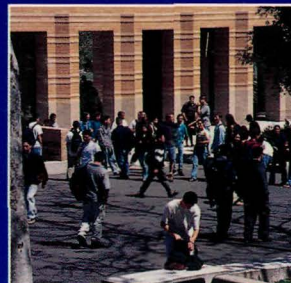
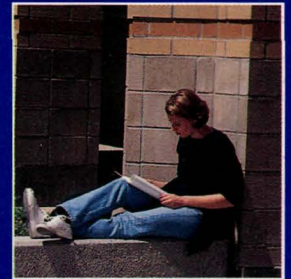


UCI



Academic Calendar

Please read the *Catalogue* and the quarterly *Schedule of Classes* very carefully for detailed information on enrollment procedures and late service fees. The registration process consists of two steps: payment of fees and enrolling in classes. (Medical students should consult the College of Medicine Office of Admissions calendar.)

Fall Quarter, 1998

Quarter Begins..... Sept. 22 (Tue.)
Academic Advising and Orientation..... Sept. 22–24 (Tue.–Thur.)
Instruction Begins..... Sept. 25 (Fri.)
Thanksgiving Holiday Nov. 26–27 (Thur.–Fri.)
Instruction Ends..... Dec. 4 (Fri.)
Final Examinations Dec. 7–11 (Mon.–Fri.)
Quarter Ends Dec. 11 (Fri.)
Winter Recess Dec. 24–Jan. 3 (Thur.–Sun.)

Winter Quarter, 1999

Quarter Begins..... Jan. 4 (Mon.)
Academic Advising and Orientation Jan. 4 (Mon.)
Instruction Begins..... Jan. 4 (Mon.)
Martin Luther King Jr. Holiday Jan. 18 (Mon.)
Presidents' Day Holiday Feb. 15 (Mon.)
Instruction Ends..... Mar. 12 (Fri.)
Final Examinations Mar. 15–19 (Mon.–Fri.)
Quarter Ends..... Mar. 19 (Fri.)
Spring Administrative Recess Mar. 29 (Mon.)

Spring Quarter, 1999

Quarter Begins..... Mar. 31 (Wed.)
Academic Advising and Orientation... Mar. 31–Apr. 2 (Wed.–Fri.)
Instruction Begins Apr. 5 (Mon.)
Memorial Day Holiday May 31 (Mon.)
Instruction Ends..... June 11 (Fri.)
Final Examinations June 14–18 (Mon.–Fri.)
Commencement..... June 19 (Sat.)
Quarter Ends June 19 (Sat.)

Summer Sessions, 1999

Session I June 28–Aug. 4 (Mon.–Wed.)
10–Week Session June 28–Sept. 3 (Mon.–Fri.)
Session II..... Aug. 9–Sept. 15 (Mon.–Wed.)

The *UCI General Catalogue* is available in alternative formats, including Braille, large print, cassette tape, and computer disk, for persons with print disabilities. Information is available from the Office of Disability Services; telephone (949) 824-7494 (voice), 824-6272 (TDD).

How to use the *Catalogue*: See page 18.

How to obtain the *Catalogue*: Copies of the 1998–99 *UCI General Catalogue* are available in person for \$6 (plus tax) from the UCI Bookstore. Catalogues also are available by mail: California, \$12; continental U.S., \$14; Alaska and Hawaii, \$17; international destinations, \$21. Prices include tax and first-class or equivalent mailing. Checks, or International Money Orders, payable in U.S. dollars, should be made payable to UC Regents, and sent to the University of California, Irvine, UCI Bookstore, 210-B Student Center, Irvine, CA 92697-1550. For credit card purchases, call the UCI Bookstore at (949) 824-BOOK. To order via e-mail, send an inquiry to books@uci.edu.

The *Catalogue* also is available for reference (1) on the World Wide Web at <http://www.editor.uci.edu/~editor/catalogue/>, (2) in most California public libraries, (3) in the library or counseling center of most California high schools and colleges, and (4) in the libraries of some universities, colleges, and educational counseling centers throughout the world.

On the cover: The Humanities Instructional Building, a 74,000-square-foot, five-story facility, opened its doors to students in fall 1997. It houses a 361-seat lecture hall, a digital arts laboratory, a computer laboratory, departmental and faculty offices, conference rooms, and classrooms, including one that is technologically enhanced. A 175-foot-long pedestrian bridge physically and symbolically connects the School of Humanities with the School of the Arts.

Cover photographs by Caryl MacMaster, ASUCI

Visit UCI on the World Wide Web at <http://www.uci.edu/>.

1998-99 GENERAL CATALOGUE

UNIVERSITY OF CALIFORNIA, IRVINE

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INTRODUCTION

THE UNIVERSITY OF CALIFORNIA

Richard C. Atkinson, **President**

The University of California (UC) was chartered as the State's only Land Grant College in 1868. Throughout its first decades, the University's development was strongly influenced by leading educators and scholars from various parts of the country. Supported by the State and many generous benefactors, the University was responsive to the needs of California while progressing on a steady climb toward eminence in academic and scientific achievement.

Today the University system includes nine campuses: Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, San Francisco, Santa Barbara, and Santa Cruz. A tenth campus, UC Merced, is projected to open in 2005. Among the campuses there are five medical schools, three law schools, a school of veterinary medicine, and professional schools of business administration, education, engineering, oceanography, and many others. The collections of the more than 100 UC libraries are surpassed in size on the American continent only by the Library of Congress collection.

The University is one of the world's largest and most renowned centers of higher education. The faculty is internationally noted for its distinguished academic achievements and includes 18 Nobel laureates. National Academy of Sciences membership numbers 267, greater than any other college or university system.

The University maintains a variety of research facilities, agricultural field stations, and extension centers in more than 100 locations throughout California. Public services include medical and dental clinics, information services for agricultural and urban populations, and a broad program of continuing education.

Under contract with the U.S. Department of Energy, the University operates the Lawrence Berkeley, Lawrence Livermore, and Los Alamos National Laboratories. Other major research facilities include the Statewide Air Pollution Research Center, Space Sciences Laboratory, Lick Observatory, White Mountain Research Station, Scripps Institution of Oceanography, and Philip L. Boyd Deep Canyon Desert Research Center, among others.

One of the University's unique resources is its roster of University Professors. This title is reserved for certain distinguished faculty members who are recognized internationally as scholars and teachers. A University Professor may visit several UC campuses during the academic year, holding conferences and presenting lectures.

Governance. Under the State constitution, governance of the University is entrusted to the Board of Regents. The Regents appoint the President of the University, and with the President's advice, the officers of the University.

Authority in academic matters is delegated by the Regents to the Academic Senate, which consists of faculty and certain administrative officers. The Academic Senate determines academic policy for the University as a whole, sets conditions for admission and the granting of degrees, authorizes and supervises courses and curricula, and advises the University administration on faculty appointments, promotions, and budgets. Additionally, each campus has a divisional Academic Senate.

The President is executive head of the total institution. Each campus has a Chancellor as its chief administrative officer. Students participate in policy-making at both the campus and University-wide levels.

The names of University Professors, Regents, Officers, and Chancellors are presented in the Appendix.

THE IRVINE CAMPUS

Ralph J. Cicerone, **Chancellor**

The University of California, Irvine (UCI) opened in 1965 with 116 faculty and 1,589 students. In the succeeding years, UCI has attained national and international distinction in its programs and faculty. The campus challenges its students both academically and personally and relies on the commitment, curiosity, imagination, and judgment of its faculty and students to assure its continued intellectual and cultural vitality.

Two Nobel Prizes in 1995, for founding faculty F. Sherwood Rowland in Chemistry and Frederick Reines in Physics, helped to secure UCI's position among the leading American research universities. In addition to scientific prominence, UCI humanities programs have placed among the top 25 in the country, according to recent National Research Council rankings. For overall quality of educational experience and caliber of faculty, UCI consistently rates among the top 50 universities nationwide. And membership in the American Association of Universities (AAU), a group of 60 of the most distinguished research institutions, is another indication of UCI's stature in the academic community.

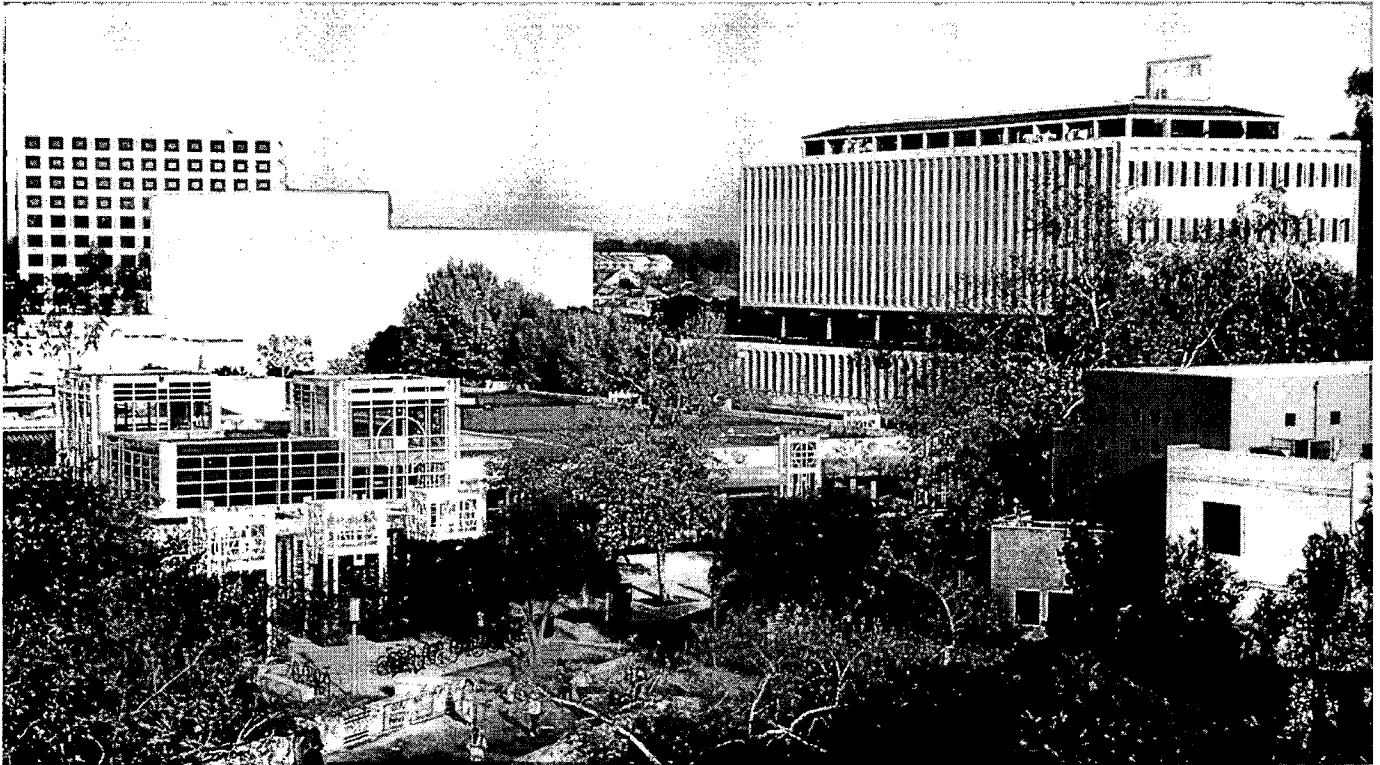
UCI's research programs have a positive impact on both undergraduate and graduate education. Research is critical to graduate education because of the research-oriented nature of doctoral study. At the undergraduate level, students have access to a faculty made up of researchers at the forefront of their fields and also have opportunities to participate directly in faculty research projects.

UCI is committed to the pursuit and transmission of knowledge. It makes available to its 17,800 students (14,220 undergraduate, 2,430 graduate, and 1,150 health sciences students and medical residents) opportunities for gaining knowledge, training, skills, and credentials which in turn can provide the basis for enhanced social and economic opportunities.

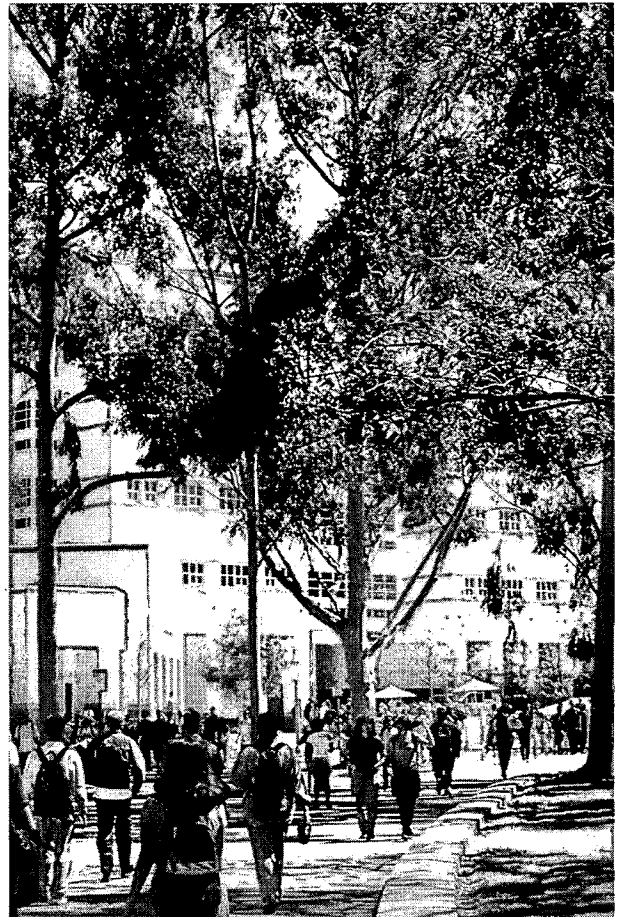
UCI's education and research missions are fulfilled in its academic units, which are described briefly below, and in its formal research units, which are described in the Research and Graduate Studies section.

The **School of the Arts** teaches the creative as well as the academic and critical dimensions of the arts. It is concerned with the vitality of the arts in society. Faculty energies are directed toward the refinement, enhancement, and encouragement of students' artistic and creative talents and toward the development of the students' understanding of related theory and history. The School offers programs which emphasize extensive studio and workshop experiences, essential theoretical and historical background studies, and exercises in criticism. There are 780 students in the School, including 670 undergraduate and 110 graduate.

The **School of Biological Sciences** is one of the campus' larger academic units, with 3,030 students (2,860 undergraduate and 170 graduate). Faculty research areas include neural plasticity and behavior (which in part encompasses the development of the nervous system, memory, response to injury, and degenerative brain diseases such as Alzheimer's); the nature of cell-cell interactions; pattern formation; the elucidation of ecological conditions and evolutionary histories that have been the driving forces in organism design and functional diversity; the organization and expression of genes; biomolecular structure; molecular pathogenesis; and cell biology.



As the end of the millennium approaches, UCI's reputation for the quality of its academic and research programs continues to grow. The campus received a record number of applications for fall 1998, and this year's entering freshmen are the most academically qualified group UCI has ever admitted. Funding for research at UCI continues to increase, bolstered by such recent additions as two grants totaling \$5.8 million for investigations toward unraveling the mysteries of autism. UCI is the fastest growing "growth campus" in the UC system, and new teaching and research facilities are being constructed at a record pace.



The **Department of Education**, with 140 postbaccalaureate students, offers an Ed.D. in Educational Administration, credential programs for current and prospective teachers and administrators in California's public elementary and secondary schools, and a minor in Educational Studies. A focus of the Department's research and instructional programs is educational technology. In addition, the teaching credential programs are enriched by an emphasis on literacy, multicultural perspectives, and modalities of learning. The Department is recognized throughout California for its leadership in the development of exemplary programs to improve education in grades K–12.

The **School of Engineering** focuses on the analysis and design of physical systems applying modern scientific principles to the development of technology for society. The School has 1,500 students, of which 1,200 are undergraduate and 300 are graduate students. The major research disciplines are aerospace, biochemical, chemical, civil, computer, electrical, environmental, materials science, and mechanical engineering. Research issues include biochemical and bioreactor engineering, earthquake engineering, water resources, transportation, parallel and distributed computer systems, intelligent systems and neural networks, image and signal processing, opto-electronic devices and materials, fluid mechanics, combustion and jet propulsion, materials processing, robotics, and modern control theory.

The **School of Humanities** faculty has been repeatedly honored for its teaching and scholarly excellence. Included in the faculty's more than 100 research specialties are literary criticism, film studies, Southern history, the philosophy of science, women's studies, East Asian languages and literatures, and bilingual education. The School houses the renowned René Wellek Special Collection of Literary Criticism and the Thesaurus Linguae Graecae Project, the unique computerized databank of all existing Greek literature from its Homeric beginnings to A.D. 1453. The School has 1,700 students, including 1,340 undergraduate and 360 graduate.

The **Department of Information and Computer Science (ICS)** has 880 students (770 undergraduate and 110 graduate). ICS faculty are actively engaged in research and teaching in artificial intelligence, especially machine learning, data mining, automated reasoning, brain modeling, and biomedical computing; computer systems design, including computer-aided design, hardware-software codesign, optimizing compilers, parallel processing, and networks; computing, organizations, policy, and society, including computer-supported cooperative work and human-computer interaction; software, including software environments, process, metrics, testing, analysis, and user interfaces; and theory of design and analysis of algorithms and data structures, including graph algorithms and computational geometry.

UCI's **Interdisciplinary Programs (IDPs)** provide students with opportunities to pursue subject areas which derive from the interaction of different disciplines. The IDPs are African-American Studies, Asian American Studies, Chicano/Latino Studies, Global Peace and Conflict Studies, History and Philosophy of Science, Latin American Studies, Transportation Science, and Women's Studies.

Faculty in the **Graduate School of Management** are involved in studies of organizational behavior, information technology, finance, marketing, international business, managerial economics, accounting, decision sciences, operations management, strategy, public policy, and health care management. The School has 280 students in its graduate programs leading to the M.B.A. and Ph.D. degrees, and 180 students in its program leading to an undergraduate minor in Management. In addition, the Executive M.B.A. Program, the Health Care Executive M.B.A. Program, and the Fully Employed M.B.A. Program have a total of 420 students.

The **School of Physical Sciences** has a student body of 1,200 (920 undergraduate and 280 graduate). Researchers in the School are conducting investigations in atmospheric chemistry (including the discovery of the adverse impact of human-made chlorofluorocarbon compounds on the earth's ozone layer), biogeochemistry and climate, synthetic chemistry, laser spectroscopy, condensed matter physics, elementary particle physics, plasma physics, and applied mathematics and mathematical physics.

The **School of Social Ecology**, a multidisciplinary unit established in 1970, is unique to UCI. The School's central objectives are the application of scientific methods to the analysis and resolution of societal problems and the development of theory and knowledge pertinent to environmental and social phenomena. Among issues of long-standing interest are crime and justice in society, social influences on human development over the life cycle, and the effects of the physical environment on health and behavior. There are 1,700 students in the School, including 1,570 undergraduate and 130 graduate.

The **School of Social Sciences**, with 3,440 students (3,220 undergraduate and 220 graduate), is one of the larger academic units at UCI. The faculty, several of whom are nationally recognized, has expertise in a wide range of specific social science topics, for example, the mathematical modeling of perception and cognitive processes; the economic analysis of transportation; the examination of the impact of society's political system on its economy; the study of social structure and values in different cultures through a formal-scientific methodology; and the exploration of authority structures and inequality in society.

The **UCI College of Medicine** has 1,150 students (390 medical, 650 resident-physicians and fellows, and 110 graduate). It offers one of the country's largest residency training opportunities in primary care and internal medicine and houses some of the most advanced equipment in medical imaging and laser medicine available in the world. The College's faculty conduct innovative research in the following areas of emphasis: bioethics, biomolecular structure, oncology, cardiovascular and pulmonary diseases, geriatric medicine, immunology, molecular and human genetics, the neurosciences, and perinatology.

Academic Goals

UCI offers programs designed to provide students with a foundation on which to continue developing their intellectual, aesthetic, and moral capacities. Programs and curricula are based on the belief that a student's collective University experience should provide understanding and insight which are the basis for an intellectual identity and lifelong learning.

An important aspect of UCI's educational approach is the emphasis placed on student involvement in independent study, research, and the creative process as a complement to classroom study. Independent research in laboratories, field study, involvement in writing workshops, and participation in arts productions are normal elements of the UCI experience. In many departments special programs and courses which involve students in original research and creative activities are integrated into the curriculum.

UCI provides an atmosphere conducive to creative work and scholarship at all levels, to the exploration of the accumulated knowledge of humanity, and to the development of new knowledge through basic and applied research. Along with these objectives, UCI has a serious commitment to public service. The campus generates research expertise which may be applied to regional and national social issues, and seeks to provide humanistic understanding of the problems of society.

Academic Structure

UCI's instruction and research programs focus on fundamental areas of knowledge, and at the same time provide for interdisciplinary and professional study through the School of the Arts, School of Biological Sciences, Department of Education, School of Engineering, School of Humanities, Department of Information and Computer Science, Interdisciplinary Programs, Graduate School of Management, School of Physical Sciences, School of Social Ecology, School of Social Sciences, and the College of Medicine.

