on selected topics of research in population genetics and evolution. (F,SP)

290E. Graduate Seminar in Genetics: Human Genetics. (1-3). Formerly 290E. May be repeated for credit. Seminar. Seminar Prerequisites: Consent of instructor. Graduate student presentations on selected topics of research in human genetics. (F,SP)

290F. Origin Problems in Genetics. (1). Formerly 290F. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of seminar per week. Semester Prerequisites: Consent of instructor. Emphasis on problems rather than mechanisms underlying evolutionary, developmental, and genetic phenomena. Variable topics stressing features common to all origin problems. (F,SP)

298. Directed Group Study. (1-8). Formerly 298. May be repeated for credit. Individual study arranged. Four hours per week per unit. Semester Prerequisites: Consent of instructor. Specially arranged topics in genetics. (F,SP)

299. Research in Genetics. (1-2). Formerly 299. May be repeated for credit. Sections 1-10: letter grading; sections 11-15: S/U grading. Individually arranged. Four hours per week per unit. Semester Prerequisites: Consent of instructor. Graduate research in genetics under the supervision of individual faculty. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for master's degree. Must be taken on a satisfactory/unsatisfactory basis. Individually arranged. Quarter Prerequisites: For candidates for master's degree. Individual study in consultation with field adviser in preparation for required master's examinations. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individually arranged. Quarter Prerequisites: For candidates for doctoral degree. 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 the Ph.D. (F,SP)

Molecular Plant Biology

Division Office, 313 Hilgard Hall, 642-3884

Professors: Bob B. Buchanan, Ph.D. (Chair) Richard Melkin, Ph.D. Daniel I. Amor, Ph.D. Docteur (Hon.) (Emeritus)

Associate Professor: Anastasios Melis, Ph.D.

Assistant Professor: Robert Fisher, Ph.D.

Major Adviser: B. Buchanan, 313 Hilgard Hall.

Undergraduate Program in Molecular Plant Biology

The study of plants at the molecular level is a newly emerging scientific discipline that includes bio-chemical, biophysical, and molecular biological approaches to the characterization of basic plant processes, such as photosynthesis and nitrogen fixation. This program has been developed with the objective of training students to be capable of entering new biotechnology enterprises related to improvement of plant yields through alterations of basic plant processes. In addition, it serves to prepare students for advanced education in fields related to the above-described discipline, such as plant biochemistry, plant molecular biology, or molecular aspects of plant pathology.

Molecular plant biology students initially study basic physics, mathematics, chemistry, and biology as prerequisites for more advanced work. Coursework in computer sciences is strongly recommended. The program includes upper division courses dealing with plant biochemistry, plant molecular biology, and laboratory procedures in these areas form the central core of the program. Additional advanced courses from related disciplines, such as genetics, botany, and biochemistry, serve to supplement the program and are individually selected to suit particular areas of interest. An attempt is made to provide senior students with an opportunity to spend approximately six months in the research laboratories of individual faculty members in order to obtain actual research experience of an individually-developed project.

Upper Division Courses

101. Flow of Energy and Matter in the Living World. (2). Formerly Bioenergetics 101. Two 1-hour lectures per week. Semester Prerequisites: Chemistry 1A-1B and 1A; Biology 1A-1B. Energy requirements and chemical elements essential for life; origin and utilization of energy in the biosphere; oxygen, carbon, nitrogen, phosphorous cycles; cycles of other essential elements in the biosphere; biological and nonbiological future sources of energy. (SP)

107. Bioenergetics. (2). Formerly Bioenergetics 107. Two 1-hour lectures per week. Semester Prerequisites: Chemistry 1A-1B and 1A; Biology 1A-1B. Energy requirements and chemical elements essential for life; origin and utilization of energy in the biosphere; oxygen, carbon, nitrogen, phosphorous cycles; cycles of other essential elements in the biosphere; biological and nonbiological future sources of energy. (SP)

108. Bioenergetics. (2). Formerly Bioenergetics 108. Two 1-hour lectures per week. Semester Prerequisites: Chemistry 1A-1B and 1A; Biology 1A-1B. Energy requirements and chemical elements essential for life; origin and utilization of energy in the biosphere; oxygen, carbon, nitrogen, phosphorous cycles; cycles of other essential elements in the biosphere; biological and nonbiological future sources of energy. (SP)
energy utilization in biological work at the molecular, cellular, and organismal level; evolutionary development of biological energy production. (SP)

117. Plant Physiology. (2). Formerly Bioenergetics 117. Two 1-hour lectures per week. Semester Prerequisites: Plant Biology 1A-1B, or consent of instructor. One 1-hour laboratory per week. Semester Prerequisites: Plant Biology 1A-1B. The interaction of light and living systems as studies from the molecular to the organismal level. Role of light in animal, plant, and microbial processes, including behavior, development, vision, photosynthesis/photosrespiration, phototropism/photoaxis, bioluminescence, carcinogenesis, damage and repair of DNA. (SP)

120. Plant Biochemistry. (3). Formerly Plant Nutrition 120. Three 1-hour lectures plus one 2-hour laboratory per week. Semester Prerequisites: Biochemistry 102 or equivalent or consent of instructor. Quarter Prerequisites: Plant Biology 5 and 82. Biochemistry of plant processes, including photosynthesis, respiration, development, nitrogen and sulfur metabolism. (F)

125. Plant Biochemistry Laboratory. (3). Formerly Cell Physiology 125. One and one-half hour of lecture and 7 hours of laboratory per week. Semester Prerequisites: Consent of instructor or pass in 119. One hour of lecture/discussion per week. Semester Prerequisites: Consent of Instructor. (F,SP)

175. Molecular Plant Biology Laboratory. (3). One hour of lecture and six hours of laboratory per week. Semester Prerequisites: Upper division course in molecular biology and consent of instructor. Laboratory experimentation on the molecular biology of plants, including isolation, characterization, and manipulation of nucleic acids relevant to intact plant and plant tissue culture systems. (F)

198. Directed Group Study or Investigation. (1-3). Formerly Bioenergetics 198. Course may be repeated for credit. Must be taken on a credit/credit or pass/credit basis. One hour of lecture/discussion per week. Semester Prerequisites: Consent of instructor. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly Bioenergetics 199. Course may be repeated for credit. Must be taken on a pass/credit/no pass basis. Three hours of research/laboratory research per week. Semester Prerequisites: Consent of instructor. (F,SP)

Graduate Courses

222. Photosynthesis. (3). Formerly Cell Physiology 222. Three 1-hour lectures per week. Semester Prerequisites: Consent of instructor; Carbon assimilation, structure of photosynthetic apparatus, light and dark reactions, with special emphasis on energy conversion, photosynthetic phosphorylation, and photosynthesis in subcellular systems. (F)

250. Seminar in Molecular Plant Biology. (1). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One two-hour seminar per week. Semester Prerequisites: Consent of Instructor. Review of current literature and research in the field. (F,SP)

260. Seminar in Cell and Molecular Plant Biology. (1). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1½-hour meeting per week. Semester Prerequisites: Consent of Instructor. Current topics in the areas of cellular, molecular, and related physiological aspects of plant biology. (SP)

298. Molecular Plant Biology Group Studies. (1-6). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture/discussion per week per unit. Semester Prerequisites: Consent of Instructor. Advanced study or research topics which will vary from semester to semester. (F,SP)

299. Molecular Plant Biology Supervised Independent Study and Research. (1-12). Formerly Cell Physiology 299. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours of research/lab per week per unit. Semester Prerequisites: Consent of Instructor. Research. (F,SP)

Related Courses in Other Departments

BOTANY 138. Plant Molecular Biology. (2).

Nutritional Sciences

Department Office, 119 Morgan Hall, 642-6490

Professors:
George H. Beaton, Ph.D. (Visiting)
Leonor D. Magdalena, Ph.D.
Doris H. Calloway, Ph.D.
Kenneth J. Carpenter, Ph.D.
Janet C. King, Ph.D.
Norman Krömer, M.D., Ph.D. (Chair)
Angela C. Little, Ph.D.
Mary Ann Williams, Ph.D.
George M. Briggs, Ph.D.
Maynard A. Joslyn, Ph.D. (Emeritus)
Thomas H. Jukes, Ph.D. (Emeritus)
Barbara M. Kennedy, Ph.D.
Ruth Okey, Ph.D. (Emerita)
Rosemarie Ostwald, Ph.D. (Emerita)
E.L. Robert Stokstad, Ph.D. (Emerita)
Bessie B. Cook (Bessie Cook Jeffers), Ph.D.
(Emerita)

Associate Professors:
George W. Chang, Ph.D.
Benito de Lumen, Ph.D.
Nancy K. Amy, Ph.D.
Gail E. Butterfield, Ph.D.
Pat Booth, M.S., R.D.
Mary Anna Burgard, Dr.P.H., R.D.
Laura Gardner, M.S.R.D.
Jonis Richmond, Ph.D.

Assistant Professors:
Susan M. Oace, Ph.D.
Ricardo Castillo, M.D., Ph.D.
Sarah E. Fleming, Ph.D.
Nellie B. True, M.S., R.D.
(Visiting)

Lecturers:
Laura Gardner, M.S.R.D.

Education Goals and Major Requirements

The Department of Nutritional Sciences offers two undergraduate majors leading to the B.S. degree. The Nutrition and Food Science major provides an excellent foundation in natural sciences and advanced study in nutrition. The Nutritional Sciences major provides a balanced background in biochemistry and physiology of nutrient utilization, and food science, the study of properties and processing of food materials. Graduates are prepared for employment in government agencies, research laboratories, or the food industry or may seek advanced study in professional or graduate schools in medical sciences or other biological or chemical sciences. Through careful selection of electives, the nutrition and food science major can be prepared for advanced coursework and supervised clinical experience for eligibility for an American Dietetic Association accredited dietetic internship. Courses that fulfill the Lower Division prerequisites for nutrition and food science may be repeated for credit. A two-semester laboratory course is required for eligibility for an American Dietetic Association accredited dietetic internship. The courses include: Advanced study in nutrition, foods, and management. The major includes professional courses in clinical dietetics such as nutrition in clinical settings and supervised clinical experience for eligibility to sit for the registration exam prerequisite to becoming a registered dietitian. Graduates find employment in health care, government, industry, community agencies, educational institutions and research or are prepared to undertake advanced professional or graduate training in medical sciences, nutrition, and related fields. The graduate courses offered by the department are designed primarily for support of the M.S. programs in Nutrition and in Food Science, and the Ph.D. in Nutrition. The courses include advanced study of research techniques, nutrition functions, food and nutrition policy issues and the latest developments in food and nutritional sciences. Graduates find employment in government, industry, academic institutions, medical research, clinical nutrition, and research and extension agencies. Many seek advanced professional medical degrees. Major requirements appear in the Announcement of the College of Natural Resources.

For further information please contact the Student Assistant, 127 Morgan Hall, 642-2879.

Lower Division Courses

10. Survey of Nutritional Sciences. (3). Formerly 10. Three hours of lecture and one hour of discussion per week. Broad aspects of nutritional sciences and food components and their importance to life. (F,SP)

Upper Division Courses

100. Human Nutrition and Metabolism. (4). Four hours of lecture and one hour of discussion per week. Semester Prerequisites: 10, Physiology 1, and Biochemistry 102 (may be taken concurrently). Quarter Prerequisites: Organic Chemistry and Human Physiology. Nutrient function and metabolism; human nutrient requirements throughout the life cycle; nutritional balances. (F)

100L. Human Nutrition and Metabolism Laboratory. (1). Formerly portions of 100 and 102. Three hours of laboratory per week. Semester Prerequisites: 100 (may be taken concurrently). Quarter Prerequisites: 103, Biochemistry 102, and Physiology 1. Biochemical, clinical, and dietary methods of assessment of nutritional status. (F)

104. Human Food Practices. (2). Formerly 104. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: 10 recommended. Historical, ecological, cultural, socio-economic, legal, religious, and personal influences on food practices. Determinants of food selections. (SP)

105. Introduction to Food Science. (3). Formerly 106. Three 1-hour lectures per week. Semester Prerequisites: Biochemistry 102 or consent of instructor. 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)

106L. Introductory Food Science Laboratory. (2). Formerly 134. One hour of lecture/discussion and three hours of laboratory per week. Semester Prerequisites: 106 (may be taken concurrently). Quarter Prerequisites: 106L. Experimental study of the principles of food preparation. Evaluation of the sensory and quality aspects of food. (SP)

108. Food Chemistry Laboratory. (3). Formerly 108. One hour of lecture/discussion and six hours of laboratory per week. Semester Prerequisites: 106 and Biochemistry 102L, and a course in statistics. Principles, methods, and techniques for qualitative and quantitative food analysis of food components by physical, chemical and biological assays. Effects of processing on the nutritional and functional properties of food components. (SP)

109. Principles of Food Processing and Preservation. (2). Formerly 109. Two hours of lecture per week. Semester Prerequisites: 106. The chemical, physical, engineering, and nutritional aspects of food processing and preservation. (SP)

110. Food Toxicology. (2). Formerly 110. Two hours of lecture per week. Semester Prerequisites: 106 or consent of instructor. Principles and problems in evaluating the safety of foods, food components, additives, and contaminants. Selective toxicity, detoxification, mechanisms, basic concepts, and techniques of safety evaluation, and interpretation of biological data. (SP)

113. Food Microbiology. (2). Formerly 113. Two hours of lecture/discussion per week. Semester Prerequisites: A course in food microbiology or other microbiology such as enumeration, control, and action of the microorganisms involved in food fermentations and food spoilage. Thermodynamic, microbiological quality control. (F) Not offered 1984-85.

113L. Food Microbiology Laboratory. (2). Formerly 113L. Three hours of laboratory per week. Semester Prerequisites: 113 (may be taken concurrently). Laboratory experiments with...
the microorganisms involved in food fermentations and spoilage. The action of these microorganisms on food spoilage. The action of these microorganisms on the microorganisms involved in food fermentations and quality control, personnel management, administrative systems, food experiences, projects, and field work in institutional situations. (F)

150. Experimental Nutrition. (4). Formerly 150. Three hours of lecture and 1 hour of discussion per week. Semester Prerequisites: 100. Quarter Prerequisites: 103, Biochemistry 102L, and a course in physiology. Experimental basis for present concepts in the science of nutrition. Effects of changes in nutrient supply on cellular metabolism. (SP)

161. Therapeutic Nutrition. (4). Formerly 161 and a portion of 160. Four hours of lecture and one hour of discussion per week. Semester Prerequisites: 150. Quarter Prerequisites: 103, Biochemistry 102L, and a course in physiology. Introduction to Research in Nutritional Sciences. Oral and written individual and group reports by students on topics selected from the current research literature: emphasis on active research areas in the department. (F)

201. Seminar in Nutrition. (1). Formerly 201A-201B-201C. One hour of lecture/discussion per week. Semester Prerequisites: Intended primarily for first year graduate students in nutrition. Oral and written individual and group reports by students on topics selected from the current research literature: emphasis on active research areas in the department. (F)

202. Carbohydrate and Lipid Metabolism. (2). Formerly 204. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: 150. Quarter Prerequisites: Biochemistry 102 and a course in nutrition. Nutritional and hormonal effects of carbohydrate and lipid metabolism and metabolic abnormalities. (F) Not offered 1984-85.

203. Vitamin and Mineral Metabolism. (2). Formerly 203 and 201. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: 150. Quarter Prerequisites: Biochemistry 102 and Biochemistry 102L. Advanced vitamin and mineral nutrition; emphasis on function, homeostatic control, and dietary need. (SP) Not offered 1984-85.

205. Protein and Energy Metabolism. (2). Formerly 205. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: 100. Quarter Prerequisites: Biochemistry 100A-100B-100C or 102. Methodology for study of protein and energy nutrition. Factors influencing protein and energy utilization and metabolism. (F) Not offered 1984-85.

211. Research Methods in Nutritional Sciences. (3). Formerly 211 and 212. One and one-half hours of lecture/discussion and 6 hours of laboratory per week. Semester Prerequisites: 100, a course in statistics, and consent of instructor. Preparation, presentation, and evaluation of instructional units. (F,SP)

250. Advanced Human Nutrition. (2). Formerly 250. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: 100 and advanced physiology. Quarter Prerequisites: 160. Analysis of current research and areas of clinical interest and controversy in human nutrition. (SP) Not offered 1984-85.

290. Advanced Seminars in Nutritional Sciences. (1-2). Formerly 290. May be repeated for credit. One hour of lecture/discussion per week per unit. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: Open to qualified graduate students. Advanced study of topics in nutritional sciences. More than one section may be taken simultaneously. (F,SP)

290C. Comparative Nutrition. (1-2). (F,SP)

290F. Food Science. (1-2). (F,SP)

290G. General Nutrition. (1-2). (F,SP)

290H. Human Nutrition. (1-2). (F,SP)

290J. Journal Club. (1-2). (F,SP)

290L. Lipids. (1-2). (F,SP)

290M. Metabolism. (1-2). (F,SP)

290P. Food Policy and Planning. (1-2). (F,SP)

298. Directed Group Studies. (1-4). Formerly 288. May be repeated for credit. One hour of lecture/discussion per week per unit. Semester Prerequisites: Graduate standing and consent of instructor. Special study in various fields of nutritional sciences. Topics will vary depending on interests of qualified graduate students and availability of staff. (F,SP)

299. Research in Food and Nutrition. (1-12). Formerly 299. May be repeated for credit. Approximately four hours of research per week per unit. Semester Prerequisites: Graduate standing and consent of instructor. (F,SP)

602. Individual Study for Doctoral Students. (1-6). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Open to qualified graduate students for the various examinations required for candidates for the Ph.D. (F,SP)

301. Professional Preparation: Teaching in Nutritional Sciences. (1). Formerly 301. One hour of lecture/demonstration per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: Graduate standing in food science, nutrition, or closely related field. Teaching methods in nutrition and food science at the university Preparatory, consultation, and evaluation of instructional units. (F)

401. Dietetic Counseling. (2). Formerly 401. May be taken on a passed/not passed basis. Semester Prerequisites: 202 (may be taken concurrently) and a 2.5 GPA in required major courses and consent of instructor. Quarter Prerequisites: 199 and a 2.5 GPA in required major courses and consent of instructor. Minimum of 80 hours of clinical field work during the semester; includes planning, discussion, and evaluation sessions during the semester and prior to the semester. Offered 1984-85.

402. Hospital Dietetics. (4). Formerly 402. Must be taken on a passed/not passed basis. Semester Prerequisites: 202 (may be taken concurrently) and a 2.5 GPA in required major courses and consent of instructor. Minimum of 80 hours of clinical field work during the semester; includes planning, discussion, and evaluation sessions as needed. Additional effort may be required to achieve competency. Supervised practice of dietetics in a hospital setting with greater responsibility to entry level practitioner competency. Consecutive full days of clinical experience in specialized care wards. (SP)

403. Research Dietetics. (1). Formerly 403. May be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: 100L and a 2.5 GPA in required major courses and consent of instructor. Quarter Prerequisites: 199 and a 2.5 GPA in required major courses and consent of instructor. Minimum of 80 hours of clinical field work during the semester; includes planning, discussion, and evaluation session as needed. Additional effort may be required to achieve desired competency. Supervised practice of dietetics in metabolic research design and administration of research diets; ethics of human research; equipment and data handling. (F,SP)

407. Community Dietetics. (1). Formerly 407: May be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: 100L and a 2.5 GPA in required major courses and consent of instructor. Quarter Prerequisites: 161, 182, and a 2.5 GPA in required major courses and consent of instructor. Minimum of 40 hours of clinical field work per semester; includes planning, discussion, and evaluation sessions as needed. Extra effort may be required to achieve competency. Supervised practice of dietetics in community agencies NATURAL RESOURCES: Nutritional Sciences / 271
Pest Management

Department Office, 201 Wellman Hall, 642-6660, and 147 Hilgard Hall, 642-5121

Administered jointly by the Departments of Entomological Sciences and Plant Pathology.

The primary objective of the major is to provide the interdisciplinary training that will permit the student to approach pest management field problems and to recommend corrective actions that are economically and ecologically sound. Attention has shifted from dependence on chemical suppression of pests to pest population management through integrated control systems. Pest management specialists must have an understanding of natural control mechanisms operating in the ecosystem as well as knowledge of the ecology of the crop or other commodity systems, pest phenoeny and ecology, and the spectra of control methods available. Plant disease, weed, and nematode situations and many other factors may have to be considered before the pest management specialist can make the appropriate action decisions required. Employment opportunities exist both in public agencies such as the U.S. Department of Agriculture, U.S. Forest Service, and state agencies of agriculture and forestry, and with private firms such as agricultural chemical companies, biotechnology and genetic engineering firms, consulting firms, firms that produce forest products and range, forest product firms, and private practice.

Curriculum requirements in the first two years include: economics, English, other humanities and social sciences, Chemistry 1A-1B, 8A, 8B, calculus, physics, computing science, and statistics. Additionally, courses in biology and resource science are needed, as well as courses that focus on pest management.

Upper Division Courses

120. Introduction to Pest Management. (3). Formerly 20. Two 1-hour lectures, one 3-hour laboratory, field trip, or discussion per week. Semester Prerequisites: Biology 130, or consent of instructor. Quarter Prerequisites: Consent of instructor. Introduction to the principles, philosophy, and methods for applying pest management systems to agricultural, forest, and urban areas for the control of invertebrate and vertebrate pests, weeds, and diseases. Detection and sampling of pest and beneficial species and evaluation of damage. All methods applicable will be reviewed, including biological, chemical, cultural, and legal. Social and legal aspects of pest management will be discussed. (F)

134. Chemical and Cultural Control Methods in Pest Management. (3). Formerly 54A-54C. Three 1-hour lectures per week. Semester Prerequisites: 120; Chemistry 8A-8B or equivalent, or consent of instructor. Quarter Prerequisites: 20; Chemistry 8A-8B or equivalent, or consent of instructor. Chemical and agronomic techniques used in pest management; advantages and limitations. (F)

135. Biological, Microbial, and Genetic Methods of Pest Control. (3). Formerly 154B. Two 1-hour lectures and one 2-hour laboratory, field trip, or discussion per week. Semester Prerequisites: 120, 141, Ent 130, and Plant Path 120, or consent of instructor. Quarter Prerequisites: 20, 151, Ent 130, and Plant Path 120. The techniques, advantages, and limitations of using biological, microbial, and genetic means to manage animal pests, plant diseases, and noxious plants. (SP)

141. Weed Ecology and Management. (3). Formerly 151. Two 1-hour lectures and three hours of laboratory per week. Semester Prerequisites: Entomology 106, Plant Pathology 120, or consent of instructors. Quarter Prerequisites: Entomology 106, Plant Pathology 120, or consent of instructors. The ecological aspects of weeds, and other pests in forest ecosystems, their impacts on forest resource values and management objectives, and interactions with man’s activities. Diagnosis and evaluation of forest pest situations, and strategies of regulation of pest populations. (SP)

155. Agricultural Pest Management. (3). Formerly 156. Two 1-hour lectures, one 3-hour laboratory, field work, or field trips per week. Semester Prerequisites: Advanced standing in pest management major, or consent of instructors. Quarter Prerequisites: 20, 154A-154B-154C. The systems approach to decision-making in pest management using representative crops and crop systems. Biological, economic, social, and political factors as they affect tactics in agricultural pest management. (SP)

157. Urban Pest Management. (3). Two 1-hour lectures and one 3-hour discussion or field trip per week. Semester Prerequisites: Senior standing in Pest Management major, or consent of instructor. Concepts and fundamentals of urban pest management emphasizing arthropods. Biological, social, economic, and political factors that influence pest management activities and programs. Review of current methods for managing urban pests and case histories that exemplify fundamental aspects of urban pest management. Theoretical and practical aspects of information transfer in an operational context. (F)

157. Field Studies in Pest Management. (1-3). Formerly 157. May be repeated for credit. To be arranged. One unit for 3 hours of work per week on part of student. Semester Prerequisites: Consent of instructor. Supervised experience in off-campus organizations relevant to specific aspects of pest management. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

188. Directed Group Studies. (1-3). Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. One unit for 3 hours of work per week on part of student. Semester Prerequisites: Consent of instructor. Group study or investigation of special problems. (F,SP)

199. Supervised Independent Study and Research for Undergraduates. (1-4). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. To be arranged. One unit for 3 hours of work per week on part of student. Semester Prerequisites: Consent of instructor. Enrollment is restricted by regulations listed on page. (F,SP)

Plant Pathology

Department Office, 147 Hilgard Hall, 642-5121

Undergraduate Program

Plant Pathology involves the study of interactions among plants, pathogens, and their environment, with the objective of developing effective procedures for the protection of plants from disease. The subject area is exceptionally broad embracing the response of the plant to the environment and to disease agents such as bacteria, fungi, seed plants, and viruses. Plant pathologists are involved in the study of such diverse problems as host-parasite physiology, microbial ecology, and soil management, utilizing cultural, chemical, genetic, and biological control approaches. Because of the fundamental importance of plants as food, fiber and recreational resources, this discipline makes an important contribution to human welfare.

To function as a professional plant pathologist, graduate training to the M.S. is required, and the Ph.D. is highly desirable. A primary purpose of the undergraduate major in plant pathology is to prepare students for graduate work in the discipline. Because of the broad requirements, the major is also well suited for students who wish to obtain a strong background in plant biology or general microbiology. Lower division requirements are the same as those listed in Bioresource Sciences. For upper division requirements, see the Announcement of the College of Natural Resources.

Undergraduate Program in Bioenergetics

(See Division of Molecular Plant Biology)

Graduate Programs

This program is administered by the Department of Plant Pathology and offers graduate education leading to the M.S. and Ph.D. degrees. Applicants should have a bachelor's degree in plant pathology or an equivalent field that includes a broad background in physical and biological sciences, including bacteriology, biochemistry, plant cell biology, and plant physiology.

The field is primarily concerned with the study of plant diseases and protection of a wide range of crops from disease losses. The subject area is exceptionally broad, embracing the response of the plant to the environment and to disease agents, such as bacteria, fungi, plants, and viruses, as well as their control. This leads to research on fundamental problems such as host-parasite physiology, comparative virology and bacterial genetics. It includes applied programs such as integrated pest management and biological control. Areas of emphasis include biological deterioration of wood; epidemiology and diagnosis of plant diseases; forest pathology; physiology of pathogenic fungi and bacteria; and taxonomy, ecology, and behavior of soilborne plant pathogens.
The Department maintains extensive research facilities, including greenhouses and a broad range of specialized research equipment. One of the largest plant pathology reprints libraries in the world is also maintained.

Lower Division Courses

23. Introduction to Microbiology of Natural Resources. (4). Formerly 23. Two hours of lecture and six hours of laboratory per week. Semester Prerequisites: Biology 1A-1B. Quarter Prerequisites: A course in Biology, Chemistry 6B, or consent of instructor. A general survey of the microbiology of bacteria, fungi, viruses, algae, mycoplasmas, and protozoa with emphasis on their biological activities in relation to our natural resources and human welfare. Laboratory assignments include growth techniques for handling viruses, bacteria, fungi, algae, and protozoa, and effects of these microorganisms on food. (SP)

Upper Division Courses

120. Plant Diseases. (4). Formerly 120. Two 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: Biology 1A-1B. Quarter Prerequisites: Biology 1A-1B or consent of instructor. An introductory course in plant diseases. Diseases studied include those important throughout the world as well as those important in California. Included are diseases caused by bacteria, as well as those resulting from infection by bacteria, mycoplasma, fungi, viruses, nematodes and phanerogams. Studies in the laboratory with fresh or preserved material argument information given in lectures. (F,SP)

197. Field Study in Plant Pathology. (1-3). Formerly 197. One hour of lecture and three to six hours of field study per week per unit. An advanced course in plant pathology. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Three hours of laboratory/discussion per week per unit. To be arranged. Supervised experience in off-campus organizations relevant to specific aspects of plant pathology. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Three hours of laboratory/discussion per week per unit. To be arranged. Semester Prerequisites: Consent of instructor. Supervised independent study (upper division). (F,SP)

Graduate Courses

201. Seminar in Plant Pathology. (1). Formerly 201. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One hour of seminar per week. An advanced research seminar on topics in plant pathology. (F,SP)

202. Biology of Plant Pathogenic Fungi. (3). Formerly 202. Two hours of lecture and 3 hours of laboratory per week. Semester Prerequisites: 120, and 205 Unit I; a course in introductory mycology, or consent of instructor. Quarter Prerequisites: 120 and 208A. A course in introductory mycology. Taxonomy, ecology, and role in disease of plant pathogenic fungi, with emphasis on problems in collection, cultivation, and identification. (SP)

203. Bacteria in Relation to Plant Diseases. (3). Formerly 204. Two hours of lecture and 3 hours of laboratory per week. Semester Prerequisites: 120; Biochemistry 102; Microbiology and Immunology 102 and 102L. Quarter Prerequisites: 120; Biochemistry 120; Bacteriology 102 and 102L, or consent of instructor. The taxonomy, ecology, and physiology of plant pathogens of related bacteria are treated in covering the major bacterial plant disease groups of the world. The chemical, cultural, and biological control of bacterial diseases are addressed. (SP)

204. Viruses in Relation to Plant Diseases. (3). Formerly 206. Two hours of lecture and 3 hours of laboratory per week. Semester Prerequisites: 120 or consent of instructor. Characterization of viruses which cause plant disease; environmental factors relating to incidence and field spread of virus infections; approaches to control. (F)

205. Laboratory Methods in Plant Pathology. (1-3). Each unit may be taken separately. Unit I receives 1 unit credit. Unit II receives 2 units credit. One hour of lecture and four hours of laboratory per week. Semester Prerequisites: 120 (may be taken concurrently). Quarter Prerequisites: 120. Unit I: Formerly 208A. Basic microbiological techniques in plant pathology. Unit II: Formerly 208B. Photographic and cytological techniques applied in plant disease research. (SP)

207. Physiology of Plant Pathogens. (2). Formerly 218. Two hours of lecture per week. Semester Prerequisites: Chemistry 5 and 6A-6B; Biochemistry 102; Botany 140. Quarter Prerequisites: Chemistry 5 and 6A-6B or equivalents. Recommended: Botany 140; Biochemistry 102. Topics covered include host-parasite recognition, host penetration, pathogen attack and defense mechanisms, and host responses to infection. (SP)

208. Advanced Plant Pathology. (2). Formerly 212A-212B. Two hours of lecture per week. Semester Prerequisites: 120, and one 200 series course in Plant Pathology. Quarter Prerequisites: 120 or introductory course in plant pathology. History and development of concepts of plant pathology; emphasis on etiology, symptomology, nomenclature, disease classification, and pathogenesis. Current topics of interest in plant pathology are explored. (SP)

209. Genetics of Plant-Microbe Interactions. (2). Two hours of lecture per week. Semester Prerequisites: Consent of instructor: Concerned with the modern literature of genetics of host-parasite systems. Emphasis placed on components of microbial pathogenicity and host resistance; criteria for selection of model systems; update on the tools for genetic manipulation; genetic engineering for plant disease control. (F)

210. Diagnosis of Plant Disease. (2). Formerly 222. One hour of lecture and 3 hours of laboratory per week. Semester Prerequisites: Consent of instructor. Course is designed to present current laboratory methods used in the identification of plant pathogens. (F,SP)

211. Epidemiology and Control of Plant Disease. (3). Formerly 210. Three hours of lecture per week. Semester Prerequisites: 120. Theory and practices of plant disease control and management. Chemical, cultural, biological, and genetic methods. Epidemiology of plant disease, inoculum-disease relationships, factors involved in the development of epidemics. (F)

212. Advanced Plant Pathology. (2). Formerly 212A. Two hours of lecture per week. Semester Prerequisites: 120, and one 200 series course in Plant Pathology. Quarter Prerequisites: 120 or introductory course in plant pathology. History and development of concepts of plant pathology; emphasis on etiology, symptomology, nomenclature, disease classification, and pathogenesis. Current topics of interest in plant pathology are explored. (SP)

213. Genetics of Plant-Microbe Interactions. (2). Two hours of lecture per week. Semester Prerequisites: Consent of instructor: Concerned with the modern literature of genetics of host-parasite systems. Emphasis placed on components of microbial pathogenicity and host resistance; criteria for selection of model systems; update on the tools for genetic manipulation; genetic engineering for plant disease control. (F)

214. Research in Plant Pathology. (1-12). Formerly 229. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four hour lab/discussion per week per unit. Semester Prerequisites: Consent of instructor. Research in plant pathology. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for a master's degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four hours of lab/discussion per week per unit. Semester Prerequisites: Consent of instructor. Research in plant pathology. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May not be used for unit or residence requirements for the doctoral degree. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Four hours of lab/discussion per week per unit. Semester Prerequisites: Consent of instructor. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Interdepartmental Studies Courses

Upper Division Courses

IDS120. Introduction to Comparative Virology. (3). Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Organic chemistry and elementary biology, or consent of instructor. Quarter Prerequisites: Biology 1A and Chemistry 6A. An introductory course concerned with the viruses where they belong in the hierarchy of biological systems, and how they infect and replicate in bacteria, plants, and animals (vertebrates and invertebrates). A comparison will be made of their biochemical and genetic characteristics, and their modes of replication. Sponsoring Departments: Entomological Science and Plant Pathology. (SP)

Plant and Soil Biology

Department Office, 108 Hilgard Hall, 642-0341

Professors:
- Harvey E. DONER, Ph.D. (Emeritus)
- John G. COLL, Ph.D. (Emeritus)
- G. A. BAUMANN, Ph.D. (Emeritus)
- Theodore C. BROYER, B.S. (Emeritus)

Associate Professors:
- Mary Firestone, Ph.D. (Emeritus)
- Paul R. Day, Ph.D. (Emeritus)
- Lawrence J. WALDRON, Ph.D. (Emeritus)
- Albert Urich, Ph.D. (Emeritus)

Lecturers:
- Ronald G. AMUNDSON, Ph.D.
- Rodney J. ARKLEY, Ph.D.
- Ivan VERNIS, Ph.D. (Emeritus)
- D.E. WILLIAMS, Ph.D. (Emeritus)
- Norma Terr, Ph.D.
- Theodore M. HALLGIN, Ph.D.
- Lawrence J. WALDRON, Ph.D.
- Albert Urich, Ph.D. (Emeritus)

Plant and Soil Biology is a multidisciplinary department with teaching and research directed to the study of the entire plant-soil system. Course offerings of the Department support the curricula of two undergradaute majors: Plant and Soil Biology, and Soil Resource Management.