The Office of Academic Affairs has responsibility for all programs of instruction and research. It, as well as the Office of Research and Graduate Studies and the Division of Undergraduate Education, report directly to the Executive Vice Chancellor. Matters of educational policy, including approval of programs, courses, and grades, are the responsibility of the Irvine Division of the Academic Senate.

The mission of the Division of Student Services may be expressed in terms of its three major goals: (1) to support campus efforts to recruit, enroll, educate, and retain to graduation a diverse student body; (2) to support the academic success and personal development of students with emphasis on ethical development, understanding and appreciation of diversity, leadership skill development, and community service; and (3) to provide programs and services which are ancillary components of a major university. In addition to essential needs such as housing, health services, financial aid, admissions, registration, career planning, and child care, Student Services offers programs that place special emphasis on encouraging students to participate in their University experience.

The Division of Undergraduate Education provides leadership in developing policies and programs for the improvement of undergraduate education in such areas as general education, retention, advising, curricular development, undergraduate scholarship and research activities, international education, assessment, improvement of instruction, and improvement of instructional space. Undergraduate Education also administers programs and services affecting undergraduate education which require campus-level attention and coordination and which do not come under the direct authority of the heads of academic units or the Irvine Division of the Academic Senate.

The Vice Chancellor for Research and Dean of Graduate Studies has general administrative responsibility for graduate education and research. In the area of research, the Vice Chancellor is responsible for research policy development, implementation, and oversight. In graduate education, the Dean of Graduate Studies serves as the academic dean for all graduate students and is responsible for admissions, graduate student services, graduate student support, and the Graduate and Professional Opportunity Program.

Accreditation

UCI is a member of the Western Association of Schools and Colleges (WASC)*. The campus is fully accredited by the Senior Commission of WASC. This accreditation requires periodic review in accord with WASC policies and standards. In addition, the undergraduate degree program of the Department of Chemistry is accredited by the American Chemical Society; the undergraduate majors in Aerospace, Chemical, Civil, Computer, Electrical, and Mechanical Engineering offered by the Departments of Chemical and Biochemical, Civil and Environmental, Electrical and Computer, and Mechanical and Aerospace Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology; the M.D. program of the UCI College of Medicine is accredited by the Liaison Committee of the Association of American Medical Colleges and the American Medical Association; the Department of Drama is accredited by the National Association of Schools of Theatre, and is a member of the

University/Resident Theatre Association (U/RTA); the Graduate School of Management is accredited by the American Assembly of Collegiate Schools of Business (AACSB)—International Association for Management Education; the Master of Urban and Regional Planning program is accredited by the National Planning Accreditation Board; and the credential programs of the Department of Education are approved by the California Commission on Teacher Credentialing (CCTC).

*P.O. Box 9990, Mills College, Oakland, CA 94613-0990; (510) 632-5000

Office of Equal Opportunity and Diversity

The UCI Office of Equal Opportunity and Diversity provides consultation services and training programs to the campus and UCI Medical Center on the interpretation and application of both UCI policy and federal and state laws regarding equal opportunity and diversity. It also develops and monitors UCI's affirmative action plan as required by federal regulation for staff and faculty.

The Office investigates and provides assistance in the resolution of discrimination complaints, including sexual harassment, brought by students, faculty, and staff. In addition, as a means of promoting awareness and support of the University's commitment to diversity, the Office offers a variety of staff and faculty career development programs, as well as various workshops on diversity, cross-cultural communication, and conflict resolution. The Office is located in 524 Administration Building; telephone (949) 824-5594.

Office of the Assistant Executive Vice Chancellor-University Ombudsman

The Assistant Executive Vice Chancellor-University Ombudsman is available to assist students, faculty, staff, and visitors with problems they may encounter while on the UCI campus. The University Ombudsman responds to individual grievances or group petitions by hearing complaints; clarifying issues; making appropriate on- and off-campus referrals; and providing a confidential, impartial, and informal setting for conflict negotiation. The Office also sponsors the Campus Mediation Program. Trained volunteer mediators provide free, confidential mediation services for the campus community. The Office is located in 255 Administration Building; telephone (949) 824-7256.

The Campus Setting

UCI's location offers the cultural and economic resources of an urban area along with access to the scenic, recreational areas of Southern California. Located 40 miles south of Los Angeles, five miles from the Pacific Ocean, and nestled in 1,489 acres of coastal foothills near Newport Beach, UCI lies amid rapidly growing residential communities and a dynamic multinational business and industrial complex.

The campus itself is a natural arboretum planted with trees and shrubs from all over the world and with native species. Adjacent to the campus lies the San Joaquin Freshwater Marsh Reserve, part of the University's land preserve system and home to a wide variety of migratory and nonmigratory waterfowl and other wildlife.

The Western Center of the American Academy of Arts and Sciences is located on the campus, and the Arnold and Mabel Beckman Center of the National Academies of Sciences and Engineering is adjacent to the campus. UCI Medical Center, located in the City of Orange on a 33-acre site, is a major teaching hospital for the UCI College of Medicine.

University Center, a commercial center linked to the campus by a pedestrian bridge, includes apartments, a movie theater complex and comedy nightclub, a post office, restaurants, and various shops and businesses. Also nearby are major department stores, award-winning restaurants, and major hotels and resorts. Cultural



The Science Library, which has capacity for more than 500,000 volumes, centralizes all of UCI's science and technology collections previously housed in four separate campus libraries.

opportunities include repertory theatres, orchestras, choral groups, dance companies, galleries, and museums. The John Wayne Airport is two miles from campus.

The temperate, Mediterranean climate enhances year-round water-oriented activities such as swimming, surfing, windsurfing, sailing, and tidepooling. Local mountain and desert recreation areas are within easy reach and the metropolitan attractions of Los Angeles and San Diego are within a one- to two-hour drive from the campus.

Bus transportation between the campus, UCI Medical Center, and major housing areas, shopping centers, and beaches is convenient. In addition, the campus and surrounding communities are designed to encourage bicycle traffic, and trails connect UCI to many student housing areas and to the beach.

CELEBRATE UCI

On Saturday, April 17, 1999, UCI will host its annual open house—Celebrate UCI. Among the day's events are the Wayzgoose Medieval Fair, housing and campus tours, and lectures and presentations, including information about admissions, academic programs, and financial aid. Additional information is available from the Office of the Dean of Students; telephone (949) 824-5182.

Instructional and Research Facilities

UNIVERSITY LIBRARIES

Gerald J. Munoff, *University Librarian*

Established in 1963, the UCI Libraries serve the information needs of students, faculty, staff, and community members at three major library facilities, the Main and Science Libraries on the Irvine campus and the Medical Center Library in Orange. The collection, carefully selected and developed in conjunction with the campus academic plan, is augmented by the 26-million-volume collections of the University of California library system, several systemwide cooperative acquisitions programs, and access to a growing number of electronic resources.

The UCI Libraries have approximately two million volumes and 19,500 active serial subscriptions that are available for study, teaching, and research. With the exception of certain special units, all books and periodicals are on open shelves and easily accessible to users. In addition, campus users may request library materials, including periodical articles, from other libraries around the world.

Technology has dramatically changed the way a research library acquires, processes, and makes available information. Modern methods for increasing the speed and efficiency of library services are in evidence throughout the UCI Libraries. The Libraries subscribe to a computer-based cataloging service which facilitates the rapid availability of materials. UCI has its own local computerized system, ANTPAC (the Anteaters Public Access Catalog), that provides information about books, periodicals, and other materials at UCI, including whether an item is checked out, on-order, or in-process. The Libraries also provide access to a growing number of databases in CD-ROM format. In addition to local, in-house systems, the MELVYL® Online System connects users at UCI with the vast resources of the nine-campus University of California library system, as well as an increasing number of bibliographic, abstracting, and full-text databases. Information about the Libraries may also be found on the World Wide Web at <http://www.lib.uci.edu>.

The UCI Libraries conduct an active instruction program to help users become familiar with rapidly expanding information resources and technologies. The program includes a formal course in library research techniques (Humanities 75, Library Research Methods), course-related and course-integrated instruction, instruction in the use of various online systems, e-mail and Internet access training, and general orientations to the libraries.

The newly renovated Main Library reopened in winter 1997. With collections and services to support teaching and research in arts, humanities, social sciences, and business and management, the Main Library features a state-of-the-art Multimedia Resources Center with 32 computer workstations and a video playback area, a Technology Enhanced Classroom for hands-on library instruction, and a Student Communications Room for easy access to e-mail.

A single combined service desk on the first floor serves the collections of the Main Library's Research and Instructional Services Department and of the Government Information Department. The Research and Instructional Services Department maintains an open-shelf collection of approximately 30,000 volumes and a growing number of computerized resources. Librarians assist in the use of materials and provide information on a variety of topics to campus and community users. The Department publishes a series of reference guides in paper and electronic format to aid in researching both general and specialized topics.

The Government Information Department contains over 400,000 publications issued by the U.S. government, the State of California, international organizations, and Canada, as well as the Orange County Public Affairs Collection, a resource for information on local topics issued by governmental and nongovernmental agencies. The Department also houses a large collection of government publications and primary research materials on microform, and microform reading and photocopying machines are available.

The Department of Special Collections contains noncirculating holdings of rare books and early printed works, noteworthy or finely printed editions, exceptionally fragile or costly items, and manuscripts. Special subject collections include French literature of the seventeenth and eighteenth centuries, the René Wellek collection of the history of criticism, the Hans Waldmüller Thomas Mann collection, the Ruth Clark Lert Dance Collection and Archives, California history and literature, British naval history, contemporary poetry, dance, historical costume, political pamphlet literature, and the Emma D. Menninger collection in horticulture.

The Southeast Asian Archive documents the experiences of post-1975 Cambodian, Hmong, Laotian, and Vietnamese refugees and immigrants. The archive includes materials relating to the exodus from the homeland, resettlement in the United States, community development, and history and culture of Southeast Asians in the U.S., with a special focus on Orange County and California. The archive contains materials in both Vietnamese and English,

including books, dissertations and theses, refugee orientation materials, reports from government and private agencies, periodicals, newspaper clippings, audiovisual materials, and manuscripts.

Current Periodicals/Newspapers houses current unbound issues of humanities and social sciences journals and other periodicals, foreign and domestic newspapers, a wide variety of popular magazines for recreational reading, and back issues of newspapers and journals on microform.

Library Copy Service provides conveniently located copiers for patron use in all libraries (Main, Science, and Medical Center). For an additional charge, patrons may leave materials to be copied. A card system is used for photocopies, search print requests, and various other items, and card dispensers/regenerators are available in all libraries.

Reserve Services offers limited circulation of required or collateral reading materials that have been selected by the faculty.

Other Main Library facilities include individual and group study areas and a room containing study aids for blind and partially sighted students.

Opened to the public in mid-1994, the Science Library is the second major library on the UCI campus. The six-story building, with capacity for over 500,000 volumes, centralizes the science and technology collections formerly housed in four separate campus libraries and contains materials in astronomy, biology, chemistry, computer science, engineering, geosciences, mathematics, medicine, physics, and allied fields. The facility features a 6,000-square foot Interactive Learning Center, a reference consultation and user self-search room, 2,200 reader stations, a current periodicals reading room, a microcomputer laboratory, a 24-hour study hall, special reading rooms for faculty and graduate students, and the technical services operations for the entire UCI library system. The Science Library offers reference assistance, computer-assisted reference service, instruction in library use and information management, and CD-ROM user self-search workstations.

The Science Library is also home to the University Archives, the official repository for records having permanent value in documenting the history of UCI, including publications, manuscripts, photographs, and other records of administrative and academic units, student organizations, and campus support groups.

Located at the UCI Medical Center in Orange, the Medical Center Library serves the information and research needs of the Medical Center and supports the teaching activities of the College of Medicine. Its collection includes approximately 47,000 volumes and 1,000 clinical serials subscriptions. The Medical Center Library provides a full range of services, including reference service, CD-ROM user self-search workstations, and two computer technology facilities featuring an instructional laboratory and an Information Technology Center.

OFFICE OF ACADEMIC COMPUTING

The Office of Academic Computing (OAC) provides telephone, network, and computing services in support of research and education at UCI. OAC provides central computing services, computer laboratories, departmental and research-group support services, and campuswide technical coordination. The campus network infrastructure maintained by OAC provides connectivity on campus and to the world-wide Internet.

OAC provides coordination and infrastructure for UCI's Electronic Educational Environment (EEE), a cooperative campuswide venture to enhance the educational experience using computer-mediated communications and electronic resources. As a part of EEE, OAC provides electronic access services to all UCI students, including Educational Access (EA) e-mail accounts and access to



the Internet and class information resources. For more information see the EEE Web site at <http://eee.uci.edu>.

Approximately 110 MS-Windows computers, Macintosh computers, ASCII terminals, and X terminals are available 24 hours a day in computer laboratories surrounding Room E1140 in the Engineering Gateway building. All common Macintosh and MS-Windows applications are available including word processing, spreadsheet, statistics, graphing, and presentation software. Computer peripherals including flat-bed image and text scanners and laser printers are also available. While school is in session, OAC student consultants are on duty in Room E1140 to provide assistance to those using the facilities.

An additional 80 Pentium and Power Macintosh computers are located in the Engineering and Computing Trailer (ECT) and are available for drop-in use when not scheduled for classes. OAC also operates "OAC@HIB," a new drop-in instructional laboratory in the Humanities Instructional Building. This laboratory has 30 Pentium II computers and is open to students of any major.

OAC offers a variety of additional services. For more information see OAC's Web site at <http://www.oac.uci.edu>. Offices are located in the Engineering Gateway Building, Room E2130. The OAC Help Desk may be reached by sending electronic mail to oac@uci.edu or by calling (949) 824-6116.

IRVINE ECOLOGICAL PRESERVE

The 102-acre Irvine Ecological Preserve consists of several small hills and surrounding flatlands bearing remnants of coastal sage scrub flora and associated fauna. The Preserve is located on the campus and is set aside for use by the campus community. Additional information is available from the Department of Ecology and Evolutionary Biology; telephone (949) 824-6006.

NATURAL RESERVES SYSTEM

The University of California manages and maintains a system of 27 land and water reserves that are representative of the State's habitat and geographic diversity. These serve as outdoor laboratories for students, faculty, and staff, and are intended primarily for purposes of education and research. The reserves are administered by local campus management committees who control their uses. UCI is responsible for two reserves: the San Joaquin Freshwater Marsh Reserve and the Burns Piñon Ridge Reserve. Additional information is available from the manager; telephone (949) 824-6031.



Associate Adjunct Professor Peter A. Bowler, Director of the UCI Arboretum and UC Natural Reserve System Academic Coordinator, teaches courses in wetlands ecology and global sustainability.

San Joaquin Freshwater Marsh Reserve

The San Joaquin Freshwater Marsh Reserve, one of the last remaining freshwater marshes of Southern California, is a 202-acre reserve adjacent to the UCI campus. The Marsh consists of a series of freshwater ponds and their attendant aquatic flora and fauna, and is especially known for its rich bird life, both resident and migratory. Researchers and observers have recorded more than 200 species of birds in the Reserve, a major stopping point on the Pacific Flyway. Periodic tours are conducted.

Burns Piñon Ridge Reserve

The Burns Piñon Ridge Reserve is located near the town of Yucca Valley in San Bernardino County. It is a 265-acre parcel of high-desert habitat representing an ecotone between montane and desert biota, with mixtures of Joshua tree, piñon pine, and juniper woodland. The Reserve has primitive camping facilities and is used primarily for overnight field trips and research by faculty and students from the School of Biological Sciences.

UCI ARBORETUM

The UCI Arboretum is a botanical garden developed and managed by the School of Biological Sciences. It contains areas planted with floras adapted to climates similar to those of Southern California. The Arboretum maintains a gene bank devoted to the conservation of African monocot floras and contains several important collections of rare plants. Certain research and instructional materials are grown. The Arboretum collections are also used as an educational resource for the community at large. Volunteers and other interested parties are encouraged to participate in Arboretum activities. Additional information is available from the Arboretum Office; telephone (949) 824-5833.

LASER MICROBEAM AND MEDICAL PROGRAM

The Laser Microbeam and Medical Program (LAMMP) was established at UCI in 1979 as a national user facility providing a unique set of laser microbeam biotechnologies to individual researchers. LAMMP functions as a research, training, and service facility, and provides interaction between the laser industry and the academic biomedical optics community. LAMMP provides laser microbeam technologies for optical manipulation and functional imaging of living cells, and for developing noninvasive systems for monitoring and imaging physiology in living tissue. The program is conducted

in the Beckman Laser Institute and Medical Clinic and is funded through the Biotechnology Resources Program of the National Institutes of Health. Additional information is available from the LAMMP coordinator at (949) 824-3664 and on the World Wide Web at <http://www.bli.uci.edu/lammp/lammp.html>.

THESAURUS LINGUAE GRAECAE

Financed through private and federal funds, the Thesaurus Linguae Graecae (TLG) began in 1972. Its goals are to create the Thesaurus Linguae Graecae, a comprehensive data bank of Greek literature; to conduct literary research using collected texts; and to apply technological innovation in these endeavors. TLG research activities combine the traditional concerns and methodologies of philological and literary study with the most advanced features of computer technology. Included among current research foci are the identification of ancient Greek literary and documentary materials from various literary-historical periods; the conversion of these materials into machine-readable form; the enhancement of automated text-verification routines; and the examination of criteria for the lexical analysis and categorization of the texts in the data bank. TLG staff have also established procedures to facilitate nationwide access to data-bank resources at UCI. The data bank currently contains some 73 million words of Greek text and essentially all ancient Greek literary texts from Homer to A.D. 1453. Data entry continues with the aim of including later periods of Greek literature.

Close ties with the Department of Classics are evidenced by faculty participation in TLG research and TLG support of graduate students. The jointly sponsored TLG/Classics Research Laboratory offers faculty, graduate students, and advanced undergraduate students access to a wide variety of the latest hardware and software resources. In addition, TLG's library holdings enhance those of the University Library, and TLG-related conferences and scholarly visits afford faculty and students contact with eminent classicists. The TLG has made UCI a major source of Classics research activity.

UCI MEDICAL CENTER

UCI Medical Center, the only university hospital in Orange County, offers a full scope of acute- and general-care services including a comprehensive neuropsychiatric center, a regional burn center, and one of only 14 National Institute of Child Health and Human Development-designated mental retardation research centers in the nation.

Located in the City of Orange, 13 miles from the UCI campus, UCI Medical Center has more than 300 specialty physicians and 50 primary care doctors. Perinatologists are available for the expert management of high-risk pregnancies, and the Center has the most sophisticated neonatal unit in the county to care for critically ill newborns. The Medical Center houses a 24-hour emergency department and is designated as Orange County's only Level I Trauma Center—the most comprehensive for the treatment of serious, life-threatening injuries.

The Chao Family Comprehensive Cancer Center at UCI Medical Center is the only National Cancer Institute-designated comprehensive cancer center in Orange County, offering a full range of cancer therapies and research programs. Internationally respected physicians and a talented team of medical professionals are also affiliated with the Medical Center's bone marrow, liver, and renal (kidney) transplant programs. As part of its focus on family and preventive health, the Medical Center has outpatient health centers throughout Orange County, including Anaheim, Irvine (on the UCI campus), Orange, Santa Ana, and Westminster.

UCI Medical Center also serves as the principal clinical facility for teaching and research programs for the College of Medicine.

UCI CENTER FOR OCCUPATIONAL AND ENVIRONMENTAL HEALTH

In 1980 the University established occupational health centers in Northern and Southern California. The purposes of these Centers are (1) to train occupational health professionals, (2) to conduct research on occupational health issues, and (3) to provide clinical evaluation of the worker/patient for work-related disease. The Centers have strong ties to the University's Schools of Medicine and Public Health.

The Center is comprised of health professionals from UCI. Faculty research is concerned with identification of causal association between disease and occupational exposure as a basis for prevention of occupational disease and injury. The Center's primary areas are occupational medicine, toxicology, and epidemiology, and it also is concerned with the prevention of disease due to environmental exposures.

The Center houses a referral clinic, faculty and staff offices, and facilities for research and teaching in industrial hygiene and toxicology, a classroom, a library, and study space for residents in occupational medicine and other graduate students. Additional information is available from (949) 824-8641.

Office of University Advancement

The Office of University Advancement is responsible for increasing awareness and support of UCI's teaching, research, and public service missions through a strategic program incorporating development, communications, alumni relations, and governmental relations.

In an era of decreasing state and federal funding to the University of California, the importance of private support is greater than ever. The Development Office, in conjunction with the UCI Foundation, raises private funds from individuals, corporations, and foundations. Their combined efforts provide a bridge between the University and the community, promoting a climate of understanding, support, and access.

Key components of UCI's development activities include a major gift program, in which development officers work with donors on behalf of schools, programs, and students; corporate and community relations, which fosters relationships with business and community members; foundation relations, which coordinates campuswide gift solicitations from charitable foundations; planned giving, which

assists donors wishing to include UCI in their wills or estate plans; and annual giving, which is the umbrella for a variety of giving clubs including the Chancellor's Club, Daniel G. Aldrich, Jr. Society, Scholar's Circle, Chief Executive Roundtable. In addition, there are numerous support groups affiliated with academic units, athletics, and student programs.

The Communications Office assists the University in articulating its missions and priorities and informing the public about UCI's achievements, academic accomplishments, and events. Through a comprehensive program that incorporates media relations, publications, electronic communications, and the World Wide Web (<http://www.communications.uci.edu/~inform/>), a wide variety of audiences are reached on an ongoing basis. The Office also produces the *UCI Journal* and *UCI News*.

The UCI Alumni Association advances and supports the interests of UCI and its graduates through recruitment and retention of students and alumni, providing scholarships and fellowships, and disseminating information about UCI and its objectives. The Association provides opportunities for alumni to form lasting bonds with UCI through membership in its various chapters and participation in continuing education, seminars, and special programs.

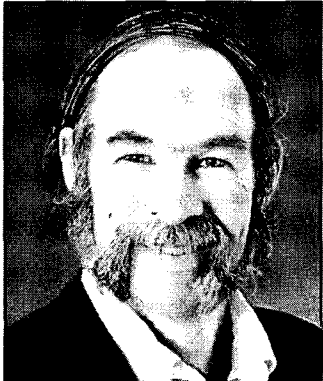
The Office of Governmental Relations maintains active relationships with federal, state, and local representatives to foster support for the public financing and well-being of UCI. The Office represents UCI in UC's Sacramento and Washington offices, which work to coordinate support for the UC state and federal budgets. The Advocacy Program assists in this effort by working with volunteers to develop new relationships with elected officials on behalf of the University.

For more information, call: University Advancement, (949) 824-8696; Development Office, (949) 824-8696; Communications Office, (949) 824-6922; Alumni Association, (949) 824-2586; Governmental Relations, (949) 824-4663; Advocacy Program, (949) 824-7382.

UCI awarded 3,108 bachelor's, 518 master's, 219 doctorate, and 81 medical degrees during the June 1997 Commencement ceremonies. An additional 229 students completed credential programs through the UCI Department of Education.



UCI ACADEMIC SENATE DISTINGUISHED FACULTY



JAMES N. DANZIGER

Daniel G. Aldrich Jr. Distinguished University Service Award, 1997

Dean of the Division of Undergraduate Education and Professor of Political Science

My discipline of political science provides interesting and conflicting interpretations of “service.” From the “rational choice” perspective, there are very few occasions when an individual should engage in activities that do not directly benefit that individual or direct kin. For example, it is not rational to vote in the presidential election because the probability that one’s own vote will alter the outcome is infinitesimally small and thus the effort associated with voting far outweighs any personal benefits. Similarly, you need not participate in the political actions of a large group, because you can be a “free rider” and take advantage of that group’s efforts, sharing in any positive impacts without expending any energy.

However, most political science thinking takes a quite different view, emphasizing the virtues associated with serving others. First, from the group politics perspective, there are very few situations where an individual can have as much impact acting alone as when the individual works cooperatively with a group. This certainly applies to political action, and it seems true in many aspects of our lives. Second, there is considerable evidence that healthy and thriving societies are held together by the willingness of many people to interact in and contribute to the public domain. It is this sharing of responsibility to act positively in public life that creates community and supports democracy. And third, it has been persuasively argued since Aristotle that a citizen’s public actions serve not only the collectivity, but are also one of the individual’s most powerful ways to gain a sense of personal achievement and satisfaction (that is, what is called “self-actualization” in late twentieth-century jargon).

I was deeply honored that my colleagues in the UCI Academic Senate selected me to receive the Service Award. In my view, it recognizes contributions to all three of the great missions set out for faculty at the University of California. Our *research* mission is in direct service to the creation and refinement of knowledge about our world. I am fascinated by the puzzles and issues associated with my own primary research area—the nature and impacts of rapidly evolving information technologies on individuals, groups, and society. Our *teaching* mission extends this service to others, as we attempt to enhance their capabilities and to communicate concepts and understanding to them. For me, teaching is the most exhilarating and rewarding aspect of our service, since encouraging and facilitating learning and intellectual development in others are so exciting. And third, our explicit “*service*” mission encompasses the multitude of ways in which one can be an active contributor to the lives of others.

I have offered service in many forms, from coaching and refereeing in youth sports to involvement as a political activist at the local level to working in positions of responsibility in organizations both on and off the campus. These kinds of experiences, although time-consuming and sometimes frustrating, have persuaded me of the accuracy of Aristotle’s vision—such service has given me a much stronger sense of self-worth. Given the invaluable benefits to themselves and their community, I suggest that everyone should make the time and effort to seize opportunities for involvement, participation, and service.

STANLEY B. GRANT

Distinguished Assistant Professor Award for Teaching, 1997-98

Associate Professor of Environmental Engineering

When I was 10 years old, my parents, older sister, and I moved to a remote Aleut-Russian village of 160 people on Spruce island in the Pacific Ocean, 140 miles south of the central Alaskan coast. The island was small enough that you could traverse its width in a good day's hike. We moved there to operate a shrimp processing plant that had gone bankrupt some years earlier. Within a year of our arrival, the plant was running around-the-clock processing 20 tons of shrimp a day, all destined for the fish markets in London.

Growing up in the village is a dangerous proposition unless you are blessed with guardian angels, and I had two of them. The first was Nonna Chernikoff, an octogenarian who tended a herd of cattle, tatted lace that would grace the walls of any museum, and had enough enthusiasm and love for 10 ordinary people. The second was the Baptist missionary's wife, Mrs. Smith, who played the role of village doctor without the benefit of formal medical training. She stitched cuts, administered antibiotics, paid house calls, and occasionally stabilized patients with serious injuries as they waited for a plane flight out of the village and into the world of modern medicine, all free of charge. (Students who ask me for a recommendation to medical school have a tough act to follow!) Mrs. Smith also taught me to play the piano, and thus initiated a life-long love of music that landed me, eight years later, a scholarship to study piano performance at the Eastman School of Music. With reluctance, I turned down a musical life in favor of studying science and engineering at Stanford University and later, Caltech.

At UCI, I teach and conduct research in the field of environmental engineering. My students and I study how to get small particles—like disease-causing viruses and bacteria—out of drinking water. The research is equal parts chemistry, physics, and microbiology, and is motivated by Southern California's increasing reliance on "recycled" sewage to supply its water needs. In my classes, I emphasize the interdisciplinary nature of modern environmental problems and, when possible, involve students in field-based studies. One success story in this regard is the "UCI Water Quality Survey," in which undergraduate students plan and carry out field-based research on a local wetland under the supervision of a panel of experts from local private firms, government agencies, and universities.

Overall, I see my central challenge as an educator as follows: to provide the intellectual tools my students need to achieve their life ambitions, and to instill the core values I learned from my village experience, namely, that life holds promise and that individuals can make a difference.



ELLEN GREENBERGER

Daniel G. Aldrich Jr. Distinguished University Service Award, 1997

Professor of Psychology and Social Behavior

As I write this essay, I am thinking especially of our many undergraduate and graduate students who are pondering their academic identities and perhaps their long-range futures.

I received my undergraduate degree in English at Vassar College, then a small women's college and now a little larger and coeducational. Thanks to a strong minor in psychology, I went on to obtain a Ph.D. in clinical psychology at Harvard. As a faculty member and researcher in the ensuing years, I found my clinical interests dwindling and my imagination fired by other issues. I began to redirect my research, master other kinds of knowledge (including advanced quantitative methods), and "reinvented" myself as a developmental psychologist. A terrific undergraduate education—to which I had been deeply committed and given a great deal of time and effort—gave me the foundation for shaping and reshaping so much of my own destiny. Moreover, I did not lose out in terms of long-term career success for following my somewhat changing inclinations—a message your parents and other loved ones may not appreciate my sharing with you!



Even before joining UCI's School of Social Ecology 20-plus years ago, my research was shaped by the premise that the cultural and social contexts (or social ecologies) in which we live play an important role in human development throughout the life span. An early and continuing topic of my research concerns the measurable influence of the family and peer group on adolescents' development of independence and social responsibility. I also have an ongoing interest in the impact of men's and women's work lives on their physical and mental health, their parenting styles, and their children's outcomes. Currently, I am engaged in cross-cultural research in societies that are undergoing rapid social change. In urban locations in China, Korea, and various eastern European countries, and in Los Angeles and Orange counties, my colleague Chuansheng Chen and I and our students are examining alterations in family relationships, values, and mental health, and the degree to which these changes are linked.

People sometimes wonder what research (especially, a high commitment to research) has to do with teaching. In my case, the changing cultural environment we live in and the diversity of cultural backgrounds I have encountered among my students at UCI have expanded the scope and significance of the research questions I pursue. And the resulting research has made my teaching and mentorship more interesting to students and more attuned to current social issues. Having had my own identity—indeed, my life—transformed by experiences in college, I feel a sense of obligation to today's students at UCI. In my classes, I emphasize thinking carefully, logically, and creatively; and I keep a special eye out for those students, both undergraduate and graduate, who want to engage in real dialogue, real learning, and have some good laughs along the way.



DONALD McKAYLE

Distinguished Faculty Lectureship Award for Research, 1997

Professor of Dance

As a highly active artist in dance and theater, my work has spanned: creating choreography for dance companies around the world; conceiving, directing, and choreographing musical theater on Broadway, in London, and on the European continent; creating the dances for feature films and television; and staging the appearances of major celebrity performers. I bring all of this to my work at UCI where I cherish the laboratory that the studio/classroom environment affords me in the ongoing development of my art. The daily exchange with students is a revitalizing challenge into new discovery as well as a process of imparting established canons. Choreographic works that I have created on students for the annual University concert series have entered into the repertoires of professional dance companies of national reputation: the Cleo Parker Robinson Dance Company, The Limón Dance Company.

As graduate choreography advisor, I oversee all choreography thesis projects, and serve as a primary resource for students who wish to make contact with professionals outside of UCI. This work is often collaborative as well as advisory. Liaisons formed are maintained after graduation. In the undergraduate program, I have established the UCI Etude Ensemble, a preprofessional performance group. Aspirants are chosen annually through a highly competitive audition process. This performing aggregate is composed of Dance majors: freshmen, sophomores, juniors, seniors. The UCI Etude Ensemble has been presented locally, on and off campus, and nationally in concerts and lecture demonstrations. It has proven to be an impressive ambassador of UCI's Dance program. Alumni are presently employed in nationally prominent dance companies: Limón West, MOMIX, the Martha Graham Dance Company. The UCI Etude Ensemble can also be viewed on the Graphix Zone CD-ROM, *Herbie Hancock Presents Living Jazz*, and on the American Dance Legacy Institute's first interactive volume, *The Rainbow Etude*. This volume will be stored at the National Museum of Dance in Saratoga Springs, New York, and at the Smithsonian Institute in Washington, D.C.

Another realm of deep involvement for me is the School of the Arts' annual mainstage performances at the Irvine Barclay Theater, presented jointly by the Departments of Dance, Drama, and Music. This is an area of instruction and practice in musical theater that is

intrinsic to the development of the performer, the stage manager, and the costume, scenic, lighting, and sound designer. In the role of director/choreographer, I am afforded the opportunity to extend original concept to existing classics of this genre. At the same time, I work alongside the student staff and performers in the prime moments of creative experimentation. The students are full and equal participants in the highly creative and collaborative act of theater.

I look forward to new challenges, new collaborations, and to the discovery of new talent and new ideas.

PETER M. RENTZEPIS

Distinguished Faculty Lectureship Award for Research, 1997

Professor of Chemistry and UC Presidential Chair

I joined the Chemistry Department some 12 years ago because I was impressed by the faculty and students of the School of Physical Sciences. I found them to be extremely stimulating and ever-evolving toward new areas of research and methods for improving teaching. There seems to be a continuous influx of novel and exciting ideas for research: from theories on differential equations and geometry, to the synthesis and characterization of new materials and drugs, and from ultrafast spectroscopy and chemical dynamics, theory, and high-energy physics, to surface sciences, geosciences, and inorganic chemistry.

I usually teach quantum chemistry and experimental courses. My task is to teach and convince students that it is worth utilizing their native abilities and background knowledge, which is indeed amongst the best in the country, to understand the principles of quantum mechanics, and during the course to develop a working knowledge of science in general and physical chemistry in particular. In the laboratory we teach students how to apply scientific concepts and theories in laboratory experiments which are similar to those used professionally. The ultimate goal is for the students to be able to use the scientific concepts and analytical thinking, taught at UCI, advantageously in their professional lives.

My own research concerns the interaction of light with matter. More specifically, we study the first ultrafast events, occurring during molecular reactions induced by laser light. Some of the phenomena studied include photosynthesis and vision, where we found processes occurring in a millionth of a millionth of a second. We are also studying transient structures of Si and GaAs, two computer chip materials, under laser irradiation by means of picosecond resolved x-ray diffraction, a new technique which we developed at UCI.

Another research study, on two photon picosecond nonlinear processes, has led us into the concept of a novel three-dimensional computer memory. This 3D memory was developed to a practical prototype device in collaboration with Professor S. Esener of UCSD's Electrical and Computer Engineering Department. As a result of our basic research, many patents have been applied for, issued to us, and assigned to the University of California; these are now licensed to industry in order to make a commercial two-photon 3D memory device. A number of students, postgraduate researchers, and faculty from many parts of the world have been continuously associated with both the basic research and the technology of this project.

This atmosphere of engineers and scientists from diverse scientific and geographic areas, working together, provides a most stimulating and fruitful habitat for the performance of excellent research. I believe that UCI's students have the opportunity for the best possible education, both in the lecture halls and the research laboratories. Every effort is made to have them well prepared to enter the professional world and be able to become successful professionals and great assets to UCI and society.





WILLIAM R. SCHONFELD

Distinguished Faculty Lectureship Award for Teaching, 1997

Dean of the School of Social Sciences and Professor of Political Science

Universities were created in medieval times. They were called "*universitas magistrorum et scholarium*." The word, university, had nothing to do with the "universality" of knowledge or learning. Rather it identified the fact that this institution of masters (*magistrorum* or professors) and scholars (*scholarium* or students) was a company of persons, a community, a body, like other medieval guilds, organized for the sake of its own protection.

What was to be protected, and from whom? The University, from its origins, was not only a center of discussion, but also of critique. It considered issues critically, and thus often disapproved of policies enacted by the State and the Church. In an era of authoritarian control by both secular and ecclesiastical authority, this trait surely needed protection.

Today the challenges are more subtle. Perhaps the most important stem from the calls for career preparation as a centerpiece of undergraduate education. The university has not, is not, and cannot be a trade school. Rather it is a setting in which students acquire basic analytical skills capable of being applied to a range of diverse employments. It also provides society with a pool of intelligent, educated people.

Students and faculty must work together to ensure that the university remains a setting, first and foremost, of the expansion of knowledge and the increase in sophistication of thought. Undergraduates must insist on demanding curricula and rigor in the assessment of academic performance. Faculty must ensure that students learn to write clearly and precisely, understand basic mathematical and scientific thinking, and acquire in-depth knowledge in some academic area of interest to the student.

At UCI, we have the potential to become one of the handful of great American universities. To do so, we must build on our solid foundation, and resist the calls to attempt to train undergraduates for specific jobs. We are poised to either address this challenge or succumb to the pressures for ordinariness which are common in the environment surrounding the university, and even on campus. The direction that we take will be determined by the extent to which faculty and students share a common commitment to create the highest-quality educational and research environment on the campus. If we do not have this commitment, greatness will elude us. If we develop and nurture it, we will achieve the potential which is ours. And the children of today's UCI undergraduates will ask their parents: "How did you ever manage to get into and complete studies at such an extraordinary University?"

JUDITH STEPAN-NORRIS

Distinguished Assistant Professor Award for Research, 1997-98

Chair of the Department of Sociology and Associate Professor of Sociology

After years of decline, the American labor movement is beginning to show signs of revitalization. Today's typical university student grew up in a world that was largely devoid of news and views on the roles and character of labor unions, so it is important that they understand the basics, including the history of the labor movement and its main goals. Yet when I begin discussing these topics, students sometimes ask why they should even care, given that many of them will end up in managerial positions. I explain that these are issues of concern to all of us who live in a democratic society, especially people who hope to be effective managers.

Most of my research is historically oriented: I investigate the role of politics within the Congress of Industrial Organizations (CIO) unions, as well as the effects of unions' political efforts on the larger political scene during the 1930s-1950s. In my courses, I emphasize how this research impacts basic sociological concepts such as bureaucratization, the "iron law of oligarchy," and democracy. Interested students often go on to take independent studies with me, where I introduce them to primary data including archival materials, FBI files,



oral history interview transcripts, and complex political maps. I also work one-on-one with a number of graduate students, and often coauthor articles with them.

My teaching is oriented toward developing students' critical thinking skills, so I often offer students some established facts concerning a topic, along with two or more perspectives on those facts. When teaching Introductory Sociology students about labor unions, for example, I first give a lecture that elaborates on what unions do and how they have evolved over time. During the next meeting I bring in two guest speakers, one from a local union and the other from management. Each gives his or her own view on the role and worth of unions, and answers students' questions. I think that students normally find the juxtaposition of these presentations to be very useful in their own search for answers.

Overall, I aspire to enhance students' understanding of the basic facts about important societal issues and prepare them to make informed decisions concerning them.

KEITH A. WOERPEL

Distinguished Assistant Professor Award for Research, 1997-98

Assistant Professor of Chemistry

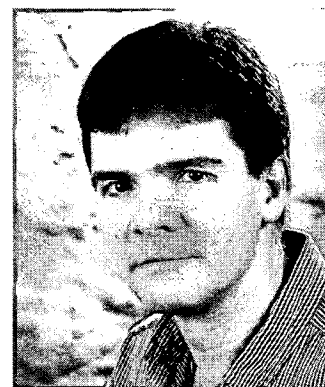
In my first year of college I thought I wanted to be a physician. Since I had to take so many chemistry classes to prepare for this career, I decided I might as well get a degree in chemistry. In my second year I encountered organic chemistry, the study of carbon compounds. I studied the structures of organic molecules and how these molecules interact with each other to change their structures. I learned the structures of plastic wrap and the molecule that gives pine trees their characteristic smell. I learned that an overwhelming number of medications are organic compounds, synthesized in the laboratory from simpler molecules. The elegance, power, and relevance of organic chemistry persuaded me to pursue this subject as a career.

My passion for chemistry has only grown since my second year of college. Now I am no longer satisfied by what I read in books: I must know more. That is where research fits in. Research is the expression of passion so deep that one is motivated to create new knowledge.

My research involves the discovery and study of new organic reactions. I am particularly interested in developing methods for the construction of architecturally complicated organic molecules. Using the knowledge developed in our laboratories and laboratories like ours, a chemist in a pharmaceutical company can construct new molecules as potential medicines.

Research and teaching are not distinct activities. I incorporate my research experiences into my teaching, and research is itself an act of education. As with most professors, my research is conducted in collaboration with a team of undergraduate and graduate students. As students make new discoveries in the laboratory, I teach them to analyze data, formulate new hypotheses, and design experiments to test these hypotheses. My students and I are proud of our results and conclusions because they represent the efforts of our hard work and cooperation.

The love of chemistry that motivates my research is also expressed in my teaching. I see every class as an opportunity to convey my excitement to a new generation of students. Research requires me to be current on the most recent advances in chemical knowledge, so my students learn the most modern and relevant aspects of the discipline. I am fortunate to be at UCI, an intellectually stimulating environment where the pursuit and transmission of knowledge are intimately connected.



PREADMISSION MATTERS

OFFICE OF ADMISSIONS AND RELATIONS WITH SCHOOLS

The mission of the Office of Admissions and Relations with Schools, a division of Student Services, is to: (1) optimize UCI's undergraduate enrollments by implementing Academic Senate, universitywide, and campus policies for the selection and admission of new freshman and transfer students; and (2) stimulate and advance cooperative educational relationships between UCI and California schools and colleges. The Office works to improve the preparation of prospective students for higher education and to promote their access to and success at UCI.

Additional information about the services listed below is available from the Office; telephone (949) 824-6703; e-mail: oars@uci.edu; World Wide Web: <http://www.reg.uci.edu/UCI/ADMISSIONS/>.

Undergraduate Admissions

Staff are involved in monitoring applications and admission targets, in collecting and evaluating personal and academic data to select and admit new undergraduate students, in establishing students' permanent UCI academic record, and in evaluating for transfer credit course work taken in other colleges and universities by new and continuing students.

Intersegmental Relations

Staff are involved in: (1) promoting liaison and curricular articulation between UCI and California Community Colleges; and (2) various educational organizations designed to facilitate regional cooperation (South Coast Higher Education Council).

School and College Relations

Staff: (1) advise prospective students, their parents, teachers, counselors, and school administrators regarding academic programs and admission requirements, and assist them with UC application and enrollment processes; (2) increase public awareness by making presentations to schools, colleges, and the community regarding UCI and the University of California, and by creating publications which explain admissions policies and procedures, academic options, housing, financial aid, and student life opportunities; (3) provide general information on UC admissions and programs for all UC campuses; (4) interpret University policies and procedures specific to undergraduate enrollment; (5) assist prospective transfer students and community college faculty and staff; (6) participate in activities and projects designed to enhance the academic success of students; and (7) sponsor an Academic Talent Search to identify gifted and high-ability sixth- through tenth-grade students and to design activities to prepare them for the University and promote their academic success.