The major in Plant and Soil Biology provides academic training in basic biological concepts of soil-plant interactions. The curriculum is broadly based, covering chemical, physical, and biological aspects of soils as well as soil-plant relationships, plant nutrition, plant physiology and biochemistry. The curriculum in Plant and Soil Biology provides excellent undergraduate preparation for graduate studies in soil science, agronomy, and natural resource fields. The Bachelor's degree qualifies students for employment as soil scientists with public agencies or private firms and landmanes doing environmental consulting, crop management, and soil resource management.

The curriculum in Soil Resource Management is excellent preparation for professional and applied scientific employment in soil conservation and environmental protection. Graduates in the major achieve an understanding of the scientific principles underlying soil resource classification, evaluation and inventory.

Courses offered by Plant and Soil Biology serve other students in the College of Natural Resources and across the campus in such diverse but related studies as forestry, land management and natural resource studies, botany, biochemistry, geology and geography. A number of our courses are of sufficient general interest to attract students who are not in related studies, but wish to expand their intellectual horizons by learning something about soils, plants, and their interrelationships which support all terrestrial life.

Plant and Soil Biology courses form an essential part of the graduate programs of the interdisciplinary graduate groups in Plant Physiology and in Soil Science.

Lower Division Courses

10. Soils and Their Significance to Society. (2). Formerly Soil Science 10. Two hours of lecture per week. Semester Prerequisites: High school chemistry and bi-
ology recommended. Introduction to soils, their relationship to ecosystems, their significance to society, and interpretation of soil properties for land-use decisions. (F) Not offered 1984-85.

Upper Division Courses

100. Soil Characteristics. (3). Formerly Soil Science 100. Two hours of lecture and 3 hours of laboratory per week. Semester Prerequisites: Chemistry 1A-1B. Quarter Prerequisites: Chemistry 1A-1B-1C. Introduction to physicochemical properties of soils, methods of soil description, identification, geographic distribution, and uses; the role of soil in supplying water and nutrients to plants; and aspects of soil as a habitat for organisms. Soil management for agriculture and forestry will also be discussed. (F)

101. Development and Morphology of Soils. (2,4). Formerly Soil Science 101 and Soil Science 101F. Two hours of lecture and optional 6-hour field trip per week. Semester Prerequisites: 100 or equivalent, and introductory courses in geology and biology. Quarter Prerequisites: Soil Science 100 or equivalent, and introductory courses in geology and biology. Development, morphology, and classification of soils as related to climate, biota, geology, topography, and time. Soils as functioning, integrative components of ecosystems. Students enrolling for 4 units of credit will also participate in one 6-hour Saturday field trip per week. (SP)

102. Soil Physics. (4). Formerly Soil Science 102. Two hours of lecture and six hours of laboratory per week. Semester Prerequisites: 100, 101, or 103. Quarter Prerequisites: Soil Science 100, 101, or 103. Field observations with lecture/demonstrations throughout California. Eight hours per day of field or lecture, five days per week, plus travel time for six weeks. Field study of soils with emphasis on their characteristics, morphology, and genesis. Field exercises in classifying/mapping soils and preparation of survey reports. Practice in evaluating soils for agriculture, range, forest, and other uses. Extracurricular.

105. Summer Field Course. (6). Formerly Soil Science 105. Semester Prerequisites: 100, 101, or 103. Field observations with lecture/demonstrations throughout California. Eight hours per day of field or lecture, five days per week, plus travel time for six weeks. Field study of soils with emphasis on their characteristics, morphology, and genesis. Field exercises in classifying/mapping soils and preparation of survey reports. Practice in evaluating soils for agriculture, range, forest, and other uses. Extracurricular.

110. The Soil As a Medium for Plant Growth. (3). Formerly Soil Science 110. Three hours of lecture per week. Semester Prerequisites: Chemistry 1A-1B and 8A. Quarter Prerequisites: Chemistry 1A-1B and 8A or 1C. Chemical, physical, and biological processes which control nutrient availability in soil-plant systems. Ion movement, water potential relations, plant-microbial interactions are emphasized. Characteristics and causes of acid, alkaline, and saline soils. (F)

111. Soil Microbiology. (2). Formerly Soil Science 111. Two hours of lecture per week. Semester Prerequisites: Biology 1A-1B or 1A-1B-1C. Introduction to soil microorganisms: their diversity and their activities in relation to soil organic matter, soil properties, the rhizosphere, and biogeochemical cycling. (SP)

111L. Soil Microbiology Laboratory. (1). Formerly Soil Science 111L. One 3-hour laboratory per week. Semester Prerequisites: 111 (to be taken concurrently). Quarter Prerequisites: Soil Science 111L. Laboratory work to acquaint the student with soil microorganisms, their isolation and handling, and the measurement of their activities in soil. Planned to accompany lectures in 111. (SP)

112. Soil Chemistry. (2,4). Formerly Soil Science 112 and Soil Science 113. Two hours of lecture and two optional 3-hour laboratories per week. Semester Prerequisites: 100, 101, or 110. Quarter Prerequisites: Soil Science 110. Physicochemical properties influencing the availability of nutrients to plants. The soil laboratory for 2 additional units will explore liquid, solid, and gaseous phases of soils; cation exchange, solubility, buffering, salinity reactions; chemistry of macronutrients and micronutrients. (SP)

115. The Nutrition of Green Plants. (2). Formerly Plant Nutrition 115. Three hours of lecture per week. Semester Prerequisites: Biology 1A-1B. Evolution of modern concepts of plant nutrition, including functional aspects of inorganic nutrients, photosynthesis, and nitrogen metabolism. (SP)

117. The Nutrition of Green Plants Laboratory. (3). Formerly Plant Nutrition 117. One hour of lecture and 6 hours of laboratory per week. Semester Prerequisites: Biology 1A-1B-1C. Formerly Soil Nutrition 111L. Laboratory work to acquaint the student with soil microorganisms, their isolation and handling, and the measurement of their activities in soil. Planned to accompany lectures in 111. (SP)

161. Soil and Water Conservation. (2). Formerly Soil Resource Management 161. Two hours of lecture per week. Management of the soil for sustained agricultural production, water quality control, and environmental protection. Soil erosion, fertility enhancement, salinity, and water conservation are the principal topics. (SP)

162. Soil Resource Evaluation. (2). Formerly Soil Resource Management 162. Two hours of lecture and 1 hour of discussion per week. Semester Prerequisites: Upper Division soil science course. Any upper division soil science course. Review and discussion of environmental impacts of various land-management practices, with particular reference to soil characteristics. Interpretation of current soil research data and soil survey information in making land-use decisions. (F)

169. Senior Seminar. (1). Formerly Soil Resource Management 169. One hour of student seminars and one hour of discussion per week. Semester Prerequisites: Senior standing in soil resource management plant and soil biology. Student seminars directed to integrating the natural science, economic, and political aspects of soil resource management and plant and soil biology. (SP)

198. Directed Group Study. (1-3). Formerly Soil Science 198. May be repeated for credit. Must be taken on a passed/not passed basis. One hour of lecture/discussion per week per unit. Semester Prerequisites: Upper Division standing. Select topics in soil science for advanced undergraduates. (F,SP)

199. Supervised Independent Study and Research. (1-4). May be repeated for credit. Must be taken on a passed/not passed basis. One hour of lecture/discussion per week per unit. Semester Prerequisites: Upper division standing. Enrollment is restricted by regulations listed in the Key to Symbols section of the General Catalog. (F,SP)

Graduate Courses

202. Soil Physics. (2). Formerly 220. Two hours of lecture and one hour of discussion per week. Semester Prerequisites: 102. Special topics in soil physics and the plant environment with emphasis on the soil-plant-atmosphere flow of water. (SP) Odd numbered years.

211. Advanced Soil Microbiology and Biochemistry. (2). Formerly Soil Science 211. Course may be repeated for credit. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 111. Microbial processes and their role in soil nutrient transformations. The ecology of microbes in the soil environment. Origin, nature and properties of soil organic matter. (F) Not offered 1984-85.

212. Advanced Soil Chemistry. (2). Formerly Soil Science 212. Two hours of lecture per week. Semester Prerequisites: 112; Chemistry 130A. Quarter Prerequisites: Soil Science 110; Chemistry 109. Application of chemical thermodynamics to soil systems; mechanisms of sorption on soil materials. (SP) To be offered alternate years.

235. Seminar in Soil Science. (1). Formerly Soil Science 235. Course may be repeated for credit. One hour of seminar and one hour of discussion per week. Semester Prerequisites: Graduate standing in soil science, plant physiology, or related graduate student seminars on selected topics in soil science. (SP)

266. Seminar in Plant Physiology. (1). Formerly Plant Nutrition 266. Course may be repeated for credit. One hour of seminar and one hour of discussion per week. Semester Prerequisites: Graduate standing in appropriate field. Graduate student seminars on selected topics in plant physiology. (SP)

298. Special Study for Graduate Students. (1-4). Formerly Soil Science 298. Course may be repeated for credit. One hour of discussion/lecture per week per unit. Semester Prerequisites: Graduate standing in appropriate field. Advanced study of research topics which will vary from semester to semester. (F,SP)

299. Research in Plant and Soil Biology. (1-12). Formerly Soil Science 601. Course may be repeated for credit. Units may not be used to meet either unit or residence requirements for a master's degree. Must be taken on a satisfactory/un satisfactory basis. Four hours of research/laboratory per week per unit. Semester Prerequisites: Graduate standing in appropriate field. Individual study for the comprehensive or language requirements in consultation with the field adviser. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly Soil Science 601. Course may be repeated for credit. May not be used for unit or residence requirements for the doctoral degree. Must be taken on a satisfactory/un satisfactory basis. Two 2-hour lectures or laboratories per week per unit. Semester Prerequisites: Graduate standing in appropriate field. Individual study 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)

Ad Hoc Interdisciplinary Doctoral Program

This program is administered directly by the Dean of the Graduate Division. There is no parallel master's level program. It is designed for students who wish to work or carry on research in areas not covered by any other existing doctoral program. Admission to the program is restricted to students who have completed some graduate study on this campus and have already been admitted to an existing departmental or group doctoral program. New applicants for admission to the Graduate Division are not eligible.

Before applying for admission to this program, the student arranges with three professors (presumably from different departments). Each agrees to constitute the sponsoring committee. After the student is accepted, this committee acts as the "department" up to final conferment of the degree.

The program at present is small in number of students enrolled. Several students are "housed" in departments within the College of Natural Resources, with sponsoring committees members from its faculty.

Agricultural and Environmental Chemistry

Office, 127 Morgan Hall, 642-2879

Professors:

James A. Bassham, Ph.D.
Leonard F. Bjeldanes, Ph.D.
David L. Brink, Ph.D.
Bob B. Buchanan, Ph.D.
Kenneth J. Carpenter, Ph.D.
John E. Casida, Ph.D.
E.L. Stokstad, Ph.D.
John G. McColl, Ph.D. (Chair)
Norman Terry, Ph.D. (Emeritus)

Associate Professors:

George W. Chang, Ph.D.
Benito deLumen, Ph.D.
Harvey E. Doner, Ph.D.
Melvin Calvin, Ph.D.
(Emeritus)

Graduate Adviser: Leonard Bjeldanes.

Graduate Adviser: Leonard Bjeldanes.
This program is administered by an interdepartmental group and is open to students who are interested in the application of chemistry to resource and agricultural problems. For entry into the program, students should have the equivalent of the bachelor's degree in chemistry.

Studies leading to the M.S. and Ph.D. degrees are offered by a group of agricultural chemists 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 Biochemistry in the College of Letters and Science, and in the College of Chemistry. The following are examples of the fields represented: insecticide chemistry and insect biochemistry in the Department of Entomological Sciences; soil chemistry and plant nutrition in the Department of Plant and Soil Biology; forest products chemistry in the Department of Forestry and Resource Management; and food chemistry and technology and animal nutrition in the Department of Nutritional Sciences. 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 qualifying examinations in agricultural chemistry. A reading knowledge of one foreign language is required before the oral qualifying examination for the Ph.D. degree. Course work is recommended but you may petition the Executive Committee for substitution of another language.

Graduate Courses

299. Research in Agricultural and Environmental Chemistry. (1-9). Formerly 299. Course may be repeated for credit. Approximately four hours of research per week per unit. Semester Prerequisites: Graduate standing and consent of instructor. Research in agricultural and environmental chemistry. (F,SP)

Biophysics

Office, 101 Donner Laboratory, 642-0379

Professors:
Bob Buchanan, Ph.D.
Sheldon Margen, Ph.D.
Charles A. Dekker, Ph.D.
Edward S. Weisblat, Ph.D.

Associate Professors:
Benito O. deLumen, Ph.D.
George W. Chang, Ph.D.

Lecturers:
Marcia W. Chang, Ph.D.

This program is administered by a campus-wide interdepartmental group which has organized itself to permit students interested in biophysics to obtain graduate training leading to a M.A. or a Ph.D. degree. Students interested in study and research in biophysics may work under the supervision of any faculty member belonging to the group without having to pursue other graduate programs offered by the department with which the faculty member is affiliated. In this College, members of the group in biophysics include individual faculty members of the departments of Entomological Sciences, Genetics, Nutritional Sciences, and the Division of Molecular Plant Biology.

Undergraduate students interested in pursuing graduate study in biophysics should as undergraduates acquire training in the basic physical and biological sciences, but individual deficiencies may be removed during the early stages of graduate study.

Comparative Biochemistry

Office, 2553 Life Sciences Building, 642-3313

Professors:
Giovana Ferro-Luzzi Ames, Ph.D.
Esau C. Eames, Ph.D.
C. Richard Borgford, Ph.D.
S. Elgin, Ph.D.
George M. Briggs, Ph.D.

Associate Professors:
Marilyn C. Soderling, Ph.D.
John E. Casida, Ph.D.
M. Alwin J. Clark, Ph.D.
R. David Cole, Ph.D.

Lester Pecker, Ph.D.
Jesse C. Rabie, Ph.D.
Henry Rapoport, Ph.D.
Harry Rubin, D.V.M.
Kenneth Sauer, Ph.D.
Thomas P. Singer, Ph.D.
Mary Ann Williams, Ph.D.
Leon Wolof, Ph.D.

Associate Professors:
George Chang, Ph.D.
Benito O. deLumen, Ph.D.
Anastasia Mili, Ph.D.

Associate Professor:
Janis D. Young, Ph.D.

Lecturer:
Jonas E. Richmond, Ph.D.

Graduate Advisers: Bob Buchanan, Giovana Ferro-Luzzi Ames.

This program, leading to the M.S. degree, is administered by an interdepartmental group which was organized to permit students interested in biophysics to obtain graduate training and advanced degrees. This interdisciplinary program allows the student to do research on a biochemical problem and to fulfill M.A. or Ph.D. biophysics requirements in the supervision of a faculty member in one of several departments, such as Biochemistry, Molecular Plant Biology, Entomological Sciences, Nutritional Sciences, Physiology-Genetics, and organic research units such as Chemical Biodynamics. Students are expected to obtain a background in physiology and biology and to specialize in some area of biochemistry.

Food Science

Office, 127 Morgan Hall, 642-2879

Professors:
Leonard F. Bjeldanes, Ph.D.
Harvey W. Blanch, Ph.D.
Noria H. Calloway, Ph.D. (Provost, Professional Schools and Colleges)
Kenneth J. Carpenter, Ph.D.
James M. Cartman, Ph.D.
Robert C. Cooper, Ph.D.
C. Judson King, Ph.D.
Robert C. Cooper, Ph.D.
Janet L. King, Ph.D.
Aurora C. Lillie, Ph.D.
Sheldon Margen, Ph.D.
William J. Oswald, Ph.D.

Associate Professors:
Horace K. Burr, Ph.D.
George W. Chang, Ph.D.
Benito O. deLumen, Ph.D.

Assistant Professor:
Sharon E. Fleming, Ph.D.

Graduate Adviser: Leonard Bjeldanes.

This program, leading to the M.S. degree, is administered by an interdepartmental group which was organized to permit students interested in a biochemical approach to biological problems to obtain graduate training and advanced degrees. This interdisciplinary program allows the student to do research on a biochemical problem and to fulfill M.A. or Ph.D. requirements in the supervision of a faculty member in one of several departments, such as Biochemistry, Molecular Plant Biology, Entomological Sciences, Nutritional Sciences, Physiology-Genetics, and organic research units such as Chemical Biodynamics. Students are expected to obtain a background in physiology and biology and to specialize in some area of biochemistry.

Graduate Adviser: Leonard Bjeldanes.

This program, leading to the M.S. degree, is administered by an interdepartmental group which was organized to permit students interested in a biochemical approach to biological problems to obtain graduate training and advanced degrees. This interdisciplinary program allows the student to do research on a biochemical problem and to fulfill M.A. or Ph.D. requirements in the supervision of a faculty member in one of several departments, such as Biochemistry, Molecular Plant Biology, Entomological Sciences, Nutritional Sciences, Physiology-Genetics, and organic research units such as Chemical Biodynamics. Students are expected to obtain a background in physiology and biology and to specialize in some area of biochemistry.

Graduate Adviser: Leonard Bjeldanes.

This program, leading to the M.S. degree, is administered by an interdepartmental group which was organized to permit students interested in a biochemical approach to biological problems to obtain graduate training and advanced degrees. This interdisciplinary program allows the student to do research on a biochemical problem and to fulfill M.A. or Ph.D. requirements in the supervision of a faculty member in one of several departments, such as Biochemistry, Molecular Plant Biology, Entomological Sciences, Nutritional Sciences, Physiology-Genetics, and organic research units such as Chemical Biodynamics. Students are expected to obtain a background in physiology and biology and to specialize in some area of biochemistry.

Graduate Adviser: Leonard Bjeldanes.

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Graduate Adviser: Leonard Bjeldanes.

This program, leading to the M.S. degree, is administered by an interdepartmental group which was organized to permit students interested in a biochemical approach to biological problems to obtain graduate training and advanced degrees. This interdisciplinary program allows the student to do research on a biochemical problem and to fulfill M.A. or Ph.D. requirements in the supervision of a faculty member in one of several departments, such as Biochemistry, Molecular Plant Biology, Entomological Sciences, Nutritional Sciences, Physiology-Genetics, and organic research units such as Chemical Biodynamics. Students are expected to obtain a background in physiology and biology and to specialize in some area of biochemistry.
as biochemistry, chemistry, biological sciences, physiology, will provide a strong background.

Graduate study in nutrition offers opportunities to study a range of problems encompassing human, comparative, and cellular nutrition. Fields of emphasis include chemical, biophysical, and genetic aspects of nutrition; experimental nutrition; human nutrition; international nutrition; physiological phenomena; and therapeutic nutrition.

Parasitology

Office, 218 Wellsman Hall, 642-0660

Professors:
John R. Anderson, Ph.D.
Donald H. Brasier, Ph.D.
John H. Davis, Ph.D.
Julius Schachter, Ph.D.
Yoshinori Tanada, Ph.D.

Associate Professors:
William C. Reeves, Ph.D.
Stewart H. Madin, D.V.M., Ph.D.

Lecturers:
Anne H. Good, M.D., Ph.D.
Stuart A. Wainwright, Ph.D.

Graduate Advisers: Clarence Weinmann, Constantine Tempelis.

The program is administered by an interdepartmental group composed of staff members drawn from various departments interested in parasitology. Graduate study leading to the M.S. and Ph.D. degrees is offered. Students with a bachelor's degree in a biological or chemical science may be admitted to the program. They are expected to have training in microbiology, zoology, chemistry, biochemistry, genetics, animal physiology, and statistics. Any deficiencies must be removed at the outset of graduate study.

The varied background and interests of the supervising group offer the prospective students a broad scope of educational opportunities. A common interest of the group is in host-parasite interrelations. Hosts of primary interest are those in the animal kingdom. The parasites under consideration cover a broad range of invertebrate and microbial forms, and special attention is directed to parasites of man and domestic animals. Subjects for research may be chosen in the classical areas of parasitology, but students may also choose from a wide variety of disciplines that can be brought to focus on a host-parasite relationship.

Facilities for study and research by graduate students are located in the administrative units of the faculty members of the group. These include the Department of Entomological Sciences, the Department of Zoology, the Department of Microbiology and Immunology, and the School of Public Health on the Berkeley campus and the Department of Epidemiology and International Health and the G.W. Hoeper Foundation for Medical Research on the San Francisco campus.

Plant Physiology

Office, 313 Hilgard Hall, 642-3684

Professors:
James A. Bassham, Ph.D.
Bob B. Buchanan, Ph.D.
Donald G. Arganbright, Ph.D.
Alexander Glazer, Ph.D. (Emeritus)
Joseph J. Jacobson, Ph.D.
Robert A. Lumsden, Ph.D.
Russell J. Jones, Ph.D.

Assistant Professors:
Lewis J. Feldman, Ph.D.
Robert Fisher, Ph.D.
William Grusven, Ph.D.

Associate Professors:
Anastasios Melis, Ph.D.
Renée Z. Sung, Ph.D.
Norman T. Perry, Ph.D.
Lawrence J. Waldron, Ph.D.
Paul J. Zinke, Ph.D.

Assistant Professors:
Ronald G. Admumson, Ph.D.
Robert Robichaux, Ph.D.
William C. Taylor, Ph.D.

Lecturer:
Alex Quintanilha, Ph.D.

Graduate Adviser: Richard Mallink.

The Graduate Group in Molecular and Physiological Plant Biology was formed to permit students to obtain advanced degrees in modern areas of plant sciences. The graduate program is directed by an interdepartmental group consisting of faculty members from several academic units (Botany, Molecular Plant Biology, Plant and Soil Biology, Genetics, Chemistry, Microbiology, and Forestry). Graduate study leading to the M.S. and Ph.D. degrees is offered.

This program emphasizes fundamental training in the plant sciences. The student chooses one of three academic options, each concentrating on a different aspect of plant science: plant physiology, molecular plant biology, and physiological plant ecology. Each option is designed to allow students maximum flexibility in achieving their professional objectives. Applicants should have prior preparation in the basic physical and biological sciences, although deficiencies can be removed during the early stages of graduate study.

Range Management

Office, 145 Mulford Hall, 642-3765

Professors:
Edward C. Stone, Ph.D.
Donald G. Arganbright, Ph.D.

Associate Professors:
James L. Hardy, Ph.D.

Assistant Professor:
Randall C. Rosiere, Ph.D.

Graduate Adviser: Randy Rosiere.

This program is administered by an interdepartmental group consisting of faculty members from the Department of Forestry and Resource Management and related departments on the Berkeley campus. The program is designed to enable students with a B.S. degree in range management, forestry, in other range management fields, or in related disciplines to obtain advanced work in this field. Graduate study leads to the Master of Science degree and serves students with advanced professional interests and those wishing to specialize in a basic aspect of range management, such as grass or brushland ecology, forage in relation to livestock or wildlife management, or rangeland vegetation manipulation.

Excellent laboratory and field facilities include several experimental range properties and large acreages of wildland ranges that are easily accessible from Berkeley. The staff is actively involved in both theoretical and practical research.

Soil Science

Office, 108 Hilgard Hall, 642-0341

Professors:
Robert Colwell, Ph.D.
Harvey Doser, Ph.D.
(U.C. Davis)

Associate Professors:
James Bartolome, Ph.D.

Assistant Professors:
Ronald G. Admumson, Ph.D.

Lecturers:
Rodney J. Arkley, Ph.D.
Albert Urikh, Ph.D. (Emeritus)
Isaac Barndad, Ph.D. (Emeritus)

Graduate Adviser: John G. McCall.

Graduate study in soil science is supervised by an interdepartmental group drawn from the staff of the Department of Plant and Soil Biology and other departments in the University who have special qualifications and interests supervising research in soil science. Both M.S. and Ph.D. programs are available. For admission the student must have a bachelor's degree in soil science or its equivalent in the biological and physical sciences. Previous completion of courses in mathematics, statistics, physics, chemistry, biochemistry, and several fields of biology will enhance admission opportunities and reduce the time required to complete graduate programs in this field.

Graduate study in soil science offers opportunities to study problems of increasing food and fiber production and maintaining these at high levels without adverse effects on the soil and plant ecosystem. The principal lines of study are soil chemistry, soil microbiology and biochemistry, soil morphology, soil physics, and soil-plant relationships.

Research facilities include greenhouses with filtered air, pot culture areas, environmental growth chambers, and modern laboratories for diversified plant and soil studies. In addition to general laboratory equipment, there are instruments for X-ray diffraction, atomic absorption spectrophotometry, emission spectrophotometry, and spectroscopy, and gas chromatography, radiochemistry, electron microscopy, and soil rheology studies.

Wildland Resource Science

Office, 145 Mulford Hall, 642-3765

This program is administered by the Department of Forestry and Resource Management, with degree programs available at the M.S. and Ph.D. levels. The Ph.D. program is designed to develop the student's critical abilities and to expand the capacity to conduct research on forests, woodland, grasslands, and related renewable natural resources. It is concerned with wildland ecosystems and with the aggregates of vegetation, fauna, water, soil, climate, and social systems associated with them. It examines these ecosystems in terms of management and manipulation to achieve particular social purposes.

The master's level program is intended for the graduate in forestry, in other wildland resource fields, or in related disciplines who desires to specialize in some aspect of wildland resources such as biometrics, ecology, economics, photography, policy and planning, silviculture, soils, watershed management, or wildlife habitat management.

The Department has excellent facilities for instruction and research, including photogrammetric, physiological, and statistical laboratories as well as several forest properties where students may center their field studies.

Wood Science and Technology

Building 478 Richmond Field Station, 231-9452

Professors:
Donald G. Arganbright, Ph.D.
Charles R. Wilke, Ph.D.
Robert G. Engstrom, Ph.D.
Eugene Zavarn, Ph.D.
Robert A. Cockrell, Ph.D.

Associate Professor:
Georgi A. Grozdich, Ph.D.

(Acting)
Ian L. Bailey, M.S.

Graduates are offered a thorough knowledge of all areas of wood science as a background to their chosen research fields or areas of specialization. To be considered for admission, students must have a bachelor’s degree or equivalent in forestry, engineering, wood science, or wood technology.

Graduate study directs principal attention to an understanding of the anatomy, mechanics, physics, and chemistry of wood for man's benefit. Specialization through additional study and thesis research is possible under the program in such areas as wood structure; wood physics, including wood moisture and wood heat relations; timber mechanics and wood engineering, gluing and glued products; wood quality, wood chemistry, including extractives, fiber utilization and pulping, pyrolysis, and other chemical processes; or impairments of the vision system. Specifically educated, clinically trained, and state-licensed to examine the eyes and related structures to detect the presence of vision problems, eye diseases, and other impairments of the vision system.

Graduate study directs principal attention to an understanding of the anatomy, mechanics, physics, and chemistry of wood for man's benefit. Specialization through additional study and thesis research is possible under the program in such areas as wood structure; wood physics, including wood moisture and wood heat relations; timber mechanics and wood engineering, gluing and glued products; wood quality, wood chemistry, including extractives, fiber utilization and pulping, pyrolysis, and other chemical processes; or impairments of the vision system. Specifically educated, clinically trained, and state-licensed to examine the eyes and related structures to detect the presence of vision problems, eye diseases, and other impairments of the vision system.

The School of Optometry provides professional training in the art and science of vision care. Drawing upon the principles of anatomy, optics, physiology, psychology, and the study of all factors influencing visual performance, the four-year professional program leads to the degree of Doctor of Optometry which qualifies one to take the State Board Examination in all states. Doctors of Optometry are health care professionals who specialize in the examination, diagnosis, and treatment of conditions or impairments of the vision system. Specifically educated, clinically trained, and state-licensed to examine the eyes and related structures to detect the presence of vision problems, eye diseases, and other impairments of the vision system.

The four-year course is devoted to the practice of optometry and the detailed study of specialized areas, including contact lenses, binocular vision, vision functions, pathology, and low vision.

Optometry offers a wide variety of interesting, challenging, and rewarding careers both in private practice and in public service. The education acquired at our School provides today's Doctors of Optometry with the knowledge and skill necessary to meet the challenges of providing vision care in the 1980's and beyond.

The School also offers a graduate program in physiological optics which leads to the M.S. degree and the Doctor of Philosophy degree. Offered in cooperation with other departments of the University this program is designed to prepare students for a career in teaching and research in the science of vision. Research facilities available to graduate students in physiological optics are unequaled anywhere in the world, and a distinguished resident and visiting faculty is available to provide guidance in most of the important aspects of the field.

A one-year graduate professional (residency) program is available for graduates of optometry programs of expanding their skills in one or more clinical areas and/or seeking training in specialty areas. The areas that are offered are: binocular vision and/or ocular health practice, contact lenses, visual functions, low vision care, and ocular disease detection. Special combined or unique programs are possible.

For further information consult the Announcement of the School of Optometry available in Room 314, Minor Hall.

Physiological Optics

An undergraduate program in physiological optics is offered which leads to the B.S. degree. The purpose of this program is to prepare students for the graduate program in physiological optics rather than the practice of optometry.

The graduate program in physiological optics is a field of study leading to the M.S. and Ph.D. degrees. The program is administered by the Group in Physiological Optics, representing faculty from the School of Optometry and other departments.

Those interested in this graduate program should familiarize themselves with the regulations of the Graduate Division and, in addition, should contact the adviser of the Group in Physiological Optics as soon as possible. Admission to this program requires a bachelor's degree in physics, physiology, physiological optics, psychology or optometry, or a doctor's degree in medicine or optometry.

For further details on the requirements for the B.S., M.S., and Ph.D., please consult the adviser of the Group in Physiological Optics, School of Optometry.

Letters and Science List: For regulations governing this list, see the Announcement of the College of Letters and Science.

Optometry

Upper Division Courses

100A. Introduction to Optometry. (2). Formerly 100. Must be taken on a pass/no pass basis. Two 1-hour lecture, two hours clinic observation. Optometric introduction: definition, history, current problems, contribution of scientific method, relation to clinic practice. Clinical observation and clerkships. (F)

100B. Introduction to Optometry. (2). Formerly 100. Must be taken on a pass/no pass basis. One 1-hour lecture and 2 hours laboratory per week. Semester Prerequisites: 100A. The profession of optometry, its history, and present status. Discussions on the role of the optometrist in health care delivery systems and training in clinical optometric practice. Clinic observation. (SP)

114A. Ophthalmic Optics. (3). Formerly 114A. Two 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: Physiological Optics 110 and 111. Geometric optics of thick and thin spherical and cylindrical ophthalmic lenses, including prism, addition of prism, and crossed cylinders, differential prism, and magnification. Theory of the lensmeter and the lens gauge. Laboratory exercises in lens measurements, layout, and lens mounting. (SP)

114B. Ophthalmic Optics. (3). Formerly 114B-114C. Two 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 114A. Ophthalmic lens materials, lens aberrations and their control, absorptive lenses, reflective coatings, safety aspects, multifocal lenses. Laboratory exercises in fabrication of spectacle lenses, alignment and verification of optical components, spectrophotometry, lensing, standards testing. Consideration in the design of ophthalmic lenses and frames according to the refractive, physiological, and psychological requirements of the individual patient, safety, and appearance. (SP)

126. Ametropia and Emmetropia. (1). Formerly 126. One 1-hour lecture per week. Semester Prerequisites: Physiological Optics 110. The refractive status of the eye, the nature, etiology, incidence, course, and de-
development of ametropia and emmetropia. Consideration of methods to control refractive error. (SP)

127A. Clinical Examination of the Visual System. (4). Formerly 127A. Two 1-hour lectures, two 2-hour laboratories plus two hours clinic per week. Semester Prerequisites: 100 and Physiological Optics 110. Quarter Prerequisites: Grade of C or better in 126 and Physiological Optics 102. Diagnostic elements of the optometric examination. Theory and techniques of examination procedure. Interpretations of symptoms and signs related to anomalies of the sensory, motor, and optical components of the visual system. (F)

127B. Clinical Examination of the Visual System. (5). Formerly 127B-127C. Three 1-hour lectures, two 2-hour laboratories, and two hours clinic per week. Semester Prerequisites: 127A. Quarter Prerequisites: Grade of C or higher in 127A. Continuation of diagnostic elements of the optometric examination; theory and techniques of examination procedures. Interpretations of symptoms and signs related to anomalies of the sensory, motor, and optical components of the visual system. Graphical and normative analysis of examination data, including fixation disparity and symptomology. Diagnosis, management, and prognosis of visual anomalies. (SP)

130. Basis and Recognition of Systemic Diseases. (3). Formerly 130. Three 1-hour lectures per week. Semester Prerequisites: Physiological Optics 101. Quarter Prerequisites: Grade of C or higher in Physical Optics 101, 125, and 151. Basic pathological processes in human development, senescence, and disease under physiological and histology. Basic techniques of physical examination and interpretation of common symptoms and signs relating to major disease processes. (F)

131. Ocular Manifestations of Systemic Diseases. (2). Formerly 131. Two 1-hour lectures per week. Semester Prerequisites: 130 and 140. Quarter Prerequisites: Grade of C or higher in Physical Optics 129 and 130. Basic physiological basis of low vision aids. Epidemiology, etiology, signs, and symptoms of low vision. Optometric examination and treatment of the low vision patient, interdisciplinary rehabilitation resources, counseling, and referral. (F,SP)

132. Pediatric Optometry. (3). Formerly 132C. Two 1-hour lectures and one 2-hour lab per week. Semester Prerequisites: 132B. The psychology of infants and children. Optometric training, examination, management, and treatment of pediatric patients. Methods of assessing visual and perceptual functions related to educational development. Review of procedures used by other professionals in the management of children's health and education. (SP)

134A. Low Vision. (3). Formerly 134A. Two 1-hour lectures and one 2-hour lab per week. Semester Prerequisites: 132B. Examination and treatment of the low vision patient, interdisciplinary rehabilitation resources, counseling, and referral. (F)

135. Instrumentation of Ocular Disease Detection. (3). Formerly 135. One 1-hour lecture and one 2-hour lab per week. Semester Prerequisites: 132A. Development of advanced topics in ophthalmic instruments. (SP)

136A. Basis, Recognition, and Management of Ocular Disease. (5). Formerly 136A. Four 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 136A. Quarter Prerequisites: Grades of C or higher in 128, 132, 139 and 140A-140B. Continuation of 136A. (SP) Sequence begins in the Fall.