On-Campus Services

Staff: (1) offer student-led campus tours; (2) host programs for prospective students and educational groups including UCI Preview Day (fall) for high school students, and Transfer Track (fall) for prospective transfer students; (3) maintain an honors outreach program for high-achieving prospective UCI students including the UCI Academic Talent Search and a Day for Honors Students; (4) inform UC and UCI administrators and faculty of developments in California schools and community colleges; and (5) provide consultative services to campus departments wishing to provide programs for schools and colleges or special recruitment for specific majors or programs.

Transfer Student Services

Transfer Student Services (TSS), a component of the Office of Admissions and Relations with Schools, provides advice and guidance to prospective UCI transfer students. Staff meet with prospective transfer students to discuss admission requirements, academic planning and preparation, and UCI lower-division major and general education requirements. Articulation agreements, which identify how community college courses may be used to fulfill lower-division UCI degree requirements, are facilitated through TSS. Articulation agreements may be viewed on the World Wide Web at <http://www.assist.org>.

Campus Tours

Student-led tours of the campus are conducted weekdays at noon, except during academic recesses; Saturday tours are offered during October, November, and April only. To confirm tour dates, times, and parking instructions and to arrange tours for school groups of 10 or more during the regular academic year, call (949) 824-6703.

HOW TO USE THE CATALOGUE

Because the *UCI General Catalogue* must be prepared well in advance of the year it covers, changes in some programs and courses inevitably will occur. The selection of courses to be offered each quarter is subject to change without notice, and some courses are not offered each year. The *Schedule of Classes*, a publication available from the Registrar's Office shortly before registration begins each quarter, provides more current information on courses, instructors, enrollment procedures and restrictions, class hours, room assignments, and final examination schedules. Students should consult the appropriate academic unit for even more up-to-date information. (Admission to UCI does not guarantee enrollment in any particular course.)

Presentation of information in the *Catalogue* is divided into five main concepts (details are found in the Table of Contents):

1. Introduction to UCI
2. Preadmission Matters
3. Information for Admitted Students
4. Research and Graduate Studies
5. Academic Programs

Included in the academic unit descriptions are the following kinds of information:

- a. Brief descriptions of the areas that are covered in each school or program and a brief statement of the educational philosophy and orientation of the unit.
- b. Lists of faculty members, the institutions from which they received their highest degrees, and their areas of interest.
- c. Requirements for undergraduate and graduate degrees, including those for majors and minors.
- d. Additional areas of study (referred to as concentrations, specializations, or emphases).
- e. Advice about planning a program of study, and other information relevant to the academic progress and experience of students majoring in fields within each school or program.
- f. Courses offered.

UNDERGRADUATE AND GRADUATE DEGREES

Degree Title	Degree ¹	Degree Title	Degree ¹
Aerospace Engineering	B.S.	Environmental Toxicology	M.S., Ph.D.
African-American Studies	B.A.	Film Studies	B.A.
Anthropology	B.A.	French	B.A., M.A. ² , Ph.D.
Applied Ecology	B.S.	Genetic Counseling	M.S.
Art History	B.A.	German	B.A., M.A. ² , Ph.D.
Arts Interdisciplinary	B.A.	Health Psychology	Ph.D.
Asian American Studies	B.A.	History	B.A., M.A., Ph.D.
Biological Sciences	B.S., M.S. ² , Ph.D.	Human Development	Ph.D.
Business Administration	M.B.A.	Humanities	B.A.
Chemical and Biochemical Engineering	M.S., Ph.D.	Information and Computer Science	B.S., M.S., Ph.D.
Chemical Engineering	B.S.	International Studies	B.A.
Chemistry	B.S., M.S. ^{2,3} , Ph.D.	Japanese Language and Literature	B.A.
Chinese Language and Literature	B.A.	Linguistics	B.A.
Civil Engineering	B.S., M.S., Ph.D.	Management	Ph.D.
Classical Civilization	B.A.	Mathematics	B.S., M.S. ³ , Ph.D.
Classics	B.A., M.A. ² , Ph.D.	Mechanical and Aerospace Engineering	M.S., Ph.D.
Comparative Literature	B.A., M.A. ² , Ph.D.	Mechanical Engineering	B.S.
Computer Engineering	B.S.	Medicine	M.D.
Criminology, Law and Society	B.A., Ph.D.	Music	B.A., B.Mus., M.F.A.
Dance	B.A., B.F.A., M.F.A.	Pharmacology and Toxicology	M.S. ² , Ph.D.
Drama	B.A., M.F.A.	Philosophy	B.A., M.A. ² , Ph.D.
Earth System Science	M.S. ² , Ph.D.	Physics	B.S., M.S. ² , Ph.D.
East Asian Cultures	B.A.	Political Science	B.A., Ph.D.
East Asian Languages and Literatures	M.A. ² , Ph.D.	Psychology	B.A., Ph.D.
Economics	B.A., M.A. ² , Ph.D.	Psychology and Social Behavior	B.A.
Education	Credential Programs	Radiological Sciences	M.S. ⁴ , Ph.D. ⁴
Educational Administration	Ed.D.	Social Ecology	B.A., M.A., Ph.D.
Electrical and Computer Engineering	M.S., Ph.D.	Social Science	B.A., M.A. ² , Ph.D.
Electrical Engineering	B.S.	Sociology	B.A.
Engineering	B.S., M.S., Ph.D.	Spanish	B.A., M.A., M.A.T., Ph.D.
English	B.A., M.A. ² , M.F.A., Ph.D.	Studio Art	B.A., M.F.A.
Environmental Analysis and Design	B.A.	Transportation Science	M.S., Ph.D.
Environmental Engineering	B.S.	Urban and Regional Planning	M.U.R.P., Ph.D.
Environmental Health Science and Policy	M.S., Ph.D.	Women's Studies	B.A.

¹ Degrees: B.A. = Bachelor of Arts; B.F.A. = Bachelor of Fine Arts; B.S. = Bachelor of Science; B.Mus. = Bachelor of Music; Ed.D. = Doctor of Education; M.A. = Master of Arts; M.A.T. = Master of Arts in Teaching; M.F.A. = Master of Fine Arts; M.S. = Master of Science; M.B.A. = Master of Business Administration; M.D. = Doctor of Medicine; M.U.R.P. = Master of Urban and Regional Planning; Ph.D. = Doctor of Philosophy. Titles of degrees may not correspond exactly with specific fields of study offered; see the Index and the academic unit sections for information.

² Emphasis at the graduate level is on study leading to the Ph.D. degree. The master's degree may be awarded to Ph.D. students after fulfillment of the appropriate requirements.

³ In addition to the regular M.S. degree program, a program coordinated with the Department of Education leads to an M.S. degree and a Teaching Credential.

⁴ Contact the Department for information about this program.

NOTE: Although UCI is authorized to grant the following degrees, admission to these programs is not available: Business Administration, M.B.P.A.; Comparative Culture, B.A., M.A., M.A.T., Ph.D.; Fine Arts, M.F.A.; Geography, B.A.; Public Administration, M.B.P.A., M.P.A., Russian, B.A.



UCI undergraduates may select from 49 majors, 44 minors, and a variety of concentrations, specializations, and emphases.

Course Listings

Undergraduate courses are classified as lower division (numbered 1-99) and upper division (numbered 100-199). Courses numbered 200 and above are graduate or professional courses. Lower division usually refers to freshman-sophomore courses, upper division to junior-senior courses. However, junior and senior students may take lower-division courses, and freshmen and sophomores may normally take upper-division courses when upper-division standing is not a prerequisite and when any other prerequisites have been met. A course has no prerequisites unless indicated.

Courses with sequential designations (for example, 1A-B-C) normally indicate multiple-quarter courses; *except as noted, each course in a sequence is prerequisite to the one following.* The letter L following a number usually designates a laboratory course. The letter H preceding a number designates an honors course.

The (4) or (4-4-4) designation following the course title indicates the quarter unit credits toward graduation. Some courses give other than four units of credit; for example, two, five, or a range from one to 12.

The notations F, W, S, or Summer after the course number and title indicate when the course will be offered: fall, winter, or spring quarter, or summer session.

When a course is approved for satisfaction of the UCI breadth requirement, the breadth category is indicated by a Roman numeral in parentheses at the end of the description. However, courses which have been approved to fulfill the upper-division writing requirement are *not* designated in this *Catalogue*. Rather, they are designated in the quarterly *Schedule of Classes* with a W following the number. Students should refer to the *Schedule of Classes* for a complete listing of approved upper-division writing courses.



UNDERGRADUATE MAJORS, MINORS, AND ASSOCIATED AREAS OF STUDY

Students are urged to become informed of and understand all requirements concerning their intended majors, minors, and associated areas of study. Special restrictions apply to some majors and minors; for example, some minors require formal application or declaration by students, others may be completed without such formalities. Information about the programs listed below may be found in the academic unit sections of the *Catalogue*.

Undergraduate majors are offered in all of the bachelor's degree programs on the list of degree titles; the degree programs are referred to as majors in the following list. In association with these majors, UCI offers a number of minors, concentrations, specializations, and emphases.

A **minor** consists of a coordinated set of courses (seven or more) which together take a student well beyond the introductory level in an academic field, subject matter, and/or discipline but which are not sufficient to constitute a major. An **interdisciplinary minor** consists of courses offered by two or more schools or programs. All minors, including interdisciplinary minors, are available to all students regardless of their major, with the exception that students may not minor in their major. Minors are listed on a student's transcript but are not listed on the baccalaureate diploma.

A **concentration** is a program of interdisciplinary study consisting of courses offered by two or more schools or programs. Concentrations are similar to minors in that they require fewer units of work than majors do, and the area of concentration appears on the student's transcript but not on the baccalaureate diploma. Concentrations are taken in combination with a major in one of the schools or programs offering the concentration.

A **specialization** is a program of study which enables students to focus on courses in a particular field within a major. The area of specialization pursued appears on the student's transcript but not on the baccalaureate diploma.

An **emphasis** is a program of study within a major which emphasizes a specific area of the discipline. Emphases usually have a defined course of study and are not listed on the transcript nor on the baccalaureate diploma.

SCHOOL OF THE ARTS

Majors:

Arts Interdisciplinary

Dance

Specializations (B.F.A. only):

Choreography

Performance

Drama

Music

Emphases (B.A. only):

Analysis

History

Jazz

Performance

Specializations (B. Mus. only):

Bassoon

Clarinet

Composition

Contrabass

Flute

French Horn

Harp

Lute and Guitar

Oboe

Percussion

Piano

Saxophone

Trombone

Trumpet

Tuba

Viola

Violin

Violoncello

Voice

Special String Performance

Studio Art

Minors:

Digital Arts

Drama

Studio Art

Concentration:

Medieval Studies (in combination with any major in the School of the Arts or the School of Humanities)

SCHOOL OF BIOLOGICAL SCIENCES

Majors:

Biological Sciences

Specializations:

Cell Biology

Developmental Biology

Ecology

Evolution

Microbiology

Molecular Biology and Biochemistry

Neurosciences

Physiology

Plant Sciences

Applied Ecology (offered jointly with the School of Social Ecology)

DEPARTMENT OF EDUCATION

Major: Only a doctoral degree and credential programs are offered

Minor: Educational Studies

SCHOOL OF ENGINEERING

Majors:

Aerospace Engineering

Chemical Engineering

Specializations:

Biochemical Engineering

Environmental Engineering

Materials Science

Civil Engineering

Specializations:

Structural Engineering

Transportation Engineering

Water Resources and Environmental Engineering

Computer Engineering

Electrical Engineering

Specializations:

Electro-optics and Solid-State Devices

Power Systems

Systems and Signal Processing

Engineering

Environmental Engineering

Mechanical Engineering

Specializations:

Aerospace Engineering

Combustion/Propulsion

Environmental Engineering

Heat Transfer/Fluid Mechanics

Materials Science and Engineering

Mechanical Systems

SCHOOL OF HUMANITIES

Majors:

Art History

Chinese Language and Literature

Classical Civilization

Classics

Emphases:

Greek

Latin

Linguistics

Comparative Literature

East Asian Cultures

English

Emphases:

Literary Criticism

Writing

Film Studies

French

German

Emphases:

Linguistics

Literature

History

Humanities (Interdisciplinary)

Japanese Language and Literature

Philosophy

Spanish

Emphases:

Linguistics

Literature and Culture

Teaching Language and Culture

Minors:

Art History

Chinese Language and Literature

Classical Civilization

Comparative Literature

English
Film Studies
French
German
Greek
History
Humanities and Law
Italian
Japanese Language and Literature
Latin
Philosophy
Portuguese
Spanish

Concentration:

Medieval Studies (in combination with any major in the School of the Arts or the School of Humanities)

DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

Major: Information and Computer Science

Specializations:

Artificial Intelligence
Computer Systems
Implementation and Analysis of Algorithms
Information Systems
Networks and Distributed Systems
Software Systems

Minor: Information and Computer Science

INTERDISCIPLINARY STUDIES

Majors:

African-American Studies
Asian American Studies
Women's Studies

Minors:

African-American Studies
Asian American Studies
Chicano/Latino Studies
Global Peace and Conflict Studies
Global Sustainability
History and Philosophy of Science
Latin American Studies
Native American Studies
Religious Studies
Women's Studies

GRADUATE SCHOOL OF MANAGEMENT

Major: Only graduate degrees are offered

Minor: Management

3-2 Program: Available to outstanding undergraduates in all majors*

* School of Engineering majors should contact their academic counselor.

SCHOOL OF PHYSICAL SCIENCES

Majors:

Chemistry
Mathematics

Specializations:

Mathematics for High School Teaching
Statistics

Physics

Concentrations:

Applied Physics
Biomedical Physics

Specialization:

Astrophysics

Minor:

Mathematics

SCHOOL OF SOCIAL ECOLOGY

Majors:

Criminology, Law and Society
Environmental Analysis and Design
Psychology and Social Behavior
Social Ecology
Applied Ecology (offered jointly with the School of Biological Sciences)

Minors:

Criminology, Law and Society
Environmental Analysis and Design
Environmental Design
Epidemiology and Public Health
Psychology and Social Behavior
Urban and Regional Planning

SCHOOL OF SOCIAL SCIENCES

Majors:

Anthropology
Economics
International Studies
Linguistics
Political Science
Psychology
Social Science

Specializations:

Multicultural Studies
Public and Community Service
Research and Analytical Methods
Social Studies

Sociology

Minors:

Anthropology
Linguistics
Political Science
Psychology
Sociology

AREAS OF GRADUATE STUDY

For information about any area of graduate or professional study, including the precise title of the degree conferred, consult the *Catalogue's* academic unit sections.

School of the Arts

Acting
Choral Conducting
Dance
Design and Stage Management
Directing
Drama
Instrumental Performance
Music Composition
Piano Performance
Studio Art
Vocal Performance

School of Biological Sciences

Anatomy and Neurobiology^{1, 2}
 Biological Chemistry^{1, 2}
 Biological Sciences
 Biotechnology
 Developmental and Cell Biology²
 Ecology and Evolutionary Biology
 Microbiology and Molecular Genetics^{1, 2}
 Molecular Biology and Biochemistry²
 Physiology and Biophysics^{1, 2}
 Protein Engineering Science³
 Psychobiology

Department of Education

Educational Administration
 Multiple Subject Instruction (elementary)⁴
 Single Subject Instruction (secondary)⁴
 Bilingual Crosscultural Language and Academic Development
 (BCLAD) Emphasis in Spanish⁴
 Crosscultural Language and Academic Development (CLAD)
 Emphasis⁴
 Preliminary Administrative Services⁴
 Professional Clear Administrative Services⁴

School of Engineering

Chemical and Biochemical Engineering
 Civil Engineering
 Computer Networks and Distributed Computing
 Computer Systems and Software
 Electrical Engineering
 Environmental Engineering
 Materials Science and Engineering
 Mechanical and Aerospace Engineering
 Protein Engineering Science³

School of Humanities

Art History
 Chicano/Latino Literature
 Chinese Language and Literature
 Classics
 Comparative Literature
 Creative Writing: Poetry or Fiction
 Critical Theory
 East Asian Cultural Studies
 East Asian Languages and Literatures
 English and American Literature
 Film Studies⁵
 French
 German
 Greek
 History
 History and Philosophy of Science
 Humanities
 Japanese Language and Literature
 Latin
 Logic and Methodology
 Philosophy
 Spanish
 Spanish Literature
 Spanish-American Literature

Department of Information and Computer Science

Artificial Intelligence
 Computer Algorithms and Data Structures
 Computer Software
 Computer Systems and Networks
 Computer Systems Design
 Computing, Organizations, Policy, and Society
 Information and Computer Science

Interdisciplinary Programs

Feminist Studies⁶
 Transportation Science

Graduate School of Management

Business Administration
 Management

School of Physical Sciences

Chemical and Materials Physics
 Chemistry
 Earth System Science
 Mathematics
 Physics
 Protein Engineering Science³

School of Social Ecology

Criminology, Law and Society
 Environmental Analysis and Design
 Environmental Health Science and Policy
 Health Psychology
 Human Development
 Social Ecology
 Urban and Regional Planning

School of Social Sciences

Anthropology
 Cognitive Sciences
 Economics
 Linguistics
 Mathematical Behavioral Sciences
 Political Psychology
 Political Science
 Politics and Society
 Psychology
 Public Choice
 Social Networks
 Social Science
 Sociology and Social Relations
 Transportation Economics

College of Medicine

Anatomy and Neurobiology^{1, 2}
 Biological Chemistry^{1, 2}
 Environmental Toxicology
 Genetic Counseling
 Medical Residency Programs
 Medical Scientist Program
 Medicine
 Microbiology and Molecular Genetics^{1, 2}
 Pharmacology and Toxicology
 Physiology and Biophysics^{1, 2}
 Radiological Sciences

¹ School of Biological Sciences and College of Medicine joint program.

² Combined program in Molecular Biology, Genetics, and Biochemistry.

³ Available in conjunction with the Ph.D. programs in Biological Sciences, Chemistry, and Engineering.

⁴ Credential program.

⁵ Available in conjunction with the program in Art History.

⁶ Available in conjunction with the programs in Anthropology, Art History, Drama, East Asian Languages and Literatures, English and Comparative Literature, French, German, History, Sociology and Social Relations, Spanish, and Studio Art.

MAJORS AND CAREERS

Choosing a Major

Many students select their University major, the field of study which represents their principal academic interest, at the time they fill out their *University of California Undergraduate Application for Admission and Scholarship*. Some students, however, are not ready to choose a major at the time they apply, and still others may wish to change to a different major after they have enrolled.

In preparation for choosing a major, students need to familiarize themselves as much as possible with UCI and its academic programs. Entering students are exposed to a wide range of areas of study, and it is not unusual for students to become enthusiastic about academic disciplines previously unfamiliar to them. At UCI a number of traditionally separate academic disciplines have strong interrelationships, so that the academic environment is influenced by broad interactions among disciplines. As a complement to classroom study, UCI encourages its students to become involved in a variety of educational experiences such as independent study, laboratory research, field study, writing workshops, computing, and arts productions. Such experiences can help students identify additional areas of interest.

The *UCI General Catalogue* is a good place to find specific information about programs available and requirements. Students are encouraged to talk to academic counselors and faculty advisors and to go to any department to learn more about its programs of study, its requirements for graduation, and possible enrollment limitations. (Some majors are impacted, that is, more students apply than can be accommodated. See the Undergraduate Admissions section for information.) While advisors may not be familiar with all fields, they can suggest ways to investigate other areas of study and be helpful in planning a lower-division program which will keep several options open. Courses and workshops designed to assist students in choosing a major are offered by the UCI Career Center, the Division of Undergraduate Education, and some of the academic units.

All students are required to choose a major by the time they reach junior status. It is important to look well ahead to this decision and to think about it carefully during the freshman and sophomore years. When considering possible majors, students should keep in mind that some major programs require quite specific preliminary study. At the same time, excessive early concentration could reduce a student's options and could cause the student to need more than four years to obtain the baccalaureate degree. Furthermore, courses required for graduation need to be considered. For these reasons, it is desirable for students to plan their programs carefully and thoughtfully, seeking a balance between exposure to a variety of academic areas and completion of courses which are prerequisite to a major under consideration. A qualified student interested in two areas of study may graduate with a double major by fulfilling the degree requirements of any two programs. Certain restrictions may apply; students should check with their academic advisor.

Each school or program has its own standards for change of major, and some majors are impacted, as indicated above. Once a student selects a major, or decides to change majors, the student should visit the academic counseling office for their prospective major to obtain current information about prerequisites, program planning, and policies and procedures. In addition, a form called the Undergraduate Petition for Change of Major must be completed. The form is available from academic counselors and the Registrar's Office.

Undecided/Undeclared Students

Students who enter the University as freshmen or sophomores may be uncertain about which major they should choose and may not feel ready to declare their major or even to identify their interests with a particular school. Such students participate in the Undecided/Undeclared Advising Program which is administered by the Division of Undergraduate Education. The goal of this program is to help students make the best informed and most rational choice of a major that is possible. All students at UCI are required to choose their major by the time they reach junior status.

To make a good decision about what major to declare, students should know what programs UCI offers and have some experience with them, have a good knowledge of their own abilities and interests, have clear educational goals, and have a good sense of their vocational goals and of the academic programs at UCI that will provide appropriate preparation. Students in the Undecided/Undeclared Advising Program receive quarterly individualized faculty and staff counseling that helps them explore the variety of course offerings on campus, become more aware of their own interests and abilities, formulate sound educational goals, and learn how to prepare for graduate education and/or possible careers.

To assist students in choosing a major, the program has created a two-quarter required course designed to expose undecided/undeclared students to a variety of opportunities and resources available to them on the campus such as electronic technology including the World Wide Web and electronic mail, and to introduce students to each of the schools and majors offered. In addition, students learn about research and career opportunities within different disciplines.

Call (949) 824-6987 for more information.

Courses in Undergraduate Education

University Studies 1A-B University Experience: Issues and Options for Undecided/Undeclared Students (2-2). Introduces new undecided/undeclared freshmen to university issues, resources, and options as they learn about the academic undergraduate culture at UCI. Two-quarter course emphasizes necessary skills and tools for being a successful student, followed by exploration of UCI's undergraduate majors and career options with a focus on decision-making skills.

University Studies 192 Group Project for Discussion Leaders (2). For discussion leaders for University Studies 1A-B. Weekly discussion group training for leading effective groups in addition to evaluations of weekly discussion sections and completion of a special project on issues of freshman development. Prerequisite: consent of instructor.

University Studies 198 Methods and Application in Small Group Instruction (4). Explores various theories and methods of learning and development and their practical application in small group settings. Peer tutors receive instruction in the design, implementation, and evaluation of an effective learning environment for undergraduate students. Prerequisite: employment as a tutor for the Learning and Academic Resource Center.

Preparation for Graduate or Professional Study

Undergraduate students ought to keep the possibility of future graduate or professional study in mind as they plan their academic programs, and they should discuss their career goals with their advisors. Students who have an idea of the direction in which they would like to go should familiarize themselves with the basic requirements for postbaccalaureate study and keep those requirements in mind when selecting courses. Furthermore, students should supplement their undergraduate programs by anticipating foreign language or other special requirements at major graduate schools and by intensive work in areas outside their major that are of special relevance to their intended graduate work. Students should consult the graduate advisor or academic counselor in the academic unit corresponding to the area of interest. Also, the UCI Career Center offers a number of services useful to those considering graduate or professional study.

Preprofessional Preparation

LAW

Law schools want to produce lawyers to serve the entire legal spectrum (for example tax, criminal, entertainment, or immigration law), and this requires a wide range of academic backgrounds. Law schools look less for specific areas of study than they do for evidence of academic excellence. A good record in physics or classics, for example, will be preferred over a mediocre record in history or political science. Most law schools give equal preference to students from all academic disciplines. Courses that help develop writing and analytical skills (logic, writing, mathematics, research methods, and statistics, for example) build skills that are the key to doing well on the Law School Admissions Test (LSAT) and succeeding in law school and the legal profession.

UCI offers a number of law-related courses that students in any major may take. The School of Humanities offers a Humanities and Law minor, emphasizing courses that require critical reading and analysis, and courses that focus on theoretical and applied analytical perspectives on ethical, political, and social issues relevant to the law. The School of Social Sciences offers courses in the study of law, international relations, and economics of law and recommends that students take some political science courses as well. The School of Social Ecology offers many law-related courses in both substantive law (such as environmental and criminal law) and in law and society and criminal justice, and offers its majors the opportunity to apply theories learned in the classroom to actual problems through its field study program.

Students should know that law schools look closely at five aspects of a student's application: grades, LSAT results, the applicant's statement of purpose, in-depth letters of recommendation, and extracurricular activities and law-related work experience. Students should be aware that not everyone who applies is admitted to law school. One consideration in selecting an undergraduate major is alternative careers should one's goals change.

MEDICINE AND OTHER HEALTH-RELATED SCIENCES

Although health science educators strongly recommend that students obtain a bachelor's degree prior to admission to the health sciences, there is no preferred major. Many UCI students who plan to enter the health professions major in Biological Sciences because much of the basic course work for that major is also required for medical school admission; however, students may major in any academic field as long as they also take the courses required by professional health science schools. The minimum amount of undergraduate preparation required includes one year each of English, biology with laboratory, general chemistry with laboratory, organic chemistry with laboratory, physics with laboratory, and college mathematics, especially calculus and statistics, as well as one semester (or two quarters) of biochemistry. Courses in cell or molecular biology, genetics, developmental physiology or comparative anatomy, vertebrate embryology, and computer science are recommended. In addition, some health sciences schools have certain nonscience course requirements or recommendations, for example, English and/or a foreign language. Facility with the Spanish language is very helpful in California medical schools and in other areas of the United States with large Hispanic populations.

Although many factors ultimately are considered when reviewing applicants for admission, admission committees look carefully at: college grade point average (science and nonscience grades are evaluated separately, and evidence of improvement in work during the undergraduate years is important); results of the Medical College Admission Test (MCAT), the Dental Admission Test, and other aptitude examination scores; the student's personal essay and/or personal interview; in-depth letters of recommendation; practical experience in the health sciences, whether paid or volunteer, which is regarded

favorably as an indication of exposure to and interest in the health sciences; extracurricular activities which demonstrate the applicant's ability to interact successfully with others; and research experience, especially in a biological, medical, or behavioral science.

Since medical programs cannot accommodate all qualified applicants and competition for entrance is keen, it is important to keep in mind alternative career opportunities should one not be accepted to health science school, or should one decide to pursue instead one of the expanding number of health-related programs now available.

BUSINESS/MANAGEMENT

The contemporary executive or manager must be a creative thinker, make complex decisions, and have the ability to perceive and participate in the full scope of an enterprise while understanding its role in the economy. Effective management requires leadership ability, strong problem-solving skills, the ability to successfully deploy and manage information technologies, effective oral and written communication skills, analytical skills, an understanding of global economic trends, and a basic knowledge of behavioral processes in organizations.

Although UCI does not offer an undergraduate degree in business, the Graduate School of Management offers a minor in Management as a supplement to any undergraduate major. This minor can provide students with a broad understanding of management theory and practice and may be helpful to students in determining whether they wish to pursue a career in business or management or undertake graduate-level study in management.

Students can also supplement their major course work to develop the skills needed for business and management by taking electives such as calculus, statistics, economics, psychology, sociology, computer science, and political science, and are encouraged to take intensive course work in the culture, history, geography, economy, politics, and language of specific foreign countries.

For admission purposes, the majority of graduate schools of business look at five areas: grades, scores on the Graduate Management Admission Test (GMAT), the applicant's statement of purpose, in-depth letters of recommendation, and evidence of leadership in school and community activities and work experience. Substantive work experience is becoming an increasingly important prerequisite for many programs.

Students from a variety of undergraduate disciplines including liberal arts, social sciences, physical or biological sciences, computer science, and engineering are encouraged to apply to UCI's Graduate School of Management.

Career Opportunities

UCI's academic units which offer undergraduate education leading to the bachelor's degree provide students with opportunities to explore a wide range of interests leading to a career choice or to further education at the graduate or professional level. The lists which follow show the varied career areas pursued by UCI graduates. Any major can lead to a number of careers. Additional discussions of careers are presented in individual academic unit sections.

Arts Career Areas

Acting, Advertising, Animation, Arts Administration, Art Therapy, Broadcasting, Choreography, Composition, Conducting, Conservation/Restoration, Consulting, Criticism, Curating, Direction, Environmental Design, Instrument Repair/Tuning, Interior/Industrial Design, Journalism, Librarianship, Lighting, Marketing, Medical Illustration, Performance, Photography, Physical Fitness, Printing, Production, Publicity, Public Relations, Publishing, Set/Stage/Costume Design, Stage Management, Teaching, Tourism, Visual Resources Management, Writing.

The exceptionally talented School of the Arts graduate may choose to become a professional actor, art historian, artist, dancer, or musician. However, there are many other careers to explore in numerous arts-related areas, or the graduate may wish to combine

part-time professional performance with supplemental work. The field of arts administration is an increasingly important career area, offering opportunities to work with opera and dance companies, repertory theatre companies, museums, state and local arts councils, community arts organizations, and arts festivals.

Biological Sciences Career Areas

Bioanalysis, Biochemistry, Biomedical Engineering, Cell Biology, Chiropractic Medicine, Dentistry, Developmental Biology, Dietetics, Environmental Management, Forestry, Genetic Engineering, Health Administration, Industrial Hygiene, Marine Biology, Medical Technology, Medicine, Microbiology, Nurse Practitioner, Occupational Therapy, Oceanography, Optometry, Osteopathy, Plant Biology, Pharmacology, Pharmacy, Physicians' Assistant, Physical Therapy, Podiatry, Public Health, Quality Control, Research, Sales, Speech Pathology, Teaching, Technical Writing and Editing, Veterinary Medicine.

The health field is one of the fastest-growing career areas in the country. Work sites may include private corporations, educational institutions, hospitals, health care complexes, private foundations, city and county governments, state agencies, the federal government, and many others.

Engineering Career Areas

Aerospace, Biochemical, Biomedical, Biotechnology, Chemical Engineering, Communications, Computer Architecture, Computer Engineering, Computer Software, Control Systems, Digital Signal Processing, Earthquake Safety, Electric Power, Electronics, Electro-optics, Environmental Control, Environmental Engineering, Flood Control, Geotechnical, High-Speed Image Processing, Hydraulics, Land Development and Urban Planning, Manufacturing Engineering, Materials, Process Control, Propulsion and Power, Public Works, Reliability, Robotics, Structures, Traffic, Transportation, Water Resources, Water Supply.

These are some areas for employment available to UCI engineering graduates. Career paths typically involve one or more of the following: design, research and development, manufacturing or construction, operations, consulting, applications and sales, management, or teaching. At UCI they will have had the choice of Aerospace, Chemical, Civil, Computer, Electrical, Environmental, or Mechanical Engineering, as well as a general program in Engineering. However, they will frequently find challenging positions in related areas such as biomedical or industrial engineering, for which their general and specialty course work at UCI, followed by formal or informal, on-the-job training will qualify them. Approximately half of UCI's Engineering graduates obtain advanced degrees from UCI or other universities, and almost all engage in continuing education to keep abreast of advances in technology. Many Engineering graduates build on their engineering background and enter graduate programs to obtain degrees in the fields of administration, law, medicine, physics, or mathematics.

Humanities Career Areas

Advertising, Banking, Broadcasting, Business, Counseling, Communications, Diplomacy, Education, Film and Television, Foreign Service, Government Service, Human Resources, Insurance, International Relations, Journalism, Law, Library Science, Management/Administration, Marketing, Personnel, Politics, Public Administration, Public Relations, Publicity, Publishing, Research, Retail Sales, Social Welfare, Teaching, Technical Writing, Tourism, Translating/Interpreting, Writing.

Diverse career fields available to Humanities graduates include entry-level positions in both the public and private sectors or professional-level opportunities combining the degree with further specialization. Humanities graduates may also elect to enter professional programs such as law, library science, medicine (with proper prerequisites), or public administration. Business and industry utilize Humanities graduates for management training programs in banking, retail sales, and insurance. Graduates with special skills in oral and written communications may look to positions with newspapers, advertising agencies, public relations firms, radio and television stations, and publishing houses.

Technical writers are currently in demand, particularly those who have had some preparation in engineering, computer science, and the sciences. Opportunities for graduates fluent in foreign languages exist in government, business, social service, counseling, foreign service, and international trade, among others.

Information and Computer Science Career Areas

Applications Programming, Computer-Aided Design, Computer Animation, Computer Architecture, Computer Networks, Computer Simulation, Computer Systems Design, Databases, Information Systems Design and Consulting, Management Information Systems, Multimedia Applications, Parallel and Distributed Systems, Embedded Systems, Software Design and Development, Software Management and Maintenance, Supercomputing, Systems Administration, Systems Analysis and Design, Systems Programming.

Graduates of the Department of Information and Computer Science pursue a variety of careers. Many graduates specify, design, and develop a variety of computer-based systems comprised of software and hardware in virtually every application domain, such as aerospace, automotive, biomedical, consumer products, engineering, entertainment, environmental, finance, investment, law, management, manufacturing, and pharmacology. ICS graduates also find jobs as members of research and development teams, developing advanced technologies, designing software and hardware systems, and specifying, designing, and maintaining computing infrastructures for a variety of institutions. Some work for established or start-up companies while others work as independent consultants. After a few years in industry, many move into management or advanced technical positions. Some ICS students also use the undergraduate major as preparation for graduate study in computer science or another field (e.g., medicine, law, engineering, management).

Physical Sciences Career Areas

Actuarial Science, Aerospace, Analytical Chemistry, Applied Physics and Chemistry, Astrophysics/Astronomy, Bioscience, Computers, Energy Science, Electronics, Engineering Applications, Environmental Science, Food Chemistry, Forensic Chemistry, Geoscience, Inorganic Chemistry, Instrumentation, Laboratory Science, Lasers, Materials Science, Medicine, Nuclear Science, Optical Devices, Organic Chemistry, Pharmacology, Physical Chemistry, Plasma Physics, Quality Control, Radiation Science, Radiology, Solid State Devices, Space Science, Statistics, Teaching.

Graduates of the School of Physical Sciences have backgrounds appropriate to a variety of areas in research, teaching, and management. Career opportunities for physical scientists are found in federal, state, and local government as well as in private industry. Chemists may work in research and development and in jobs dealing with health, pollution, energy, fuel, drugs, and plastics. Water districts, crime labs, and major chemical and oil companies are also good resources for employment. Mathematics graduates find employment in both government and the private sector in such technical fields as operations research, computer programming, marketing research, actuarial work, banking, retail management, and scientific research. Physics graduates find professional positions in education, research and development, and in the electronic and aerospace industries. Possible careers include science teaching and writing, computer and electrical engineering, device and instrumentation development, nuclear and reactor physics, environmental and radiological science, laser and microchip development, astronomy, and geophysics.

Social Ecology Career Areas

Administration, Air Quality Control, Architecture, Biostatistics, Clinical Psychology, Corrections/Probation, Counseling, Education Support Services, Environmental Design, Environmental Planning and Consulting, Epidemiology, Government Service, Health Service, Hospital Administration, Housing Development, Law, Management/Administration, Mental Health, Program Coordination, Psychology, Public Health Research, Public Relations, Real Estate/Development, Research and Research Design, Social Service, Teaching, Urban Planning, Urban Sociology, Water Quality Control.

Graduates of the School of Social Ecology may hold positions as urban planners, environmental consultants, juvenile probation officers, counselors, elementary and secondary school teachers, legal aides, coordinators of juvenile diversion programs, social workers, mental health workers, special education teachers, or architectural consultants. Many School of Social Ecology graduates have used their training to enter graduate programs and obtain degrees in the fields of law; clinical, community, social, developmental, and environmental psychology; public health; public and business administration; environmental studies; urban planning; social welfare; criminology; and the administration of justice.

Social Sciences Career Areas

Banking, Correction/Probation, Counseling, Environmental Analysis, Finance, Foreign Service, Government Service, Health Services, Human Services, Industrial Relations, International Affairs, Labor Relations, Law, Library Science, Management/Administration, Marketing, Personnel, Psychology, Public Relations, Publishing, Real Estate, Research, Sales, Statistical Analysis, Teaching, Writing.

Business and industry often look to social science graduates to fill positions in management, finance, marketing and advertising, personnel, production supervision, and general administration. In the public sector, a wide variety of opportunities are available in city, county, state, and federal government. Teaching is a frequently chosen career at all levels from elementary school teacher to professor. In addition, many graduates enter professional practice, becoming lawyers, psychologists, researchers, or consultants in various fields.

SPECIAL PROGRAMS

University Program for High School Scholars

The University Program for High School Scholars (UPHSS) is a special opportunity offered to highly prepared and gifted students by UCI. High school seniors and, occasionally, juniors have the opportunity to expand their education by enrolling concurrently at UCI in order to pursue academic interests beyond those available at their high schools. UPHSS enables participants to sample UCI's nationally acknowledged academic resources, to participate in University life, and to interact with outstanding UCI faculty and students without disrupting high school academic and social involvements.

UPHSS is particularly valuable for talented young people who are intellectually ready for university-level work, who have eagerly and successfully completed the "college-prep" courses offered by their high school, and who are looking for new academic challenges. UCI makes every effort to encourage and facilitate the participation of qualified students from all ethnic and socioeconomic backgrounds. Additional information is available in the Undergraduate Admissions section of this *Catalogue* and from the UPHSS coordinator in the Office of Admissions and Relations with Schools, telephone (949) 824-6703. After matriculation, information is available from the Division of Undergraduate Education, telephone (949) 824-6987.

Educational Opportunity Program

UCI recognizes and values the contributions of a student community that reflects the cultural, ethnic, and socioeconomic diversity of the people of California. The Educational Opportunity Program (EOP) provides pre-University programs and services aimed at increasing the eligibility rates for socioeconomically disadvantaged students. Qualification for EOP is based primarily on family income level, and all students served by the program must be California residents, with the exception of American Indian students.

EOP programs and services are located in the Office of Admissions and Relations with Schools, (949) 824-6703, and in the Center for Educational Partnerships, (949) 824-7482.

Admission. Outreach counselors in the Office of Admissions and Relations with Schools visit high schools and community colleges throughout California and meet with prospective students, parents, teachers, counselors, and school officials to discuss the admission and financial aid process, housing, and the academic opportunities available at UCI.

Prospective students indicate their interest in being considered for EOP services on the *UC Undergraduate Application for Admission* and must provide the information requested. Application fee waivers are available for low-income applicants who meet the eligibility criteria.

Housing. UCI guarantees on-campus housing to all new EOP students who meet the housing application deadline.

Prior to enrolling at UCI, a limited number of admitted EOP students are invited to participate in a Summer Bridge Program sponsored by Student Academic Advancement Services (SAAS). SAAS and the California Alliance for Minority Participation in Science, Engineering, and Mathematics (CAMP) offer a variety of services to EOP students once they enroll at UCI including advising, tutoring, and learning skills services.

Center for Educational Partnerships

The Center for Educational Partnerships supports cooperative educational partnerships among UCI and California schools and colleges, and provides pre-enrollment services to prospective students.

Partnership Programs. The Partnership Network, an academic collaboration including UCI, K-12 schools, and postsecondary institutions, was established to encourage and develop creative leadership through various forums and to bring to light the best understanding of effective educational practices, paradigms, and structures.

Project STEP (Student/Teacher Educational Partnership) is a regional model of institutional collaboration from K-16 to improve the college attendance rates of educationally disadvantaged students. Participating campuses include UCI, California State University at Fullerton, Rancho Santiago College, Chapman University, and the Santa Ana Unified School District.

Santa Ana Networks includes activities which focus on increasing the educational achievement of at-risk youth. It is based on the premise that the educational system must reach and serve students in new far-ranging ways and engage partners who are equally committed to student success. This is accomplished on the strength of two existing programs, Project STEP, which is mentioned above, and Santa Ana 2000, a business/community/citywide partnership.

Summer Scholars Transfer Institute, a collaborative Rancho Santiago College/UCI residential summer institute, facilitates the transfer of at-risk students to a four-year university and is a successful model of two institutions working together to provide academic readiness.

Pre-College Initiatives and Services. The Center for Educational Partnerships promotes statewide pre-college initiatives that help disadvantaged students develop the academic skills and background needed to enter college. These initiatives include Mathematics, Engineering, Science Achievement (MESA); Young Black Scholars; Upward Bound; and California Student Opportunity and Access Program (Cal SOAP).

Early Academic Outreach and Academic Development Partnerships provide pre-enrollment services. Early Academic Outreach development programs assist intermediate and high school students to become aware of academic opportunities and how to prepare for admission to the University of California. Workshops, special



Noontime outdoor concerts on the UCI Student Center patio are held throughout the academic year.

events, and conferences are offered to program participants and their parents.

The School-Centered Partnerships division is dedicated to improved student academic preparation for college success through establishment of K-12/college/university academic partnerships. Staff generate extramural support for discipline-specific and interdisciplinary initiatives for curriculum reform, professional development, and student academic services.

For additional information about the Center for Educational Partnership's programs and services, telephone (949) 824-7482.

In addition, the Educational Opportunity Program and Center for Educational Partnerships are aligned with the California Alliance for Minority Participation in Science, Engineering, and Mathematics (CAMP), a program for students interested in these disciplines. CAMP provides research opportunities for undergraduates, faculty mentoring, and peer group support. Call (800) 359-2579 or (949) 824-3479 for information.

Student Academic Advancement Services

Student Academic Advancement Services (SAAS), a unit of the Division of Undergraduate Education, provides support services to students who are first-generation college students or low-income students, as well as disabled students (those with physical and/or learning disabilities). The goal of SAAS is to help students earn their University degree. See the Division of Undergraduate Education section of the *Catalogue* for additional information.

Graduate and Professional Opportunity Program

The University of California recently reaffirmed that a diverse student and faculty population is integral to academic excellence and is critical to promoting the lively intellectual exchange and the variety of ideas and perspectives that are essential to advanced

research. The University remains committed to expand outreach, recruitment, and retention efforts. Through the Graduate and Professional Opportunity Program (GPOP), steps are taken to increase the participation of diverse groups who traditionally have been underserved in graduate education in the United States. See the Research and Graduate Studies section of the *Catalogue* for additional information.

Medical Student Support Programs

The College of Medicine's Office of Admissions and Outreach is designed to meet the challenges of California's changing demographics and to contribute to the College's goal of achieving a broad spectrum of diversity in the student population, and ultimately, in the medical profession. The office plays a major role in the recruitment and retention of targeted socioeconomically disadvantaged students who have the potential of service to the medically underserved communities in California. See the College of Medicine section for additional information.