140. Pharmacology. (4). Formerly 140A-140B. Three 1-hour lectures and one 2-hour lab per week. Semester Prerequisites: Physical Optics 101. Quarter Prerequisites: 128. Basic principles of drug action. Pharmacodynamics, mechanisms of action, toxicology. Emphasis on those agents used in optometry and the side effects of drugs, especially to children. Attention given to optical actions, uses, contraindications of ophtalmic preparations, with emphasis on diagnostic drugs used in clinical practice. (F)

158A. Low Vision. (3). Formerly 158C. Two 1-hour lectures and one 2-hour lab per week. Semester Prerequisites: 127B. The psychology of infants and children. Optometric screening, examination, management, and treatment of pediatric patients. Methods of assessing visual and perceptual functions related to educational development. Review of procedures used by other professionals in the management of children's health and education. (SP)

185A. Clinical Examination of the Visual System. (4). Formerly 185A. Must be taken on a passed/not passed basis. Two 1-hour lectures per week. Semester Prerequisites: 185A. A credit and grade to be awarded upon completion of sequence. Must be taken on a satisfied/unsatisfactory basis. Seminar/patient demonstration. Semester Prerequisites: O.D. Degree. Must be taken on a passed/not passed basis. Four 1-hour lectures per week. Semester Prerequisites: O.D. Degree. Clinical examination of patients in designated specialty clinics. More than one clinical specialty may be taken simultaneously. (F,SP)

281A-281B. Graduate Clinical Rounds. (1-3-1-3). New Course since Spring 1983. Course may be repeated for credit. Four hours of clinic per credit hour. Semester Prerequisites: O.D. Degree. Clinical examination of patients in designated specialty clinics. More than one clinical specialty may be taken simultaneously. (F,SP)

292A-292B. Graduate Optometry Seminar. (1-3-1-3). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Seminar/patient demonstration. Semester Prerequisites: O.D. Degree. Must be taken on a satisfied/unsatisfactory basis. Seminar/patient demonstration. Semester Prerequisites: O.D. Degree. Presentation and discussion of the diagnosis, etiology, prognosis, and treatment of selected clinical cases. (F,SP)

410. Summer Optometry Clinic. (4). Formerly 410. Must be taken on a passed/not passed basis. Twenty hours of clinic per week. Semester Prerequisites: 127B. Quarter Prerequisites: Grade of C or higher in Optometry 126. Lectures, seminars, problem sets, and performance in the technique and interpretation of clinical data. (SP)

453A. Optometry Clinic. (4). Formerly 453A. Credit and grade to be awarded upon completion of the course. Must be taken on a passed/not passed basis. One 1-hour lecture per week. Semester Prerequisites: 127B. Laws governing the practice of optometry. The establishment, management, economics of an optometric practice. Professional organizations and societies; options and methods for delivery of optometric services. (SP)

458A-458B. Geriatric Optometry. (2;2). Must be taken on a passed/not passed basis. Four 1-hour lectures per week for two 8-week summer sessions. Semester Prerequisites: O.D. Degree. Modern concepts pertaining to the physical, physiological, psychological and visual aspects of the aging patient. Fundamental aspects in the examination of the elderly patient will be stressed: case history, test techniques, prescription considerations, after care and management. Discussion of the problems, examination techniques and prescription design considerations for aphasic patients and aging patients with low vision. (SP)
122A. Sensory Processes of Vision. (4). Formerly 122A. Three 1-hour lectures and one 2-hour laboratory per week. Light thresholds, light and dark adaptation, luminosity, radiometry, photometry, ocular transmission, physiological factors affecting human vision, retinal pigment epithelium, cone photoreceptors, photopic and scotopic vision (cone pigments, trichromatic, dichromatic, monochromatic, retinal densitometry, Stiles mechanisms). Color sensations: characteristics of radiant sources, normal and anomalous color vision (hue, saturation, luminosity). Color perception. (F)

123B. Sensory Processes of Vision. (5). Formerly 123B. Four 1-hour lectures and one 2-hour laboratory per week. Semester Prerequisites: 123A. Properties of the visual pathway based on single unit and multiple unit responses; comparison of visual processes from normal and visually deprived mammals. (SP)

160. Binocular Vision and Space Perception. (3). Formerly 160. Two 1-hour lectures and one 3-hour laboratory per week. Semester Prerequisites: 129. Perception of space, direction, and distance. Binocular retinal correspondence, horopter, differential magnification effects, sensory vision, local and global stereopsis, static and dynamic monocular depth cues. (F)

Graduate Courses

201A. Seminar in Physiological Optics. (2). Formerly 201A. Course may be repeated for credit. One 2-hour seminar per week. Consent of instructor. Graduate seminar in physiological optics. (F)

201B. Seminar in Physiological Optics. (2). Formerly 201B. Course may be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Graduate seminar in physiological optics. (SP)


205. The Oculomotor System. (3). Formerly 205. Two 1-hour lectures and two 2-hour laboratories per week. Semester Prerequisites: Lecture and laboratory demonstrations on mechanical, physiological, servoanalytical, and behavioral aspects of pupil, accommodation, and monocular and binocular eye movements related to vision. (SP)

207. Simulation of Visual Systems. (3). Formerly 207. Two hours of lecture and five hours of laboratory per week. Semester Prerequisites: Graduate standing or permission of instructor. Analysis of eye movement and sensory visual systems from a control and systems approach is made available to non-engineers, using computer simulation techniques, and biologist-oriented display programs. (F)

210. Instrumentation and Methodology in Vision Research. (4). New Course since Spring 1983. Three hours lecture and two 2-hour laboratories per week. Semester Prerequisites: Consent of instructor. Selected topics from: basic concepts in radiometry, photometry, and colorimetry. Optical bench systems: light sources, control, calibration, video and oscilloscope stimulation generation and calibration. Neurophysiological and behavioral techniques for measurement of eye movements, pupil, accommodation, ERG, EOG, VEP, single unit activity. Psychophysical methodology, signal detection, computer control of stimuli, data acquisition and processing. Clinical assessment of ocular components; exam (F)


214A. Visual Sciences A. (5). Course may be repeated for credit with consent of instructor. Two 1.5-hour lectures per week. Semester Prerequisites: Consent of instructor. The course will cover both the classical literature and the more recent information on visual science. Topics will include physiological anatomy and physiology, psychological and psychophysical procedures, incremental thresholds and absolute sensitivity, color vision (physiology and psychophysics), spatial vision, visual acuity, spatial frequency analysis, form perception, visual development, temporal aspects of vision (movement and flicker), and binocular vision. (SP)

214B. Visual Sciences B. (5). Course may be repeated for credit with consent of instructor. Two 1.5-hour lectures per week. Semester Prerequisites: Consent of instructor. The course will cover both the classical literature and the more recent information on visual science. Topics will include retinal neuro-anatomy and neurophysiology, retinal and macular anatomy and physiology, psychophysical procedures, incremental thresholds and absolute sensitivity, color vision (physiology and psychophysics), spatial vision, visual acuity, spatial frequency analysis, form perception, visual development, temporal aspects of vision (movement and flicker), and binocular vision. (SP)

216. Color Vision. (3). Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 214A-214B or consent of instructor. Selected topics from spatial vision, color vision mechanisms, specification and discrimination, psychophysics and neurophysiology of color processing. Color and brightness perception. Stiles two-color increment threshold measures, interaction of color and form, color vision anomalies. (F)

218. Spatial Aspects of Vision. (3). Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 214A-214B or consent of instructor. Selected topics from spatial vision, color vision mechanisms, specification and discrimination, psychophysics and neurophysiology of color processing. Color and brightness perception. Stiles two-color increment threshold measures, interaction of color and form, color vision anomalies. (F)

222. Application of Vision Psychophysics to Clinical Disorders. (4). Course may be repeated for credit with consent of instructor. Three hours of lecture per week. Semester Prerequisites: 214A-214B or consent of instructor. Selected topics from: non-invasive techniques in the study of retinal and choroidal diseases, glaucoma, strabismus, amblyopia, and various degrees of visual impairment; study of basic laboratory procedures which may be applied to allow identification of susceptibility to retinal disease, and other causes of visual sensitivity in disease detection, and contribute to an understanding of the prognosis for eye disease. (SP) Offered every other year.

252. Neurophysiology of Visual Development. (2). Formerly 252. Two hours of seminar per week. Semester Prerequisites: Consent of instructor. Selected topics from: theories of developing mammalian visual systems. Review of the effects of normal and altered visual experience, including monocular or binocular deprivation, strabismus, amblyopia, and anisometropia. Evaluation of innate and environmental contributions to the development of the visual system. (F)

259. Physiological Optics of the Eye. (3). Formerly 259. Four hours of lecture per week. Semester Prerequisites: Graduate standing and a course in calculus.
Programs of study leading to the following academic degrees are administered by groups of faculty from the School of Public Health and other departments.

Biostatistics, M.A., Ph.D. Comparative Pathology, M.S., Ph.D. Environmental Health Sciences, M.S., Ph.D. Epidemiology, M.S., Ph.D. Immunology, M.A., Ph.D. Microbiology, M.A., Ph.D. Nutrition, Ph.D. Parasitology, M.S., Ph.D.

Students are encouraged, and in most programs are required, to begin studies in the Fall Semester because of the order in which courses are scheduled. Separate applications for admission must be submitted to the Graduate Division of the University and to the School of Public Health no later than February 1 for admission to the following Fall Semester.

For further information consult the Announcement of the School of Public Health, available from the School.

The following sections have been established for courses 197, 198, 199, 295, 296, 297, 298, 299, 601, and 602. The courses may be repeated for credit, but some sections may not be given every semester.

A. Program/Clinic Administration B. Planning and Policy C. Health Services Management F. Maternal and Child Health G. Public Health Education H. Behavioral Sciences J. Public Health Nutrition K. Environmental Health Sciences L. Biostatistics M. Department M.P.H. (BioEnv.) N. Epidemiology O. Biomedical Sciences P. Forensic Science

Upper Division Courses

190. History and Development of Public Health. (1). Formerly 190. One 2-hour meeting per week. The first hour will be devoted to lectures that survey broadly the history of public health from antiquity to the 20th century. Appropriate readings will be the focus for discussion in the second hour of each class. The general purpose of the course is to provide an historical background for our understanding of health and disease. (SP)

Graduate Courses

291A. Introduction to Public Health. (6). Formerly 291A-291B. Three 1-hour lectures and two 1/2-hour seminars-laboratories per week. Required of all new Master of Public Health degree students. Biological, social, and physical factors affecting health; distribution of diseases in populations, planning, organization, and delivery of services affecting health. (F)

291A. Introduction to Community Oriented Primary Care. (2). New Course since Spring 1983. Three 1-hour and two 1/2-hour lectures per week. Semester Prerequisites: Graduate standing in Public Health or consent of instructor. Required of all new Master of Public Health degree students. Biological, social and physical factors affecting health; distribution of diseases in populations, planning, organization and delivery of services affecting health. (F)

Biomedical and Environmental Health Sciences

Department Office, 113 Haviland Hall, 442-4416

Social and Administrative Health Sciences

Department Office, 508 Earl Warren Hall, 442-5441

Professors:

Ruth L. Uehnemann, Sc.D. (Emeritus)
Andres L. Norman, Ph.D. (Emeritus)
Edith M. Lindsay, Ed.D. (Emeritus)
Dorothy Bird Nyswander, Ph.D. (Emeritus)
Alberta Parker, M.D., M.P.H. (Clinical) (Emeritus)
Keith O. Taylor, Ph.D., M.B.A. (Emeritus)
Helen M. Wallace, M.D., M.P.H. (Emerita)

Assistant Professors:

Joseph J. Hooper, Ph.D.
John R. Adamson, Ph.D. (Adjunct)

Biomedical and Environmental Health Sciences

Department Office, 113 Haviland Hall, 442-4416
Biomedical and Environmental Health Sciences

The mission of the Department of Biomedical and Environmental Health Sciences is to educate graduate students in the scientific basis for the promotion of health and prevention of disease in the human population and to engage in continued research for the advancement of health sciences. The successful accomplishment of this ambitious and challenging mission requires a faculty with expertise in a range of disciplines as well as teaching and research programs that facilitate interdisciplinary cooperation. To accomplish the educational mission and goals of the Department, the faculty are organized in a creative and innovative manner that meets the educational mission and goals of the Department and the career objectives of its students.

The domain of activities includes identifying the biological, chemical, physical, social, and environmental factors which affect human health; development of analytic models and investigative techniques to measure and assess the impact of these factors on health; and to recommend and evaluate health programs. Some areas of special interest include the scientific basis for the promotion of health and prevention of disease in the human population and to engage in continued research. The scientific basis for the promotion of health and prevention of disease in the human population and to engage in continued research for the advancement of health sciences.

The successful accomplishment of this ambitious and challenging mission requires a faculty with expertise in a range of disciplines as well as teaching and research programs that facilitate interdisciplinary cooperation. To accomplish the educational mission and goals of the Department, the faculty are organized in a creative and innovative manner that meets the educational mission and goals of the Department and the career objectives of its students.
199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a pass/not pass basis. Requires three hours of work per unit per week. Semester Prerequisites: Enrollment is restricted by regulations listed in the Graduate Catalog. (F.SP)

Graduate Courses

204. Advanced Medical Virology. (3-4). Formerly 282. Two 2-hour lecture/discussion sections per week plus research paper. Semester Prerequisites: 104 or consent of instructor. Quarter Prerequisites: 182. Analysis of viral components and host factors that play a role in viral diseases of medical importance. Graduate students in academic degree programs are required to do an additional project for one additional unit. (SP)

205. Advanced Medical Microbiology. (3-4). Formerly 280. May be repeated for credit. Two 2-hour lecture/discussion sections per week. Semester Prerequisites: 105 or consent of instructor. Quarter Prerequisites: 180A-180B. Analysis of bacterial and fungal cell components and host factors that play a role in medically important diseases. Graduate students in academic degree programs are required to do an additional project for one additional unit. (F)


207. Advanced Methods in Medical Microbiology. (4). Formerly 284A. One 1-hour lecture and one 3-hour laboratory and one 1/2-hour laboratory per week. Semester Prerequisites: Qualitative status in Biomedical and Environmental Health Science or consent of instructor. Theory and practice of current methods in clinical and research medical microbiology. Instrumental methods, chromatography, electrophoresis, tissue culture, and related methods applied to medical microbiology. (F)

208. Advanced Methods in Medical Microbiology. (3). Formerly 284B. One 1-hour lecture and two 3-hour laboratories per week. Semester Prerequisites: Qualitative status in Biomedical and Environmental Health Sciences or consent of instructor. Theory and practice of current methods in clinical and research medical microbiology. Instrumental methods, chromatography, electrophoresis, tissue culture, and related methods applied to medical microbiology. Individual student research projects. (F)

209A-209B. Principles of Human Pathology. (4-4) Formerly 270A-270B-270C. May be repeated for credit. Two 1-hour lectures and two 3-hour laboratories per week. Semester Prerequisites: Human anatomy, histology, physiology, biochemistry, and consent of instructor. An examination of the history of medicine and special responses to disease processes. (F.SP)

210. Current Problems in the Public Health Laboratory. (1,5). May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 1/2-hour lecture per week. Semester Prerequisites: Graduation in Biomedical Sciences. Existent federal and state regulations and standards for clinical and public health laboratories. Current diagnostic, surveillance and safety problems associated with microorganisms. Funding problems that interfere with assigned laboratory missions. (SP)

211. Molecular Biology and Disease of Slow Viruses. (2). Formerly 287. One 2-hour lecture per week. Semester Prerequisites: Elementary courses in biology and chemistry. Analysis and development of emerging slow viral diseases of animals and humans. Molecular biology of slow viruses and unusual viral-like agents. (SP) To be given even-numbered years.

212. Clinical Trials. (3). Formerly 261A-261B. Two 1/2-hour lectures per week. Semester Prerequisites: Calculus, matrix algebra, and Statistics 200A which may be taken concurrently. A basic understanding of statistical methods for the design, conduct, and analysis of therapeutic and prevention trials with human subjects. (F) To be given even-numbered years.

222. Biometrical Data Analysis - Pathological and Incomplete Data. (4). Formerly 262B. Three 1-hour lectures and one 2-hour discussion section per week. Semester Prerequisites: 130A-130B or equivalent, or consent of instructor. Quarter Prerequisites: 160A-160B. Survey of advanced methods and models for analysis of disease and health status over time. Based on the methods of survival analysis and survival analysis models. (F) To be given even-numbered years.

223. Introduction to Risk and Intervention Research Methods. (4). Formerly 184. Three hours of lecture and one 2-hour discussion section per week. Semester Prerequisites: 130A or consent of instructor. Quarter Prerequisites: 160A. Biostatistical concepts and modeling relevant to the design and analysis of multifactor cohort studies, matched and unmatched case-control studies, and interrupted time series. (SP)


230A. Stochastic Processes in Biology and Health. (3). Formerly 260A-260B-260C. Three 1-hour lectures and one 1-hour discussion section per week. Semester Prerequisites: Mathematics 111 or 123; Statistics 101 or consent of instructor. Quarter Prerequisites: Mathematics 111 or 123. Characteristics, numerology, and properties of various stochastic processes, including stationary and ergodic processes, Markov chains, and stochastic processes with memory. (SP) To be given even-numbered years.

230B. Stochastic Processes in Biology and Health. (3). Formerly 260B-260C-260D. Three 1-hour lectures and one 1-hour discussion section per week. Semester Prerequisites: 230A or consent of instructor. Quarter Prerequisites: 260B-260C. Stochastic models in biology and medicine. Data generation; exponential-type distributions; branching processes; random walk; diffusion processes; Markov chains; renewal processes; applications. (F) To be given odd-numbered years.

231. Introduction to Multivariate Public Health Statistics. (4). Formerly 266. Three 1-hour lectures and one 2-hour discussion section per week. Semester Prerequisites: 130B or consent of instructor. Quarter Prerequisites: 266. Advanced design and sampling methods for health services research. Bias adjustment techniques. Health status indexes. Application of operations research, queueing theory to analysis of health surveys. Case studies. (F) To be given odd-numbered years.

232. Stochastic Models for Survivorship Analysis. (3). Three 1-hour lectures per week. Semester Prerequisites: Calculus, matrix algebra, one year of mathematical statistics. Advanced design and sampling methods for health services research. Bias adjustment techniques. Health status indexes. Application of operations research, queueing theory to analysis of health surveys. Case studies. (F) To be given odd-numbered years.

233. Stochastic Models for Survivorship Analysis. (3). Three 1-hour lectures per week. Semester Prerequisites: Calculus, matrix algebra, one year of mathematical statistics. Advanced design and sampling methods for health services research. Bias adjustment techniques. Health status indexes. Application of operations research, queueing theory to analysis of health surveys. Case studies. (F) To be given odd-numbered years.

242. Industrial Hygiene: Chemical Agents. (3). Formerly 247A-247B. Three hours lecture per week. Semester Prerequisites: Graduate standing in Environmental Health Sciences. Survey of concepts and methods used by industrial hygienists in the evaluation of chemical hazards in the workplace. (F)

241. Industrial Hygiene: Physical Agents. (3). Formerly 254 and 255. Three hours lecture per week. Semester Prerequisites: Quarter Prerequisites: 247A. Noise, radiation, and heat as occupational hazards, including industrial hygiene evaluation and related damage-risk criteria. (F)

242. Industrial Hygiene: Engineering Evaluation and Control. (3). Formerly 247B. Two hours lecture and 3 hours laboratory per week. Semester Prerequisites: Quarter Prerequisites: 247A. Survey of engineering principles and methods used to control the hazards of aerosols, vapors, and physical agents in the occupational setting. Intended for students specializing in industrial hygiene. (SP)

243. Industrial Hygiene: Air Sampling and Analysis. (2). Formerly 247C. Four hours lecture/laboratory per week. Semester Prerequisites: 247A, and 247B. Formerly 247A. Methods of air sampling and analysis used for evaluating occupational exposures to airborne chemicals. Includes production of controlled test atmospheres for gases, vapors, and aerosols, and application of instrumental methods of analysis. (SP)

244. Industrial Hygiene: Professional Practices. (3). Formerly 249. Six hours lecture/laboratory or discussion per week. Semester Prerequisites: 240, and 241 or 242. Quarter Prerequisites: 247A and 247C or 254. Formerly 247B. Familiarization with industrial hygiene environment and the professional skills practiced by current industrial hygienists and related occupational health specialists in management, labor, and government programs. (SP)

246. Principles of Occupational Diseases. (3). Formerly 249A and 249B. Three hours lecture per week. Semester Prerequisites: Understanding of basic anatomy and physiology, or consent of instructor. Pathologic pulmonary responses: cardiovascular diseases; effects of occupational agents, pesticides, and metal poisons of the hematopoietic, musculo-skeletal, and reproductive systems; neoplasias, skin diseases, and occupational medical practices and administration of programs. (SP)

250. Genetic Toxicology. (3). Formerly 250. Two 1/2-hour lectures per week. Semester Prerequisites: Consent of instructor. Principles of genetic toxicology with emphasis on...
phasis on methods of evaluation of genetic hazards from occupational sources. (SP)

253. Environmental Toxicology. (3). Formerly 253. Three hours of lecture per week. Semester Prerequisites: Graduate standing or consent of instructor. Principles of toxicology applied to the evaluation and control of chemical hazards in air, food, and water. Biological mechanisms of toxicity will also be discussed. (SP)

254. Advanced Toxicology. (2). May be repeated for credit. Three hours seminar per week. Semester Prerequisite: 253. Current topics in toxicology research. Seminar format. (SP) Not offered 1984-85.

256. Environmental Health and Infectious Disease. (2). Formerly 251. Two hours lecture/discussion per week. Semester Prerequisites: Elementary course in microbiology or consent of instructor. A survey of important infectious diseases associated with water, food, and vectors. Their description, distribution, and control. (F)

258. Toxicology Laboratory. (2). Formerly 258. Four hours laboratory per week. Semester Prerequisites: Graduate standing and 253 or consent of instructor. Experimental methods and techniques for evaluating the toxic properties of chemicals. Emphasis on oral, dermal, and inhalation studies. (SP)

259. Applied Allogogy. (3). Formerly 259. Three hours lecture per week. Semester Prerequisites: Graduate or upper division standing in Engineering, Biology, or Public Health. Applications of microbiological systems to human needs. (SP)

260. Epidemiologic Methods. (3). Formerly 260. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Concurrent enrollment in 130A and 259N or consent of instructors. Quarter Prerequisites: 190A and 259N. Principles and methods of epidemiology: study design, selection, and definition of cases and controls; sampling, data collection, analysis, and inference. (F)

261. Current Problems in Epidemiology. (3). Formerly 276. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 3-hour lecture per week. Semester Prerequisites: Introduction course in epidemiology. Quarter Prerequisites: 175. Guest lecturers and staff present their current research in epidemiology and related fields, emphasizing the bases for development of research programs, methods employed, and difficulties encountered. (SP)

262. Advanced Forensic Science: Biological Aspects. (3). Formerly 286A. One 2-hour lecture/discussion and three 3-hour laboratories per week. Semester Prerequisites: Consent of instructor. A detailed analysis of advanced procedural and interpretational problems in forensic science with a focus on problems of a biological nature. (SP)

264. Forensic Pathology. (2). Formerly 271. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour lecture per week. Semester Prerequisites: Senior or graduate standing. Aspects of medico-legal investigations, including gunshot and unexplained natural death; time of death, characterization of injuries, analysis of medico-legal evidence, post-mortem examination, the medical examiner system. Requires attendance at one post-mortem. (SP) Alternate years.

265. Seminars. (1-4). Formerly 295. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Topics to be announced. (F,SP)

266. Special Study. (1-8). Formerly 296. May be repeated for credit. Individual conferences. Semester Prerequisites: Qualified graduate students in Biomedical and Environmental Health Sciences. Designed to permit any qualified graduate student an opportunity for special study under direction of a faculty member. (F,SP)

270L. General Seminar in Biostatistics. (5-1). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar given once a month. Semester Prerequisites: Consent of instructor. Round table discussion of current issues and recent developments in the field of biostatistics. Students who do extra work can take the course for one unit. (F,SP)

297S. Field Study. (1). Formerly 297S. May be repeated for credit. Individual conferences. Semester Prerequisites: Consent of instructor. Supplied field experience. Regular meetings with faculty are required. (F,SP)

298. Group Study. (1-8). Formerly 298. May be repeated for credit. Lecture/discussions. Semester Prerequisites: Qualified graduate students in Biomedical and Environmental Health Sciences. Designed to permit qualified graduate students to pursue study under direction of a faculty member. (F,SP)

299. Individual Research. (1-12). Formerly 299. May be repeated for credit. Individual conferences. Semester Prerequisites: Qualified graduate students in Biomedical and Environmental Health Sciences. Designed to permit qualified graduate students to pursue research interest under direction of faculty member. (F,SP)

601. Individual Study for Master's Students. (1-8). Formerly 601. Units may not be used to meet either unit or residence requirements for the master's degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Individual study for the comprehensive or language requirements in consultation with the field advisor. (F,SP)

602. Individual Study for Doctoral Students. (1-12). Formerly 692. May not be used for unit or residence requirements for the doctoral degree. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Individual conferences. Individual consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required for candidates for the Ph.D. (and other doctoral degrees). (F,SP)

Professional Courses

300L. Instructional Techniques in Biostatistics. (2). Formerly 300L. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Two hours of lecture and three hours of seminar per week. Semester Prerequisites: Consent of instructor, interdisciplinary course to explore the influence of selected aspects of the physical and social environment on health. Among topics to be discussed are density and crowding, and migration, urbanization, industrialization, and stress as they influence health and disease. Sponsoring Departments: Biomedical and Environmental Health Sciences and Architecture. (SP)

IDS282. Tumor Biology Seminar. (1). Formerly 282. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour lecture and discussion per week. Semester Prerequisites: Consent of instructor. Reviews and reports of current research in tumor biology. Sponsoring Departments: Biomedical and Environmental Health Sciences, Zoology, Physiology, and Microbiology. (F,SP)

Social and Administrative Health Sciences

The Department of Social and Administrative Health Sciences in the School of Public Health is concerned with improving the quality of life through the prevention and solution of community health problems. The scope of faculty and student interests in health research and practice is broad. Numerous aspects of health programs and issues are studied: administrative, behavioral, educational, political, and economic.

Flexibility in the curriculum enables students to prepare themselves to pursue many possible career goals. Students may specialize in the following areas: health planning and policy, health administration, management of complex health organizations, maternal and child health, public health nutrition, applied behavioral sciences, and public health education. Students are urged to take an interdisciplinary approach to the study of health problems. Each program prescribes the skills areas in which competency must be demonstrated prior to graduation.

Because of the breadth of health subject interests, graduate students are expected to make extensive use of related departments on the Berkeley campus such as: anthropology, business administration, city and regional planning, economics, education, genetics, nutritional sciences, psychology, public policy and social welfare. Opportunities for supervised field experience are offered by many health agencies in nearby communities, the state, and the nation. For physicians, certain training programs are designed to provide certification required by state and federal regulations. Additionally, many specialties such as preventive medicine, pediatrics, and obstetrics and gynecology. Both the Master of Public Health and the Doctor of Public Health degree programs are offered.

Sequence of Course Offerings

00-09 Planning
10-19 Policy, Law, and Politics
20-29 Finance and Economics
30-39 Administration
40-49 Health Behavior, Social Change, Health Education and Working with People
50-59 Nutrition
60-69 Maternal and Child Health
70-79 Special Population Groups and Problems
80-89 Research and Evaluation
90-99 Experimental, Seminars, Independent Study, etc.

Sequence of Course Offerings

24. Financial Management and Regulation of Health Care. (3). Formerly 244A-244B. Two 1/2-hour lecture-discussions per week. Semester Prerequisites: (1) 225B or Business Ad. 203; or (2) 206 and 235. Students emphasizing management must meet prerequisites (1); those emphasizing planning/regulation must meet prerequisites (2). Quarter Prerequisites: Same as semester prerequisite description. Financial management and regulation of health care institutions, including relationship between institutional and national health care policy; financial planning, forecasting, program evaluation, reimbursement analysis, and control of health care costs. Course is based on a computer game simulation. (SP)

225A. Financial Management. (3). Formerly 225A. Two 1/2-hour lectures per week. Semester Prerequisites: 224. introduction to accounting, or consent of instructor. Semester Prerequisites: 224A-224B. introduction to accounting. Principles of financial management in the context of community clinics and other free-standing ambulatory health care settings. (SP)

225B. Advanced Financial Management. (2). Formerly 225B. One 2-hour lecture-discussion per week. Semester Prerequisites: Financial Management or, policy, or consent of instructor. Quarter Prerequisites: 225A. Integration of analytical methods of financial management and residency experiences into decision making in community clinics. Uses of cases which focus on both clinical and business elements of health care planning and control systems, cost-volume-profit analysis, cost analysis, financial statements, reimbursement analysis, and financial planning. (F)

231A. Administrative Behavior and Processes in Health Agencies. (3). Formerly 231A. Two 1/2-hour lectures per week. Introduction to health administration, focusing on organization and management theory and practices as they relate to the administration of health care delivery systems. Experiences in health care settings will be used to tie theory to practice. (Students taking 235 may not enroll in 231A.) (SP)

231B. Advanced Theory in Health Administration. (2). Formerly 231B. One 2-hour lecture-discussion per week. Semester Prerequisites: Residency in administrative health care setting, or policy, or consent of instructor. Quarter Prerequisites: 231A. Study of current approaches to the theories of innovation and change as they relate to theories of complex organizations, inter-organizational relationships in health care, and political economy of health services, distributional equity, production and utilization of medical services, role of profit and non-profit institutions, health manpower, and issues of competition or regulation. (F)

232. Advanced Medical Care Organization. (2). Two 1-hour lecture-discussions per week. Semester Prerequisites: Public Health 291; a basic graduate course in medical care organization, or consent of instructor. Quarter Prerequisites: A basic graduate course in medical care organization. An indepth analysis and evaluation of the health and medical care delivery systems. Alternative methods for organizing and financing are discussed. Lecture and case materials on selected topics are presented. (F,SP)

233. Quantitative Analysis for Health Service Systems Planning. (4). Formerly 207 and 233. Two 11/2-hour lectures per week, and one 2-hour discussion per week. Semester Prerequisites: BEHS 130A, or consent of instructor. Quarter Prerequisites: EHHS 160A, Application of quantitative analyses and operations research methods to problems and decision-making in health service systems and facilities; introduction of selected quantitative techniques; emphasis on identifying and formulating systems problems that are amenable to solution through use of quantitative techniques. (SP)

235. The Hospital As a Social and Economic Enterprise. (3). Formerly 235. Two 11/2-hour lecture-discussions per week. Development of the hospital as a social and economic institution. Emphasis on social aspects of delivery, ownership pat terns, governance, medical and administrative structures and operations, quality controls, financing. (SP)

236. Organization Theory and Health Institutions. (3). Formerly 236. Two 1/2-hour lecture-discussions per week. Semester Prerequisites: An introductory course in organization theory, or consent of instructor. Quarter Prerequisites: An introductory course in organization theory. Bridging theory and practice in understanding and administering health care services; organizational behavior; power and control; conflict and change. (SP)

239. Analysis of Administrative Practices in Health Service Organizations. (2-6). Formerly 239. Two 2-hour lecture-discussions per week, plus field work. Credit for fieldwork will be assigned on a semester basis. (SP)

240. General Theories of Social Change. (3). Formerly 240. Two 1/2-hour lecture-discussions per week. A general introduction to the major theories of behavior change and practice: (a) positivist social theories of change, (b) interactionism, (c) cultural theories of change, (d) ideological theories of change, as these relate to health and human behavior. Specific examples of the three major approaches in current health settings will receive special emphasis. (SP)

241. Social Theory in Public Health. (3). Formerly 241. One 3-hour seminar per week. Current developments in social theory as they relate to the solution of public health problems. (F)

242. Behavior Theory in Public Health. (3). Formerly 242. One 3-hour seminar per week. A behavioral perspective of development in the behavioral theory as they relate to the solution of public health problems. (SP)

243. Advanced Health Education: Theory. (3). Formerly 244. Three hours of lecture-discussion per week. Semester Prerequisites: Public Health Education major; upper division standing.
The course is designed to provide a basic understanding of the theory, vocabulary, concepts, and approaches to practice that underlie the health education process. (F)

244. Advanced Health Education: Group Work. (3). Formerly 247-251A-251B. Two 1 1/2-hour lecture-discussions per week. Semester Prerequisites: 243 or consent of instructor. Group theory, practice, and research as they apply to public health education. (F,SP)

245. Community Organization and Concepts Basic to the Change Process. (3). Formerly 247. One 3-hour seminar per week. Semester Prerequisites: Major in Public Health Education or consent of instructor. An examination of social-psychological concepts and theories basic to the practice of public health education, including analysis of community organization process, theory, and research. (SP)

251A. Public Health Nutrition. (3). Formerly 251A-251B. Two 1 1/2-hour lecture-discussions per week. Semester Prerequisites: Graduate standing; major in Public Health Nutrition. Role of nutrition in public health and assessment of nutritional status. (Core course.) (F)