EXPENSES AND FEES

Estimated Expenses

The range of estimated nine-month expenses, including fees, for students attending UCI during the 1998-99 academic year are shown below; fees are subject to change.

Student Status	Living Arrangement	Estimated Nine-Month Expenses ¹
Undergraduate	On Campus	\$ 13,070
	Off Campus	13,380
	At Home	9,555
Graduate	On Campus	13,560
	Off Campus	17,310
	At Home	10,985
M.B.A. (new students)	On campus	22,665
	Off campus	26,325
	At Home	20,000
Fully Employed Program		28,240
	Executive Program	41,970
	Health Care Executive Program	31,900
First-Year Medical ² (10 months)	On Campus	21,135
	Off Campus	25,025
	At Home	18,115

¹ Student expense detail is available from the Office of Financial Aid and from the College of Medicine Financial Aid Office. Expenses are subject to change and do not include Nonresident Tuition.

² Estimated expenses for second-, third-, and fourth-year medical students are available from the College of Medicine Financial Aid Office.

Expenses for students living off campus vary depending upon number of roommates, location of apartment, amenities, and other factors. Graduate student expenses assume two students sharing a two-bedroom apartment. All other on- and off-campus estimates are based on two students sharing a bedroom. Figures are based on annual surveys and are intended only as a guide in computing average expenses.

Fees

Undergraduate Student Fees for Academic Year 1998-99 ¹

	Resident	Nonresident
University Registration Fee ²	\$ 713.00	\$ 713.00
Educational Fee ²	2,896.00	3,086.00
Associated Students Fee	54.00	54.00
UCI Student Center Fee	142.50	142.50
Bren Events Center Fee	69.00	69.00
Nonresident Tuition	—	<u>9,384.00</u>
Total	\$ 3,874.50	\$ 13,448.50

Graduate and Medical Student Fees for Academic Year 1998-99 ^{1,3}

	Resident	Nonresident
University Registration Fee ²	\$ 713.00	\$ 713.00
Educational Fee ²	3,086.00	3,086.00
Associated Graduate Students Fee ⁴	27.00	27.00
UCI Student Center Fee	142.50	142.50
Bren Events Center Fee	69.00	69.00
Graduate Student Health Insurance Fee	1,140.00	1,140.00
Nonresident Tuition	—	<u>9,384.00</u>
Total	\$ 5,177.50	\$ 14,561.50

¹ Student fees are based on three quarters of attendance. Second- and third-year medical students attend four quarters; summer quarter fees of \$1,192.50 for these medical students are not included in this table. All fees are subject to change without notice, and the University may impose additional fees. Fee payment dates are announced in the quarterly *Schedule of Classes*.

² Subject to change without notice by the Regents of the University of California.

³ The fee level shown does not include the Professional School Student Fee, which is \$6,000 for M.B.A. students who enroll fall 1998 or later, and \$5,376 for M.D. students who enroll fall 1998 or later. Students who enrolled prior to fall 1998 should consult the *Schedule of Classes* for their fee level. All medical students pay an additional fee of \$61 for Medical Student Disability Insurance.

⁴ The Associated Graduate Students Fee is \$42 for Graduate School of Management and Medical students.

Payment of Fees

Fees for each quarter are due and payable in advance within deadlines published in the *Schedule of Classes*. A student will not be officially enrolled in classes or receive any University benefits until fees are paid in full, with the exception of students who are participating in the PACE Plan. The PACE Installment Plan allows students to spread the quarterly costs of fee payment over a three-month period. A fee is charged for this privilege. Information about PACE is available from Campus Billing Services, 109 Administration Building; telephone (949) 824-2455.

For information on how to cancel or withdraw from UCI, see the sections on Fee Refunds and on Enrollment and Other Procedures.

The **University Registration Fee** is \$238 per quarter for the fall and winter quarters and \$237 for the spring quarter. The full fee is required of all students regardless of the number of courses taken. This fee, which must be paid at the time of registration, is a charge to each student for services which benefit the student and which are complementary to, but not a part of, the instructional programs. No part of this fee is refundable to students who do not use all or any of these services. Graduate students studying out of the State may be eligible to pay one-half of the Registration Fee.

The \$100 advance deposit on the Registration Fee (this deposit is known as the Undergraduate Acceptance of Admission Fee), required of new undergraduates, is applied to the full fee when the student registers. Continuing and returning students are required to pay all outstanding fines and other debts, in full, before they pay their Registration Fee for an upcoming term.

Medical students are required to pay the full Registration Fee for each fall, winter, and spring quarter, and a reduced Registration Fee of \$80 for each summer quarter.

The **Educational Fee** is \$966 per quarter for the fall quarter and \$965 per quarter for the winter and spring quarters for full-time resident undergraduate students. The fee is \$1,029 per quarter for the fall and winter quarters and \$1,028 per quarter for the spring quarter for full-time nonresident undergraduate students and resident or nonresident graduate students. Medical students are required to pay the full Educational Fee for each quarter in which they enroll, including the summer quarter. The summer quarter Educational Fee level will be the same as that of the previous spring quarter.

The **Associated Students Fee** is \$18 per quarter for undergraduates, \$9 per quarter for graduates, and \$14 per quarter for medical and Graduate School of Management students. The undergraduate student fee is administered by the Associated Students of UCI; the graduate student fee is administered by the Associated Graduate Students; the medical student fee is administered by the Associated Medical Students; and the GSM student fee is administered by the Graduate School of Management Student Association. These funds provide social activities, lectures, forums, concerts, and other activities at either a reduced charge, or no charge, to UCI students. The fees are required of all students.

The **UCI Student Center Fee** is \$47.50 per quarter. The fee is required of all students regardless of the number of courses taken. The fee is used to pay the debt service on revenue bonds sold to finance the construction costs of the UCI Student Center.

The **Bren Events Center Fee** is \$23 per quarter. The fee is required of all students regardless of the number of courses taken or units carried. The fee is used to pay the debt service on revenue bonds sold to finance the construction costs of the Bren Events Center.

The **Graduate Student Health Insurance Fee** is \$1,140 annually. The annual fee is charged over three quarters, fall, winter, and spring, to provide 12-month coverage from September through August. The fee is required of all graduate and medical students regardless of the number of courses taken or units carried. The fee is used to provide graduate and medical students with health insurance. If students provide evidence of comparable coverage from another source, participation in the mandatory plan may be waived.

The **International Student Health Insurance Fee** is \$1,140 annually. The annual fee is charged over three quarters, fall, winter, and spring to provide 12-month coverage from September through August. International students who have private insurance which is equal or superior to the policy provided through the University may be eligible to have the mandatory fee waived.

The **Medical Student Disability Insurance Fee** is \$61 annually. The entire annual fee is charged for the fall quarter. The fee is required of all medical students.

The **Professional School Student Fee** is required of all M.B.A. degree program students who enrolled fall 1994 or later and all M.D. degree program students, regardless of the number of courses taken. For M.B.A. students who enroll fall 1998 or later, the fee is \$2,000 per quarter for fall, winter, and spring quarters. For M.D. students who enroll fall 1998 or later, the fee is \$1,793 for the fall quarter, \$1,792 for the winter quarter, and \$1,791 for the spring quarter. M.B.A. and M.D. students who enrolled prior to fall 1998 should consult the *Schedule of Classes* for their fee level.

A \$500 advance deposit on the Professional School Student Fee is required of all new M.B.A. students upon their acceptance of admission. This deposit is nonrefundable.

Fees for Part-Time Reduced-Fee Study Program

Undergraduate and graduate students on approved part-time status (enrollment in 10 units or less per quarter for undergraduates and in eight units or less per quarter for graduate students) pay the full University Registration Fee and one-half the Educational Fee. Those part-time students who have been determined to be nonresidents of the State of California are assessed one-half the Nonresident Tuition, in addition to the full Registration Fee and one-half the Educational Fee. Part-time students pursuing a professional degree are assessed one-half the Professional School Student Fee. Students seeking part-time status must obtain the approval of the appropriate academic dean. Part-time status can be granted only for reasons of occupation, health, or family responsibilities. Part-time status lapses at the end of each academic year; therefore, a student must reapply each year that part-time status is desired. See the *Schedule of Classes* for more information.

Alan Pattee Scholarship Act

Under terms of the Alan Pattee Scholarship Act, a surviving child of a California resident who died as a result of accident or injury incurred in the performance of active law enforcement or active fire suppression and prevention duties is eligible to apply for waiver of certain fees. Additional information is available from the Registrar's Office.

Miscellaneous Fees

Application Fee ^{1, 2}	\$ 40.00
Application Fee for Readmission ¹	40.00
Advancement to Candidacy for Ph.D.	50.00
Duplicate Diploma	22.00
Duplicate Diploma, College of Medicine	75.00
Filing Fee (graduate programs)	119.00
M.B.A. Acceptance of Admissions Deposit ¹	500.00
Special Library Borrowing Privilege	50.00
(per year, nonrefundable, renewable)	
Transcript of Record (per copy)	5.00
Undergraduate Acceptance of Admission Fee ¹	100.00
(applied toward University Registration Fee)	
Verification of Student Status (per copy)	3.00

Service Charges

Changes in Class Enrollment after Announced	\$ 3.00
Dates (each transaction)	
Credit by Examination (each petition)	5.00
Late Payment of Registration Fees	25.00/50.00
Late Enrollment in Classes	25.00/50.00
Returned Check Collection	10.00
OCTA Bus Coupon Book (10 rides) ³	5.00
OCTA Bus Passes for students (monthly) ³	13.00
Parking Fees ⁴	
Student preferred, annual purchase only ⁵	387.00
Student general, quarterly	81.00
annual ⁵	216.00
Student resident, quarterly	81.00
annual ⁵	216.00
System of Interactive Guidance (SIGI) Fee.....	20.00

In addition, students may be assessed a course materials fee. Consult the *Schedule of Classes* for courses requiring the fee and the fee level.

¹ Nonrefundable in all cases.

² The \$40 entitles an applicant to apply to one UC campus. Applicants who are applying to more than one campus must pay an additional \$40 fee for each campus selected.

³ Sold through the UCI Parking and Transportation Services Office.

⁴ UC parking systems are, in accordance with Regents policy, self-supporting auxiliary enterprises receiving no State appropriations.

⁵ Fall, winter, and spring quarters.

CALIFORNIA RESIDENCE AND THE NONRESIDENT TUITION FEE

All students who have not lived in California with the intent to make California their permanent home for more than one calendar year prior to the residence determination date for each quarter or semester they propose to attend the University must pay the Nonresident Tuition Fee. The residence determination date is the day instruction begins at the last of the University of California campuses to open for the quarter, and for schools on the semester system, the day instruction begins for the semester.

Laws Governing Residence

The rules regarding residence classification for tuition purposes at the University of California are governed by the California Educational Code and implemented by Standing Orders of the Regents of the University of California. Under these rules adult citizens and certain classes of aliens can establish residence for tuition purposes. There are particular rules that apply to the residence classification of minors.

Who Is a Resident?

Adult students (at least 18 years of age), may establish residence for tuition purposes in California if they are a: (1) U.S. citizen; (2) permanent resident or other immigrant; or (3) a nonimmigrant who is not precluded from establishing a domicile in the U.S. This includes nonimmigrants who hold valid visas of the following types: A, E, H-1, H-4, I, K, L, O-1, O-3, or R.

To establish residence a student must, immediately prior to the residence determination date:

1. Be physically present in California for more than one calendar year, and
2. Must have come to California with the intent to make California the permanent home. For example, physical presence within the state of California solely for educational purposes does not constitute the establishment of California residence, regardless of the length of stay.
3. Students under 24 years of age whose parents are not residents of California will be required to meet the Financial Independence requirement in order to be classified as a resident for tuition purposes.

Residence cannot be derived from a spouse or parents.

Requirements for Financial Independence

Students are considered "financially independent" if they fall into at least one of the following categories:

1. At least 24 years of age by December 31 of the calendar year of the term for which resident classification is requested.
2. Veteran of the U.S. Armed Forces.
3. A ward of the court or both parents are deceased.
4. Has legal dependents other than a spouse.
5. A married graduate or professional student who was not claimed as an income tax deduction by parents or any other individual for the tax year immediately preceding the term for which resident classification is requested.
6. An unmarried undergraduate student, not claimed as an income tax deduction by parents or any other individual for the two tax years immediately preceding the term for which resident classification is requested, who can demonstrate self-sufficiency for those years.

NOTE: Financial independence is not a factor in residence status for graduate student instructors, graduate student teaching assistants, research assistants, junior specialists, postgraduate researchers, graduate student researchers, and teaching associates who are employed 49 percent or more of full time in the term for which resident classification is requested.

Establishing Intent to become a California Resident

Relevant indicia that contribute to the demonstration of a student's intent to make California the permanent home include, but are not limited to, the following: registering to vote and voting in California elections, designating a California permanent address on *all* records (i.e., school, employment, military), a California Driver's License, a California Identification Card, California vehicle registration, paying California income taxes as a resident (including taxes on income earned outside California from the date California residence was established), maintaining a California residence in which

personal belongings are kept, licensing for professional practice in California, and the *absence* of these indicia in places other than California during any period for which residence in California is asserted.

General Rules Applying to Minors

The residence of the parent with whom an unmarried minor (under the age of 18) lives is the residence of the unmarried minor. When the unmarried minor does not live with either parent, the residence of the unmarried minor is that of the parent with whom the unmarried minor last lived. An unmarried minor may establish his or her own residence when both parents are deceased and a legal guardian has not been appointed unless the unmarried minor is a minor alien who is precluded by the Immigration and Nationality Act from establishing domicile in the U.S. *The residence of an unmarried minor who has a parent living cannot be changed by the unmarried minor's own act, by the appointment of a legal guardian, or by the relinquishment of a parent's right of control.*

Specific Rules Applying to Minors

1. **Parent of Minor Moves from California.** If the California resident parent(s) of an eligible minor moves from California, the minor will be entitled to resident classification as long as the minor enrolls for full-time attendance in a California public postsecondary institution within one calendar year of the parent's departure, and remains physically present in California. This classification will continue until the minor has attained the age of majority and has resided in California for the minimum time required to become a resident. The Financial Independence requirement does not apply to this situation.
2. **Self-Supporting Minor.** Minor students who are U.S. citizens or eligible aliens may be eligible for resident classification if documentation of physical presence, intent to be a California resident, and self-support through the student's own employment or credit is provided for the entire calendar year prior to the residence determination.
3. **Two-Year Care and Control.** Minor students who are U.S. citizens or eligible aliens may be eligible for resident classification if they have lived with and been under the continuous care and control of an adult or series of adults other than a parent for not less than two calendar years. The adult or series of adults must have been responsible for care and control for the entire two-year period and must be California residents for 366 days prior to the residence determination date of the term for which resident classification is requested.

Exemptions from the Nonresident Tuition Fee

Students for whom any of the following conditions apply may be eligible for an exemption from the Nonresident Tuition Fee.

1. **Member of the Military.** A student, on active duty as a member of the United States military stationed in California, unless assigned for educational purposes to a state-supported institution of higher education.
2. **Child or Spouse of a Member of the Military.** A student who is the natural or adopted dependent child or spouse of a member of the United States military on active duty, stationed in California, unless the member of the military is assigned for educational purposes to a state-supported institution of higher education.
3. **Child or Spouse of a Faculty Member.** To the extent that university funds are available, a student who is the unmarried, dependent child under the age of 21 or the spouse of a University of California faculty member who is a member of the Academic Senate.
4. **Child or Spouse of a University Employee.** A student who is the unmarried, dependent child under the age of 21 or the spouse of a full-time employee of the University of California who is permanently assigned to work outside the state of California (i.e., Los Alamos National Laboratory).
5. **Child of a Deceased Public Law Enforcement or Fire Suppression Employee.** A student who is the child of a deceased public law enforcement or fire suppression employee, who was a California resident and was killed in the course of law enforcement or fire suppression duties.
6. **Dependent Child of a California Resident.** A student who has not been an adult resident for more than one year and is the natural or adopted, dependent child of a California resident who has been a resident for more than one year immediately prior to the residence determination date. The student must also maintain full-time attendance in a California public postsecondary institution.

7. **Graduate of a California school operated by the Federal Bureau of Indian Affairs (B.I.A.).** A student who is a graduate of a California school operated by the B.I.A. (i.e., Sherman Indian High School) and who enrolls at the University of California.

Temporary Absences

If a nonresident student is in the process of establishing a domicile in California and returns to his or her former home during noninstructional periods, the student's presence in California will be presumed to be solely for educational purposes and only convincing evidence to the contrary will refute this presumption. *Students who are in the state of California solely for educational purposes will not be classified as residents for tuition purposes regardless of their length of stay in California.*

If a student who has been classified as a resident for tuition purposes leaves California temporarily, the absence could result in the loss of California residence. The burden of proof is on the student to demonstrate through documentation that he or she (or the parents if the student is a minor) did nothing inconsistent with a claim of continuing California residence during an absence. Steps that should be taken to retain California residence include, but are not limited to:

1. Continue to use a California address on all records (educational, employment, military, among others).
2. Continue to satisfy California tax obligations. A student claiming California residence is liable for payment of income taxes on his or her total income from the date he or she begins to establish residence in California including income earned in another state or country.
3. Retain a California voter's registration and vote by absentee ballot.
4. Maintain a California Driver's License, California Identification Card, and vehicle registration in California. If it is necessary to change the driver's license or vehicle registration, then it *must* be changed back to California in the time prescribed by law.

Change in Resident Classification

Continuing students who are classified as nonresidents for tuition purposes, and who believe that they will be eligible for resident status for the upcoming quarter, must submit a Petition for Resident Classification to the Office of the Registrar in order to have their residence status changed before they submit their registration fee payment for the applicable quarter. Students must initiate all changes of status before the registration deadline of the quarter for which they want to be reclassified. (Specific deadline dates are listed in the quarterly *Schedule of Classes* booklet.) Students are strongly encouraged to submit their petition in person in order to expedite the review process. As long as submission deadlines are met, students may be allowed a period of time no later than the end of the quarter to provide any additional documentation required for residence determination.

Incorrect Classification

Any student found to be incorrectly classified as a resident is subject to nonresident classification and to payment of all previously unpaid Nonresident Fees. If a student has concealed information or furnished false information and was classified incorrectly as a result, the student is also subject to University discipline. Resident students who become nonresidents of California must immediately notify the UCI Residence Deputy.

Inquiries and Appeals

Inquiries regarding residence requirements, determination, and/or recognized exceptions should be directed to the University of California, Irvine, Residence Deputy, Registrar's Office, 215 Administration Building, Irvine, CA 92697-4975, telephone (949) 824-6129, or to the Legal Analyst, Residence Matters, 300 Lakeside Drive, 7th Floor, Oakland, CA 94612-3565. *No other University personnel are authorized to supply information relative to residence requirements for tuition fee purposes.*

This summary is *not* a complete explanation of the law regarding residence classification. A copy of the regulations adopted by The Regents of the University of California is available for inspection in the Office of the Registrar. Changes may be made in the residence requirements between the publication of this statement and the relevant residence determination date. Any student, following a final decision on residence classification by the Residence Deputy, may appeal in writing to the Legal Analyst within 45 days of notification of the Residence Deputy's final decision.

Fee Refunds

Student Fee Refunds

Students who pay fees for a regular academic quarter and then decide to withdraw from the University must submit a Cancellation/Withdrawal form to the Registrar's Office after obtaining the signatures of their academic dean and, for undergraduate students, the University Ombudsman. Medical students must submit the form to the Curricular Affairs Office in the College of Medicine. This form serves two purposes: (1) a refund of fees, if applicable; and (2) automatic withdrawal from classes.

The effective date of withdrawal is used in determining the percentage of fees to be refunded. This date is normally the date that the student submits the form to the appropriate Dean/Ombudsman for approval and is designated by that Dean/Ombudsman. It is presumed that no University services will be provided to the student after that date. Registration fees are refunded as follows.

New Undergraduate Students. Through the first day of instruction, fees are refunded in full except for the \$100 Undergraduate Acceptance of Admission Fee. The International Student Health Insurance Fee (if applicable) is withheld once the quarter begins. The refund of the Registration Fee, Educational Fee, Associated Students Fee, UCI Student Center Fee, Bren Events Center Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown.

Continuing and Returning Undergraduate and New, Continuing, and Returning Graduate Students. Through the first day of instruction, fees are refunded in full, except for a \$10 service charge. The Graduate Student Health Insurance Fee (if applicable) and International Student Health Insurance Fee (if applicable) are withheld after the quarter begins. The refund of the Medical Student Disability Insurance Fee (if applicable) is handled on an on-request basis. The refund of the Registration Fee, Educational Fee, Professional School Student Fee (if applicable), Associated Students or Associated Graduate Students Fee, UCI Student Center Fee, Bren Events Center Fee, and Nonresident Tuition Fee (if applicable) is prorated as shown.

Calendar days, beginning with the first day of instruction	Refund
1	100 percent
2-7	90 percent
8-18	50 percent
19-35	25 percent
over 35	no refund

Claims for refund of fees must be presented during the fiscal year (July 1 to June 30) in which the claim is applicable. Refund checks are issued by the Accounting Office and are mailed to the student generally two to four weeks after the official notice of withdrawal is initiated.

Students who are receiving financial aid and withdraw from UCI during a quarter will have all or part of the fee refund credited to the appropriate financial aid fund. Any cash disbursements, other than work-study, that a student received may also require repayment. The refund amount for new students who receive Title IV Federal financial assistance and withdraw during their first term at UCI is calculated as shown below. Students withdrawing who received loans must schedule an exit interview with the Financial Services Office at (949) 824-7081.

Calendar days, beginning with the first day of instruction	Refund
1	100 percent
2-7	90 percent
8-14	80 percent
15-21	70 percent
22-28	60 percent
29-35	50 percent
36-42	40 percent
over 42	no refund

Housing Refunds

UCI Housing Contracts provide students with complete housing refund policies.

FINANCIAL AID

Lack of funds need not be a barrier to attending UCI; more than 60 percent of UCI's enrolled students receive some form of financial aid. Students who demonstrate that they need financial assistance in order to attend may be eligible for scholarships, grants, loans, and/or work-study awards through the Financial Aid Office. In addition to awarding aid on the basis of financial need, some scholarships are awarded on the basis of academic excellence.

Information regarding the application process, deadlines, and financial aid programs for undergraduate, graduate, and medical students may be found in the *Financial Aid for the 21st Century* handbook. The handbook is mailed to entering students in January and is available to continuing students in the Financial Aid Office, 102 Administration Building; telephone (949) 824-8262.

Free Application for Federal Student Aid (FAFSA/Renewal Application). To obtain financial aid, new and continuing students must file the FAFSA/Renewal Application and the necessary supporting documents each year. The FAFSA is available at high schools, local colleges and universities, and at the UCI Financial Aid Office. Renewal applications are mailed to current financial aid recipients starting in mid-November and continuing through the end of December. Students are encouraged to apply as early as possible after January 1. The priority deadline to file the FAFSA/ Renewal Application for loans, work-study, and most grants is March 2. All other supporting documentation should be submitted to the Financial Aid Office by May 1 for priority consideration.

The University expects the student and the parent (or spouse) to contribute toward the educational costs to the extent possible. For dependent students, an analysis of the FAFSA and supporting documents determine the amount a student and the student's parents can be expected to contribute toward the cost of the student's education. For independent students, the analysis determines the amount a student and/or, if applicable, a spouse can contribute to the cost of the student's education. Income, assets, size of family, and the number of family members in college are the major factors considered in the analysis. Assets include, but are not limited to, equity in real estate other than family residence; stocks, bonds, and other securities; business equity; and cash, savings, and checking accounts. Income includes wages, salaries, interest, dividends, and nontaxable income such as Social Security and Veterans' benefits.

All undergraduate financial aid applicants are required to apply for a Pell Grant, and eligible California residents are required to apply for a Cal Grant. The application deadline for Cal Grants is March 2 for the following academic year.

Special Expenditures. Financial aid recipients who are in need of money for special expenditures (beyond the cost of books and basic supplies associated with certain courses of study) may make an appointment to see a financial aid counselor to explore the possibility of a budget extension, based on the availability of funds. Examples of such special expenditures include special equipment for students with disabilities.

Eligibility Requirements

Federal financial aid programs are subject to regulations that define the criteria students must meet to qualify and maintain eligibility for those programs. The regulations state that a student must: (1) be a U.S. citizen or an eligible noncitizen of the U.S.; (2) be accepted for admission to the University; (3) be enrolled in good standing at the University; units taken through the University Extension program are not counted toward half- or full-time enrollment; (4) demonstrate financial need (except for William D. Ford Federal Direct Unsubsidized Loans and Federal PLUS loans); financial need is the difference between the reasonable and approved expenses of attending UCI and all available resources, including the expected contribution from parents, the

student, and any outside aid; (5) maintain satisfactory academic progress for financial aid, as outlined below; (6) be registered with the Selective Service if the student is a male at least 18 years old, born after December 31, 1960, and not on active duty with the armed forces; (7) not owe a refund on a federal grant or be in default on a federal educational loan.

Once a student meets the above criteria, disbursement of financial aid funds is made only if the student does not have outstanding debts owed to UCI.

UCI POLICY ON SATISFACTORY ACADEMIC PROGRESS FOR FINANCIAL AID

Undergraduate and Graduate Students

In defining student eligibility for financial aid, the Higher Education Act Amendments of 1986 state that a student must maintain "satisfactory progress in the course of study the student is pursuing, according to the standards and practices of the institution at which the student is in attendance." Federal regulations of May 1982 state that each institution shall establish, publish, and apply "reasonable standards" for assuring that every student receiving need-based financial aid should maintain "satisfactory progress in his/her course of study." Final Federal regulations, published October 6, 1983, state that "in order to receive student financial aid under the programs authorized by Title IV of the Higher Education Act, a student must be maintaining satisfactory progress in the course of study he or she is pursuing according to the standards and practices of the institution in which he or she is enrolled."

Satisfactory Academic Progress Requirements for Financial Aid

The following requirements for satisfactory academic progress for receipt of financial aid apply to all applicants for any financial aid awards administered by the UCI Financial Aid Office. These requirements are separate and distinct from UCI's policy regarding satisfactory academic progress.

1. **Grade Point Average (GPA).** All financial aid recipients must be in compliance with the following minimum cumulative GPA requirements at the conclusion of the spring quarter of each academic year: Undergraduates: first year, 1.85; second year, 1.90; third year, 1.95; fourth year, 1.975; fifth year, 2.00; graduate students: 3.0; medical students: academic performance requirements to pass course.*

* Prior to June 1996, third- and fourth-year students must meet the minimum 2.0 GPA requirement. Effective June 1997, all students must meet the academic performance requirement necessary to pass courses.

2. **Units (Undergraduate and Graduate) and Clock Hours (Medical Students).** All financial aid applicants must comply with the following minimum cumulative unit or clock-hour requirements.

Undergraduates:

Year	Units/ Quarter	End of Year Total	Cumulative Total
1	8 *	24	24
2	9 *	27	51
3	12	36	87
4	15	45	132
5	16	48	180

Graduate Students: Completion of at least 8 units per quarter.

Part-time Students: Completion of at least 6 units per quarter.

Medical Students—Regular Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	995	995
2	796	1,791
3	1,390	3,180
4	1,040	4,221

Medical Students—Extended Curriculum Clock-Hours:

Year	End of Year Total	Cumulative Total
1	597	597
2	597	1,194
3	597	1,791
4	1,390	3,180
5	1,040	4,221

* These requirements are separate from enrollment requirements for specific financial aid programs. Contact the Financial Aid Office for more information.

NOTE: Undergraduate and graduate students who enroll in more than the minimum number of units required per quarter in the first and second years will have the additional units carried forward for the cumulative total.

3. **Quarter Limits for Eligibility.** All financial aid applicants exceeding the following quarter limits will be ineligible for financial aid consideration. Students will not be granted additional quarters of eligibility solely by reason of changing their field of study or pursuing more than one major.

Undergraduate students:

1. Entering freshmen are eligible for all types of financial aid for a total of 15 quarters of academic year attendance.
2. Advanced standing transfer students will have transcripts from previous postsecondary institutions evaluated to determine the number of remaining quarters of financial aid eligibility at UCI.
3. Students acquiring a second bachelor's degree will have up to six quarters of additional financial aid eligibility for a maximum of 21 quarters of undergraduate attendance.

Graduate students:

1. California educational credential students: four quarters of academic year attendance.
2. Master's degree designed for completion in:
 - a. three quarters: five quarters of academic year attendance.
 - b. six quarters: eight quarters of academic year attendance.
 - c. nine quarters: eleven quarters of academic year attendance.
3. Ph.D. students may be eligible for financial aid for up to 21 quarters of academic-year attendance following the completion of their baccalaureate degree (whether or not they received financial aid during the 21 quarters).

Medical students:

1. Incoming students in their first year of attendance will be eligible for financial assistance for a total of four years.
2. College of Medicine students who have been approved for Extended Curriculum will be eligible for financial assistance for a total of five years.

Unit Evaluation

1. **Remedial courses.** Required remedial courses will count toward the undergraduate, graduate, and medical student minimum unit/clock-hour requirement of the satisfactory academic progress policy for financial aid.
2. **Grade evaluation.** As defined below, units for the following grades will not be counted toward meeting the minimum unit/clock-hour requirement.
Undergraduate and graduate students: F (Failure), I (Incomplete), NP (Not Pass), U (Unsatisfactory), W (Withdraw), NR (No grade reported), Repeat courses (Repeat of a D grade or higher; repeat of an advanced standing or high school course). *Medical students:* F (Failure), NR (No grade reported), Repeat courses (Repeat of a D grade or higher).
3. **Incomplete courses—medical students.** Clock-hours for a grade of Incomplete (I) will be counted toward satisfactory academic progress for the quarter/quintile during which the student took the course. If the student fails to meet the requirements for removing the I and the I becomes a grade of F, the clock-hours for that course will be deleted retroactively from the student's satisfactory academic progress record.

4. **Courses in progress—medical students.** Clock-hours for courses In Progress (IP) will be counted toward satisfactory academic progress during the first quarter/quintile of a course requiring more than two quarters/quintiles for completion. Should the student fail to receive a passing grade, after the course has been completed the clock-hours for that course will be deleted retroactively from the student's satisfactory academic progress record.

Deficiencies in Satisfactory Academic Progress and Their Effect on Receiving Financial Aid

The requirements for undergraduate and graduate student satisfactory academic progress stated above are monitored each quarter and at the end of each academic year. Students who fail to maintain satisfactory academic progress will have their financial aid eligibility affected in the following manner.

1. Quarterly totals—unit and GPA

a. Cumulative GPA below the minimum required total:

Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive financial aid funds for that academic year but the GPA deficiency must be cleared by the end of spring quarter of that academic year or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the GPA deficiency. Note: GPA deficiencies must be cleared at a University of California campus.

b. Unit deficiencies:

i. Enrolled in less than the minimum units required but at least six per quarter. Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive financial aid funds for that academic year but the unit deficiency must be cleared by the end of spring quarter of that academic year or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the unit deficiency.

ii. Enrolled in less than six units per quarter. Students are placed on Satisfactory Academic Progress probation for the remainder of the academic year. They are able to receive campus-based financial aid funds for that academic year but the unit deficiency must be cleared by the end of spring quarter or the end of summer session. Eligibility for the following academic year will be dependent upon clearing the unit deficiency.

2. Academic year totals—units and GPA. The Financial Aid Office will verify the cumulative totals for units and GPA after the conclusion of spring quarter. Students who have unit and/or GPA deficiencies will be required to make up the deficiency prior to receiving any future financial aid funds, including funds that would be used for payment of fees.

3. Quarter limits of eligibility. At the end of each quarter students will be notified by the Financial Aid Office if they are nearing the quarter limit of eligibility for financial aid. The notice will indicate how many quarters of eligibility remain. Students also will be notified when they have completed the maximum number of quarters of eligibility for financial aid.

Satisfactory Academic Progress Appeals

After failure to maintain satisfactory academic progress, a student will be considered for financial aid only when one of the following conditions has been met: (a) sufficient units/clock-hours have been completed and/or the minimum cumulative GPA requirement has been satisfied, or (b) it is established through the financial aid appeals process that the student encountered some type of extenuating circumstances during the quarter(s) in question which hindered academic performance (i.e., prolonged hospitalization, death in the family).

Appeals Procedure

Students wishing to appeal must submit the UCI Financial Aid Appeal Request Form (available from the Financial Aid Office); a letter to the Financial Aid Office stating their reasons for failing to meet the unit, clock-hour, or GPA progress requirements, and whether or not they have solved their difficulties; and any other requested documents. Undergraduate and graduate students may seek the assistance of the University Ombudsman in the preparation of appeals. Medical students may seek the assistance of the Associate Dean of Student and Resident Affairs in the preparation of appeals. They may also be required to submit a degree check, course plan, or letter from their dean.

Undergraduate Students—All relevant material will be presented to the Financial Aid Appeals Board (the Board is composed of Financial Aid professional staff). Once material has been reviewed, the Board will decide whether eligibility for aid will be reinstated. In the event the Board decides not to accept an appeal, the student will be given the right to a personal interview with the Board. If the student decides to exercise this right, a final recommendation based upon the interview and written material will be made by the Board and forwarded to the Director of Financial Aid for a final decision.

Graduate Students—Appeals are reviewed by (1) the Graduate Advisor of the student's advanced degree program and (2) the Dean of Graduate Studies, who will make the final recommendations to the Director of Financial Aid for a final decision.

Medical Students—All relevant materials will be presented to the Committee on Promotions and Honors. If the Committee, after consideration of the appeal, determines that the appeal should be approved, its decision will be forwarded to the Director of Financial Aid and aid will be reinstated. In the event the appeal is denied by the Committee, the student will be given the right to a personal interview with the Committee. The Committee will forward the final decision to the Director of Financial Aid for implementation.

Scholarships

Scholarships are awarded on the basis of academic ability, achievement, and promise. They do not require repayment. Although a few honorary scholarships are awarded on the basis of academic excellence alone, many also require that an applicant demonstrate financial need. UCI offers students with proven high academic achievement and leadership potential seven top honors awards: Regents', University, Chancellor's Club, Alumni Association, Scholar's Circle, UC Irvine Scholar, and UCI Foundation Scholarships. The scholarships have stipends which range from \$250 to full in-state fees; or, in the case of Regents' Scholarships, may provide full demonstrated need.

Entering Freshman and Transfer Students

Students who are entering UCI in the fall must complete the scholarship section of the *UC Application for Undergraduate Admission and Scholarships* and submit the application by November 30. The Financial Aid Office automatically collects information about applicants' scholarship qualifications. Applications that meet the requirements are reviewed by the Faculty Committee on Undergraduate Scholarships, Honors, and Financial Aid. Information about the Alumni Scholarship is available in the *UC Application for Undergraduate Admission and Scholarships*.

Restrictive Endowment Scholarships

Eligibility requirements for Restrictive Endowment Scholarships vary greatly and are restricted in terms of such student characteristics as geographic location, family background, academic major, and career goals. For the most part, these scholarship awards are based on the student's established financial need. All UCI students will be considered for Restrictive Endowment Scholarships based upon information from the *UC Application for Undergraduate Admission and Scholarships* and their current academic records.

Regents' Scholarships

Regents' scholarships, among the highest honors conferred upon UC students, are awarded on the basis of academic excellence and exceptional promise. Undergraduate students are eligible upon graduation from high school or transfer from community college. Medical students are eligible during any year of their study in medical school. The scholarship is awarded both as an honorarium and a stipend. It may be renewed for an additional one or three years depending on the year of appointment, provided the student completes an average of 12 units per quarter and maintains a grade point average of at least 3.25. The honorarium is based upon year of appointment as a Regents' Scholar and is awarded without reference to financial need. The amount of the stipend will vary depending on the student's established financial need.

University Scholarships

University scholarships are offered to students entering their freshman year who show evidence of high scholastic attainment. Students who demonstrate financial need may receive stipends funded by The Regents of the University of California. These stipends may be renewed by completing the application process and demonstrating financial need.

National Merit Scholarships

UCI is a sponsor of the National Merit Scholarship. Recipients are selected from a list of finalists who selected UCI as their first college choice on the National Merit Scholarship Application. Annual awards for attendance at UCI are up to full in-state fees.

ROTC Scholarships: See the Supplementary Educational Programs section.

Grants

Grants are awarded on the basis of financial need. There is no repayment requirement. A student's financial aid award includes grant funds whenever regulations, UCI policies, and funding levels permit.

Federal Pell Grant is the largest federally funded grant program and provided up to a maximum of \$2,700 for the 1997-98 academic year. To be eligible, applicants must be U.S. citizens or eligible noncitizens, be enrolled as undergraduates, have not previously received a bachelor's degree, and demonstrate financial need. Students must use the FAFSA to apply for this grant.

Cal Grant A is a State-funded scholarship program which currently provides awards to be applied to the payment of University fees. In 1997-98 Cal Grant A awards paid up to \$3,799. To be eligible, applicants must be California residents and demonstrate financial need. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant A. The filing deadline for new applicants is March 2 for the following year.

Cal Grant B is a State-funded grant program which provided, in 1997-98, awards up to a maximum of \$1,410 during the student's first year and \$1,410 plus \$3,799 toward fees during subsequent years. To be eligible, applicants must be California residents, demonstrate financial need, and be entering college or not have completed more than one quarter of college work. Students must use the FAFSA and GPA Verification Form to apply for Cal Grant B. The filing deadline for new applicants is March 2 for the following year. *NOTE: Students may not receive both Cal Grant A and Cal Grant B. If offered both, the Financial Aid Office recommends taking Cal Grant B over Cal Grant A.*

Federal Supplemental Educational Opportunity Grant (FSEOG) provides grant aid for U.S. citizens and eligible noncitizens who are undergraduate students and have demonstrated financial need. These federal grants range from \$100 to \$4,000 per year, depending upon financial need.

UC Grant-In-Aid (GIA) is funded by The Regents of the University of California and by the State of California and provides grant aid for full-time students who demonstrate financial need. The amount awarded depends upon financial need and funding levels.

Loans

Loans are often part of a financial aid award. They provide recipients with an opportunity to defer the cost of their education by borrowing when needed and paying later. However, loan recipients must pay interest on the amount borrowed. The deferment and cancellation provisions for the loans listed below are contained on the promissory note each recipient must sign and also may be obtained from the Financial Aid Office.

A student's loan responsibility, prior to acceptance of the loan, is to understand the terms of the loan. After accepting the loan, the recipient must repay the loan in accordance with the repayment schedule, advise the Financial Aid Office upon leaving UCI; participate in an exit interview; and provide the Financial Services Office with a current address after leaving UCI. In case of death or total disability, outstanding loan obligations may be canceled upon presentation of official confirming documents.

Federal Perkins Loan (formerly National Direct Student Loan) provides long-term federal loans for U.S. citizens and eligible noncitizens. The amounts awarded vary, depending on financial need, but cannot exceed \$3,000 annually for undergraduates and \$5,000 annually for graduate students. Cumulative totals for the full term of college attendance may not exceed \$15,000 as an undergraduate and \$30,000 as a graduate student. The \$30,000 cumulative total includes loans received as an undergraduate student and Federal Perkins Loan funds received at all colleges or universities attended. No interest is charged nor is repayment required while

the borrower is enrolled in at least one half of the normal academic load. Interest of five percent a year begins nine months* after the borrower ceases to be enrolled or is enrolled less than half-time, and repayment must be completed within a 10-year period.

* For loans made prior to July 1, 1987, interest charges and repayment begin six months after the borrower ceases to be enrolled or is enrolled less than half-time.

University Loan, funded by The Regents of the University of California, provides long-term loans to full-time students who demonstrate financial need. The maximum amount for an academic year is \$3,000. Interest of five percent a year begins six months after the student ceases to be enrolled at least half-time, and repayment must be completed within ten years. Two cosigners are required.

William D. Ford Direct Loan Program

Subsidized William D. Ford Federal Direct Loan (formerly Guaranteed Student Loan), processed through the U.S. Department of Education and UCI, is available to undergraduate, graduate, and medical students who are U.S. citizens or eligible noncitizens, and who demonstrate financial need. During an academic year, the maximum a student may borrow is: \$2,625, freshmen; \$3,500, sophomores; \$5,500, juniors and seniors; \$8,500, graduate and medical students. Both a guarantee and origination fee will be deducted from the amount of the loan prior to issuing the check.

Interest rates: The federal government pays interest during the deferment period for Subsidized Direct Loans. Interest rates are variable for loans to new borrowers with first disbursements on or after October 1, 1992, based on 91-day Treasury Bill plus 3.10 percent, capped at 8.25 percent. Borrowers will be charged a 3 percent origination fee and an insurance premium of 1 percent.

Interest rates: 1991-92 borrowers, 8 percent*. Repeat borrowers: loans after September 1983, 8 percent; loans from January 1980-September 1983, 9 percent; loans before January 1980, 7 percent. (*First-time loans made after July 1, 1988, have an 8 percent rate for the first four years of repayment. Beginning with the fifth year, interest is 10 percent on the remaining balance.)

Cumulative maximums: Dependent, undergraduate, \$23,000; independent, undergraduate, \$46,000; graduate and medical students, \$65,500 (includes undergraduate loans). Deferment period before repayment: Six months after ceasing to be enrolled at least half-time. Full repayment: Up to 10 years.

Unsubsidized Federal Direct Loans have the same terms and conditions as the Federal Direct Loan, including the aggregate loans limits, interest rate, and repayment. During an academic year the maximum a dependent student may borrow is \$2,625, freshman; \$3,500, sophomore; \$5,500, juniors and seniors. Independent students may borrow an annual maximum of: \$6,625, freshmen; \$7,500, sophomores; \$10,500, juniors and seniors; \$18,500, graduate and medical students. These maximum amounts include any amount borrowed under the Subsidized William D. Ford Federal Direct Loan program. However, the loan is not based on need. Students may borrow an amount equal to the cost of attendance less any estimated financial assistance up to the annual loan limits in effect at the time the loan is disbursed. Students must first apply for the Federal Direct Loan prior to consideration for the Unsubsidized Federal Direct Loan. There is no interest subsidy for this loan; students pay the interest charged while enrolled at UCI. Students may receive both subsidized and unsubsidized Federal Direct loans but the total may not exceed the loan limits. Borrowers with both types of loans may have a single repayment schedule.