251B. Public Health Nutrition. (3). Formerly 251B-251C. Two 1-hour lectures per week. Semester Prerequisites: 251A. Quarter Prerequisites: 251A-251B. Evaluation of nutrition programs. (Second semester core course.) (SP)

251L. Field Experiences in Nutrition. (2). Formerly 251L. May be repeated for credit. One hour discussion and 3 hours field work per week. Semester Prerequisites: Admission to 251A. Field experience in agencies whose work relates to public health nutrition services. (F,SP)

252. Current Developments in Public Health Nutrition. (3). Formerly 252. Two 1-hour lecture-discussions per week. Semester Prerequisites: Previous coursework in advanced nutrition, or consent of instructor. Quarter Prerequisites: Previous coursework in advanced nutrition. Critical evaluation of current literature related to public health nutrition issues and problems; implications for programs and research; interpretation to health professionals and the public. (F)

253. Nutrition for Health Professionals. (3). Formerly 253. One 2-hour lecture-discussion per week. Semester Prerequisites: Graduate standing in the School of Public Health or consent of instructor. Introduction to basic concepts of nutrition. Critical evaluation of current issues and problems related to the health of the public. Implications for health professionals in practice and programming. (SP)

255A-255B. Nutrition and the Life Cycle. (3,3). One 2-hour lecture and one 2-hour discussion per week. Semester Prerequisites: Some knowledge of nutrition and general interest in human development and nutrition. Critical events and effects of nutrition in the life cycle. (SP)

256B. Public Health Aspects of Nutritional Care: In Community Setting. (3). Formerly 256B. One 3-hour lecture-discussion per week. Semester Prerequisites: Admission to MPH Internship in Public Health Nutrition: completion of 256A or consent of instructor. Organization and delivery of nutrition care services in community agencies such as health departments, ambulatory health care settings, child care and education facilities, and others. Topics to include: nutrition assessments, nutrition education (individual, group, client, and staff), short and long range planning, advocacy. (F,SP)

257. National Food and Nutrition Policy. (3). One 3-hour lecture-discussion per week. Semester Prerequisites: Some educational or work experience in the nutrition field. Field instructor. Understanding the functioning of the administrative, judicial, and legislative branches of our government as they affect nutritional policy. Impediments, interventions, and implementation of programs will also be examined. (SP)

260A-260B. Problems and Programs in Maternal and Child Health. (3,3). Formerly 260A-260B-260C and portions of 252F. Two 1 1/2-hour seminar-discussions per week. Semester Prerequisites: Major in M.C.H. or consent of instructor. Sequential courses focus on promotion of health of children, youth, and women of childbearing age and related health issues. Part I: Family life, childbearing, and women's health. Emphasis on primary prevention; overview and analysis of policies and programs; and current problems from public health perspectives. (F,SP)

261. Human Growth and Development: The Life Span. (2). Formerly 260. One 2-hour lecture-discussion per week. Semester Prerequisites: Graduate standing; major in Public Health Nutrition. Examination of social-psychological concepts and theories central to understanding the complex linkages in human development. (F,SP)

262. International Maternal and Child Health. (2). Formerly 262. One 2-hour lecture-discussion per week. Semester Prerequisites: Graduate standing; major in Public Health Nutrition. Examination of social-psychological concepts and theories central to understanding the complex linkages in human development. (F,SP)

263. Review of Maternal and Perinatal Health. (2). Formerly 263 and 265. One 2-hour lecture per week. Major areas related to maternal health and outcome of pregnancy. Development of concepts of family health, and total maternal and infant care, and regional perinatal care. (F,SP)

264. Application of Genetics to Maternal and Child Health. (2). Formerly 263. One 2-hour lecture-discussion per week. Semester Prerequisites: Graduate standing; major in Public Health Nutrition. Examination of social-psychological concepts and theories central to understanding the complex linkages in human development. (F,SP)

265. Services and Programs for Handicapped Children and Youth. (2). Formerly 266. One 2-hour lecture-discussion per week. Semester Prerequisites: Graduate standing; major in Public Health Nutrition. Examination of social-psychological concepts and theories central to understanding the complex linkages in human development. (F,SP)

266. Programs and Services for Handicapped Children and Youth. (2). Formerly 266. One 2-hour lecture-discussion per week. Examination of health status of mothers, infants, and children on worldwide basis; special emphasis on problems, policies, and programs affecting MCH and family planning in developing countries. (SP)

267. Health Needs of Children in Day Care, Preschool, and School Programs. (3). Formerly 267 and 270. Two 1 1/2-hour lecture-discussions per week. Examination of trends, issues, and programs related to health and nutrition services for preschool and school-aged children, and day care. (SP)

268. Population Dynamics, Family Planning, and Health. (2). Formerly 275. One 2-hour lecture-discussion per week. Introduction to family planning policies and practices. Current program trends and issues central to understanding the complex linkages in human development. (F,SP)

269. Biomedical and Behavioral Aspects of Family Planning. (2). Formerly 276. One 2-hour lecture-discussion per week. The physiology of reproduction, fertility control, and recent advances in contraception, sterilization, and abortion. Current issues in family practice. (F)

270. Indian Health Care and Indian Mental Health. (3). Formerly 271. Two 1 1/2-hour lecture-discussion sessions per week. Semester Prerequisites: Consent of instructor. Part I: In-depth examination of Indian health care policy, legislation, and institutions. Part II: Examination of Indian mental health issues, paradigms, strategies, and interventions. (SP)

271. Aging: Value and Social Policy Issues. (3). Formerly 272. One 3-hour lecture 1 1/2-hour. Semester Prerequisites: Graduate standing in public health or related discipline. This seminar examines key themes and issues central to understanding the complex linkages between public health education, public policy, and aging. (F)

273. The Patient as Consumer and Advocate. (2). Formerly 273. One 2-hour lecture-discussion per week. Socialization of lay knowledge; substantive knowledge; compliance control and treatment modification; social roles and their relationship; knowledge conflicts and the consultation; knowledge, decision making strategies and tactics; classification typologies; sick role theory; health based social movements; consumerism and institutional response. (SP)

274. Occupational Health Education. (3). Three hours of lecture-discussion per week. This course is designed so that participants from various disciplines will develop a working knowledge and understanding of current issues in occupational health. (SP)

278. Substance Abuse Prevention. (3). Formerly 170, 171, and 172. Three 1-hour lecture-discussions per week. Consideration of the nature and extent of drug abuse and the impact; concepts of intervention and treatment through community programs. (F)

279. Problems and Programs in Mental Health. (3). Formerly 278. Three 1-hour lecture-discussions per week. Consideration of the nature and extent of mental illness and current concepts of prevention and treatment through community programs. (SP)

280. Research Methods: Logic and Design. (3). Formerly 280. Two 1 1/2-hour lectures and group discussions per week. The study of logic, theory, concepts, and basic experimental designs of behavioral research as they apply to public health. (F)

281. Research Methods: Program Evaluations. (3). Formerly 281. Two 1 1/2-hour lectures and group discussions per week. Semester Prerequisites: Graduate standing in the School of Public Health or consent of instructor. The study of methods, concepts, rationale, and methodology of evaluation research as they apply to the health field. (F,SP)

282. Advanced Methods: Field Applications. (3). Formerly 283. One 3-hour lecture-discussion per week. Critical analysis of selected research topics in health, including approaches to conceptualizing research on parallel issues, methodology of problems in planning and conducting field investigations, and management of large-scale research projects. (SP)

284. Advanced Methods: Qualitative Research. (3). Formerly 284. One 3-hour lecture-discussion per week. Semester Prerequisites: Doctoral candidate in Public Health or a related discipline, or consent of instructor. The study of observational and related methods used to describe and assess health behavior and health care delivery. (SP)

285. Advanced Methods: Survey Research. (3). Formerly 285. One 3-hour lecture-discussion per week. Semester Prerequisites: Doctoral candidate in Public Health or a related discipline, or consent of instructor. The study of methods and related disciplines used in the study of surveys, and other methods used in health and related surveys. (F)

286. Advanced Methods: Measures and Indices. (3). Formerly 286. One 3-hour lecture-discussion per week. Semester Prerequisites: Doctoral candidate in Public Health or a related discipline, or consent of instructor. The study of quantitative methods for assessing health attitudes, beliefs, and behavior. (SP)

290. Health Issues Seminar. (1-4). Formerly 290. May be repeated for credit. One to 4-hour seminar per week. A discussion of current developments and issues in public health in interest to faculty and students of the Department as a whole. Content varies from year to year, depending upon current issues and interests. (F,SP)

291. Experimental Courses. (1-8). Formerly 291. Variable (F,SP)

291C. Ethical Perspectives On Health Issues: Bioethics. (3). Formerly 291C. One 3-hour seminar per week. Semester Prerequisites: Graduate standing in a program devoted to health, or consent of instructor. The goal of this seminar is to critically examine issues and cases which illustrate a number of fundamental ethical issues in the area of health care and bio-medicine. Alternatives to current custom or policy are formulated. (SP)

291N. International Nutrition. (3). Two 1-hour lecture-discussions per week. Semester Prerequisites: Consent of instructor. Emphasis on problems of nutrition in developing countries, examining the nature of the problems, functional consequences of malnutrition for individuals and population, and suggested solutions. (SP)

292. Seminars for M.P.H. Students. (1-4). Formerly 292. May be repeated for credit. One to 4-hour seminar per week. Current topics and special issues in the health field. (F,SP)
Graduate School of Public Policy

Office, 2607 Hearst Avenue, 642-4670

Professors:
Lee S. Friedman, Ph.D.
David L. Kirp, J.D. (Dean)
C. Bartlett McGuire, M.A.
Arnold Meitner, Ph.D.
John Quigley, Ph.D.
Allan P. Sinding, Ph.D.
David L. Kirp, J.D. (Dean)
Percy H. Tannenbaum,
Ph.D.
Martin A. Trow, Ph.D.
Aaron Wildavsky, Ph.D.

Assistant Professors:
Henry Brady, Ph.D.
Timothy Sullivan, Ph.D.

Senior Lecturer:
John Wilson

Lecturers:
William Ahern
Fratie Reiker
Michael Bernick
Rose Cheit
Matthew Coles
Abigail English
William Hiarle
Michael Kieschnick
Joyce Le Novic
Amy McPherson
Elliot Madrich
Burke Zimmerman

Affiliated Faculty: Sally Fairfax (Conservaton and Resource Studies), Judith Gruber (Political Science), Robert Kagan (Political Science), Stephen Sugarman (Law), Michael Wiseman (Economics).

Undergraduate Courses

The undergraduate courses in Public Policy deal with the substance of American 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 should 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 specified in the course description below. 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.

Graduate Courses

Through an examination of a wide variety of contemporary American domestic policy areas, graduate courses enable students to conduct systematic work in the design and assessment of public policies. Among the skills emphasized are those facilitating the application of political, organizational, economic, quantitative and legal analysis to the full range of the policy process. In addition, students are introduced to the larger policy adoption, implementation, and evaluation. By developing these skills, students from the professional schools and academic disciplines should find their strengths enhanced and their areas of interest sharpened. Furthermore, students should be more effectively related to the making of civil rights. (F) (SP)

10. Contemporary Policy Issues and Controversies. (New Course since Spring 1983. Two 1-hour lecture per week. Examinations of problems of civil rights and unemployment by reviewing the literature of each topic. This course is designed to provide students with an awareness of the issues, areas such as income transfer programs, housing, health care, and child abuse. (F)

160. Civil Rights, Courts and the Policy Process. (3). One hour lecture per week. Emphasis is on both the substance of the policy and the development of skills in defining and analyzing policy conflicts. (SP)

161. Policy On Inner-City Poverty and Unemployment. (3). New Course since Spring 1983. Two 1-hour lecture per week. Examinations of problems of inner-city poverty and unemployment by reviewing the literature of each topic. This course is designed to provide students with an awareness of the issues, areas such as income transfer programs, housing, health care, and child abuse. (F)

162. Gender Equity and Public Policy. (3). New Course since Spring 1983. Three 3-hour lecture per week. This course will analyze key issues raised by the contemporary feminist movement, and its impact on national and state policies. Gender policy areas to be covered include family law, health, civil liberties, and economic equity. (F)

163. Case Studies in the Courts and Four Major Policy Areas. (3). New Course since Spring 1983. Two 1-hour lecture per week. Examinations of problems of race, equal rights, delinquency and privacy, using as an analytical tool decisions of the federal court system. Some perspectives on the role the courts do or don't play in shaping policy will also be examined. (SP)

164. Impact of Government Policies and Programs on Poor Children and Families. (3). New Course since Spring 1983. Two 1-hour lecture per week. Examinations of problems of race, equal rights, delinquency and privacy, using as an analytical tool decisions of the federal court system. Some perspectives on the role the courts do or don't play in shaping policy will also be examined. (SP)
170. Evaluating Changes in the Political Process. (3). Formerly 170. Two 1½-hour lectures per week. Institutional problems and reforms dealing with the presidency, Congress, bureaucracy, political parties, campaign financing, and the role of special interests in the mass public and direct legislation. Emphasis on the decision-making processes and the consequences of current operations and of the change made or proposed on recognizing the conflicting values & interests associated with institutional change. (F)

171. Educational Governance and Policy Planning. (3). Formerly 171. Two 1½-hour lectures per week. Examines how educational policy gets made and who becomes involved in the enterprise. Case histories of such topical matters as education vouchers, desegregation, teachers' bargaining and financing public schools are discussed. These cases comprise the elements of policymaking including formulating issues, use of social science data, anticipating implementation problems. (F)

172. Historical Forces in the Shaping of Public Policy. (3). Formerly 172. Two 1½-hour lectures per week. The public policy implications of the dominant values of an era and of the interpretations given major historical events such as the Munich analogy and the IndoChinese war; Black history and ethnic memories and viewpoints; Marxist perspectives and large historical patterns; the Great Depression and social welfare policy. The range of topics will vary from year to year. (F)

174. Issues in Environmental Policy. (3). Formerly 174. Two 1½-hour lectures per week. Semester Prerequisite: Economics 100A or 101A or equivalent. An exposition of American regulatory and administrative processes for promoting environmental quality. How do political, economic, legal, and institutional factors shape current approaches to environmental regulation? Introduces students to political, economic, and administrative theories of regulation. Case studies of regulatory decisions permit students to apply theories to specific environmental problems. (3). Formerly 174. Two 1½-hour lectures per week. Examines the conflicts of values and interests in equal opportunity policy, with emphasis on affirmative action, minority admissions in higher education and the policy controversies conducted in recent court cases. The role of the courts and of the political process in determining such policies will also be considered. (SP)

175. Making Legislative Policy. (3). Formerly 175. One 3-hour lecture per week. Practical factors influencing governmental action in Sacramento. Effect of constituents, lobbyists, the media, the Administration, local government, and interest groups on legislative management. (F)

176. Current Issues in Public Policy Analysis. (3;3). Formerly 220. Two 1½-hour lectures per week. Semester Prerequisite: Economics 100A or 101A or equivalent. A comprehensive introduction to the use of quantitative techniques in public policy analysis: computer modelling and simulation, linear programming and optimization, decision theory, and cost-benefit analysis. Case studies present students with realistic problems and examples. (F)

179. The Rise and Fall of Recent American Social Policies. (3). Formerly 179. Two 1½-hour lectures per week. How liberal ("Great Society") and conservative (the New Right and Ronald Reagan) ideologies have affected the outcome of American policy making. After reviewing the history of these ideologies, the course launches into a detailed examination of four policy ideas—the negative income tax, educational vouchers, required national service, and public funding of abortions—which demonstrate the inter-relationships of social policy, sociology, and political ideologies. (F)

180. Introduction to Economic Policy Problems of Urban America. (3). Formerly 180. Two 1½-hour lectures per week. Semester Prerequisite: Consent of instructor. The course considers federal, state and local government policy choices with regard to the rights of citizens in the geographic form and the economic functions performed in urban areas. It also examines housing and land use patterns as well as regulation and subsidy policies affecting residential housing. (F)

181. Energy Policy. (3). Formerly 181. Two 1½-hour lectures per week. Examines the economic analysis for America's "energy problem" especially policy choices affecting energy demand and conservation, energy supply and exploitation of finite energy resources and environmental changes from energy production and use. Solar subsidies, building and appliance efficiency standards, the strategic petroleum reserve, accelerated development of western coal and other policies will be examined. (SP)

182. Political Skill in the Making of Public Policy. (3). Formerly 182. Two 1½-hour lectures per week. Strategic considerations in managing problems of policy design and advocacy. Special attention to neutralizing opponents, and to issues of "timing". Analysis of these problems uses a praxiological and bureaucratic structures. Focuses on professional and citizen activist roles. (SP)

184. The Economics of Public Problem Solving. (3). Formerly 184. Two 1½-hour lectures per week. Semester Prerequisite: Economics 100A or 101A or equivalent. Extensions and applications of microeconomic theory as required for use in practical public policy analysis. Case studies of the techniques will be drawn from diverse policy applications: welfare reform, national health insurance, price supports during energy shortage, public regulation and other policies. (SP)

185. An Introduction to the Politics of Policy Advising. (3). Formerly 185. Two 1½-hour lectures per week. Starting with an overview of policy-making processes in the House, Senate, White House, and the role that provides it to whom, the conditions under which it is accepted or rejected and the political and bureaucratic environment of policy advising. It explores advising by examining domestic and foreign policy issues. (SP)

186. Equal Opportunity, Affirmative Action, and Public Policy. (3). Formerly 186. Two 1½-hour lectures per week. Examines the conflicts of values and interests in equal opportunity policy, with emphasis on affirmative action, minority admissions in higher education and the policy controversies conducted in recent court cases. The role of the courts and of the political process in determining such policies will also be considered. (SP)

187. Legal Institutions and Public Policy. (3). Formerly 187. Two 1½-hour lectures per week. Issues of public policy are increasingly resolved by the judiciary. How does judicial policy making differ from policy making as carried out elsewhere in government? How has the involvement of the courts in issues of public policy changed the character of the judiciary? Among current issues involved in policy to be discussed: abortion, preferential admissions and exclusionary zoning. (SP)

188. Current Issues and Conflicts in American Health Policy. (3). Formerly 188. Two 1½-hour lectures per week. Examines the discussion of health policy, of today's health alternatives, and of the public policy process for determining health policies. Attention will be given to the role of doctors, hospitals and insurers; to Medicaid, Medicare and their expanding costs; and to such health-related issues as genetic engineering and environmental pollution. (F)

189. Urban Policy Problems. (3). Formerly 189. Two 1½-hour lectures per week. An analysis of the social, economic, political, and philosophical roots and implications of urban problems and policy. Alternative approaches to existing problems in the areas of housing, poverty, welfare, public education, and employment will be analyzed. (SP)

198. Directed Group Study. (1-4). Formerly 198 Course may be repeated for credit. Must be taken on a pass/ not passed basis. Consent of instructor required. Formerly 199. Directed Group Study of a selected topic or topics in Public Policy. Meetings to be arranged.

199. Supervised Independent Study and Research. (1-4). Formerly 199. Course may be repeated for credit. Must be taken on a pass/ not passed basis. Semester Prerequisite: Open only to students in the Graduate School of Public Policy. (SP)

200. Professional Development Seminar. (2). Formerly 200. Three hours of seminar per week. Semester Prerequisite: Open only to majors who have completed the core curriculum. Each student will conduct thorough analyses on a major public policy issue. In this research, students will apply the interdisciplinary methods approaches and perspectives studied in the core curriculum. (SP)

206. Professional Development Seminar. (2). Formerly 206. Three hours of seminar per week. Semester Prerequisite: Open only to majors who have completed the core curriculum. Provides a forum for examining professional issues. Introduces students to the current research explores aspects of the work of life analysts in bureaucratic settings, the role of professional norms and values, and the ethical issues faced by analysts on the job. (SP)

210A-210B. The Economics of Public Policy Analysis. (3). Formerly 210A-210B. Two 1½-hour lectures per week. Must be taken on a passed/not passed basis. Semester Prerequisite: Open only to majors who have completed the core curriculum. Provides a forum for examining professional issues. Introduces students to the current research explores aspects of the work of life analysts in bureaucratic settings, the role of professional norms and values, and the ethical issues faced by analysts on the job. (SP)

220. Law and Public Policy. (3). Formerly 220. Two 1½-hour lectures/discussions per week. Semester Prerequisite: Open only to students in the Graduate School of Public Policy. (SP)

220A-220B. Introduction to Policy Analysis. (3;3). Formerly 220A-220B. Two 1½-hour lectures per week. Must be taken on a passed/not passed basis. Semester Prerequisite: Open only to students in the Graduate School of Public Policy. (SP)

230A-230B. Political & Organizational Aspects of Public Policy Analysis. (3). Formerly 230A-230B. Two 1½-hour lectures per week. Must be taken on a passed/not passed basis. Semester Prerequisite: Open only to students in the Graduate School of Public Policy. (SP)

240A-240B. Decision Analysis, Modeling, and Quantitative Methods. (4;4). Formerly 240A-240B. Two 2-hour lectures per week. Semester Prerequisite: 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 modelling and simulation, linear programming and optimization, decision theory, and statistical and econometric analysis for policy choices. (SP)

250. Political and Organizational Environment of Policy Analysis. (3). New Course since Spring 1983. One 3-hour meeting per week. This course is intended for students in the Graduate School of Public Policy interested in developing skills in political science and organizational factors to the analysis of public policy. Explores political feasibility, especially the ways in which political and organizational considerations constrain the
adoption and implementation of alternative policies. Attentions is given to the political role of the analyst, planner, or adviser. (SP)

251. Microeconomic Organization and Policy Analysis. (3). Formerly 251. One 2-hour seminar and one hour of conference per week. Semester Prerequisites: Business Administration 201B or Economics 200A or equivalent and consent of instructor. Quarter Prerequisites: Business Administration 201B or Economics 200A. Research seminar to develop public policy analyses based on microeconomic theories and to evaluate, including collective demand mechanisms, behavioral theory of regulatory agencies and bureaucracies, and productivity in the public sector. (F)

252. The Politics of Policy Advising. (3). Formerly 252. One 3-hour seminar and one hour of conference per week. The political and economic effects of public policy and the surrounding policy advising and the application of analytical information to policy making. By exploring the interactions of clients and advisors, engineers, planners, policy analysts, and other professionals, we will be in a better position to assess the likely effectiveness of their advising. (F)

253. Methods of Policy Evaluation. (3). Formerly 253. Three hours of seminar per week. Semester Prerequisites: Consent of instructor. The seminar will consider a variety of models for evaluating the consequences of public policies and ongoing evaluation of an adopted policy. (F)

254. Organizational Analysis and Public Policy. (3). Formerly 254. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Examines organizational implications of public policy and the role of the public official upon the definition of policy problems. A variety of theoretical perspectives and case studies are explored. Specific consideration is devoted to organizational effectiveness and problems of organizational design and reorganization. (SP)

255. Advanced Quantitative Models in Policy Analysis. (3). Formerly 255. One 3-hour meeting per week. Semester Prerequisites: Consent of instructor. Examination of the application of statistical and dynamic models to allocation, organization and implementation problems in the public sector. Instructor and student interests will determine specific applications. Students will choose substantive issues for individual research and analysis. (F)

256. The Public Policy of Economic Stabilization and Growth. (3). Formerly 256 and 266. One 3-hour session per week. Semester Prerequisites: Consent of instructor. Application of economic models (supply-side economics, demand economics, and monetarism) to various policy issues: stimulating economic growth through tax cuts: increasing government spending: controlling the money supply; lowering interest rates: stimulating capital investment. Includes the use of normative economic models to analyze alternative economic policies. (F)

257. Implementation and the Policy Process. (3). Formerly 257. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. The process of implementing any new public policy is often attended by delay, the distortion of goals, and minimal results from maximal effort. This course examines the political and organizational factors producing these problems and considers strategies for countering these tendencies. (F)

258. The Use of Microeconomics in Policy Analysis. (3). Formerly 258. One 3-hour meeting per week. Semester Prerequisites: Economics 100A, 101A or equivalent, or consent of instructor. Quarter Prerequisites: Economics 100A, 101A or equivalent. This course is intended for the Graduate Program in Public Policy who seek microeconomic skills in analyzing public policies. Covers a variety of uses of microeconomic theory, including cost-benefit techniques, as applied to the analysis of American domestic policy problems. Developed for students with some academic or practical familiarity with legal analysis. (SP)

259. Inflation As a Social Policy. (3). Formerly 260. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. The personal and institutional consequences of inflation, unemployment, and economic growth will be explored. Special attention will be paid to describing social impacts of inflation, reviewing proposed solutions, and determining how individuals, state and local governments, and businesses can cope with persistent "stagflation". (SP)

260. Policy in Higher Education. (3). Formerly 261. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. This seminar will explore current problems and issues in American higher education, with special attention to the forces that shape public policy in this area. Special attention will be paid to the historical and structural context of higher education, political context, finance, function, and governance. (F)

261. California Energy and Coastal Protection Policy Analyses. (3). Formerly 262. One 3-hour seminar per week. Explores the relationship of analysis, politics, and ideology in the development of energy and environmental policy in California's Coastal Commission and Public Utilities Commission, including offshore oil drilling, harbor dredging, electric utility fuel oil purchasing, and liquefied natural gas terminal siting. The use of practical policy analysis techniques will be demonstrated. (SP)

262. Seminar in Mass Communication Policy. (3). Formerly 263. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Examination of selected public policy issues involved in the regulation and operation of mass media. Particular attention will be directed at policy questions stemming from recent technological innovations. (SP)

263. Issues in Mental Health Policy. (3). Formerly 264A-264B. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Examination of selected policy problems in mental health. Special emphasis on political, organizational, and fiscal problems. Students are encouraged to do field research. (SP)

264. Policies for Youth. (3). Formerly 265. One 3-hour seminar per week. Semester 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 U.S. and abroad. (SP)

265. The Uses of History in Public Policy Analysis. (3). Formerly 267. One 3-hour lecture per week. History considered as a way of understanding elite decision making, as providing a historical perspective on the basis for improving American public policy. Special attention to the shaping of policies and policy by critical events (such as the Great Depression) and group history (such as that of Blacks or women). (SP)

266. Environmental Policy and Regulation. (3). Formerly 268. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Examination of diverse regulatory policies for enhancing environmental quality, from the viewpoint of both environmental economics and effective policy implementation. Special consideration given to the public choice issues raise in environmental regulatory processes and to alternatives to adversarial litigation, such as the mediation of environmental disputes. Specific issues, such as air pollution, hazardous waste disposal, and waste facility siting, are considered. (F)

267. Analysis of Controversial Policy Applications. (3). Formerly 271. One 3-hour seminar per week. Examines several actual macro and micro issues of public and some model approaches for addressing them. Topics include: evidence of racial bias within a police force; the "easy" case of hazardous waste disposal; using stringent criteria in selection decisions for employment and education; and privacy in an information-rich world burgeoning with telecommunications. Preference given to students with some academic or practical familiarity with legal analysis. (SP)

270. Scientific Evidence and Public Policy. (3). One 3-hour seminar per week. Examination of the role of scientific evidence in formulating and carrying out public health policies. Discussion of how uncertainties, and differing interpretations of "evidence" affects perceptions of policy participants. Case studies include regulation of cancer-causing chemicals, toxic waste, and recombinant DNA. (SP)

271. Law and Social Change. (3). Formerly 271. One 3-hour seminar per week. Semester Prerequisites: Limited to graduates or only those undergraduates who have taken Public Policy 187 and have consent of instructor. Examines the interrelationships among the legal processes (court decisions, legislation, administrative regulation) and policy making. Case studies, drawn from such diverse fields as public education, welfare, and environmental reform, will illustrate the role of law in translating, implementing, and thwarting policy decisions. Specific topics to be covered will change from year to year: e.g. discretion, compliance, and the law and procedural justice. (SP)

273. Moral Issues in Public Policy. (3). Formerly 273. One 3-hour seminar per week. Focuses on the social and organizational sources of moral issues and on moral dilemmas arising in the design or administration of public policies rather than on logical and philosophical analyses of ethical positions. Problems and illustrations will be drawn from a variety of policy areas and professions. (SP)

274. Gender Policy. (3). Formerly 274. One 3-hour seminar per week. Semester Prerequisites: Consent of instructor. Explores a range of political, legal, and normative issues surrounding gender equality, and considers strategies for counteracting them. (SP)

275. The Problem of Social Cooperation. (3). Formerly 275. One 3-hour seminar per week. Exploration of the idea of "enlightened self-interest" from an ethical, institutional, political, and cultural perspective. Special attention to the concept of self-interest as a basis for social cooperation. (F)

276. Economic Analysis and Public Policy. (1-3). Formerly 276. It will be possible for students to take modules of 5 or 10 weeks on selected topics and to receive appropriate course credit. One 3-hour lecture per week. Semester Prerequisites: Economics 255A or consent of instructor. A consideration of selected topics in the economic analysis of urban areas and the relationship of analysis to urban policy. Topics covered may include urban public finance, analyses of the housing, transport, non-residential sectors, issues in service delivery and welfare, etc. This course will be offered in more conventional units as needed. In addition to the more conventional 3-unit format. (SP)

280. Quantitative Approaches to Public Policy. (3). Formerly 280. One 3-hour meeting per week. Intended for students not in the Graduate School of Public Policy who seek an improved quantitative background. Students will be provided with a basic understanding of students to quantitative techniques useful for diagnosing policy problems and evaluating alternative solutions. Coverage varies from year to year, but will include such topics as statistical analysis, computer modelling, difference equations, decision theory, benefit-cost analysis, and linear programming. (F)

283. Organizational Decline and Cutback Management. (3). Formerly 283. One 3-hour meeting per week. An examination of how organizations cope when faced with resource cutbacks. Particular attention will be paid to the political response of clientele groups and to the tensions between equity and efficiency in the management of decline. (F)

284. Public Policy On the Regulation of Private Financial Markets. (3). Formerly 284. One 3-hour seminar per week. An examination of the impact of public policy on the nations rapidly changing financial markets. Selected cases of private markets under public regulation will be studied, including regulatory issues in the venture capital market, the development of alternative mortgage instruments, the investment of pension funds, and other areas of public intervention in the allocation of capital. (SP)

292. Directed Advanced Study. (1-12). Formerly 292. Course may be repeated for credit. Open to qualified graduate students wishing to pursue special study and
Research under direction of a member of the staff. (F,SP)

293. Ph.D. Seminar. (2). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Must be third year or beyond Ph.D. student in Public Policy. Discussion and analysis of dissertation research projects, including conceptual and methodological problems of designing and conducting public policy research. (F,SP)

298. Directed Advanced Study. (1-12). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Open to qualified graduate students wishing to pursue special study and research under direction of a member of the staff. (F,SP)

299. Independent Study in Preparation for the Master's Essay. (3). New Course since Spring 1983. Credit to be awarded upon completion of the master's essay. Semester Prerequisites: Consent of faculty. By arrangement with faculty. Open only to qualified second-year graduate students working toward the M.P.P. degree. (SP)

602. Individual Study for Doctoral Students. (1-10). Formerly 602. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Candidates for Ph.D. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare for examinations. Various examinations required for the Ph.D. May not be used for unit or requirement for the doctoral degree. (F,SP)

School of Social Welfare

Office, 120 Haviland Hall, 642-4341

Professors:
Eileen Garnbret, Ph.D.
Neil Gilbert, Ph.D.
Milton Chernin, Ph.D.
Henry Miller, D.S.W.
Robert Segal, Jr., Ph.D.
Harry Specht, Ph.D. (Dean)
Milton Chernin, Ph.D.
(Emertus)
Ruth Cooper, D.S.W.
(Emertus)
Walter Friedlander, Ph.D.
(Emertus)

Associate Professors:
Leonard S. Miller, Ph.D.
Robert Pruger, D.S.W.

Acting Associate Professor:
Jewelle Taylor Gibbs, Ph.D.

Assistant Professors:
Richard P. Barth, D.S.W.
Lerke N. Huang, Ph.D.

Academic Administrator/Lecturer:
Paul Terrell, D.S.W.

Lecturers:
David Averback, J.D.
Mena Cohen, M.S.S.W.
Donald Guggenheim, D.S.W.
Brian Kert, M.A.
Joey Lishutz, M.D.

Coordinator of Field Work:
Barbara Weiss, M.S.W.

Lecturer/Field Work Consultants:
Joan Dunik, M.S.W.
Guerrero Fong, S.W.
Peter Manoles, M.S.W.
Doris Brit, M.S.W.

Graduate Program

The School of Social Welfare is a graduate school program which offers:

1. A program of studies leading to the degree of Doctor of Social Welfare which prepares students for careers in teaching, research, policy development and analysis, and administration in the field of social welfare and in the profession of social work. It is open to applicants who already have completed the master's degree in accredited school of social work and who give evidence of intellectual and other qualifications essential to successful doctoral study. 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 Doctor of Social Welfare degrees, and prepares for the same careers. Applicants must evidence ability to successfully complete doctoral study and must have undergraduate preparation as outlined below.

2. A two-year program of studies for the Master of Social Welfare degree in preparation for the professional practice of social work. Classroom and field courses are designed to teach professionals to use tested knowledge and skill and research methods and techniques in their practice. Applicants must have completed the group major in social welfare in the College of Letters and Science, or an equivalent major, or undergraduate study in other social and behavioral sciences judged by the faculty as adequate preparation for graduate study in the School.

Applications for admission to any of these programs should be submitted in September and no later than February 1 for admission in the following academic year. Admission to the School is contingent on admission to graduate standing; for details see the booklet Admission to Graduate Study.

The Department of Social Welfare administers an undergraduate group major in social welfare in the College of Letters and Science.

For further information, consult the Announcement of the School of Social Welfare, available from the School Office, 120 Haviland Hall.

Undergraduate Group Major, Letters and Science

The group major in social welfare, leading to the degree of Bachelor of Arts in the College of Letters and Science, offers a social welfare sequence of general interest to liberal arts students. It provides students with an opportunity to test their career interest in social work prior to pursuing graduate study. Professional education and preparation for them to prepare for community service positions beginning directly upon graduation with the bachelor's degree. Applications to the major are received throughout the year.

The number of units and prerequisite courses completed are considered for admission.

Major Requirements

Lower Division. Psychology 1, Sociology 1, and Statistics 2. Recommended: Anthropology 3, Economics 1, and 1 hour of discussion per week. Social welfare as an institution. (F,SP)

Upper Division. A minimum of 29 upper-division units, including 100A-100B, 102A-102B, 103A-103B. A minimum of five courses chosen from the following list, with three of the courses taken in one department and two selected from the others: (F,SP)

- 100A. General Social Welfare: Social Welfare as an Institution. (F,SP)
- 101. Seminar in Social Policy. (3). Formerly 100A. Two hours of lecture and 1 hour of discussion per week. Social welfare as an institution. The background and development of the social services in relation to economic, political, and social change; analysis of the organization and delivery of social services in an industrial society. (SP)
- 108. The Social Services—Social Welfare Policies and Programs. (3). Formerly 100B. Two hours of lecture and 1 hour of discussion per week. Social welfare policies and programs. Analysis of social welfare policies and programs, including public assistance, social insurance, social services, and health and mental health. (SP)
- 101. Seminar in Social Policy. (3), Formerly 111. Two 1½-hour seminar meetings per week. (SP)

102A-102B, Social Work as a Profession. (2,2). Formerly 102A-102B. Two hours of lecture per week. Semester Prerequisites: 100A-100B (may be taken concurrently). Preference in admission given to those who have completed 102A-102B. Former Prerequisites: 110A-110B. Introduction to the practice of social work: values and ethics common to helping professions; the use of behavioral and social science; and the range of methods and skills currently used in a variety of social work settings. (F,SP)

103A-103B. Field Practicum. (2,2). Formerly 103A-103B. Must be taken on a passed/not passed basis. Field work in community agencies. Approximately 200 hours per semester. Semester Prerequisites: 102A-102B (may be taken concurrently); 102A-102B must be taken concurrently. Quarter Prerequisites: 110A-110B; 102A-102B. Supervised field work in a community agency, for two consecutive semesters. Offered concurrently with 102A-102B. (F,SP)

H195. Senior Honors Course. (3). Formerly H185. Two seminar hours and 1 hour of consultation per week. Semester Prerequisites: 100A-100B; 101. Quarter Prerequisites: 110A-110B; 111. Preparation of an honors thesis. (SP)

197. Field Studies in Social Welfare. (1-3). Formerly 197. Must be taken on a passed/not passed basis. Field work in community agencies and individual conferences with faculty. Supervised experience relevant to specific aspects of social welfare in off-campus organizations. Regular individual meetings with faculty supervisor and written reports required. (F,SP)

198. Group Study for Advanced Undergraduates. (1-3). Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. Lecture and discussion. Group study on selected social welfare topics. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. Tutorial conference. Enrollment is restricted by regulations specified in the General Catalog. (F,SP)

Graduate Courses

200. Human Development in the Social Environment. (2). Formerly 200A-200B. One 2-hour lecture per week. The psychological, interpersonal, and social development of the person across the life cycle in the context of different social environments. (F)

205. Psychosocial Problems and Psychopathology. (2). Formerly 2104-2105. Two 2-hour lecture per week. Quarter Prerequisites: 200A. 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)

210A. Topics in Human Development: Stress and Coping in Adulthood. (2). Formerly 211. One 2-hour
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lecture per week. Semester Prerequisites: 200. Descriptions, measurements, and major theories concerning the etiology of stress and coping in the adult (25-60) years. (SP)

210B. Topics in Human Development: Infant Development. (2). Formerly 211. One 2-hour lecture per week. Semester Prerequisites: 200. Topics and issues in infant development, including infant mental health, parent-child relationships, behavior assessment, predictors of disturbance, and intervention with high risk infants.

210C. Topics in Human Development: Aging Processes. (2). Formerly 211. One 2-hour lecture per week. Semester Prerequisites: 200. Sociological, psychological, and physiological variables relevant to the assessment of older persons. (SP)

210D. Topics in Human Development: Life Histories and Case Studies. (2). Formerly 298 . One 2-hour lecture per week. Semester Prerequisites: 200. Theoretical and methodological problems in the study of individual lives. Focus on the intellectual and social processes involved in the formulation of critical examination, and reformulation of clinical case studies and psychobiographies. (F)

210E. Topics in Human Development: Human Development and Social Policy. (2). Formerly 201 . One 2-hour lecture per week. Semester Prerequisites: 200. Selected topics in human development and their relevance for social planning and administration. Attention to topics such as cognitive-social development and educational policy, maternal deprivation and day care, burn-out of policymakers, and issues in aging. (SP)

210F. Topics in Human Development: Social Networks and Social Support. (2). Formerly 252 . One 2-hour lecture per week. Semester 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 accomplishments and limitations; the role and skills of professionals in assessing and utilizing networks for clients. (SP)

210G. Topics in Human Development: Psychoanalytic Psychodynamics. (2). Formerly 210A-210B. One 2-hour lecture per week. Semester Prerequisites: 200 and 205. Basic principles of psychodynamics and psychoanalysis. Psychoanalytic psychology will serve as the underlying theoretical orientation. (SP)

220. Social Policy and Social Welfare. (2). Formerly 220A. One 1-hour lecture and one hour discussion section per week. Introduction to the development of the pattern of social services and of professional social work in the United States. Emphasis on attention to value choices and scientific understanding in the differentiation of fields of practice and the process of social development. (F)

222. Mental Health and Social Policy. (2). Formerly 222A. One 2-hour lecture per week. Mental health policies and programs at the national, state, and local levels; major factors influencing the provision of mental health services; reciprocal relationships between mental health policy and social work practice. (SP)

223. Designing Solutions to Mental Health Problems. (F). Formerly 223D. One 2-hour lecture per week. How mental health problems are defined; how optimum solutions to such problems are determined; new directions in the roles of community mental health social workers. (F)

226. Social Policy and Gerontology. (2). Formerly 236. One 2-hour lecture per week. U.S. social policy and programs for the aging are analyzed with respect to the knowledge required to assess the needs for societal supports and major issues and trends in the delivery of social services. (SP)

227. Advanced Study in Aging Policy. (2). Formerly 230. One 2-hour lecture per week. Advanced study in special program and policy areas. (F)

250M. Topics in Direct Practice: Psychotherapy with Black Patients. (2). Formerly 298. One 2-hour lecture per week. Semester Prerequisites: 240, 242 or consent of instructor. Focus on the treatment of patients; dynamics of the transracial treatment experience; treatment skills for successful outcomes. Not offered 1984-85.

250N. Topics in Direct Practice: Mental Health Practice with Asian Americans. (2). Formerly 251. One 2-hour lecture per week. Semester Prerequisites: 240, 242 or consent of instructor. Theory and practice issues related to ethnicity, acculturation, and mental health. Focus on the Asian American experience in the mental health system and service modifications necessary for effective intervention.

250O. Topics in Direct Practice: In-Home Services for Children. (2). Formerly 298. One 2-hour lecture per week. Semester Prerequisites: 240, 242 or consent of instructor. Overview of home-based services for children and youth. emphasis on the development of clinical skills needed to involve families in treatment. (SP)

250P. Topics in Direct Practice: Media and Methods in Social Work Practice. (2). Formerly 256. Two hours of seminar/discussion and laboratory per week. Semester Prerequisites: 240, 242 or consent of instructor. Examines the uses of video in social work practice, education, training, and research. (F)

250Q. Topics in Direct Practice: Direct Treatment of Children. (2). Formerly 251. One 2-hour lecture per week. Semester Prerequisites: 240, 242 or consent of instructor. Examines the psychotherapeutic interactions between therapist, child, and family. Topics focus on the development of clinical skills needed to involve children in treatment. (F)

250R. Topics in Direct Practice: Social Work with Adolescents. (2). One 2-hour lecture/discussion per week. Semester Prerequisites: 240, 242 or consent of instructor. Focus on the assessment and treatment of disturbed and delinquent adolescents. Psychosocial, psychodynamic, sociocultural and ecological perspectives on adolescents will be examined. (SP)

250S. Topics in Direct Practice: School Social Work. (1). On 2-hour lecture per week for 17 weeks. Semester Prerequisites: 240, 242 or consent of instructor. Course addresses the competency requirements for the California Pupil Personnel Credential. Examines the organization and context of school social work practice and introduces models for working with parents, children and youth in the school context; and issues of child abuse and handicaps. (SP)

252A-252B. Social Agency Management. (2). Formerly 230A-230B. One 2-hour lecture per week. Semester Prerequisites: 240. 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 evaluation, and training. (F,SP)

254A. Topics in Agency Management: Program Development and Proposal Writing. (2). Formerly 245. One 2-hour lecture per week. Semester Prerequisites: 240 and 262. Principles and methods of program design and proposal writing. (SP)

254B. Topics in Agency Management: Efficiency in Service Delivery. (2). Formerly 246. One 2-hour lecture per week. Semester Prerequisites: 240 and 252. Theories of organizational behavior and the practice of administration. Special problems of power, conflict, and change in human service organizations. (SP)

254C. Topics in Agency Management: The Good Bureaucrat. (2). Formerly 257. One 2-hour lecture per week. Semester Prerequisites: 240 and 252. An analysis of the problems and opportunities faced by service providers in bureaucracies. Addresses the question: "How can the professional manage the bureaucratic environment of service giving rather than be managed by it?" (F)

254D. Topics in Agency Management: The Management Cycle. (2). Formerly 253. One 2-hour lecture per week. Semester Prerequisites: 240 and 252. Basic skills in human services management: planning, budgeting, monitoring, and assessment of results. (SP)

254E. Topics in Agency Management: Boards, Legislators, and Volunteers. (2). Formerly 298. One 2-hour lecture per week. Semester Prerequisites: 240 and 252, or consent of instructor. Study of the structure, function, and dynamics of task groups; various concepts of leadership; Board executive and professional-volunteer relationships, techniques and skills for conducting meetings, conferences, and workshops. (F)

255A-255B. Social Welfare Planning. (2.2). Formerly 244. One 2-hour lecture per week. Semester Prerequisites: 240. Philosophies and models of the social planning process, problem analysis, designing and assessing alternative plans, performance assessment and evaluation. Consideration of the politics of planning and policy analysis. (F,SP)


275. Ethnic Content. (2). Formerly 298. One 2-hour lecture per week. Social work perspectives on race and ethnicity in an historical context; the relationship between social and economic conditions and the role of the social work profession vis-a-vis ethnic minorities, particularly Chicanos; the evolution and implementation of policies and programs developed to address ethnic minority concerns. (F)

279. Seminar in the History and Philosophy of Social Welfare. (2). Formerly 272. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Primarily for doctoral students. A review of efforts to conceptualize the field of social welfare to analyze heuristic tendencies. (SP)

280. Introduction to Social Welfare Research. (2). Formerly 282A. One 2-hour lecture per week. Introduction to the theory and practice of research in social welfare. (SP)

282A-282B. Seminar in Social Welfare Research. (2.2). Formerly 282A-282B. One 2-hour seminar per week. Seminar focus on problem formulation, design, and implementation. (F,SP)

285. Special Topics in Social Welfare Research. (2). One 2-hour lecture per week. Quarterly Prerequisites: 282A. Topics to be announced annually. (SP)

287. Library Research in Social Welfare. (2). Formerly 287. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Three-hour sessions for the first three weeks of the Fall Semester. Primarily for doctoral students. A systematic introduction to tasks and tools of library research in social welfare: reference works, findings and bibliographic aids. Attention to historical sources, current data flow and storage, and the students' own arrangements for collecting and retrieving information. (F)

288. Report Writing and Editing. (1). Formerly 288. Must be taken on a satisfactory/unsatisfactory basis. Course may be repeated for credit. One 2-hour seminar per week. Professional writing: structure, process, types of writing, and editing. (SP)

289A. Research Methods and Techniques in Social Welfare. (7). Formerly 290. One 2-hour lecture per week. One hour of laboratory per week. Introduction to the logic of social research: topics include definitions, variables, reliability, and validity, and an introduction to sampling. (SP)

289C. Research Methods and Techniques in Social Welfare. (2). Formerly 289C. Two 2-hour lectures per week for the first 7½ weeks of the Spring Semester. Semester Prerequisites: 289A. Stochastic model estimation: topics include problem-solving models in the general linear model; alternative estimation methods. (SP)

289D. Research Methods and Techniques in Social Welfare. (2). Formerly 289D. Two 2-hour lectures per week for the second 7½ weeks of the Spring Semester. Semester Prerequisites: 289A. Continuation and expansion of research methods and techniques in social research: topics include reliability and validity, cluster analysis, extraction and rotation procedures. (SP)

290. Community Organizing. (2). Formerly 244. One 2-hour lecture per week. Semester Prerequisites: 240. Introduction to the theory and practice of community organization. (SP)

296. Individual Study for Graduate Students. (1-12). Formerly 296. Course may be repeated for credit. One unit will be awarded for each four hours per week of student work. Semester 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)

298. Group Study for Graduate Students. (1-12). Formerly 298. Course may be repeated for credit. One unit will be awarded for each four hours per week of student work. Seminar discussion. Semester Prerequisites: Consent of instructor. Intensive examination of selected social welfare topics. (F,SP)

299. Individual Research for Graduate Students. (1-12). Formerly 299. Course may be repeated for credit. One unit will be awarded for each four hours per week of student work. Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the comprehensive examinations required of candidates for the D.S.W. May not be used to satisfy requirements for the doctoral degree. (F,SP)

Professional Courses

301. Training in Teaching. (1-6). Formerly 603. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Supervised teaching assignment. One unit will be awarded for each four hours per week of student work. (SP)

401. Field Instruction. (1-10). Formerly 401. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Supervised field work in social agencies and University based integrative seminars. One unit will be awarded for each four hours per week of student work. (SP)

402A. Practicum in Social Work Practice: Introduction to the Field. (2). Must be taken on a satisfactory/unsatisfactory basis. One day per week. Introduction to the range of professional roles and services in social welfare. Course may be repeated for credit. Practicum experiences during the first semester of the MSW program. (F)

402B. Practicum in Social Work Practice: Social Welfare. (1-4). Formerly 402B. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One unit will be awarded for each four hours per week of student work. (SP)

402A. Practicum in Social Work Practice: Social Work. (1-4). Formerly 402A. Must be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis for the second year of practicum. One unit will be awarded for each four hours per week of student work. (SP)

402C. Practicum in Social Work Practice: Planning. (1-4). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One unit will be awarded for each four hours per week of student work. (SP)
Special Studies

Demography

Graduate Group Office, 2234 Piedmont Avenue, 642-8980

Graduate Courses

200. Seminar in Introductory Population Theory. (1). Formerly a portion of 200 and 201. One 1-hour seminar per week. Semester Prerequisites: Population Studies 100 must be taken concurrently. Required for graduate students in the MA or Ph.D. program in Demography. (F)

201. Advanced Population Theory. (3). Formerly 201. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Demographic transition theory, sociological, and economic theories of population process and change. (SP)

205. Social Demography. (4). Formerly 205. Three 1-hour lectures per week. General socioeconomic and cultural conditions leading to and resulting from population change and particular population structures. (F)

210. Seminar in Introductory Population Analysis. (1). Formerly a portion of 210 and 217. One 1-hour seminar per week. Semester Prerequisites: Population Studies 110 must be taken concurrently. Required of graduate students in the MA or Ph.D. program in Demography. (F)

211. Advanced Demographic Analysis. (4). Formerly 211. Two 1-hour lectures per week. Semester Prerequisites: 210. Population Studies 110 or consent of instructor. Stable population theory, demographic measurement, and estimation procedures for flawed and incomplete data. Sensitivity testing of demographic measurement using microsimulation. (SP)

214. Demographic Forecasting for Social Planning. (4). Formerly 214. Two 1-hour lectures per week. Methods of forecasting population size, age distribution, household composition, and other characteristics at the national, state, or local level. (F)

220. Human Fertility. (4). Formerly 220. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor. Theoretical models and empirical measures of fertility; comparative analysis of social, economic, and demographic factors influencing reproductive trends and differentials; population and family planning policies in industrialized and developing countries. (F)

230. Human Mortality. (4). Formerly 230. Two 1-hour lectures per week. Semester Prerequisites: 210 or 211. Consent of instructor. Quarter Prerequisites: 210 or 211. Review of measurement and cause of death statistics. Traditional, transitional, and modern mortality patterns in European and non-European areas. Current trends and differentials by age, sex, race, marital, and occupational status. Consequences of mortality declines for fertility change and social and economic development. (SP)

240. Migration. (4). Formerly 240. Two 1-hour lectures per week. Human populations analyzed from the standpoint of their spatial distribution and movement. Special attention to rural-urban migration, metropolitan structure, interregional movement, and demographic aspects of land-use. (SP)

250. Mathematical Demography. (4). Formerly 250. Two 1-hour lectures per week. Systematic development of the mathematical theory of human population structure, deterministic and stochastic models of population growth, stable population theory, deviations from stability assumptions, discrete and continuous models and their ergodic properties, with applications to life tables, kinship, and microdemography. (F)


270. Topics in the History of Population. (4). Formerly 270. Two 1-hour lectures per week. Selected pivotal topics in historical demography. Emphasis particularly on western Europe and America, family reconstruction and aggregate analysis, household composition; and historic theory of the critique of demographic transition. (F)

293. Advanced Research Seminar I. (2). Formerly 293. May be repeated for credit. One 2-hour seminar per week for seven weeks. Special research topics in advanced areas, by lectures or seminar conferences on foci to be announced. (F)

294. Advanced Research Seminar II. (2). Formerly 294. May be repeated for credit. One 2-hour seminar per week for seven weeks. Special research topics in advanced areas, by lectures or seminar conferences on foci to be announced. (F)

296. Proseminar in Research. (4). Formerly 296A-296B. May be repeated for credit. One 2-hour seminar per week. Semester Prerequisites: 293 and 294. Quarter Prerequisites: 292A-292B. Introduction to demographic research. (SP)

298. Directed Reading. (1-8). Formerly 298. May be repeated for credit. Semester Prerequisites: Consent of instructor. Intended to provide supervision and directed reading in subject matter not covered in available course offerings. (F,SP)

299. Directed Research. (1-8). Formerly 299. May be repeated for credit. Semester Prerequisites: Consent of instructor. Intended to provide supervision in the preparation of an original research paper or dissertation. (F,SP)

601. Individual Study. (1-8). Formerly 601. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: Graduate standing. Individual study in consultation with the graduate adviser, intended for qualified students to do necessary work to prepare themselves for language examinations, and the comprehensive examination. (F,SP)

602. Individual Study for Doctoral Students. (1-8). Formerly 602. May be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Semester Prerequisites: For qualified graduate students. Individual study in consultation with the major field advisor, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D. (F,SP)

Other Courses in Demography

Economics 75. World Population and Economics. (4)

Economics 175. Economic Demography. (4)

Economics 275A. Economic Demography. (3)
The Energy and Resources Group (ERG) is an autonomous, campus-wide interdisciplinary academic unit conducting graduate teaching and research that treat energy issues as the intersection of technological, economic, environmental, and sociopolitical components. Established in mid-1973, ERG offers two-year M.A. and M.S. degrees in Energy and Resources, as well as the Ph.D.

The faculty of ERG consists of five "core" Professors of Energy and Resources whose primary responsibilities are to this interdisciplinary unit, together with some sixty "affiliated" faculty members. The latter participate part-time in the programs of ERG while holding regular appointments spanning all five colleges and four of the schools of the Berkeley campus, as well as the University's Lawrence Berkeley and Lawrence Livermore Laboratories.

Graduate Courses. The graduate courses in ERG cover a diverse range of topics and are offered in the Fall and Spring. There are no prerequisites for enrolment in the courses unless specifically noted otherwise in the descriptions below.

Graduate Courses. The graduate courses in ERG provide advanced training in interdisciplinary energy/ resources, economic, and policy research. Each course reviews current developments in the field or emphasizes particular disciplinary perspectives: economics, resources, politics, public policy, or environmental and physical sciences.

Graduates. ERG graduates are employed in state and federal energy and environmental agencies, staff positions in both houses of Congress, public and private electric utilities, energy and environmental consulting firms, national laboratories, public-interest organizations, the East-West Center, and the World Bank.

Other resources. The composition of the ERG faculty as five "core" and some sixty "affiliated" members facilitates an unusual degree of cross-disciplinary communication and collaboration in research projects, and it permits such projects to draw on the additional intellectual resources of a number of the other research units of the Berkeley campus. Among those of particular relevance and usefulness to ERG have been the University-wide Energy Research Institute, the Institute of Governmental Studies, the Institute of International Studies, the Institute of Urban and Regional Development, the Earl Warren Legal Institute, and the Center for Research in Management. A particularly close working relationship is maintained with the Energy and Environment Division of the Lawrence Berkeley Laboratory (LBL), which is immediately adjacent to the campus and is operated by the University for the U.S. Department of Energy as a national laboratory. Many of the ERG faculty hold titles and responsibilities in the Energy and Environment Division as well as on the campus; about half of the ERG graduate students hold research assistantships there, and faculty and students alike benefit from the Division's excellent library and computing facilities.

Further information may be obtained from the Energy and Resources Group, Room 100, Building T-4, University of California, Berkeley; Berkeley, CA 94720 (415) 642-1640.


**Ethnic Studies**

Department Office, 3407 DeWitt Hall, 642-6555

Professor:

Ronald T. Takaki, Ph.D.
(Asian Studies)

Assistant Professors:

Mario Barrera, Ph.D. (Chicano Studies)
Sudhbir Chau, Ph.D. (Asian American Studies)

Marie Copeland, Ph.D. (American Studies)
Ling-chi Wang, M.A. (Asian American Studies)

Clara Sue Kim, Ph.D. (Native American Studies)

Terry P. Wilson, Ph.D. (Chicano Studies)

Assistant Professors:

Syra L. Lazuzaka, Ph.D. (Chicano Studies)
Alex Saragoza, Ph.D. (Chicano Studies)

Elaine H. Kim, Ph.D. (Asian American Studies)
Carlos Munoz, Jr., Ph.D. (Chicano Studies)

Visiting Lecturers:

Carlos Munoz, Jr., Ph.D.
Al Logan Slagle, J.D. (Native American Studies)
Gary A. Soto, M.F.A. (Chicano Studies)

**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 of Afro-Americans, Asian Americans, Chicanos, and Native Americans.

Students majoring in Ethnic Studies study the history, culture, and society of Third World communities in the United States and the United Nations. Thus, they will know how to diversify a critical understanding of contemporary society and for social change 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.

1. Demonstrated proficiency in reading and composition, one year at college level.
2. Demonstrated competence in a language other than English. This may be fulfilled by two semesters of college-level courses or three years of high school courses in a given language.
3. Completion of a course in mathematics, statistics, logic, or computer science.
4. Completion of a course in the natural sciences.
5. Completion of six courses outside the student's declared area of emphasis.

### Major Requirements

**Lower Division.**

2. Completion of a course in the history of Western Civilization or American history, or an equivalent course.
3. Completion of an introductory course in one of the Four Ethnic Studies Programs (including Afro-American Studies).

**Upper Division.**

1. Completion of three core courses in Ethnic Studies: 130, 141, and 195.
2. Completion of two additional courses in Ethnic Studies.
3. Completion of six additional courses which form the basis of the declared Area of Emphasis. Two of the courses must be taken in two different Ethnic Studies Programs (including Afro-American Studies).

### Honors

The Department of Ethnic Studies provides a program leading to the A.B. degree with honors. A student will be recommended for honors if the student has completed at least 30 units in two semesters with an average GPA of at least 3.3 for all work undertaken in the Ethnic Studies Department and has been approved specifically for honors by the Department Chair upon recommendation by the faculty adviser for the group major. The honors student will be required to complete Ethnic Studies HI96, Senior Honors Seminar for Ethnic Studies Majors. In order to graduate with an A.B. degree with honors, a student must obtain at least a 3.3 GPA for all coursework undertaken at the University.

### Lower Division Courses

1. Introduction to Ethnic Studies. (3). Formerly 20. Two 1 1/2-hour lectures per week. The University, its relationship to corporate structures, legislative bodies, communities, 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 struggles will be discussed. (F)


3. Third World Cultural Patterns. (3). Formerly 30. Two 1 1/2-hour lectures per week. A comparative analysis of Third World groups and cultures in America, with emphasis on patterns of thought, differences in strategy, and cognitive maps used by various groups in responding to common cultural-life situations. (SP)

### Upper Division Courses

1. Third World Literature in America. (3). Formerly 100. Two 1-hour lectures per week. Analysis of how selected works (poetry, short stories, novels, drama, and oral literature) reflect Afro-American, Chicano, Asian-American, and Native American consciousness and experiences. (F)

2. Third World Cultural Patterns. (3). Formerly 30. Two 1 1/2-hour lectures per week. A comparative analysis of Third World groups and cultures in America, with emphasis on patterns of thought, differences in strategy, and cognitive maps used by various groups in responding to common cultural-life situations. (SP)

3. Third World Feminism. (3). Formerly 148. Two 1 1/2-hour lectures and one 1-hour discussion per week. Critical examination of women's role in society within the context of American society and culture. (F)

5. Ethnic Studies 130.
10. Ethnic Studies 141.
17. Ethnic Studies 130.
18. Ethnic Studies 141.
22. Ethnic Studies 141.

### 130. Racial Inequality in America: A Comparative Historical Analysis. (3). Formerly 130. Three 1-hour lectures and 1 hour of discussion per week. A comparative and historical study of racial inequality from 1600 to the present with attention to diversity of historical experiences on white racial attitudes and the subordination of Afro-Americans, Aians, Chicanos, and Native Americans within the context of American society and culture. (F)


### 141. Politics of Race and Class in America. (3). Formerly 141. Three 1-hour lectures and one 1-hour discussion per week. Critical examination of the ways in which political ideology and political power affect the racial and economic relations in modern societies. (SP)

### 195. Selected Issues in Third World Research. (3). Formerly 195. May be repeated twice for credit. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Seminar on issues related to Third World research in comparative literature, social, and political studies. Students will examine theories of society and race and gender studies on topics from different methodological perspectives. Issues will vary from semester to semester. (SP)

### 190. Advantaged Seminar in Third World Studies. (3). Formerly 190. May be repeated for credit. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Seminar on issues related to Third World research in comparative literature, social, and political studies. Students will examine theories of society and race and gender studies on topics from different methodological perspectives. Issues will vary from semester to semester. (SP)

### 194. Quantitative Methods for Community Research. (3). New Course since Spring 1983. Two 1-hour lectures per week. Seminar on issues related to Third World research in comparative literature, social, and political studies. Students will examine theories of society and race and gender studies on topics from different methodological perspectives. Issues will vary from semester to semester. (SP)

### 195. Selected Issues in Third World Research. (3). Formerly 195. May be repeated twice for credit. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Seminar on issues related to Third World research in comparative literature, social, and political studies. Students will examine theories of society and race and gender studies on topics from different methodological perspectives. Issues will vary from semester to semester. (SP)

### H190. Senior Honors Seminar for Ethnic Studies Majors. (3). Formerly 190. May be repeated once for credit. Two 1-hour seminars per week. Semester Prerequisites: Consent of instructor. Seminar on issues related to Third World research in comparative literature, social, and political studies. Students will examine theories of society and race and gender studies on topics from different methodological perspectives. Issues will vary from semester to semester. (SP)
197. Field Work in Third World Communities. (1-3). Formerly 197. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Upper division standing and consent of instructor. Group discussion, research, and reporting on a topic. (F,SP)

198. Supervised Group Study. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Upper division standing and consent of instructor. Tutorial or supervised study leading to the A.B. degree with honors. A student who has completed at least 30 units in two semesters with a grade-point average of at least 3.5 may apply for honors in the Asian American Studies Program and has been approved specifically for honors by the Ethnic Studies Department Chair and the Asian American Studies Coordinator upon the recommendation of the Adviser for the major. The honors student must be required to complete H195 Senior Honors Seminar for Asian American Studies Majors. In order to graduate with an A.B. degree with honors, a student must obtain at least a 3.3 GPA for all coursework undertaken at the University.

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a passed/not passed basis. Semester Prerequisites: Upper division standing and consent of instructor. Individual research on a topic which leads to the writing of major paper. Regular meetings with the faculty sponsor. (F,SP)

Asian American Studies Program

Program Office, 3407 Dwinelle Hall, 642-6555
Professor: Ronald T. Takaki, Ph.D.
Associate Professors: Sau-ling C. Wong, Ph.D., L. Ling-chi Wang, M.A.
Coordinator: Amado Y. Cabecas, Ph.D.

Undergraduate Program

The Asian American Studies Program offers a unified and interdisciplinary 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 intellectual framework for thorough instruction on the experiences 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.

The Major

Breadth Requirements. Five courses outside the Department of Ethnic Studies, two of which must be at the upper division level, including: (1) One course in a social science or humanities; (2) One course in each of the following areas: Humanities, Social Science, and Natural Science.

Lower Division. The student seeking to major in Asian American Studies shall either have satisfied or be in the process of satisfying the following: (1) Reading and Composition (Asian American Studies 2A-2B, English 1A-1B, or equivalent); (2) Asian American Community Language or Spanish (one year); (3) 20A; (4) 26B or 26C; (5) Ethnic Studies 20; (6) Two courses related to the major, offered outside of the Department of Ethnic Studies, in either the humanities or social sciences (subject to the approval of the major adviser).

Upper Division. (1) Asian American Studies 120, 145, 165, and one of the 191 courses (or Ethnic Studies 195); (2) Ethnic Studies 130; (3) Two courses in Asian American Studies; (4) Two courses in Ethnic Studies (Chicano Studies, Ethnic Studies, Native American Studies) or Afro-American Studies; (5) Field Studies 197–six units (cumulative).

Honors. The Asian American Studies Program will provide a program leading to the A.B. degree with honors. A student will be recommended for honors if the student has completed at least 30 units in two semesters with a grade-point average of at least 3.3. This program has been approved specifically for honors by the Ethnic Studies Department Chair and the Asian American Studies Coordinator upon the recommendation of the Adviser for the major. The honors student will be required to complete H195 Senior Honors Seminar for Asian American Studies Majors. In order to graduate with an A.B. degree with honors, a student must obtain at least a 3.3 GPA for all coursework undertaken at the University.

Lower Division Courses

1. Basic Reading and Composition. (2). Formerly 6A. Three 1-hour lectures and one 1-hour tutorial per week. This course develops basic skills in academic essay-writing and fosters productive writing habits by providing an intensive reading experience relevant to the Asian American experience. Readings are mostly by Asian American authors; topics include ethnic identity, language and communication, racism, stereotyping, sex roles, family relationships, career choices, etc. Two units recorded credit but recognized as four units of workload in computing study lists. (F)

2A. Ethnic American Reading and Composition. (4). Formerly 68. Three 1-hour lectures and one 1-hour tutorial per week. Semester Prerequisites: 1A, English 1A or equivalent. A reading and composition course examining the writing of the Third World experience in America. Representative works from Asian, Black, Chicano, Native American, and White literature will be examined in their cultural and historical context, but also for their social, cultural, political, and psychological impact. (F,SP)

2B. Third World Reading and Composition. (4). Formerly 6C. Three 1-hour lectures and one 1-hour tutorial per week. Semester Prerequisites: 2A, English 2A or equivalent. A reading and composition course based on analysis and interpretation of creative literature from Africa, Asia, and Latin America within their cultural, social, and political contexts with emphasis on their relevance to the various Eastern Asian-American communities and other members of Asian American racial minority groups. (F,SP)

20A. Introduction to the History of Asians in the United States. (3). Formerly 20. Three 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 2A, English 1A or equivalent. A reading and composition course examining the experiences of Asian Americans in America. (F,SP)

20B. Two 1-1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 2B. This course is offered 1984-85.

20C. Introduction to the Culture of Asians in the United States. (3). Formerly 20C. Three 1-hour lectures and one 1-hour discussion per week. Introduction to the Asian American community. Topics include: immigration, labor, culture and settlement patterns; major problems faced by various Asian American communities. (F,SP)

20D. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 2B. This course is offered 1984-85.

20E. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 145. This course is designed to acquaint the students with the basic un-
understanding of the concepts relevant to the mental health of Asian Americans with particular emphasis on the service delivery aspect. It attempts to correct the traditional academic curriculum which fail to focus on the ethnic and cultural complexity of the Asian American communities in the area. May be taken with 197. Not offered 1984-85.

143. Labor and Employment in the Asian American Community. (3). Formerly 148E. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Language needs and problems of Asian Americans; linguistic, psychological, and sociolinguistic factors affecting acquisition of English and maintenance of native languages; language and cultural identity; implications for research, materials and resource development, classroom teaching, and educational policy-making. Not offered 1984-85.

145. Social Institutions and the Asian American Communities. (3). Formerly 145. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A. A comparison of the institutions of education, health, law, social welfare, and other social institutions and their impact on Asian American communities. Students will have an opportunity to focus on particular institutions in discussion sections. (F,SP)

149. Housing and Community Development in the Asian American Community. (3). Formerly 146C. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A. The role of housing-related institutions in minority communities; formal/informal structures and underlying assumptions that permeate housing and community development policies and programs; analysis of how HUD housing and urban renewal policies have come to bear on Bay Area Asian community projects will be covered. May be taken with 197. Not offered 1984-85.

150. Asian American Family and Personality. (3). Formerly 190. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A. Two years Asian language. Introduction to novels, short stories, poems, and other literary writings of one of the following Asian immigrant groups: Chinese, Japanese, Korean, Filipino, and Vietnamese. Class will be conducted in one of the languages each time it is offered. (SP)

191A. Seminar on Asian American History. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: 191 or 191B or consent of instructor. Research seminar for majors. Students will do original research on a historical topic or issue, and write a major paper. (F)

191B. Seminar on Asian American Communities. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: 191 or 191B or consent of instructor. Quarter Prerequisites: 191A or 191B. Students will study Asian American community issues in relation to American social institutions. Through weekly seminars, readings, and supervised placements in local community organizations and agencies, students will combine learning through field experience and academic work. Topics such as race, class, political mobilization, and social change will be examined in relation to student field placements. (SP)

191C. Seminar on Asian American Culture. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: 191 or 191B or consent of instructor. Seminar for senior Asian American Studies majors. Students will do original research on a historical topic or issue, and write a major paper. (F)

197. Field Study in Asian American Communities. (1-3). Formerly 197A-197B-197C-197D-197E-197F. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Supervised community field study. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Supervised Group Study. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Group discussion, research, and reporting on a topic. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a passed not passed basis. Semester Prerequisites: Upper division standing and consent of instructor. Quarter Prerequisites: At least one upper division Asian American Studies course. Individual research on a topic which leads to the writing of a major paper. Regular meetings with faculty sponsor. (F,SP)

172. Asian American Literature. (3). Formerly 160. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A or 20B. Survey of Asian American literature and its background. Special emphasis on poetry, short stories, plays, etc. that focus on socioeconomic struggles of the Asian American community and peoples. (SP)

173. Creative Writing. (3). Formerly 161. One 2-hour lecture and one 1-hour writing lab per week. Semester Prerequisites: 20A or 20B or 20C. Quarter Prerequisites: 160. Asian American writing as an expression of and contribution to Asian American culture: a study of issues facing minority Americans and Third World writers. Interpretation of themes, symbols, language, characterization, and community portrait in literary works. Practice in forms and techniques of verse and prose writing. (SP)

180. Survey of Asian Immigrant Literature. (3). New Course since Spring 1983. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 165. Two years Asian language. Introduction to novels, short stories, poems, essays, and other literary writings of one of the following Asian immigrant groups: Chinese, Japanese, Korean, Filipino, and Vietnamese. Class will be conducted in one of the languages each time it is offered. (SP)

192. Asian American Literature. (3). Formerly 160. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A. Formerly 146C. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A. A comparison of the institutions of education, health, law, social welfare, and other social institutions and their impact on Asian American communities. Students will have an opportunity to focus on particular institutions in discussion sections. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Group discussion, research, and reporting on a topic. (F,SP)

200. Asian American History. (3). Formerly 190. Two 1/2-hour lectures and one 1-hour discussion per week. Semester Prerequisites: 20A or 20B. Quarter Prerequisites: 20A. Two years Asian language. Introduction to novels, short stories, poems, plays, and other literary writings of one of the following Asian immigrant groups: Chinese, Japanese, Korean, Filipino, and Vietnamese. Class will be conducted in one of the languages each time it is offered. (SP)

191A. Seminar on Asian American History. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: 191 or 191B or consent of instructor. Research seminar for majors. Students will do original research on a historical topic or issue, and write a major paper. (F)

191B. Seminar on Asian American Communities. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: 191 or 191B or consent of instructor. Quarter Prerequisites: 191A or 191B. Students will study Asian American community issues in relation to American social institutions. Through weekly seminars, readings, and supervised placements in local community organizations and agencies, students will combine learning through field experience and academic work. Topics such as race, class, political mobilization, and social change will be examined in relation to student field placements. (SP)

191C. Seminar on Asian American Culture. (3). New Course since Spring 1983. Three hours of seminar per week. Semester Prerequisites: 191 or 191B or consent of instructor. Seminar for senior Asian American Studies majors. Students will do original research on a historical topic or issue, and write a major paper. (F)

197. Field Study in Asian American Communities. (1-3). Formerly 197A-197B-197C-197D-197E-197F. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Supervised community field study. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

198. Supervised Group Study. (1-3). Formerly 198. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Research seminar for senior Asian American Studies majors designed to support and guide the writing of a senior thesis. (F)

197. Field Study in Asian American Communities. (1-3). Formerly 197A-197B-197C-197D-197E-197F. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Supervised community field study. Regular individual meetings with faculty sponsor and written reports required. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit. Must be taken on a passed not passed basis. Meetings to be arranged. Semester Prerequisites: Upper division standing and consent of instructor. Quarter Prerequisites: At least one upper division Asian American Studies course. Individual research on a topic which leads to the writing of a major paper. Regular meetings with faculty sponsor. (F,SP)
2. Completion of four additional upper division courses in Chicano Studies to include: (a) one course from 150, 170 or 174; (b) one course from 142, 143, 150A, 150B or 155; (c) two electives. It is recommended that majors take at least one upper division Chicano Studies course in Spanish.

3. One course in Ethnic Studies.

4. Four units of Senior Thesis work will be optional. The faculty will establish criteria and grade the completion of the honors thesis will consist of a six-unit research project. The faculty will establish criteria and grade the project. For more information, see the Chicano Studies Adviser in 3410 Dwinelle.

Lower Division Courses

1A. English Reading and Composition for Native Speakers of Spanish. (4). Formerly 1A. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Subject A. To acquire Chicano and bilingual students with methods of expository discourse. An introduction to writing, beginning with sentence and paragraph building techniques. Emphasis on unity, coherence, and overall organization of a full composition. (F)

1B. English Reading and Composition for Native Speakers of Spanish. (4). Formerly 1B. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 1A and Subject A. Designed to acquaint bilingual students with the study of the research paper form of expository discourse. (SP)

6A. Chicano Spanish. (4). Formerly 6A. 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 current events. Development of academic confidence in and facility with the Spanish language will be continually reinforced through class presentation, written and oral reports and research topics. (F)

6B. Chicano Spanish. (4). Formerly 6B. Four hours of lecture per week. Semester Prerequisites: 6A. To expand upon the material and concepts covered in 6A. This course is designed to introduce the Chicano student to represent Spanish authors and to critical analyses of a variety of their writings. (SP)

20. Introduction to Chicano Culture. (3). Formerly 20. Three hours of lecture per week. An introduction to Chicano culture and society emphasizing the period from 1900 to the present. A key theme will be the interaction between Chicanos and American society as expressed in Chicano literature, music, art, and folklore. Attention will also be given to change and continuity in Chicano family life, gender roles and parent-child relations. (SP)

30. Introduction to Mexican and Chicano Art History. (3). Formerly 30. Three hours of lecture per week. An introductory course surveying the Mexican art, the Mexican muralist period, and the mural movement, and contemporary Chicano art. (SP)

40. Introduction to Chicoano Literature in English. (4). Formerly 40. Four hours of lecture per week. The course will introduce students to modern Chicano literature through an examination of the works of major Chicano poets, short story writers, and novelists. (SP)

50. Introduction to Chicano History. (3). Formerly 50. Three hours of lecture per week. A historical survey of the relationship between American society and pole of Mexican descent, i.e., Chicanos, from the early nine- teenth century to the present. Special stress will be placed on the interpretation and analysis of the key connections between key periods in American history and the experiences of Chicanos. A major theme will be the development of ethnic consciousness and its origins. (SP)

70. Political Institution and the Chicano. (4). Formerly 70. Three hours of lecture and one hour of discussion per week. A critical introduction to dominant U.S. political institutions and their effect on Chicanos-Latinos. (F)

80. Identity and Assimilation in the Chicano Community. (3). Formerly 80. Three hours of lecture per week. An exploration of Chicano identity and assimilation from the perspectives of social science and the humanities. Topics include cultural nationalism and cultural pluralism, effects of social class, language patterns, the family, barrio, youth, and sexual identity. (F)

Upper Division Courses

101A. Modern Research in Chicano Studies. (3). Formerly 101A. Three hours of lecture per week. Semester Prerequisites: Upper division standing. The course will examine various theoretical and directional issues presently pending in the Chicano Studies research. The main focus will be to introduce students to the major theoretical approaches that have been used in social science research on the Chicano experience. (F)

101B. Research in the Chicano Community. (3). Formerly 101B. Three hours of lecture per week. Semester Prerequisites: 101A. A sequence to 101A. An analysis of the various applied qualitative and quantitative research methods used in studying the Chicano community. Topics include: research problem definition, data collection techniques, analysis (e.g., correlation, regression, etc.); measurement, processing and analysis; and various field methods (e.g., participant observation, oral history, survey questionnaires, etc.). Discussion will also inclue the historical implications of Chicano community research. (SP)

130. Contemporary Chicano Art. (3). Formerly 130. Three hours of lecture per week. Semester Prerequisites: 30 recommended. Quarter Prerequisites: 20 or 30. An analysis of the works of major Chicano artists as represented in painting, sculpture and film. To include visual presentations, lectures by guest artists, and practice with methods studied. Not offered 1984-85.

141. Chicana Writers. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: 1A or 1B equivalent. An exploration and analysis of works by Chicana writers and the vision they present of themselves. Not offered 1984-85.

142. Major Chicano Authors. (3). Formerly 142. Three hours of lecture per week. Semester Prerequisites: 40 recommended. Quarter Prerequisites: 20 or 40 or equivalent. 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. (SP)

143. Chicano and Latin American Literature. (3). Formerly 143. Three hours of lecture per week. Semester Prerequisites: 40 recommended. Quarter Prerequisites: 20 or 40 or equivalent. 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. (SP)

145. La Chicana. (3). Formerly 175. Three hours of lecture per week. Semester Prerequisites: 50 or 40 recommended. Psychological, socio-cultural and political experience of Chicanas women in the United States. The role of the Chicana will be examined within an historical context within the family. (SP)

149. Creative Writing. (3). Formerly 149. Three hours of lecture per week. Semester Prerequisites: 40 or 40 recommended. Quarter Prerequisites: 40. Although the course is conducted in English, a reading knowledge of Spanish is required. The student enrolled will study intensively craft in Chicano literature, issues and problems explored. Analysis of the role of the Chicano artist in society. The student will also practice writing in the genre of the student's choice. Not offered 1984-85.

150A. History of the Southwest: Spanish and Mexican Period. (3). Formerly 150A. Three hours of lecture per week. Semester Prerequisites: 101A. A sequence to 101A. Quarter Prerequisites: 50 or equivalent. A history of Spanish-speaking people in the Southwest from the latter part of the eighteenth century to approximately 1880. This Spanish background of the Southwest will be discussed, but emphasis will be placed on the forces and events that led to the war between Mexico and the U.S. from 1845 to 1848. The aftermath of the war and its consequences for Spanish-speaking people will also be discussed. Not offered 1984-85.

150B. History of the Southwest: Mexican - United States War to Present. (3). Formerly 150B. Three hours of lecture per week. Semester Prerequisites: 50 and/or 150A recommended. Quarter Prerequisites: 150A. A history of Chicanos from the latter nineteenth century to the present. Emphasis will be given to the internal political, economic and social forces and their impact on Chicano communities. Particular attention will be given to the internal dynamics of Chicano communities over time through the discussion of topics such as immigration, labor patterns, urbanization and cultural change, and the Chicano movement. Not offered 1984-85.

155. The Chicano Family, Sex Roles, and Childhood. (3). Formerly 173. Three hours of lecture per week. Semester Prerequisites: 50 and/or 145 recommended. Quarter Prerequisites: 20. An examination of the diversity among contemporary Chicano families through a Historical analysis, including Spanish, Indian and Mexican antecedents. Historical documents, literature, music and film will be utilized to trace the development of and variation in Chicano male-female relations, concepts of sexuality, courtship, child-rearing and parent-child relations. (SP)

160. Political Economy of the Southwest. (3). Formerly 160. Three hours of lecture per week. Semester Prerequisites: 50 or 70 recommended. Quarter Prerequisites: 50, 70, 80. An examination of Chicanos in the southwestern political economy, concentrating on economic trends, immigration, class structure, the role of Chicanos in the labor market and the origin and development of Latino communities. Not offered 1984-85.

170. Chicanos and Political Change. (3). Formerly 171. Three hours of lecture per week. Semester Prerequisites: 50 recommended. A comparative analysis of Chicano social and political movements, organizations, ideologies, and their relationships to others in the U.S. and abroad. (SP)

172. Chicanos and the Educational System. (3). Formerly 172. Three hours of lecture per week. Semester Prerequisites: 50 recommended. A comparative analysis of Chicano social and political movements, organizations, ideologies, and their relationships to others in the U.S. and abroad. (SP)

174. Chicanos, Law, and Criminal Justice. (3). Formerly 174A. Three hours of lecture per week. Semester Prerequisites: 70 recommended. Quarter Prerequisites: 20 or 50 or equivalent. An examination of the development and function of law, the organization and administration of criminal justice, and their effects in the Chicano community; response to these institutions by Chicanos. Not offered 1984-85.

176. Chicanos and Health Care. (3). Formerly 176. Three hours of lecture per week. Semester Prerequisites: 50 recommended. Quarter Prerequisites: 70. Relationship of the health care delivery system in the U.S. to the Chicano community. To include an examination and understanding of the concept of mental health as defined by Chicanos. Analysis of programs of Chicano health care and the Chicano response to health care problems and issues. (SP)

180. Topics in Chicano Studies. (3). May be repeated for credit. Three hours of lecture per week. Limited enrollment lecture course. Semester Prerequisites: Consent of Instructor. Designed for the student to develop the skills to deal with topics with which they are especially concerned; usually more restricted than the subject matter of a regular lecture course. (F,SP)

190. Advanced Seminar in Chicano Studies. (3). Formerly 190. May be repeated for credit. One 3-hour seminar per week. Semester Prerequisites: Upper division standing. Consent of instructor. Advanced seminar...
in Chicano Studies with topics to be announced at the beginning of each academic year. (F,SP)

195. Senior Thesis. (4). Must be taken on a passed/not passed basis. By arrangement. Semester Prerequisites: Consent of instructor. Writing of a thesis under the direction of the member(s) of the faculty. (F,SP)

H19S4A-H19SB. Honors Thesis. (3-3). New Course since Spring 1983. Credit and grade to be awarded upon completion of the sequence. To be arranged. Semester Prerequisites: Junior standing; a 3.3 University GPA; and a 3.3 GPA in the major. Independent study and preparation of an honor thesis under the supervision of a faculty member. (F,SP)

197. Field Work in Chicano Studies. (1-3). Formerly 197. May be repeated for credit. Must be taken on a passed/not passed basis. Individual arrangements. Semester Prerequisites: Upper division standing; consent of instructor. Supervised independent field experience in the community relevant to specific aspects of Chicano Studies. Regular meetings with faculty sponsor and written reports required. (F,SP)

198. Directed Group Study. (1-3). Formerly 198. May be repeated for credit. Must be taken on a passed/not passed basis. Individual arrangements. Semester 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). Formerly 199. May be repeated for credit. Must be taken on a passed/not passed basis. Individual arrangements. Semester 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)

Native American Studies Program

Program Office, 3415 Dwinnelle Hall, 642-6717
Associate Professors:
Marcia A. Herron, (Cherokee), Ph.D.
Terry Wilson, (Potawatomi), Ph.D. (Coordinator)
Claire Sue Kidwell, (Chippewa-Chippewa), Ph.D.
Assistant Professor:
Al Logan Stale, (Cherokee), J.D.

The Native American Studies Program exists to provide a point of academic focus and identity for Native American students and to broaden the understanding of other students interested in the history, culture, and contemporary situations of Native Americans.

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 stresses not only 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 permission from a program academic advisor who will assist in working out an appropriate course of study. Consultation with the advisor for admission into the major should be held no later than the first semester of the junior year. Students will be required to outline their academic and professional goals.

Requirements

1. University Requirements: (a) Completion of 120 units, at least 36 of which must be in upper division courses; (b) Maintenance of at least a 2.0 grade-point average; (c) Completion of senior residence, Subject A, and American History and Institutions requirements.

2. Major Requirements. (a) NAS 50: Native Americans in Contemporary Society; (b) NAS 71A-71B: History of Native Americans in North America; (c) NAS 103: Native American Sovereignty; (d) NAS 110: Introduction to Research Problems of Native American Government; (e) 15 units of upper division NAS courses; (f) Three upper division courses supportive of major. One course from Ethnic Studies Group Major. Two courses from outside NAS and the Department of Ethnic Studies. Courses in support of major, available from main field, must be approved by an academic advisor.

3. Breadth Requirements. (a) NAS 1A and 1B: Native American Studies Reading and Composition (or an equivalent); (b) Two courses outside the major; (c) Native American Literature courses, 20 or 21; (e) Three upper division courses outside the major and Ethnic Studies Department.

4. The Honors Program. A student must have junior standing; a 3.5 GPA overall; a 3.5 GPA in the major. To complete the degree with honors the student will be required to undertake a research project 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.

5. The Minor Program. For students in other areas of the University who wish to develop a special proficiency in the area of Native American Studies in combination with their major area, the Department of Native American Studies recognizes a series of courses to constitute a minor in Native American Studies. The minor program will consist of the following courses: NAS 71A-71B, 103, and one upper division course to be specified by the student's major.

6. Letters and Science List of Courses, 106 units from the List must be included in the 120 required for graduation. See the Announcement of the College of Letters and Science for courses on the List.

Lower Division Courses

1A. Native American Studies Reading and Composition. (4). Formerly 1A. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: Satisfaction of the English composition proficiency requirement. Three writing compositions directed to the needs of Native American students. Writing requirement shall be set at a norm of 8,000 to 10,000 words per semester; a minimum of 8,000 words is to be divided among six to eight papers in each half of the requirement. (F)

1B. Native American Studies Reading and Composition. (4). Formerly 1B. Three hours of lecture and one hour of discussion per week. Semester Prerequisites: 1A; Satisfaction of Subject A requirement. Continued emphasis on development of proficiency in expository composition with increased attention to Native American literary traditions. The writing requirement shall be set at a norm of 8,000 to 10,000 words per semester; a minimum of 8,000 words is to be divided among six to eight papers in each half of the requirement. (F)

50. The Native American in Contemporary Society. (3). Formerly 50. Three hours of lecture per week. Analysis of political issues and problems of Native Americans on reservations and in urban areas. Major topics: the Bureau of Indian Affairs, the U.S. Public Health Service, the relocation system, the reservation system, discrimination, urban life, Indian organizations, stereotypes, the "New Indian." (F,SP)

52. Native American Creative Writing Workshop. (3). Formerly 52. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: 1A-1B. Native American literary forms and presentation in storytelling, oratory, drama, etc. Development of creative writing skills using those forms and presentation as a basis for expression. (F)

71A. History of Native Americans in North America. (3). Formerly 71A. Three hours of lecture per week. History of the origins of native people in North America, discussion of the diversity of Native American cultures and commonality of value systems of those cultures; reconsideration of the impact of European contact to 1776. (F)

71B. History of Native Americans in North America. (3). Formerly 71B. Three hours of lecture per week. Semester Prerequisites: 71A or consent of instructor. Quarter Prerequisites: 71A. Course deals with the political, legal, and cultural relationships between the various American Indian tribes and the U.S. Government from 1776 to the present. (SP)

Upper Division Courses

101. Native American Sovereignty. (3). Formerly 103. Three hours of lecture per week. Semester Prerequisites: 71A or consent of instructor. Quarter Prerequisites: 71A-71B. Examination of Native American rights as a product of the history of Anglo-American economic, legal, political, social, and intellectual thought. This course will examine property rights, political choice, and cultural integrity through theoretical and historical phases from the colonial period to the present. (F)

103. Survey of Native American Tribal Government. (3). Formerly 101. Three hours of lecture per week. Analysis of the development of tribal government and policy including political institutions, the tribal society, inter-tribal alliances, and effects of European contact. (SP)

104. Native American Economic Development. (3). Formerly 104. Three hours of lecture per week. Semester Prerequisites: 71A or consent of instructor. Quarter Prerequisites: 71A. Analysis of economic policies on tribal lands and resources. Examination of the effect of federal legislation, BIA regulations, and corporate interests on tribal economic life. Consideration of alternative strategies of development. (SP)

110. Introduction to Research Problems of Native American Communities. (3). Formerly 111. Three hours of lecture per week. Semester Prerequisites: 71A, 71B, or consent of instructor. Quarter Prerequisites: 71A-71B. This course is designed to establish a familiarity with the chain of logic and methodology of research, and development of a research topic. Emphasis is on social science methodology, theory, assumptions, and problem solving. (F)

111. Proposal Writing for Native American Communities. (3). Formerly 111. Three hours of lecture per week. Semester Prerequisites: 71A, 71B, or consent of instructor. Quarter Prerequisites: 71A. This course is designed to address special problems as well as alternative approaches to topic definition of thesis development in NAS research through writing and submission of proposals. (SP)

151. Native American Philosophy. (3). Formerly 151. Three hours of lecture per week. Semester Prerequisites: 71A or consent of instructor. Quarter Prerequisites: 71A. A study of the philosophical and metaphysical aspects of Native American culture. Focus on the evolution of Native American science methodology, explanations of natural phenomena, and relations of human beings to nature through ritual and ceremonial observances. (SP)

152. Native American Literature. (3). Formerly 152. Three hours of lecture per week. Semester Prerequisites: 71A, 71B, or consent of instructor. Quarter Prerequisites: 71A-71B. A study of the theoretical and metaphysical aspects of Native American literature. Emphasis on the development of Native American literature as a product of the history of Anglo-American economic, legal, political, social, and intellectual thought. This course will examine property rights, political choice, and cultural integrity through theoretical and historical phases from the colonial period to the present. (F)

153. Native American Poetry. (3). Formerly 153. Three hours of lecture per week. Semester Prerequisites: 71A, 71B, or consent of instructor. Quarter Prerequisites: 71A-71B. A study of Native American poetry from ethnographic sources and contemporary writers. Consideration of Native American poetry as literature within traditional and alternative definitions of the word, and of the cultural background of Native American poetry and poets. (SP)

154. Mythic Tribal Literature. (3). Formerly 154. Three hours of lecture per week. Semester Prerequisites: 50. Three upper division courses in Chicano studies 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 Native Americans and the Cinema. (3). Formerly 155. Native American Medicine. (3). Formerly 173. Three hours of lecture per week. Semester Prerequisites: 71A or 71B, or consent of instructor. Quarter Prerequisites: 71A or 71B, or consent of instructor. This course will analyze the sociological, psychological, and literary aspects of Hollywood moviemakers' stereotyping of the American Indian through the history of film. The format will include readings on Indian films, lectures, and guest speakers from the movie industry.

Native American Women. (3). Formerly 159. Three hours of lecture per week. Semester Prerequisites: 71A or 71B, or consent of instructor. Quarter Prerequisites: 71A or 71B, or consent of instructor. Indian groups and cultures from pre-Columbian times to the present day. The focus will be on the traditional role of women in Indian societies and the modern world. Changes in Indian societies occasioned by contact with Europeans and how these changes have altered sex roles will be examined. (SP)

History of Indians of the Northeast Woodlands. (3). Formerly 173. Three hours of lecture per week. Semester Prerequisites: 71B or consent of instructor. Quarter Prerequisites: 71B. Indian groups and cultures from pre-Columbian times to the present day. The focus will be on the traditional role of women in Indian societies and the modern world. Changes in Indian societies occasioned by contact with Europeans and how these changes have altered sex roles will be examined. (SP)

History of Native Americans in the Southwest. (3). Formerly 176. Three hours of lecture per week. Semester Prerequisites: 71A, 71B, or consent of instructor. Quarter Prerequisites: 71A-71B. An historical analysis of Native American cultures of the south-western United States. (F)

Plains Indian History. (3). Formerly 177. Three hours of lecture per week. Semester Prerequisites: 71A, 71B, or consent of instructor. Quarter Prerequisites: 71A-71B. An historical analysis of Plains Indian groups of the Great Plains. The course will include domestication, nomadism, and social movements of the 1970's. It will stress the changes evidenced by the tribes as they met the challenges of ecological, economic, and historical forces. (F)

Native American Music. (3). Formerly 182. Three hours of lecture per week. Foci 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 music making to health will be emphasized. The format will include discussion, recordings, and direct contact with musical performances and musicians.

Seminar On Advanced Topics in Native American Studies. (3). Formerly 190. Course may be repeated for credit. Three hours of seminar per week. Semester Prerequisites: 71A or 71B, or consent of instructor. Quarter Prerequisites: 71A or 71B, or consent of instructor. Formerly 190. Course may be repeated for credit. Three hours of seminar per week. Semester Prerequisites: Consent of instructor and upper division standing preferred. Individual conferences to be arranged. Supervised experiences relevant to specific aspects of the Native American community in off-campus settings. Regular individual meetings with Faculty sponsor and written reports required. (F,SP)

198. Supervised Group Study. (1-3). Formerly 198. Course may be repeated for credit if the project varies. Must be taken on a passed/not passed basis. Semester Prerequisites: Consent of the instructor and upper division standing preferred. Individual conferences to be arranged. Group discussion, research, and reporting on topics by students. (F,SP)

199. Supervised Independent Study and Research. (1-3). Formerly 199. Course may be repeated for credit if the project varies. Must be taken on a passed/not passed basis. Semester Prerequisites: Upper division standing and consent of instructor. Individual conferences to be arranged. The student, with consent and guidance of an instructor, researches an interest not covered in the courses offered in the Program. (F,SP)

Ethnic Studies Graduate Group

Group Office, 3407 Dwainelle Hall, 642-6555
Graduate Adviser: Ronald T. Takaki.

The Ethnic Studies Graduate Group Program studies comparatively the histories, cultures, and communities of racial minorities in the United States. It seeks to analyze how the experience of various racial minorities were similar to and different from each other, how developments such as slavery and racial discrimination set apart Americans of color from Europeans of American ancestry, and how race and class intersected in American society. Multi-disciplinary in approach, it utilizes a broad range of scientific and humanities methods to examine the critical area of race in American life. The curriculum focuses on racial minorities, particularly on Afro-Americans, Asian Americans, Chicano's, and Native Americans within the context of American society in general—its culture, economy, and institutions—in order to understand more deeply the origins, nature, and meaning of America's racial diversity.

The curriculum for the Ethnic Studies Graduate Program is taught by faculty from Afro-American, Asian American, Chcano, and Native American Studies as well as faculty from Sociology, History, Economics, Political Science, Geography, Anthropology, Music, and English.

Students may obtain information regarding the requirements and curriculum from the Graduate Secretary. The Ethnic Studies Graduate Group. Courses pending approval at time of publication. Check with Graduate Secretary.

The Health and Medical Sciences Program

Program Office, Room 106, Building 7-7, 642-5671

Health and Medical Sciences is a pioneering program on the Berkeley campus whose aim is to develop new models of training for existing and emerging health professions. It consists of two health-related degree programs at the graduate level. These programs all share an interdisciplinary orientation with an emphasis on the importance of behavioral, ecosystemic, psychosocial, and political issues in health questions, and a common orientation toward health maintenance.

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 master's portion of the curriculum consists of at least 20 units of academic coursework and a thesis. The goal of the master's portion of the program is to help students attain a high level of analytical self-confidence in an academic field relating to health. Students are expected to acquire a solid familiarity with a selected area of interest and mastery of the tools that will enable them to perform work in this area. The master's program is inter-digitated with the required preclinical science courses during the first three years. The program seeks to achieve a five-year continuity in the clinical and academic aspects of the curriculum to reinforce the relevance of the chosen area of scholarship to the total training. The master's degree is awarded by Berkeley upon successful completion of the first three years of work, and the master's degree by UC San Francisco after satisfactory completion of the fourth and fifth years. Students selected for this program must have focused intellectual interests in a field of study. Students must also meet the rigorous academic requirements for entrance into medical school and have formed some commitment to the broader aspects of health care.

Genetic Counseling Program. A two-year program leading to the M.S. in Health and Medical Sciences. Students are trained to provide counseling, consultation, and public and professional education to individuals, families and health professionals in face-to-face and print communications with genetic information. An interdisciplinary curriculum offers biological sciences, counseling, consultation and education techniques.

Admissions. Admissions requirements of the two graduate programs vary. As a minimum, applicants must be eligible for admission to the University in graduate standing, with an undergraduate average grade-point average of at least 3.0, along with a bachelor's degree from an accredited college or university. Applicants to the Genetic Counseling program must take the Graduate Record Examination. Applicants to the Joint Medical Program must have fulfilled the standard premedical requirements and have taken the Medical College Admission Test. For more detailed information about the above programs, contact the Graduate Office, Room 106, Building 7-7, University of California, Berkeley, Berkeley, CA 94720; (415) 642-5671 or 642-5479.

Graduate Courses

205A-205B. Physical Diagnosis. (2,2). Formerly 205A-205B. Five clinical hours per week. Semester Prerequisites: Graduate standing in HMS Joint Medical Program; concurrent enrollment in 206A-206B. Quarter Prerequisites: Graduate standing in HMS Joint Medical Program; • A. Introduction to the Patient Interview. The physical examination, history taking, and organization of demonstration cases. The organ system approach will be used.

B. The complete patient interview and complete physical examination with case presentation to staff and fellow students. One lecture on the examination of various organ systems will precede each ward experience (neurological, exam, etc.) (F)

206A-206B-206C-206D. Introduction to Clinical Medicine: Basic Principles of Disease Processes. (3,3,3,3). Three hours of lecture and 2½ hours of case presentation per week. Semester Prerequisites: Graduate standing in HMS Joint Medical Program. Formerly 206A-206B-206C-206D. A-semester sequence introducing basic principles of clinical medicine including the organ systems and ending in integrated overview applying the basic principles to specialty areas. The course meets twice weekly. One session is didactic,
Interdepartmental Studies

Lower Division Courses

1. Technology and Society. (3). Formerly 1. Three 1-hour laboratory periods. Focus on the technological dimensions of social problems. Historical development of modern technology. Examples of technological systems: communications, data processing, materials, energy generation. Sponsoring Departments: Political Science and EECS. (F,SP)

2. American Studies. (4). Formerly 334A. Three hours of lecture and one 1-hour discussion per week. Admission by interview with the two instructors during preenrollment. The class examines significant issues in American history. Emphasis is placed on contributions from history, literature, political science, philosophy, and other fields. A special subject is chosen for each term, and students read primary sources, fictional and nonfictional, illustrating the application of mathematics to economic theory. Survey of American technology from colonial times to the present. Analysis of technological innovation in its cultural, economic, and political setting. Topics include the Industrial Revolution, technology of war, diffusion of science in technology, industrialization and the use of corporations. Sponsoring Departments: History and EECS. (SP)

Upper Division Courses


3. Introduction to Mathematical Economics. (3). Students who have taken Economics 104 will receive no credit for IDS 103. Three hours of lecture per week. Semester Prerequisites: Math 50A-50B. Selected topics illustrating the application of mathematics to economic theory. This course is intended for upper division students in mathematics, statistics, the physical sciences, and engineering, and for economics majors with adequate mathematical preparation. No economic background is required. Sponsoring Departments: Mathematics and Economics. (SP)

10. Introduction to Computers. (3). Three hours of lecture per week. Semester Prerequisites: Upper division standing. Students must also be enrolled in IDS 101A or an equivalent departmental course. Primarily for students in the social sciences and humanities and in the professional schools other than Engineering. The conceptual foundations of computing and information technology. Structure and function of computing systems. Elements of programming. Applications programs. Examples are drawn mainly from word processing, database management, electronic spreadsheet, graphics and simulation, and telecommunication. Sponsoring Departments: Engineering and Education. (F,SP)

10L. Introductory Computer Laboratory. (1). Two 2-hour laboratories per week. Semester Prerequisites: Upper division standing. Students must also be enrolled in IDS 110L. Designed primarily for students in the social sciences and humanities and in the professional schools other than Engineering. Elements of programming. Applications programs. Laboratory exercises are drawn mainly from word processing, database management, electronic spreadsheet, graphics and simulation and telecommunication. (F,SP)

11. Introduction to Neurobiology. (3). Formerly 111A. Three hours of lecture per week. Semester Prerequisites: Biology 1A. Must be taken on a satisfactory/unsatisfactory basis. Basic principles of neurobiology: membrane potential, synaptic transmission, neural plasticity. Sponsoring Departments: Molecular Biology and EECS. (F)
112A. Mammalian Neuroanatomy. (3). Two 1-hour lectures per week each followed by a 1/2-hour discussion section. Semester Prerequisites: Biology 1A-1B or consent of instructor. Properties of neurons and nervous systems in terms of structure and development. Designed to be taken concurrently with IDS 112B. Sponsoring Departments: EECS and Physiology-Anatomy. (SP)

112B. Mammalian Neurophysiology. (3). Two 1-hour lectures per week each followed by a 1/2-hour discussion section. Semester Prerequisites: Biology 1A-1B or consent of instructor. Properties of neurons and nervous systems in relation to reflex and goal-directed behavior. Designed to be taken concurrently with IDS 112A. Sponsoring Departments: EECS and Physiology-Anatomy. (SP)

120. Introduction to Comparative Virology. (3). New Course since Spring 1983. Two 1-hour lectures and one 1-hour discussion per week. Semester Prerequisites: Organic chemistry and elementary biology, or consent of instructor. Quarter Prerequisites: Biology 1A and Chemistry 84. An introductory course concerned with those viruses where are, why they belong to the family of biological systems, and how they infect and replicate in bacteria, plants, and animals (vertebrates and invertebrates). A comparison will be made of their biochemical characteristics, and their modes of replication. Sponsoring Departments: Entomological Science and Plant Pathology. (SP)

121A-121B. Environmental Education. (3,3). Formerly Conservation and Resource Studies 120A-120B-120C. Must be taken on a passed/not passed basis. Five and one half hours of lecture, discussion and six and one half hours of field work per week. Semester Prerequisites: 121A is prerequisite to 121B: consent of instructor. 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 participant education. Sponsoring departments: Education and Conservation and Resource Studies. (F,SP)

122. Animal Behavior. (3). Formerly 122. Three hours of lecture, one hour demonstration, plus one hour discussion per week. Semester Prerequisites: Biology 1 or 11, or Zoology 11, or Entomology 100. Genetics 102 strongly recommended. Quarter Prerequisites: Biology 1 or 11, or Zoology 1, or Entomology 100. Genetics 100 strongly recommended. An introduction to comparative animal behavior and behavioral physiology to evolutionary perspective, including analysis of behavior genetics, neuroanatomy, learning apparatus, production, adaptability, physiological substrates. Sponsoring Departments: Entomological Sciences, Psychology, and Zoology. Not offered 1984-85.

124. Applied Chemical Thermodynamics. (3). New Course since Spring 1983. Three hours of lecture per week. Quarter Prerequisites: Chemistry 94 or equivalent. Quarter Prerequisites: Chemistry 110B. Properties of real fluids and fluid mixtures, including chemical equilibria and phase equilibria. Additional topics to be chosen by the instructor. Sponsoring Departments: Chemistry and Chemical Engineering. (SP)

135. Mozart and Beaumarchais: The Figaro Cycle. (4). Formerly 135. Three hours of lecture plus extensive listening assignments. Semester Prerequisites: Major in French or permission of instructor. "Le Figaro cycle" plays as a portrait of European society on the eve of the French Revolution, and its musical settings by Mozart and other composers. Also included will be Mozart's Don Giovanni and Cosi fu et alla, both composed in 1786/7. Le Nozze di Figaro, Don Giovanni will be studied in conjunction with Moliere's Don Juan. Sponsoring Departments: Music and French. (SP)

145. Chemical Methods in Nuclear Technology. (3). Formerly 145. One 1-hour lecture and one 1-hour discussion per week. Semester Prerequisites: Nuclear Engineering 101 or Chemistry 143. Quarter Prerequisites: Chemistry 123. Experimental illustrations of the interrelation between chemical and nuclear science and technology. Topics include properties of the chemical elements, chemical effects of nuclear transformations, application of radioactivity to study of chemical problems, neutron activation analysis. Sponsoring Departments: Chemistry and Nuclear Engineering. (SP)

195A-H195B. Senior Honors Thesis. (3,3). Formerly H195A-195B. Credit and grade to be awarded upon completion of the sequence. To be arranged with advisor. Semester Prerequisites: Open only to honors students with an individual group major in the College of Letters and Science. The senior thesis will be written while a student is in residence. In policy the student is expected to integrate and synthesize the principal theme common to the courses comprising the major. (F,SP)

200A. Cellular Neurobiology. (3). Formerly 201. Two 1½-hour lectures per week. Semester Prerequisites: Chemistry 18, Mathematics 18, Physics 68, and an introductory neurobiology course. Physico-chemical basis of membrane potentials, electrotonus, action potential generation and propagation, synaptic transmission, sensory receptor function, and volume-conducting potentials. Sponsoring Departments: Physiology-Anatomy, Biophysics, and EECS. (F)

200B. Integrative Neurobiology. (3). Formerly IDS 200 and IDS 202S. Sponsoring Departments: Physiology-Anatomy, EECS, and Zoology. Two 1½-hour lectures and one 1-hour laboratory per week. Semester Prerequisites: IDS 111 or Zoology 121. In-depth consideration of current research questions central to the understanding of the organization of nervous systems, and of the behavior mediated by these systems. These topics are illustrated with examples drawn from both the vertebrate and invertebrate literature. Circuit, network, or system analogs and analysis will be emphasized in these approaches and methods. Sensorimotor integration is discussed in small systems or neurons (SP)

200L. Neurobiology Laboratory. (4). Formerly 201L. Two 6-hour laboratories plus one 3-hour demonstration per week. Semester Prerequisites: IDS 200A-200B. IDS 200B may be taken concurrently. The student will be able to work with a student who has current knowledge of analytical, physiological, and biological techniques in neurobiology through demonstrations, exercises, and individuals research problems. Topics include synaptic transmission, excitable membranes, sensory reception, and circuits of neurons generating behavior. Sponsoring Departments: Physiology-Anatomy, Zoology, and Biophysics. (SP)

202. Neurobiology Review. (1). New Course since Spring 1983. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Zoology 121 or equivalent. Discussion of research papers and original research problems in neurobiology. Sponsoring Departments: Zoology and EECS. (F,SP)

203. Developmental Neurobiology Review. (1). Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Discussion of research papers and original research reports on current problems in developmental neurobiology, including cell lineage, axonal pathfinding, synaptic connectivity, and competition. Sponsoring Departments: Physiology-Anatomy, Zoology, and Biophysics. (SP)

204. Animal Behavior Research Reviews. (1). Formerly 204. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Discussion of research papers and original research reports on current problems in developmental neurobiology, including cell lineage, axonal pathfinding, synaptic connectivity, and competition. Sponsoring Departments: Physiology-Anatomy, Zoology, and Biophysics. (SP)

205. Development Review. (1). Formerly 205. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. A seminar devoted to the analysis of major problems in animal and plant embryology-cell type determination, morphogenesis, cell interactions, and mechanisms of morphogenesis with emphasis on regulations and integration of developmental events at the cellular, molecular and tissue levels of organization. Sponsoring Departments: Molecular Biology and Zoology. (SP)

207. Public Management: Introduction and Overview. (3). New Course since Spring 1983. Two 1½-hour lectures and one 1-hour laboratory per week in public finance. Examination of methods, strategies, and requirements for effective public management in the public and non-profit sectors. Particular emphasis on budgeting and financial administration. Techniques and considerations in defining missions, influencing behavior of outside organizations, securing and controlling resources, managing staff and operations, managing the political environment, and building organizational capacity. (SP)

209. Public Management: Applied Microeconomics. (3). New Course since Spring 1983. Three hours of lecture per week. The uses and limitations of economic and analysis for managers in the public. Three-hour per week in public finance. Examination of methods, strategies, and requirements for effective public management in the public and non-profit sectors. Particular emphasis on budgeting and financial administration. Techniques and considerations in defining missions, influencing behavior of outside organizations, securing and controlling resources, managing staff and operations, managing the political environment, and building organizational capacity. (SP)

210. Public Management: Organizational Understanding for Managers. (3). New Course since Spring 1983. Three hours of lecture per week. Environmental, organizational, and social sciences. Advanced undergraduates may enroll with permission of the instructor. Introduction to the character, role and influence of managers and managers understanding of public and nonprofit organizations. The role of man in complex settings, authority relations and goals formulation, power and conflict, groups and organizations and organizational structure, problems of implementation, interorganizational relations and political environments. Case studies will be examined. (SP)

211. Public Management: Public Sector Accounting. (3). New Course since Spring 1983. Three hours of lecture per week. Accounting principles and practices for managers of public and non-profit organizations. Emphasis is on development of efficient systems which will provide both internal data for managers for analysis of past performance, control of current operations, and future planning, and data for accountability to external parties. (F)

212. Public Management: Finance. (3). New Course since Spring 1983. Three hours of lecture per week. Semester Prerequisites: Consent of instructor. Formerly 124. One 1½-hour seminar per week. Semester Prerequisites: Consent of instructor. Formerly 124. Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. One 2-hour seminar per week. Semester Prerequisites: Consent of instructor. Discussion of research papers and original research reports on current problems in developmental neurobiology, including cell lineage, axonal pathfinding, synaptic connectivity, and competition. Sponsoring Departments: Physiology-Anatomy, Zoology, and Biophysics. (SP)

213. Faunal Analysis In Archaeology. (4). Formerly 215A-215B. One 2-hour lecture, one hour discussion, and two 3-hour laboratories per week. Semester Prerequisites: Paleontology 126 or a course in comparative anatomy. Introduction of systematics of animals concerned with archaeological material. Methods of collecting and preparing samples and procedures in faunal analysis of archeological sites, practical training in osteology and research methods, and preparation of a faunal analysis of an archeological site. Sponsoring Departments: Anthropology and Paleontology. (SP)

214. Pollen Analysis. (3). Formerly 216. Two hours lecture and one 2-hour laboratory per week. Semester Prerequisites: Some relevant work in either the natural or social sciences. Advanced undergraduates may enroll with permission of the instructor. Introduction to the theory and technique (laboratory and field) of pollen analysis. Applications of pollen analysis in archaeological and paleoecological contexts. Discussions of selected topics with special emphasis on Quaternary vege- tation change in North America. Sponsoring Departments: Geography and Paleontology. (SP)

215. Human Evolution, Prehistory and Paleoenviron- ments. (2). Formerly 228. Course may be repeated
International Education

Department Office, 2538 Channing Way, Room 104, Building D, 642-1356
William A. McCormack, Ph.D. (Director and Chair)

The Education Abroad Program for undergraduates and graduates is under the Office of International Education. For additional information, see Index.

International Education also sponsors the Professional Studies Program in India. Graduate students in professional fields spend two semesters doing research or field work in India. Participants are placed at Indian universities and research institutions, and are assisted by Indian professors and professionals in developing their projects. Seminars and opportunities for the study of cognitive functioning. Sponsoring Departments: Education and Psychology (SP).

Course may be repeated for credit. Three-hour lecture and one 1-hour laboratory study per week. Semester Prerequisites: Consent of instructor. Quarter Prerequisites: Physiology, Physics, and Psychology. Sponsoring Departments: Education and Psychology (SP).

One 3-hour seminar per week. The history of the notion of parthesa from the fifth century B.C. through Antiquity, focusing on the opposition between the right to speak the truth and the obligation to tell the truth as one knows it in the political and philosophical systems of Antiquity. The course will require at least twelve hours per week of effort, including time spent in class and in discussion. Sponsoring Departments: French and Philosophy. (F)

Must be taken on a satisfactory/unsatisfactory basis. One hour of lecture and discussion per week. Semester Prerequisites: Consent of instructor. Current research in tumor biology. Sponsoring Departments: Biomedical and Environmental Health Sciences and Agriculture. (SP).

Course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three 2-hour seminars per week. The study of theoretical astrophysics. Sponsoring Departments: Astronomy and Physics. (F,SP).

286. Neurobiology of Vision. (2). Three 2-hour laboratory sessions per week. Semester Prerequisites: IDS 111, Physiology 201, and Genetics 111. Must be taken in consultation with the instructor. Graduate standing or consent of instructor. Topics covered: retinal physiology, lateral interactions, graded potential cells; active membranes, synaptic transmission, reciprocal synapses, color coding, movement coding, retinal output code. Sponsoring Departments: Optometry and EECS. (SP, F,SP)

Professional Courses

497A. Internship in India. (4-5).
Formerly 497A. Field work, research done by student. Semester Prerequisites: Graduate status and acceptance into program. This course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours lecture per week. Sponsoring Department: Professional Studies Program in India. Graduate students in professional fields spend two semesters doing research or field work in India. Participants are placed at Indian universities and research institutions, and are assisted by Indian professors and professionals in developing their projects. Seminars and opportunities for the study of cognitive functioning. Sponsoring Departments: Education and Psychology (SP).

497A. Internship in India. (4-5).
Formerly 497A. Field work, research done by student. Semester Prerequisites: Graduate status and acceptance into program. This course may be repeated for credit. Must be taken on a satisfactory/unsatisfactory basis. Three hours lecture per week. Sponsoring Department: Professional Studies Program in India. Graduate students in professional fields spend two semesters doing research or field work in India. Participants are placed at Indian universities and research institutions, and are assisted by Indian professors and professionals in developing their projects. Seminars and opportunities for the study of cognitive functioning. Sponsoring Departments: Education and Psychology (SP).
Military Officers' Education Program (ROTC)

Offices: See following listings for Aerospace Studies, Military Science, and Naval Science.
Chair, Advisory Committee on ROTC: Professor Paul Seabury.
Administrator: Andrew G. Jameson, Ph.D.
Adjunct Professors: John H. Kinert, M.S., Captain, U.S. Army
Christopher Keswick, M.S., James R. Valkenburg, M.A., Professor.

The Military Affairs program comprises the three district military officers' commissioned programs: Air Force ROTC, Army ROTC, and Navy ROTC. The purpose of the Program is to integrate the educational offerings of the separate military services into the regular University curricula. Although these core courses are expressly designed to serve ROTC candidates, they are open to all students.

Students who desire to complete the Military Officers' Education Program and earn commissions in any of the military services should consult the Program advisors in the appropriate unit.

Military Affairs

Lower Division Courses

1. American Military Experience: Revolution to Vietnam. (2). Formerly 2. Two 1-hour lectures and 1-hour discussion per week. Examines four general themes in the military history of the United States: the growth and development of the armed forces, the evolution of civil-military relations, the elaboration and refinement of military technology, and the changes in military strategy. (SP)

2. The Military in American Society. (2). Formerly 1. Two 1-hour lectures and 1-hour discussion per week. Introduction to the military profession, with emphasis on the relationships between the military institution and its relationship to the individual, the government, and the society. Investigates the nature of modern warfare, its relationship to the nation and international environment in which the U.S. Defense Policy is formulated and implemented. (FP)

3. Defense Leadership and Management. (2). Formerly 3. One 2-hour lecture per week. An analytical study of management schools, principles, and philosophies as a basis for developing effective leadership. Emphasis on behavioral science applications within the military organizational structure. Review of literature pertaining to power and authority, responsibility, motivation, communication, decision making, role theory, and professional ethics. (SP)

20. Evolution of European Warfare. (2). Formerly 20. One 2-hour lecture per week. Historical survey and analysis of the causes and nature of war from the Greeks of 500 B.C. through the France of 1789-1815. The theme of the course is the "Man on Horseback." Historians and authors employed include Herodotus, Thucydides, Plutarch, Caesar, Villehardouin, and Napoleon. Not offered 1984-85.

Upper Division Courses

120. The Evolution of American Warfare: 1600-1900. (3). Formerly 120. Two 1-hour lectures or one 3-hour 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)

Aerospace Studies (Air Force ROTC)

Department Office, 10 Callaghan Hall, 642-3572

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 University and undergraduate degree requirements.

Two accredited AFROTC programs are available: entering freshmen may elect the General Military Course or, for those students who have at least two full academic years remaining in their degree program, earn commissions in any of the military services.

The Aerospace Studies courses are 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 performance at a six-week field training camp. Students selected for the Professional Officer Course are provided uniforms, textbooks, and a $100 per month allowance while they are active in the program. Students interested in the General Military Course are eligible for scholarships which cover the costs of tuition, books, and most fees; also a $100 per month living allowance is paid to each student.

Two accredited AFROTC programs are available: entering freshmen may elect the General Military Course or, for those students who have at least two full academic years remaining in their degree program, earn commissions in any of the military services. Freshmen and sophomores competing for scholarships should contact the Department.

Students interested in the General Military Course may still be eligible for the two-year Professional Officer Course. This 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 performance at a six-week field training camp. Students selected for the Professional Officer Course are provided uniforms, textbooks, and a $100 per month allowance while they are active in the program. Students interested in the General Military Course are eligible for scholarships which cover the costs of tuition, books, and most fees; also a $100 per month living allowance is paid to each student.

Both the two-year and the four-year AFROTC programs emphasize student participation and involvement. Courses are conducted as seminars and field trips, and may be open to active student discussion. In addition, there is a full-time Leadership Laboratory that is mandatory for all AFROTC cadets. In this laboratory period, students become involved in the management of their own cadet organization. Students also participate in military and/or qualifying exams for the AFROTC program through cross- enrollment arrangements or through University Extension programs.

For further information on enrollment requirements and procedures, contact the Department Staff at 10 Callaghan Hall or phone (415) 642-3572.

Lower Division Courses


2. The Growth and Development of Air Power. (1). Formerly 21B-21C. One 1-hour lecture/discussion per week. Semester Prerequisites: Consent of instructor. Traces the historical evolution of air power, its concepts, strategies, doctrines, and applications. Emphasizes the impact of changing technology and the contribution of
specific historical figures on the growth and development of air power. (SP)

Upper Division Courses

135A-135B. Aerospace Management and Leadership. (3). Formerly 135A-135B. Two 1½-hour pro-seminar meetings per week. Semester Prerequisites: Upper division standing and consent of instructor: A study of contemporary management practices. Includes study of individual and group behavior, functions and theories of management, systematic decision-making, the communication process, case analysis, leadership theories, managerial ethics, personnel administration, and the organizational environment. (F,SP)

Professional Courses

442. Light Aircraft Operation. (2). Formerly 442. Two 1-hour lectures per week. Semester Prerequisites: Consent of instructor: Preparation for qualification as Federally Licensed Private Pilot. Study of federal aviation regulations, basic meteorology for pilots, navigation by dead reckoning and piloting, radio and radio navigation, elementary aerodynamics and aircraft structures. (SP)

Military Science (Army ROTC)

Department Office, 74 Harmon Gymnasium, 642-3374

The Army Officer Education Program offers a variety of credit courses of general interest focused on the study of the military as a social institution, a series of noncredit courses in adventure training, and a program of laboratory work in practical military skills. The program provides an opportunity to examine service in the Army while earning 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 program involves only the Advanced Course.

1. The basic course is designed for students who are unsure of their interest in the military, and it incurs no service obligation. The purpose is to expose the student to the Army while concurrently developing leadership skills applicable to both civilian and military environments.

2. The advanced course is designed for students who expect to receive their commissions within two years. It is composed of a series of Military Science or Military Affairs courses taken over a period of four semesters. Each student is required to attend a non-credit laboratory which is a practical application of the material learned in the classroom. Also required of all students is one field trip. Theoretical and historical analysis of human adaptability to hostile environments. Survival in desert, mountain, jungle, and arctic environments is analyzed. (F,SP)

Upper Division Courses

100. Army Management and Leadership. (2). Formerly 100. One 2-hour lecture per week plus one Saturday laboratory, Semester Prerequisites: Upper division standing and consent of instructor: A comparative study of contemporary civilian and Army management. An interdisciplinary approach to management and leadership examining individual and group behavior, leadership theories, communication, formal organization with emphasis on conflict, motivation, organizational development, and analysis of leadership potential models. (SP)

Professional Courses

430. Fundamentals of Terrain Representation and Military Operations. (3). Formerly 431. One 3-hour lecture per week and 1-hour laboratory per week. Introduction to topographic maps and aerial photographs and their relation to land navigation. Conceptual linkage to basic military tactics. Topics include map coordinate systems, scale and distance relationships, intersection and resection, photo interpretation, squad and platoon operations, and the use of resource planning techniques. (F)

Naval Science (Navy ROTC)

Department Office, 25 Callaghan Hall, 642-3552

The Department of Naval Science offers several programs open to academically and physically qualified men and women who will be entering their junior year of college prior to the beginning of the freshman year. Participants receive uniforms, Naval Science books, and $100 per month stipend in their junior and senior years. They complete one summer training cruise after their junior year. Upon graduation, each student receives a commission in a Navy or Marine Corps Reserve with a three-year active duty obligation (obligated service is not incurred until the start of the sophomore year in the four-year scholarship program). Application deadline December 1.

NROTC Four-Year College Program: Open to physically qualified men and women between the ages of 17 and 23, same active duty waiver as above. U.S. Citizenship is required prior to start of sophomore year. College students may enroll in the College Program up until the start of the sophomore year. Participants receive uniforms, Naval Science books, and $100 per month stipend in their junior and senior years. They complete one summer training cruise after their junior year. Upon graduation, each student receives a commission in a Naval or Marine Corps Reserve with a three-year active duty obligation (obligated service is not incurred until the start of the sophomore year in the four-year scholarship program). Scholarships may be offered to highly qualified College Program students.

NROTC Two-Year Scholarship Program: Nationwide competition open to academically and physically qualified men and women who will be entering their junior year of college prior to the beginning of the freshman year. Participants receive uniforms, Naval Science books, and $100 per month stipend in their last two years in college. One summer training cruise is required. Upon graduation, the student receives a commission in the Regular Navy or Marine Corps, with a four-year active duty obligation. Application deadline normally April 1 of sophomore year.

NROTC Two-Year College Program: Open to physically and academically qualified men and women who will be entering their junior year of undergraduate study (or their third year in a five-year undergraduate program) by June 30 of the expected graduation year, same active duty waiver as above. Candidates for the two-year scholarship attend a six-week summer training period at the Naval Science Institute in Newport, Rhode Island, prior to the start of their junior year. Graduates of the Naval Science Institute will receive full payment of tuition, fees, books, and $100 per month during their last two years in college. One summer training cruise is required. Upon graduation, the student receives a commission in the Regular Navy or Marine Corps, with a four-year active duty obligation. Application deadline normally May 1 of sophomore year.

For further information, direct inquiries to the Chair of Naval Science, 25 Callaghan Hall.

Lower Division Courses

12A. Navigation and Naval Operations. (3). Formerly 12A. Three hours of lecture and one hour laboratory per week. Principles of terrestrial navigation and piloting techniques. A study of the coordinate system, nautical
charts and publications, position plotting utilizing lines of position to determine position fixing, dead reckoning, aids to navigation, and tides and currents. Nautical rules of the road to prevent collisions at sea. (F)

12B. Navigation and Naval Operations. (3). Formerly 12B. Three hours of lecture and one hour of laboratory per week. Semester Prerequisites: 12A. Principles of celestial navigation. A study of nautical astronomy, celestial coordinate systems and their application to solving the navigation triangle. The use and corrections of sextant sightings, use of Nautical Almanacs, methods of sight reduction, special cases and star identification. The theory and systems of Electronic Navigation Meterology. (SP)

Professional Courses

401. Naval Ship's Systems. (3). Formerly 401. Three hours of lecture per week. An introduction to the physical theory or acoustic and electromagnetic wave generation and propagation; the design and use of electronic, electromechanical, and pneumatic systems; and the combination of these systems in electronic and mechanical systems to perform detection and analysis of objects sharing and traversing common environments. (F)

Peace and Conflict Studies

Program Office, 403 Eshleman Hall, 642-0256.

Faculty Advisers

Executive Committee: C. West Churchman (Business Administration, Public Health) (Chair); Gerald Berreman (Anthropology); John Hurst (Education); Michael Nagler (Classics/Comparative Literature); Peter Dale Scott (English).

Program Advisers: Carlos Benito (Agriculture and Resource Economics); Owen Chamberlain (Physics); Donald Dahlsten (Entomological Sciences/Biological Control); Leonard Duhl (Public Health/City and Regional Planning); Rosario Guerrero (Center for the Study, Education, and Advancement of Women); Paul Heist (Education); Charles Henry (African-American Studies); John Holdren (Energy and Resources Group); William Kornhauser (Sociology); Paul Lieber (Mechanical Engineering); Angela Little (Nutritional Sciences); Sheldon Margen (Public Health); Povindar K. Mehta (Civil Engineering); Richard L. Meier (Architecture/City and Regional Planning/Landscape Architecture); Alan S. Miller (Conservation and Resource Studies); Meredith Minnkle (Public Health); Charles Musacine (English); John B. Neilands (Biochemistry); Richard B. Norcross (Agriculture and Resource Economics); Jack Potter (Anthropology); John Ratcliffe (Public Health); Charles Schwartz (Physics); Otto J.M. Smith (Physics); Ronald Takaki (Ethnic Studies); Richard Walker (Geography); Leon Wolfe (Microbiology/Immunology); Anne Brotherton (Graduate Theological Union)

The Program

Peace and Conflict Studies is an undergraduate program designed to provide students with an integrative approach to the study of peace and conflict, with the objective of defining possible avenues toward stable peace. It addresses the major problems of war, injustice, poverty, and ecological deterioration, and it explores the social, psychological, and political dimensions of conflict resolution as well as cultural and religious forces of social change. Further, it includes the study of biology, ecology, and technology to provide a perspective on the evolutionary capacities of the human species. Peace studies is a humankind-oriented interdisciplinary orientation and with important components in some areas of social and natural science as well as connections to certain subjects in technology.

The Major

The degree of Bachelor of Arts or Science will be granted on the completion of the following requirements:

I. University Requirements:

(A) Minimum of 120 units. (B) Maintenance of at least a 2.0 average in all courses undertaken at the University. (C) Completion of general University requirements as to senior residence, Subject A, and American History and Institutions.

II. College Requirements:

Special requirements of the College or School in which the students was enrolled at the time of declaring a PACS major must be met.

III. Peace and Conflict Studies Requirements:

(A) Breadth Requirements: (1) Two courses beyond the Subject A level in reading and composition. (2) Proficiency in a language other than English at a level prescribed by the College of Letters and Science. (Some students will also be concentrating in their course or thesis work on a particular regional problem. They will normally be expected to obtain mastery of a useful language for that region, either at this stage or definitively.) (3) One course from (a) such fields as mathematics, statistics, linguistics, computer science, logic, or (b) such fields as literature, art, music. (4) At least one course from each of the three areas of concentration: social science, culture and ideology, and natural environment.

(B) Major Requirements: (Alternative courses may be substituted with approval of PACS program representatives.) (1) Introductory course. PACS 100 to be taken by all major fields Students 121, 121A, 121B; Sociology 140; Psychology 161. PACS 194A; Graduate Theological Union 330; Comparative Literature 166; Conservation and Resource Studies 10, Energy and Resources 100, Geography 130. (Classes not selected by students for core may also be used to satisfy breadth or area requirements.) (3) Area concentration. Students will take at least six courses in a particular area or problem of peace and conflict studies, to be selected in collaboration with their advisor. With prior approval, students may include courses from disciplines not listed under their chosen area of concentration. (For a list of recommended area concentration courses, see the Peacebook, available in 403 Eshleman Hall.) The areas of concentration are: (Area I: Social Science:) Political Science, Economics, Sociology, Psychology, Anthropology, Area II: Culture and Ideology: History, Religion, Literature, Philosophy. (Area III: Natural Environment:) Ecology, Biology, Energy and Resources. (Up to two of these courses may be used for breadth or core requirements.) (4) Integrative seminar. All students will be expected to participate in a discussion/seminar to be staffed on a rotating basis by PACS Committee faculty. Units are variable depending on whether students write research papers, participate in group projects, etc. (5) Field work. All students are required to engage in field work related to their area of concentration. PACS 197 will fulfill this requirement when taken for at least three units. (6) Senior Colloquium. All students will be expected to participate in a colloquium designed to enable students to share thesis research. (7) Senior Thesis.

The Minor Program

The minor in PACS is identical to the major except that instead of four core courses, only two are required, and instead of six courses in the area concentration, only four are required.

Upper Division Courses

100. Introduction to Peace and Conflict Studies. (4). New Course since Spring 1993. Two 11/2-hour lectures and 11/2-hour section per week. Designed to help students formulate an overview of global problems, with emphasis on militarism and peace, and approach the planning and implementation of desired futures. The course will be based on guest lectures and readings, with lectures by PACS faculty providing continuity. There will be one or more short papers leading to a final paper, a midterm, and a final exam. (F)

175. Introduction to the Ethics and Value Assumptions of Planning and Systems. (3). Formerly Interdepartmental Studies 175. Two hours of lecture and two hours of discussion per week. Introduction to the considerations of values and ethics in social planning and policy making, e.g., in operations research, systems science, policy science cost-benefit analysis, urban and regional planning, world modeling, etc. (SP)

194A. Seminar in Theory of Nonviolence. (2). New Course since Spring 1983. One 2-hour seminar per week. Semester Prerequisites: 100 or equivalent and consent of instructor. Advanced study for graduating seniors. Special topics in the theory of nonviolence as articulated or infeasible in the work of its major practitioners. (SP)

197. Peace and Conflict Studies: Field Studies Component. (1-3). New Course since Spring 1983. Must be taken on a passed/not passed basis. Semester Prerequisites: May be taken either in conjunction or following 100. Fulfills field studies requirement of the PACS major when taken for three units. Students are expected to develop a research project in consultation with a PACS advisor who will involve field research with a specific organization or agency, and will lead to the writing of a final paper. Units are variable depending on hours spent in placement agency and length of paper. (F,SP)

198. Directed Group Study for Upper Division Students. (1-3). New Course since Spring 1983. Course may be repeated as topic varies. Must be taken on a passed/not passed basis. Variable. Semester Prerequisites: Consent of instructor, upper division standing. Group discussion, research, and reporting on selected topics. Student initiation in choice of subjects is solicited and welcomed. (F,SP)
Personalized System of Instruction

A number of self-paced courses, also known as Keller Plan or PSI (Personalized System of Instruction) courses, are currently offered at Berkeley. Students who do not need the motivation imposed by deadlines are most likely to profit from these courses. While each course is unique, they typically have the following characteristics:

1. Few lectures are given. Students learn the material through study guides, workbooks, and textbooks. In some language courses, laboratory attendance may be required.

2. Students complete the work at their own pace within the limits of the semester.

3. Students must demonstrate mastery of the material covered, usually through a quiz or an assignment, before proceeding to more advanced topics.

4. Students meet periodically with the instructors or tutors to ask questions or discuss problems.

5. In some courses, variable amounts of credit may be granted. For example, if a student completes half of the assignments required by a 4-unit course, 2 units of credit are assigned. Students should file class cards for as few units as possible. If a student enrolls in two units, but completes four, the instructor may increase the unit value on the grade sheet. However, a student enrolls in four units, but completes only two, two units of earned grade will be received, along with two units of F for the uncompleted work.

This method of instruction is most popular in introductory language and science courses. The following courses are currently taught through this format: Astronomy 10S; Computer Science 7P, 7S, 8S, 8P, 50P; East European Studies 10, 100; Electrical Engineering 40I, 4II; German 14A, 14B, 14C; Italian 14A, 14B, 14C; Landscape Architecture 112; Latin 14; Mathematics 1S, 16S; Slavic 14A, 14B, 14C, 14D; Spanish 14A, 14B.

Professional Development Program

Program Office, 2208 Stephens Hall, 642-5881

The Professional Development Program (PDP) is an honors level program designed to increase the access of gifted minority and women students to higher education, especially in the fields of science, mathematics, business, and engineering, where they are particularly underrepresented. PDP serves gifted secondary school minority and women students as well as UC Berkeley undergraduates and graduates. High school students with outstanding academic ability are brought to the Berkeley campus, given an intensive preparation for university study, and motivated to seek professional careers. Instruction is provided in diverse academic disciplines, counseling and advising are offered, and field trips, guest lectures, theatrical events, and workshops aid pre-college students in defining their career goals.

PDP offers Berkeley undergraduates special academic assistance and counseling and the opportunity to participate in faculty supervised laboratory research in a broad range of academic disciplines. The program for undergraduates maximizes access to the wealth of educational resources at Berkeley through: individual faculty advising and curriculum planning in the student's major; workshops in calculus, seminars, and tutorials which augment regular course offerings; laboratory and field placement opportunities as training for research; peer teaching and research assistantships. Students who are about to begin graduate study are additionally provided with individualized instruction designed to familiarize them with the methodology of graduate work in their disciplines. PDP provides graduate students with individualized faculty orientation workshops, seminars, and lectures by distinguished minority and women scholars. PDP helps students to locate jobs that will advance their professional careers.

For further information, please contact the Program Office or call 642-5881.

University Research Expeditions Program

Program Office, 2223 Fulton Street, Third Floor, 642-5588

The University Research Expeditions Program (UREP) was established on the Berkeley campus to help provide funds for field research in the natural and social sciences while simultaneously offering students, staff, and members of the general public the opportunity of joining domestic and foreign field research projects sponsored by the University. Through UREP, University scientists with field research projects that involve techniques that can be learned with minimal training are brought together with individuals interested in actively participating in field work. Participants become short-term members of a field research team and gain valuable experience in the different methods involved. UREP projects are open to students, staff, and members of the general public. No previous academic or field experience is necessary to participate; instruction in field techniques is provided after participants arrive at their research site. Participants are selected for their interests, skills, experience, and willingness to work and learn. A tax-deductible donation to the University is required to help subsidize the research costs of the projects. Partial scholarships are available to UC students.

UREP projects have included animal behavior studies in Cameroon, Guatemala, and St. Kitts; archaeological excavations in Italy, California, and Ghana; a museum collecting expedition to the Rendille, a nomadic tribe in Northern Kenya; an anthropological study of Carnival in Brazil; the preparation of an archaeological map of the Valley of the Kings, Egypt; and marine studies in Hawaii, Jamaica, and Honduras Bay; as well as plant collecting and/or insect studies in Costa Rica, Ecuador, Mexico, Mt. Kenya, New Caledonia, and Surinam.

Some of the projects planned for 1984-85, each of approximately 2-3 weeks duration, are: (1) excavation of sites in the ancient Chimú empire in Peru; (2) a study of forest monkeys in Kenya; (3) an investigation of the mysterious prehistoric nuraghi towers of Sardinia; (4) an exploration of reef-dwelling sponges in the South Pacific. Other projects in the fields of ecology, biology, botany, anthropology, paleontology, and archaeology will be taking place in Papua-New Guinea, Costa Rica, Cyprus, Australia, Yugoslavia, California, Arizona, and Virginia.

For further information, please contact the University Research Expeditions Program, University of California, Berkeley, Berkeley, CA 94720; Telephone 642-6586.

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The Regents of the University of California

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Graduate School of Public Policy
Allan P. Sindler, Ph.D.

School of Social Welfare
Harry Specht, Ph.D.
Appendix

Student Persistence and Degree Completion at UC Berkeley

The number of students at large public universities nationally who begin bachelor degree programs and continue with them through graduation is uncertain: depending on the situation, estimates suggest that between 20 percent and 65 percent of all entering freshmen remain to earn degrees at the campuses at which they have initially enrolled, while up to 70 percent earn bachelor's degrees at one school or another. UC Berkeley data indicate that about 60 percent of each year's entering freshmen eventually complete a degree at the Berkeley campus, but not all do so in four years. Many undergraduates transfer to Berkeley after having begun college work elsewhere; of those entering at the junior level, about 75 percent complete a degree at Berkeley, although some require three years of residence to do so.

At the graduate level, where Berkeley offers more than 100 degree programs, over 60 percent of all entering students receive one or more graduate degrees.

In the academic year 1982-83, Berkeley awarded over 8,800 degrees and certificates, of which approximately 5400 were bachelor's degrees, 320 were law degrees, 2350 were master's degrees, and 780 were doctorates. The average student enrollment for the year was approximately 28,500 students.

Nondiscrimination Statement

The University of California, Berkeley, in compliance with Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Age Discrimination Act of 1975, does not discriminate on the basis of race, color, national origin, sex, handicap, or age in any of its policies, procedures, or practices; nor does the University discriminate on the basis of sexual orientation. This nondiscrimination policy covers admission and access to, and treatment and employment in, University programs and activities, including but not limited to, academic admissions, financial aid, educational services, and student employment. Inquiries regarding the University's equal opportunity policies may be directed to the Vice Chancellor—Business and Administrative Services, 200 California Hall, University of California, Berkeley; Berkeley, CA 94720, telephone (415) 642-3000 or TDD 642-8376. Inquiries regarding Title IX (sex discrimination) may be directed to Carol Christ, Title IX Compliance Coordinator, 200 California Hall, (415) 642-7609.

Student Grievance Procedure

The Berkeley campus Student Grievance Procedure is contained in the booklet Regulations Implementing Systemwide Policies Applying to Campus Activities, Organizations, and Students (1179). Copies are available in 102 Sproul Hall. The procedure affords Berkeley students an opportunity to resolve complaints alleging discrimination based upon race, color, national origin, sex, handicap, age, and sexual preference. The procedure is also available for the resolution of complaints alleging inappropriate application to the student of any rules or policies of the Berkeley campus resulting in injury to the student. The procedure is not applicable to certain types of complaints for which other appropriate appeals procedures exist such as a grade appeal based upon the application of non-academic criteria. (See General Rules and Regulations in Appendix for a description of the grade appeal process.)

Teletype Devices for the Deaf (TDD) at UC Berkeley

Office of Admissions and Records
120 Sprout Hall
642-8396 (TDD)
642-0200 (Voice)

Career Planning and Placement Center
111 Wheeler Hall
Jim Leinen—Advisor, Disabled Students
642-5373 (Voice and TDD)

Personnel Office
2539 Channing Way
Jessica Welsh—Staff Specialist for the Disabled
642-7181 (Voice and TDD)

Physically Disabled Students' Program
2515 Channing Way
Jack Jason—Counselor/Coordinator of Services to the Deaf
642-6376 (TDD)
642-0518 (Voice)

Cowell Memorial Hospital
Student Health Services
642-2891 (TDD)
642-2000 (Voice)

Access to Records
Each student is entitled by law and University policy to examine and challenge most of the records maintained by the University on that student. These records are confidential, and in most circumstances may be released to third parties only with the prior consent of the student. Such matters are detailed in the Berkeley Campus Policy Governing Disclosure of Information from Student Records, available in the Office of the Director of Student Activities and Services, 102 Sproul Hall.

Refund Procedure

If no credit for courses is received, a full refund of the Registration Fee of the regular session will be granted to all students entering the armed forces prior to the end of the sixth week of the semester. No refund thereafter.

New Undergraduate Students: Prior to Day 1, the Registration Fee paid is refunded except for the $50 Acceptance of Admission Fee, all other fees paid in refund in Day 1 and after, the $50 Acceptance of Admission Fee is withheld from the Registration Fee, and the Schedule of Refunds is applied to the balance of fees assessed.

All Continuing and Readmitted Students and New Graduate Students: There is a service charge of $10 for cancellation of registration or withdrawal before the first day of instruction. After the first day of instruction the Schedule of Refunds is applied to the total fees assessed.

Schedule of Refunds

The Schedule of Refunds refers to calendar days, beginning with the first day of instruction. Percentages listed (days 1-35) should be applied respectively to each Tuition, Educational Fee, University Registration Fee, and other student fees. The effective date for determining a refund of fees is the date on which the Notice of Withdrawal is first presented for endorsement, and it is presumed that no University services will be provided to the student after that date.

Tuition, Educational Fee, University Registration Fee, and Other Student Fees:

1-14 days: 80%
15-21 days: 60%
22-28 days: 40%
29-35 days: 20%
36 and over: 0%

Research Units

School of Business Administration
Center for Research in Management
College of Chemistry
Laboratory of Chemical Biodynamics
College of Engineering
Earthquake Engineering Research Center
Electronics Research Laboratory
Operations Research Center
Sanitary Engineering and Environmental Health Research Laboratory
Institute of Transportation Studies
Water Thermal and Chemical Technology Center
College of Environmental Design
Center for Environmental Design Research
Graduate Division
Bodega Marine Laboratory
Institute of Business and Economic Research
Institute of East Asian Studies
Center for Chinese Studies
Center for Japanese Studies

Salary and Employment Information/Representative Colleges*

<table>
<thead>
<tr>
<th>Field of Study</th>
<th>Average Monthly Salary of Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>$1565</td>
</tr>
<tr>
<td>Bus Admin. (General)</td>
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</tr>
<tr>
<td>Biological Sciences</td>
<td>$1419</td>
</tr>
<tr>
<td>Computer Science</td>
<td>$1941</td>
</tr>
<tr>
<td>Engineering</td>
<td>$2115</td>
</tr>
<tr>
<td>Humanities</td>
<td>$1380</td>
</tr>
<tr>
<td>Physical and Earth Sciences</td>
<td>$1746</td>
</tr>
<tr>
<td>Economics</td>
<td>$1590</td>
</tr>
<tr>
<td>Other Social Sciences</td>
<td>$1320</td>
</tr>
</tbody>
</table>

*Source: A July 1983 national survey of representative groups of colleges conducted by the College Placement Council representing the 80 percent range of offers throughout the country. It should be noted that a wide variation in starting salaries exists within each discipline based on job location, type of employer, personal qualifications of the individual, and employment conditions at the time of job entry. Recipients of UC Berkeley degrees are often more in demand than degree earners from representative colleges across the nation.
Center for Korean Studies
Center for Studies in Higher Education
Institute of Human Development
Institute of Industrial Relations
Institute of International Studies
Center for Latin American Studies
Center for Slavic and East European Studies
Center for South and Southeast Asia Studies
Institute for the Study of Social Change
Space Sciences Laboratory
Survey Research Center
Institute of Urban and Regional Development

School of Law
Earl Warren Legal Institute Center for the Study of Law and Society

College of Letters and Science
Archaeological Research Facility
Field Station for Division Research
Cancer Research Laboratory
Institute of Governmental Studies
Institute of Human Learning
Lowie Museum of Anthropology
Center for Pure and Applied Mathematics
Institute of Urban and Regional Development
Virus Laboratory

College of Natural Resources
Agricultural Experimental Station
Giannini Foundation
Forest Product Laboratory
Wildland Research Center
International Center for Integrated and Biological Control

School of Public Health
Naval Biosciences Laboratory
Vice Chancellor for Undergraduate Affairs

Lawrence Hall of Science
Lawrence Berkeley Laboratory
Accelerator and Fusion Research Division
Biology and Medicine Division (Donner Laboratory)
Chemical Biodynamics Division (Laboratory of Chemical Biodynamics)
Earth Sciences Division
Energy and Environment Division
Materials and Molecular Research Division
National Resource for Computation in Chemistry Division
Nuclear Science Division
Physics, Computer Science, and Mathematics Divisions

Natural Land and Water Reserves System
Bodega Marine Reserve
Chickering American River Reserve
Hastings Natural History Reservation
Pygmy Forest Reserve

General Rules and Regulations

Regulation—Fall 1984

Registration is the means by which you officially become a student at UC Berkeley. It includes the payment of fees and the filing of a study list.

New and re-entering students receive information and instructions for registering by mail in advance of the semester for which they have been admitted. The instructions include a mailing deadline which should be carefully observed.

Continuing students must pick up their first set of registration forms at locations and dates indicated on bulletin board placards and return the materials to the appropriate office by the deadlines indicated in the enclosed instructions. A second set of forms, including the Schedule of Classes, listing enrollment instructions and all courses given for the semester, their credit values, prerequisites, you can assemble your schedule. From this booklet, and with the aid of your adviser and this study list at the time and place designated by the Office of Admissions and Records. Students should arrange for conferences with advisers, review the program of studies they wish to undertake, and have all necessary approvals before submitting their request forms. The Schedule Request Form is included in your registration envelope issued to you when you register, detailed instructions for completing the form are included in the Schedule of Classes.

Enrollment in Classes—Spring 1985

Continuing students should purchase from the ASUC Bookstore, for 50 cents, the Schedule of Classes, listing enrollment instructions and all courses given for the semester, their credit values, hours and final examination groups. From this booklet, and with the aid of your adviser and this Catalog, which provides course descriptions and prerequisites, you can assemble your schedule.

You may not choose two courses in the same examination group.

In order to complete your registration and to receive credit for the work of a semester, you must file a Schedule Request Form at the time and place designated by the Office of Admissions and Records. Students should arrange for conferences with advisers, review the program of studies they wish to undertake, and have all necessary approvals before submitting their request forms. The Schedule Request Form is included in your registration envelope issued to you when you register, detailed instructions for completing the form are included in the Schedule of Classes.

Enrollment in courses after Friday of the third week of instruction requires a $50 late enrollment fee, a $10 reinstatement fee, and a petition approved by the Dean of your college of school.

Unapproved withdrawal from, or neglect of a course listed on a Confirmed Schedule will result in the assignment of grade "F", "NP" or "U" as appropriate. If you wish to make any changes in your confirmed schedule, you must do so by formal petition with the signed approval of the instructor involved and, in some cases, the Dean of your college of school.

The Semester System

Under the semester system on the Berkeley campus the academic year is divided into two semesters and one summer session. Quarter units are converted to semester units by multiplying by two-thirds; for example, 180 quarter units equal 120 semester units.

Course and Units

Most university courses are assigned a unit value. One unit represents three hours of work per week by the student, including both class attendance and preparation. Laboratory, quiz, or review sessions may or may not be given unit credit for the work of a semester, you must file a study list late and may become subject to the assigned dates for filing of their study lists. Students who fail to do this may be forced to file their study lists late and may become subject to the $10 late filing fee. The study list form is included in this packet issued to you when you register, along with instructions for completing it. The student list is filed, after Friday of the third week of instruction requires a $50 late filing fee, a $10 reinstatement fee, and a petition approved by the Dean of your college of school.

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Midterm and Final Examinations

The number of midterm examinations varies at the discretion of the instructor. Notices will be sent to those undergraduate students for whom the instructors have indicated that work at mid-term was D or F quality. Final examinations are required in all undergraduate non-laboratory courses, with the exception of courses listed in the Schedule of Classes as not requiring a final examination. This requirement protects the student by ensuring that he or she will have the opportunity to demonstrate mastery of course material while providing the instructor with written evidence for evaluation. A student may be re-examined only to complete an incomplete grade but not to raise any other grades. The examination may not exceed three hours' duration and must be administered at the time announced in the Schedule of Classes. Any deviation from the announced time, including take-home examinations, requires approval from the Committee on Courses. The requirement concerning announcement in the Schedule of Classes ensures that students have ample prior notice of the examination time, and that they have no conflict with other examinations.
given concurrently. It is the position of the Committee on Courses that take-home examinations that extend into final examination week violate both the letter and spirit of the regulation concerning the three hours' duration.

It is the responsibility of instructors and/or departments either to return to the students their final examinations or copies of them, or to retain their students' final examinations or copies of them for a period of 13 months after the dates of such examinations. In the latter case, it is also their responsibility to prohibit students from accessing their final examinations under the supervision of the instructor or a designee. It is the departmental responsibility to ensure compliance with this regulation for all faculty, including visiting faculty and faculty on leave.

Grades of Scholarship

The work of all students on the Berkeley campus is reported in terms of the following grades: A (excellent), B (good), C (fair), D (barely passing), F (failure), P (passed at a minimum level of C-), NP (not passed), S (satisfactory). I (work incomplete, due to circumstances beyond the student's control, but of passing quality), IP (work in progress; + grades carry three-tenths of a grade point), IP + (grades except for A +, which carries 4.0 grade points, for the same reason), and IP - (grades in which a student has attempted to complete at least one complete grade (e.g., C + to B -) may submit the case in writing to the Committee on Courses, which will obtain a written response from the instructor and will provide all parties the opportunity to present additional information orally or in writing. The Grievance Committee's recommendation to the Committee on Courses, including minority view, if any, must be given in writing.

If the Committee on Courses finds for the student, may change a failing grade to a P or S, drop a course retrospectively, retain the course but eliminate the grade from the GPA, or adopt the letter grade, if any, that was recommended by four of the five members of the Grievance Committee of the unit(s).

Grade I (Incomplete)

The grade I may be assigned if the student's work has been of passing quality but is incomplete for reasons beyond the student's control. Prior arrangements must be made with the instructor, because in assigning the I grade the instructor is required to specify the reasons to the Departmental chair.

For graduate students, the method of replacement of the grade I by a final grade will be determined by the Dean of the Graduate Division and the Graduate Council. It is expected that graduate students may finish all requirements as soon as possible. The I grade will remain on the record until such work is made up and a petition and the fees are filed. Graduate students should see the advice of the Dean of the Graduate Division if they have further questions concerning I grades.

For undergraduate students, an I grade received in the Fall Semester must be replaced by the first day of instruction in the following Fall Semester.

Any undergraduate student with 12 or more units of Admissions and Records and department offices. Any undergraduate student with 12 or more units of Admissions and Records and department offices.
The petition should be filed with the department in which the I grade was received as soon as the date of completion of the course has been established by the student and the instructor. The filing fee is $5, payable at the Cashier's Office. Students must make arrangements for the completion of the course at least 30 days before the deadline. The final grade cannot be recorded until the petition is filed with the department.

Note: The I grade is not physically replaced on or removed from the academic record. Completion of the work is reflected as a subsequent line entry on the record, and the units and grade points thus earned will be included in the grade-point computations at the close of the next session.

Grade IP (In Progress)

For a course extending over more than one term, where the student's performance is deferred until the end of the final term, provisional grades of IP (In Progress) are assigned in the intervening term(s). The provisional grades are replaced by the final grade if the student completes the full sequence. The grade IP is not included in the grade-point average. Effective with an IP assigned fall 1973 or later, if the full sequence is not completed as scheduled, the IP will be replaced by a final grade when the student obtains the right to assign a grade for the term(s) completed. Further changes in the student's record will be subject to the rules pertaining to I grades (see above).

Passed/Not Passed and Satisfactory/Unsatisfactory Grades

Undergraduates in good academic standing may elect to undertake letter-graded courses on a Satisfactory/Unsatisfactory basis and receive credit for such courses to a limit of one-third of the total units taken and passed on the Berkeley campus at the time their grades are awarded. Included in this one-third are any units completed in an Education Abroad program, or on another University of California campus in an inter-campus visitor or exchange program, or in a joint doctoral program. For graduate students, grades of Satisfactory are assigned in courses numbered 299 and in courses registered in a regular session may qualify for course credit by examination. Application for such credit must be presented on the form Petition for Credit by Examination, obtainable from the Office of Admissions and Records, according to the regulations governing the assignment of these grades. Further information concerning credit by examination may be obtained from the Office of Admissions and Records.

Grade Reports and Transcripts of Record

At the close of each semester, at a time and place designated by the Office of Admissions and Records and announced on bulletin boards on campus, and in the Daily Californian, you may obtain an unofficial copy of your academic record. This copy can be picked up in 128 Sproul after these distribution dates. You can also send a self-addressed, stamped envelope to the Records Division in 128 Sproul requesting that your copy be mailed to you. This copy will, for students admitted Fall Quarter 1976 and subsequent semesters, be available only for Berkeley campus. For those students admitted prior to Fall Quarter 1975, the copy may at present be partial and cover only coursework undertaken in Fall of 1976 and subsequent semesters. The official record-transcripts are also available from the Office of Admissions and Records. After the last date for final examinations, transcripts for registered students must be held for inclusion of grades until the semester is completed and, therefore, will not be available for approximately 30 working days. Partial transcripts will not be issued. At times other than the close of the semester, the normal period required for the completion of a transcript for both registered and former students is three to five working days. The charge for each transcript of every undergraduate, graduate, or separate summer session record is $3 and $1 for each additional copy of any record requested at the same time. The total amount due must accompany the application. If a transcript which would normally be issued on a five-day schedule is urgently needed, it can be made in 24 hours at a special charge of $8 and $6 for each additional copy.

Student Conduct

As a student enrolling in the University, you assume an obligation to conduct yourself in a manner compatible with the University's function as an educational institution. Rules concerning student conduct, student organizations, use of University facilities, and related matters are set forth in both policies and regulations of which are available upon request at the Office of Student Activities and Services, 102 Sproul Hall. Particular attention is called to the booklet University of California Policies Applying to Campus Activities, Organizations, and Students, (revised edition, 1979) and to the standard of conduct set forth therein.

Cheating or Plagiarism

Achievement and proficiency in subject matter includes the realization, on the part of the student, that neither is to be achieved by cheating. An instructor has the right to give an F on a single assignment produced by cheating without determining whether the cheater has a passing knowledge of the relevant factual material. That is an improper academic evaluation for a failure to understand or to abide by the basic rules of academic study and inquiry. An instructor has the right to assign a final grade of F for the course because the student plagiarized a paper for a portion of the course, even if that student has successfully and, presumably, honestly passed the remaining portion of the course. It must be understood by any student who plagiarizes or other cheating, e.g., allowing another student to copy a paper or examination question, carries guilt equally with the cheating student.

Cancellation of Registration, Absences, Withdrawal, and Re-Entry

Students who have registered by mail and who wish to cancel their registration may do so by notifying the Office of Admissions and Records in writing prior to the first day of classes. Cancellation of registration may not be accomplished by non-attendance of classes alone. A refund of all but $10 of the registration fee is made on cancellation except for the $50 deposit paid by new undergraduates.

Responsibility for short absences during the semester is left to the student. Scholarship recipients who wish to officially withdraw from the University may be required to reimburse the scholarship money. If you do find it necessary to discontinue your studies for the remainder of the semester, you should obtain a Notice of Withdrawal form from the Office of Admissions and Records and submit it to the Office of Admissions and Records. After the first of several required endorsements at the earliest possible date. If the form is submitted prior to the first day of classes, you will be entitled to the same refund as would be made on cancellation of registration. The refund of fees is prorated thereafter (see Schedule of Refunds). The amount of refund is determined not by the date on which you discontinue your studies, but by the date on which the Notice of Withdrawal is first presented for endorsement. If you are eligible for further registration in the University, you will be entitled to a Statement of Honor of Withdrawal, and may not discontinue the work of a semester without formal notice. This may result in the assignment of F grades, academic dismissal, and loss of eligibility for re-admission to a degree program.

A student who has been dismissed for academic or disciplinary reasons is generally not eligible for

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Readmission. If you have cancelled your registration, withdrawn, or been absent for a semester, you will be required to apply for readmission to any future semester you wish to attend. The Application for Readmission, obtainable from the Petitions desk, Graduate Division, 1 California Hall, and must pay a nonrefundable, nontransferable Readmission Fee of $35. This fee must accompany the Application for Readmission when first submitted or the application will not be reviewed. Approval of readmission is not automatic. A formal review of the student's petition and academic record is made by the Graduate Division and the appropriate college, school, group, or department, and the student is notified whether the petition has been approved or denied.

The Study List and Unit Load. In the Fall Semester, each registered student files out a study list, entering on it all courses or any other graduate work, including thesis and/or research approved by the graduate adviser, to be undertaken for the semester. In the Spring Semester, all students fill out a Schedule Request Form, entering on it all course requests, including thesis and/or research approved by the graduate adviser, for the semester.

Courses are classified as lower division (numbered 1 through 99); upper division (100-199); and graduate (200-299). Lower division courses are not counted as part of a full program of study leading to a higher degree. (For information on courses in the "600-series," see below.)

Teaching assistants and research assistants must normally carry a minimum of six units of upper division or graduate work (courses in the 200 series). Fellowship holders and foreign students on nonimmigrant visas must carry a full program of study, the minimum range in such cases being from eight to 12 units in upper division and/or graduate courses, although cognizance is taken of the amount of individual study being pursued in the form of language preparation, comprehensive and qualifying examination preparation, etc., for the Ph.D. degree. In these cases reduced unit loads are accepted as full programs with the consent of the graduate adviser and Dean of the Graduate Division. Formal classification of a student's program as full-time, three-quarter time, half-time, or quarter-time is determined by the graduate adviser and entered on the study list each semester. For the convenience of advisers and students a suggested schedule is given below.

Changes in the Fall 1984 Study List. Graduate students may file petitions to add or drop courses entered on their study lists at any time through the fifth week of instruction. Discontinuance of a course after this time will normally result in a grade of F. After this period, a written statement from the graduate adviser must be submitted to the Dean of the Graduate Division for special approval of any changes in study lists. A $3 fee will be assessed for any petition submitted after the third week of instruction.

Changes in the Spring 1985 Confirmed Schedule. Graduate students may file petitions to add or drop courses listed on their Confirmed Schedules at any time through the fifth week of instruction. Discontinuance of a course after this time will normally result in a grade of F. After this period, a written statement from the graduate adviser must be submitted to the Dean of the Graduate Division for special approval of any changes in study lists.

Standards of Scholarship and Dismissal for Academic Deficiencies. Only courses graded A, B, C (with or without plus or minus signs) or S are accepted in satisfaction of degree requirements. Courses graded D, F, or N must be formally transferred. Please note that departments, schools, and groups have the option of requiring performance standards higher than the minimum B average required by the Graduate Division. Expedient pursuit of the degree program implies full-time study unless a lesser program is approved by the graduate adviser, successful completion of all coursework required by the department or group program, passage of the required examinations and other requirements as specified for the program, and advancement to candidacy as specified for the various degree programs.

For a course extending over more than one semester where evaluation of the student's performance is deferred until the end of the final semester, provisional grades of In progress (IP) may be assigned in the intervening semesters. The provisional grades are replaced by the final grade if the student completes the full sequence. If the full sequence is not completed, the Berkeley Division of the Academic Senate is authorized to regulate the award of credit.

With the consent of the department involved, graduate students may enroll in courses in the "600-series." Such courses are evaluated by means of the grades satisfactory and unsatisfactory (S and U). They prepare students for appropriate master's or doctoral examinations and do not count toward academic residence or the unit requirements for a higher degree. No credit is allowed for work graded unsatisfactory. (For further information, see Grades of Scholarship in Index.)
Graduate students are subject to dismissal for academic deficiencies at the discretion of the Dean of the Graduate Division under the policies and practices established by the individual faculties of degree programs, and professional schools and colleges as approved by the Graduate Council of the Academic Senate. Dismissal for academic deficiencies is normally effected by the Department of the graduate division, but the Dean may also initiate dismissal after individually reviewing a student's record. Dismissal for academic reasons by the Dean may be appealed to the appropriate committee of the Graduate Council of the Academic Senate.

Satisfactory Grades. No more than one-third of the degree program may be fulfilled by courses graded Satisfactory, and then only if approved by the department or group.

Academic Residence. In order to meet the academic residence requirement for higher degrees—not to be confused with state residence, defined in the Appendix—every graduate student must enroll in and complete a minimum of four units or upper division and/or graduate courses per quarter semester of academic residence. Only courses in the 100 or 200 series satisfy this requirement. (Students should also familiarize themselves with the regulations on academic residence for graduate degree candidates for a graduate degree, or employees of the University of California.)

Course Credit by Examination. A graduate student in residence may petition to receive a limited amount of course credit toward the degree by passing examinations on material covered in certain courses in lieu of taking those courses. Laboratory courses or graduate seminars or research courses are excluded. The petition is obtainable from the Office of Admissions and Records. Approval to take such examinations must be given by the Dean of the Graduate Division and by the course instructor, or, where no instructor is designated, by the department chair.

Accommodation of Postdoctoral Fellows and Visiting Scholars. A prospective fellow or scholar should make a preliminary appointment with the chair of the department, school, or research unit with which affiliation is desired to determine whether the facilities required are available and whether eligibility requirements can be met for an honorary appointment. With rare exceptions, visiting residence candidates do not hold the doctoral degree or its equivalent. Visiting scholars may not be students enrolled or on leave from another institution of higher education, candidates for a doctoral degree, or employees of any University of California campus. Foreign fellows or scholars should communicate with the Advisers to Foreign Students and Scholars Office, International House, to determine that they hold the proper visa to assume an appointment.

Normative Time. This program is obligatory for all doctoral students (independent of original degree goal) first enrolled on the Berkeley campus in Fall 1978 and thereafter. Students who entered earlier may elect to join the program. The conditions of the Normative Time Program are as follows:

1. Upon entry to a Berkeley doctoral program, a student proceeds with coursework in the normal fashion until all requirements for advancement to candidacy are completed. During this period the student is registered continuously, except for semesters on approved withdrawn status as appropriate, and is liable for payment of all fees and appropriate tuition. The student is registered continuously, except for semesters on approved withdrawn status as appropriate, and is liable for payment of all fees and appropriate tuition.

2. Once the student has been advanced to candidacy for the doctoral degree, the student becomes eligible in subsequent semesters for a "fee offset grant" equal in amount to the Educational Fee.

3. The grant is awarded to the student each semester until accrued time in graduate status exceeds the normative time set for that program of study. Accrued time is the number of semesters since first registration, less a maximum of two semesters of approved withdrawn status, and any other adjustments that may be approved by the Dean of the Graduate Division.

4. During the entire period of study, a doctoral student is required to be in continuous registration, except when on approved withdrawn status, or during the semester when the Filing Fee is used in lieu of residence.

Students will be informed of their eligibility and the number of semesters of fee offset grant support available to them when they are advanced to candidacy. A student must attain formal candidacy for the doctoral degree prior to the first day of instruction of the semester in which the grant is awarded. In addition, a yearly application for renewal of the grant will be required from each student in the program. The deadline for this application will be May 1.

The following normative times in semesters have been established: Agricultural and Environmental Chemistry (13); Agricultural and Resource Economics (12); Anatomy (10); Ancient History and Archaeology (12); Astronomy (10); Biochemistry (10); Biophysics (10); Biostatistics (10); Botany (10); Business Administration (10); Chemistry (10); City and Regional Planning (10); Classical Archaeology (10); Classics (14); Comparative Biochemistry (10); Comparative Literature (13); Computer Science (10); Demography (10); Dramatic Art (10); Economics (10); Education (11); Endocrinology (10); Energy and Resources (10); Engineering (10); English (13); Entomology (10); Environmental Health Sciences (10); Environmental Planning (10); Epidemiology (8); French (12); Genetics (13); Geography (12); Geology (10); Geophysics (10); German (12); Hispanic Languages and Literatures (8); History: Modern Western Languages (12); History: Non-Western Languages (14); History of Art (14); Immunology (10); Italian (12); Japanese (12); Latin American Studies (12); Library and Information Studies (8); Linguistics (10); Logic and the Methodology of Science (10); Mathematics (11); Medical Anthropology (12); Medical Microbiology (10); Molecular Biology (10); Music (10); Near Eastern Religions (10); Neurobiology (10); Nutrition (10); Oriental Languages and Literatures: Classical Chinese (10); Paleontology (10); Parasitology (10); Philosophy (10); Physical Education (12); Physical Sciences (12); Plant Physiology (10); Political Science (10); Psychology (10); Public Health (10); Public Policy (10); Rhetoric (10); Romance Languages and Literatures: French (12); Russian (12); Spanish (10); Romance Philology (10); Scandinavian Languages and Literatures (12); Science/Mathematics Education (8); Slavic Languages and Literatures (12); Social Welfare (10); Sociology (10); South and Southeast Asian Studies (14); Statistics (10); Wildland Resource Science (10); Wood Science and Technology (10); Zoology (10).

California Residency and the Nonresident Tuition Fee

Students who have not been residents of California for more than one year immediately prior to the residence determination date for each term in which they propose to attend the University are charged and required to pay the nonresident supplement for the semester. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the semester.

General

In order to be classified as a resident for tuition purposes, upon admission an adult student must have established his/her residence in California for more than one year immediately preceding the residence determination date for the term during which he/she proposes to attend the University and established permanent residence. An adult student must couple his/her physical presence within this state for one year with objective evidence that such presence is consistent with his/her intent in making California his/her permanent home and, if such absences are delayed, the one-year duration period will be extended until both presence and intent have been demonstrated for one full year. Physical presence within the state solely for educational purposes does not constitute establishment of California residence under state law regardless of the length of his/her stay in California.

Relevant indicia which can be relied upon to demonstrate one's intent to make California his/her permanent residence include, but are not limited to, the following: registering and voting in California elections; designating California as the permanent address on all school and employment records, including military records; obtaining a California driver's license or California identification Card if a non-driver; obtaining a California vehicle registration; paying California income taxes as a resident, including income earned outside this state from sources within California; establishing a permanent abode where one's permanent belongings are kept within California; licensing for professional practice in California; and the absence of these indicia in another state where one is continually residing. Presence in California is asserted. Documentary evidence may be required. No single factor is controlling or decisive. All relevant indicia will be considered in the classification of the nonresident.

The residence of the parent with whom an unmarried minor (under age 18) maintains his or her place of abode is the residence of the unmarried minor. When minors live with both parents their residence is that of the parent whose permanent place of abode is in California. The residence of the parent whose permanent place of abode is in California is established when both parents are deceased and a legal guardian has not been appointed. The residence of unmarried minors who have a parent living cannot be changed by their own act, by the appointment of a legal guardian, or by relinquishment of a parent's right of control. Where the residence of the minor is determined, the residence of the school for which the student is enrolled is determined. It is derived must satisfy the one-year duration requirement.

A man or a woman establishes his or her residence. A woman's residence shall not be derivative from that of her husband, or vice versa.

Exceptions

1. Students who remain in this state after their parent, who was theretofore domiciled in California for at least one year prior to leaving and has, during the student's minority and within one year immediately prior to the residence determination date, established residence elsewhere, shall be entitled to resident classification if the student has attained the age of majority and have resided in the state the minimum time necessary to become a resident so long as, once enrolled, they maintain continuous attendance at an institution.

2. Nonresident students who are minors or 18 years of age and can evidence that they have been totally self-supporting through employment and actually present within California for the entire year immediately prior to the residence determination date, and have evidenced the intent to make California their permanent home may be eligible for resident status.

3. Students shall be entitled to resident classification if immediately prior to the residence determination date they have lived with and been under the continuous direct care and control of any adult or adults other than a parent for not less than two years, provided that the adult or adults having such control have been California residents.
during the year immediately prior to the residence determination date. This exception continues until the student has attained the age of 18 and has resided in the state the minimum time necessary to become a resident student, so long as continuous attendance is maintained at an institution.

4. Exemption from payment of the nonresident tuition is available to the natural or adopted child, stepchild, or spouse who is a dependent of a member of the United States military stationed in California on active duty. Such resident classification may be maintained until the student has resided in California the minimum time necessary to become a resident. If a student is enrolled in an institution and (1) the member of the military is transferred on military orders to a place outside this state where he continues to serve in the armed forces or (2) the member of the military retires from active duty immediately after serving on active duty in California, the student is entitled to retain resident classification under conditions set forth above.

5. Students who are members of the United States military stationed in California on active duty, except members of the military assigned for educational purposes to a state supported institution of higher education, shall be entitled to resident classification until they have resided in the state the minimum time necessary to become a resident.

6. A student who is an adult alien is entitled to resident classification if the student has been lawfully admitted to the United States for permanent residence in accordance with all applicable laws of the United States and has thereafter established and maintained residence in California for more than one year immediately prior to the residence determination date. Non-resident aliens present in the United States under the terms of visa classifications A, E, G, I, or K who can demonstrate California residence for more than one year immediately prior to the residence determination date may be entitled to resident classification.

7. Children of deceased public law enforcement or fire suppression employees, who were California residents, and who were killed in the course of law enforcement or fire suppression duties, may be entitled to resident classification.

**Reclassification**

The student must petition to have his or her status changed at the Office of Admissions and Records and documentation of residence (driver’s license, voter registration receipt, etc.) may be requested at that time. All changes of status must be initiated prior to the late registration period for the semester for which the student intends to be reclassified. In addition to the indicia of residence listed above, a student seeking reclassification must be financially independent of parents domiciled outside of California. Note: Graduate students who are teaching assistants, research assistants, or teaching associates employed on a 0.49 or more time basis are exempt from the financial independence requirement. For detailed information regarding reclassification contact the Residence Deputy.

**Procedures**

New and returning students are required to complete a Statement of Legal Residence. The student’s status is determined by the Residence Deputy who is located in the Office of Admissions and Records.

Students are cautioned that this summation is not a complete explanation of the law regarding residence. They should also note that changes may have been made in the rate of nonresident tuition and the residence requirements between the time this Catalog statement is published and the relevant residence determination data. Regulations have been adopted by The Regents, a copy of which is available for inspection in the Office of Admissions and Records.

All students classified incorrectly as residents are subject to reclassification and to payment of all nonresident fees not paid. If correct classification results from false or concealed facts by the student, the student also is subject to University discipline. Resident students who become nonresidents must immediately notify the Residence Deputy.

Inquiries from prospective students regarding residence requirements for tuition purposes should be directed to the Residence Deputy; 120 Sproul Hall; Berkeley, CA 94720. No other campus personnel are authorized to supply information relative to residence requirements for tuition purposes.

Any student, following a final decision on residence classification by the Residence Deputy, may make written appeal to the Legal Analyst—Residence Matters; 590 University Hall; 2200 University Avenue; Berkeley, CA 94720 within 120 days after notification of the final decision by the Residence Deputy.

**Waivers of Non-Resident Tuition**

To the extent funds are available, non-resident tuition waivers may be granted to spouses and dependent, unmarried children under age 21 of University faculty members who are qualified for membership in the Academic Senate; to the unmarried, dependent children under age 21 of a full-time University employee whose permanent assignment is outside California and who has been employed by the University for more than one year immediately prior to the opening of the term; and for certain foreign students. Inquiries regarding these waivers normally should be directed to the Residence Deputy.

In addition, certain student Teaching Assistants and Teaching Fellows, and certain graduate students designated as University Fellows and Distinguished Scholars may be eligible for non-resident tuition waivers or fellowships. Such students should contact the Graduate Division at their campus for further information.
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TRIP is located in the Chamber of Commerce Building, 1834 University Avenue, Berkeley. Call 644-POOL for transportation alternatives for you!

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**CALL BERKELEY TRIP**

6 4 4 - P O O L

or fill out the application below

Please Send Me My Free Matchlist

Please print the following information using only one letter per box. ABBREVIATE where necessary. Be specific in home and work address. Example: Is it a Street (ST.), Road (Rd.), Avenue (Ave.), etc? Provide apartment number where applicable. Forms without a phone number cannot be processed.

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**UC BERKELEY STU**

Please check as many as apply.

- [ ] I would like to carpool
- [ ] I have a car available for carpooling
- [ ] I would like to vanpool

School:

UC BERKELEY STU

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☐ I'm interested in carpooling in an emergency only.

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