Interest rates: Variable, adjusted annually, for loans to new borrowers with first disbursements on or after October 1, 1992, based on 91-day Treasury Bill plus 3.10 percent, capped at 8.25 percent. Borrowers will be charged a 3 percent origination fee and an insurance premium of 1 percent.

Cumulative maximum: Dependent, undergraduate, \$23,000; independent, undergraduate, \$46,000; graduate and medical students, \$73,000 (includes undergraduate loans). Deferment period before repayment: Interest accrues immediately and may be paid monthly or quarterly. Students also may request that the lender add the interest to the principal balance. Repayment of principal begins six months after ceasing to be enrolled at least half-time. Full repayment: Up to 10 years. Minimum payment: \$50 per month.



Various campus services, offices, libraries, and laboratories offer part-time employment opportunities for UCI students.

Federal Direct Parent Loans for Undergraduate Students (FPLUS) are designed to assist parents of dependent undergraduate students who are unable to demonstrate financial need for campus-based funds. Parents are eligible to borrow up to the cost of education for the academic year less any estimated financial aid each academic year on a student's behalf. The loan is limited to parents who do not have adverse credit histories as defined by regulation.

Interest rate: Variable, adjusted annually, based on a 52-week Treasury Bill plus 3.1 percent not to exceed 9 percent. Borrowers will be charged a 3 percent origination fee and an insurance premium of 1 percent.

Cumulative maximum: None. Deferment period before repayment: 60 days from day of final check disbursement for loan period. Full repayment: Up to 10 years.

Loans for Disadvantaged Students, Health Professional Student Loans (HPSL), and Primary Care Loans are available to medical students. Contact the College of Medicine Financial Aid Office for information.

Emergency loans are made from an emergency student loan fund made possible through various philanthropic individuals and organizations. Undergraduate and graduate students who have experienced unanticipated financial problems of a temporary nature may borrow up to \$100 without interest or service charge. Medical students may borrow up to \$300. Emergency loans must be repaid within 30 days after disbursement or by the end of the academic quarter, whichever occurs first. Applications are available in the Financial Aid Office or at the College of Medicine Financial Aid Office. This loan is not based on demonstrated financial need.

Federal College Work-Study

The Federal College Work-Study Program offers eligible students who demonstrate need an opportunity to pay for their living and educational expenses as they occur. By participating in the Federal College Work-Study Program, students can reduce the amount of the loan to be repaid after leaving school. Medical students must obtain the approval of the Associate Dean of Student and Resident Affairs prior to obtaining work-study employment. Students

awarded work-study have the choice of obtaining a work-study job either on campus or off campus at an approved nonprofit agency. A variety of work opportunities are available, and such part-time work experience can be a valuable asset when seeking employment after graduation. Information about the terms and conditions of work-study employment is provided in the UCI Financial Aid Award notification sent to all UCI students receiving financial aid who are eligible for work-study.

Veterans Work-Study Program is available only to U.S. military veterans and their eligible dependents. Positions are limited. Separate applications and detailed information are available from the UCI Veterans Student Services Office, 201 Student Services I; telephone (949) 824-6477.

Additional Aid for Graduate and Medical Students

Most graduate fellowship programs are administered by the Office of Research and Graduate Studies. Graduate students should contact the Office, 145 Administration Building; telephone (949) 824-6761. Medical students should contact the College of Medicine Financial Aid Office, 206 Medical Education Building, telephone (949) 824-6476; see the College of Medicine section for additional information.

Aid for International Students

Students who are not U.S. citizens or permanent residents of the United States, and have experienced an unanticipated change in their financial situation, may be eligible for assistance from a very limited number of University programs. The financial change must be fully documented. In order to be considered for financial aid, students must have completed at least three years of study at UCI as undergraduates or four years of study as graduate students. Financial aid is limited to the expenses for books and fees; tuition will not be considered. International students may contact the Financial Aid Office or the International Center for further information.

Aid for Students with Disabilities

All forms of student financial aid are available to eligible students with disabilities. Interested students should follow the regular financial aid application procedures and should notify the Financial Aid Office of any additional expenses they may incur because of a disability. Supporting documentation must be provided.

Student Employment

The UCI Career Center, located in the Student Services I building, assists UCI students in obtaining part- or full-time employment during the academic year and summer vacation. Financial aid recipients who have been awarded work-study also may obtain on-campus or off-campus job referrals in the Center. Students may easily access all job listings using their student I.D. number via the Career Center's Web site at <http://www.uci.edu/~career>. This site may be accessed through terminals located in the Center, from the many other on-campus terminals available to students, or via home Internet access.

UNDERGRADUATE ADMISSIONS

The Office of Admissions and Relations with Schools is responsible for the admission of new undergraduate freshman and transfer students. Inquiries may be addressed to the Office of Admissions and Relations with Schools, 204 Administration Building, University of California, Irvine, CA 92697-1075; telephone (949) 824-6703; e-mail: oars@uci.edu; World Wide Web: <http://www.reg.uci.edu/UCI/ADMISSIONS/>. The Office is open from 8 a.m. to 5 p.m., Monday through Friday.

The information on admission to UCI given below is organized as follows:

- Categories of Application
- Admission as a Freshman Applicant
- Admission to the University Program for High School Scholars
- Admission as a Transfer Applicant
- Nonresident Admission Requirements
- Admission of International Students
- Advanced Placement Credit
- Application Procedures

Categories of Application

An **undergraduate** applicant is a student who wishes to complete a program of study leading to a Bachelor of Arts, Bachelor of Music, or Bachelor of Science degree.

A **freshman** applicant is a student who has graduated from high school or has completed a California Certificate of Proficiency, an equivalent proficiency examination from another state, or the General Educational Development (GED) Certificate, but has not enrolled in a regular session of any collegiate-level institution. Summer sessions immediately following graduation are excluded in the determination of freshman status.

The University considers a **transfer** applicant as a student who has completed high school and who has been a registered student in a regular session of a college or university. Students who meet this definition cannot disregard their college record and apply as freshmen. To be considered as a **California community college transfer** applicant to UCI, a student must have earned at least 28 semester units from a California community college in the last two regular terms of enrollment.

A **nonresident** applicant is a student whose legal permanent residence (as determined by the University) is outside of the State of California. Nonresident applicants are generally required to pay Nonresident Tuition and must also present a higher grade point average than is required of California residents. Refer to the Nonresident Admission Requirements section for further information.

An applicant for **readmission** is a student who was formerly registered and enrolled at UCI and who has interrupted the completion of consecutive quarters of enrollment. See Readmission: Undergraduate and Graduate Students.

A **second baccalaureate** applicant is a college graduate who because of a change of objective wishes to obtain a second bachelor's degree in a major different from that of the first degree.

An **international** applicant is a student who holds or expects to hold a student, exchange, visitor, or diplomatic visa and who wishes to attend school in the United States.

A **University Program for High School Scholars (UPHSS)** applicant is an accelerated high school student who wishes to pursue a particular subject beyond the level offered by the high school or perhaps an area of interest not offered by the high school in which the student meets the necessary prerequisites. Participants are officially registered UCI students who enroll in the same courses and are evaluated on the same basis as full-time undergraduates.

UPHSS students enroll in one or two UCI courses on a reduced-fee basis concurrently with their high school courses.

Admission as a Freshman Applicant

The undergraduate admissions policy of the University of California is guided by the University's commitment to serve the people of California and the needs of the State, within the framework of the California Master Plan for Higher Education.

The University's eligibility requirements follow the guidelines set forth in the Master Plan, which specify that the top one-eighth of the State's high school graduates be eligible for admission to the University of California. These requirements, described in detail in the Basic Eligibility Requirements section, are designed to ensure that all eligible students are adequately prepared for University work. Meeting eligibility requirements entitles an applicant to be considered for admission but does not constitute an offer of admission.

In recent years, the number of freshman applicants to UCI has exceeded the number of spaces available. Since the campus cannot admit all eligible applicants, it must use standards that are more demanding than the minimum UC requirements to select students. These standards, which the University calls selection criteria, are used to identify applicants who have demonstrated the highest academic achievement and who have a variety of other qualities that can contribute to the strength and diversity of the campus community.

In the case that UCI is unable to accommodate all qualified applicants in their first-choice major, those students who indicate a valid alternate major may be offered admission in that major. Students who wish to change their major after enrolling at UCI must file a change of major petition.

SELECTION CRITERIA

UCI seeks to enroll students who have a demonstrated record of academic excellence. The level of performance needed to gain admission varies from year to year depending on the size and the academic quality of the applicant pool and the number of enrollment spaces. All applicants are assessed for evidence of academic achievement and potential. Although the number and type of courses completed, and grades and test scores earned remain important elements in the selection process, UCI recognizes that merit is demonstrated in many forms and can be measured in different ways.

The following criteria are used to select between 50 to 75 percent of the freshmen class:

- Academic grade point average (GPA) calculated on all academic courses completed in the subject areas specified by the University's eligibility requirements; the maximum value allowed for GPA is 4.0.
- Scores on the SAT I (or ACT) and three required SAT II Subject Tests.
- The number the college preparatory courses completed and the level of achievement in those courses including: courses completed beyond the minimum subject requirements; University-approved honors courses, e.g., Advanced Placement, International Baccalaureate Higher Level courses, and college courses; and, the quality of the senior-year program.
- Evidence of intellectual or creative achievement or substantial public service. This criterion recognizes extraordinary, sustained achievement in any field of intellectual endeavor, for example, a student who has received significant recognition for literary or scientific accomplishments, a student who has demonstrated a strong commitment to the visual and/or performing arts, or a student who has demonstrated substantial public service in any academic field of study.

Students interested in the Biological Sciences, Engineering, and Information and Computer Science majors should be aware of the following provisions.

School of Engineering: Applicants must complete four years of high school mathematics, including at least one year beyond intermediate algebra.

Biological Sciences, Information and Computer Science: The number of applicants that can be admitted to these majors is limited.

The remaining 25 to 50 percent of freshmen will be selected on the basis of academic achievement and potential, as described above, and elements related to the applicants' personal experiences including exceptionally challenging curriculum and outstanding academic and co-curricular accomplishments. Achievements will be considered in the context of the opportunities the student has had, any hardships or unusual circumstances the applicant has faced, and the ways in which the student has responded to these challenges.

BASIC ELIGIBILITY REQUIREMENTS

The University defines a freshman applicant as a student who has graduated from high school or completed a California Certificate of Proficiency, or the General Educational Development (GED) examination, and who has not enrolled in a regular session of any collegiate-level institution. Summer sessions are excluded in the determination.

Freshman applicants who are not residents of California should refer to the Nonresident Admission Requirements section.

Applicants who do not meet the requirements for admission at the time of high school graduation may be considered after they meet the requirements for admission in advanced standing (see Admission as a Transfer Applicant). Transfer credit will be granted for an acceptable course from an accredited college or university taken while still in high school if reported on a valid transcript issued by the college which conducted the course.

REQUIREMENTS

To be eligible for admission to the University as a freshman, an applicant must meet the Subject, Scholarship, and Examination requirements. It is also possible to qualify for admission by examination alone, as explained in the Admission by Examination Alone section. Meeting basic eligibility requirements entitles an applicant to be considered for admission but does not constitute an offer of admission.

1. UC Subject Requirement

The UC subject requirement consists of several courses from six core subjects. These required courses are called the "a through f" subjects. Students are required to complete 15 "a through f" subjects as described below. (A one-year course is equal to one unit; a one-semester course is equal to one-half unit.) Also, at least seven of the 15 units must have been earned in courses taken during the last two years of high school. To meet the subject requirement, these courses must appear on a certified course list which is available in the high schools for California applicants. The Office of Admissions and Relations with Schools will review and accept courses that meet the requirements for applicants graduating from out-of-State schools.

"A through F" Course Requirements

a. History/Social Science: 2 years required. Two years of history/social science, including one year of U.S. history or one-half year of U.S. history and one-half year of civics or American government; and one year of world history, cultures, and geography.

b. English: 4 years required. Four years of college-preparatory English composition and literature.

(All English courses must require frequent and regular writing and reading of classic and modern literature, poetry, and drama. Only two semesters of a certified English-as-a-second-language [ESL] course will be accepted. Also, not more than two semesters of ninth-grade English will be accepted for this requirement.)

c. Mathematics: 3 years required; 4 recommended. Three years of mathematics elementary algebra, geometry, and advanced (second-year) algebra.

(Mathematics courses taken in grades 7 and 8 may be used to meet part of this requirement if they are accepted by the high school as equivalent to its own courses.)

d. Laboratory Science: 2 years required; 3 recommended. Two one-year courses in laboratory science providing knowledge in at least two of the fundamental disciplines of biology (which includes anatomy, physiology, marine biology, aquatic biology, among others), chemistry, and physics. Two years of an integrated sciences program are acceptable provided the courses cover the basic concepts of two of the three fundamental disciplines. Laboratory courses in earth/space sciences are acceptable if they have as prerequisites or provide basic knowledge in biology, chemistry, or physics. Not more than one year of ninth-grade laboratory science can be used to meet this requirement.

e. Language Other Than English: 2 years required; 3 recommended. Two years of a single language other than English in which there is substantial literature. Courses should emphasize speaking and understanding, and include instruction in grammar, vocabulary, reading, and composition.

(Language other than English courses taken in grades 7 and 8 may be used to meet this requirement if they are accepted by the high school as equivalent to its own courses. Students are strongly encouraged to complete three or four years of one language in preparation for the UCI language other than English breadth requirement.)

f. College-Preparatory Electives: 2 years required. Two units (four semesters), in addition to those required in the "a–e" requirements chosen from the following areas: visual and performing arts, history, social science, English, advanced mathematics, laboratory science, and languages other than English—a third year in the language used for the "e" requirement or two years of another language.

The general objective of the elective program is to improve the student's analytical ability, promote their artistic development, and strengthen their oral and writing skills. Electives should involve considerable reading and writing in an amount appropriate to the course and the subject matter. The emphasis in elective courses should be to prepare for future college-level work.

Courses Satisfying the "f" Requirement:

History: All history courses should require extensive reading and writing. Courses should enable students to establish a breadth of understanding of history (for example, world history, political history, or economic history) and should provide an understanding of the human past, including its relation to the present. Courses should develop a student's critical thinking, ability to evaluate historical data, and ability to analyze and synthesize evidence.

English: All English courses should require substantial reading with frequent and extensive practice in writing which is carefully evaluated and criticized. A course in journalism, speech, debate, or drama is acceptable if it meets the rigor in reading and writing stated above. An advanced-level course in English as a second

language may be acceptable provided it meets the standards outlined under the "b" requirement.

Advanced Mathematics: Courses in mathematics with second-year algebra as a prerequisite such as trigonometry, linear algebra, pre-calculus (analytic geometry and mathematical analysis), calculus, combinatorics, probability, and statistics are acceptable electives.

A computer science course is an acceptable mathematics elective if it fulfills the following objectives. The course should enable each student to express algorithms in a standard computer language such as Pascal, BASIC, FORTRAN, or COBOL. By the end of the course each student should complete substantial programming projects in the language used. The course should also involve the study and mastery of various aspects of computer science: how computers deal with data and instructions, the internal components of a computer, and the underlying computer logic.

Laboratory Science: A laboratory science course should be a course in the biological or physical sciences in which students make their own observations and measurements and analyze these data to obtain further information. On average the laboratory activities should involve an amount of time equivalent to at least one full class period per week.

An introductory science course normally offered in the ninth grade is an acceptable science elective provided it is designed to prepare students for laboratory science courses in the tenth grade and beyond. The course must provide an introduction to the fundamental principles of physical and biological science. Laboratory activities as defined above shall be included. (A terminal course designed only to meet graduation requirements is not an acceptable science elective.)

Language Other Than English: It is recommended that elective courses be in the same language used to satisfy the language other than English "e" subject requirement. Elective courses in this language must have at least two years of the language as prerequisite. In order for a second language to qualify as an elective, at least two years of this language must be completed.

Social Science: Courses should be in one of the social sciences: anthropology, economics, geography, political science, psychology, or sociology, or, alternatively, courses should be interdisciplinary, drawing knowledge from two or more of these fields. Course objectives should include as many of the following as are applicable to the field: (1) to understand the development and basic features of major societies and cultures, (2) to examine the historic and contemporary ideas that have shaped the world, (3) to understand the fundamentals of how differing political and economic systems function, (4) to examine the nature and principles of individual and group behavior, and (5) to study social science methodologies.

In order to develop a student's critical thinking, ability to evaluate ideas and information, and ability to analyze and synthesize qualitative and quantitative evidence in the laboratory and in the field, a social science course must include a body of basic knowledge, extensive reading, and written and oral exposition.

Courses which are designed to meet State-mandated social studies graduation requirements are acceptable provided that they meet the above criteria. Courses of an applied, service, or vocational character are not acceptable social science electives.

Visual and Performing Arts: Courses in this area consist of instruction in dance, drama/theatre, music, and the visual arts. Courses should give specific attention to as many of the fundamental arts components as possible, including the perceptual, the creative, the historical, or the critical as are applicable.

Courses should enable students to understand and appreciate artistic expression and, where appropriate, to talk and write with discrimination about the artistic material studied. Courses devoted to developing creative artistic ability and those devoted to artistic



performance should have prerequisites (either course work or experience approved by the instructor) and should assume proficiency beyond the introductory level.

Courses must require on average the equivalent of a five-period class per week. Work outside of class must be required; for example, portfolio/performance preparation, reading, writing, or critical listening/viewing.

Dance courses offered for physical education credit or under any other departmental arrangement are acceptable provided they include content satisfying the above criteria.

Courses which are primarily athletic, or body conditioning are not acceptable visual and performing arts electives.

2. Scholarship Requirement

Applicants who attain a minimum grade point average of 3.30 (where the letter grade A = 4, B = 3, and C = 2) in "a through f" subjects taken after the ninth grade will be considered eligible for admission to the University regardless of their scores on the standardized tests used for the examination requirement. Applicants whose grade point average is below 3.30 but above 2.81 are eligible to be considered for admission if they achieve the composite or total test score specified on the Eligibility Index. The grade point average will be based on semester grades, unless a high school gives only year grades. (Grades earned in ninth grade or earlier are not used to calculate the grade point average for admission; however, these courses will be used to meet the subject requirement if they are completed with grades of C or better.) Freshman applicants may be required to present academic qualifications beyond those described here.

Applicants should have earned grades of C or better in meeting the subject requirement. Any “a through f” course in which a student received a D or F grade must be repeated with a higher grade or, in sequential areas of mathematics, chemistry, and language other than English, *only* validated by completion of advanced course work. (Applicants should consult with their counselors as to how these grades can be remedied and how the University will use them in the evaluation of the high school record.)

Honors-Level Courses. Advanced Placement courses, higher-level courses offered through the International Baccalaureate Program, courses certified by the University as honors courses, and college courses in the “a through f” college preparatory subjects that are transferable are examples of honors-level courses. The University assigns extra grade points for up to four units of honors-level courses taken in the last three years of high school. **NOTE:** No more than two units of honors-level courses taken in grade 10 may be assigned extra points. Grades in honors courses will be counted as follows: A = 5 points, B = 4 points, and C = 3 points. Grades of D are not assigned extra points. To be counted, these grades must have been earned in University-approved honors-level courses in history, English, advanced mathematics, laboratory science, language other than English, computer science, social science, and the visual and performing arts.

3. Examination Requirements

All freshman applicants must submit examination scores as described below. *Students applying for admission for fall quarter should complete their examination requirements during May or June of their junior year or during their senior year, but no later than the December test date. (Typically, this means that students will take either the Scholastic Assessment Test I or the American College Test in October or November, and will take the Scholastic Assessment Test II in November or December.)* Scores from earlier dates will be accepted. Applicants must ensure that reports for all scores have been submitted directly to the UCI Office of Admissions and Relations with Schools. The following examinations are required:

1. **One Aptitude Test**, either:

- a. The Scholastic Assessment Test I: Reasoning Test (SAT I): the verbal and mathematical reasoning scores submitted from this test must be from the same sitting; *or*
- b. The American College Test (ACT) composite score and

2. **Three Scholastic Assessment Test II: Subject Tests (SAT II) examinations**, which must include (a) writing, (b) math, level 1, 1C, or 2C, and (c) one from among English literature, language other than English, sciences, or social studies. The SAT II examination in Literature may not be substituted for the Writing Test.

Admission by Examination Alone

A student can qualify as a freshman by examination alone. The required total score on the SAT I is 1,400. (If the ACT is presented, the minimum score is 31.) Also, the student's total score on the three SAT II examinations must be 1,760 or higher, or at least 1,850 if a nonresident of California, with no score less than 530 on any individual SAT II examination. This option does not apply to students who will have completed more than 12 transferable units prior to admission. The SAT II examinations cannot be taken in academic subjects covered by transferable college courses a student may have taken. Freshman applicants who qualify for admission by examination alone may be required to present academic qualifications in addition to the test scores listed above.

Eligibility Index

A–F GPA	ACT ¹ or Composite	SAT I ² Total	A–F GPA	ACT ¹ or Composite	SAT I ² Total
2.82	36	1600	3.06	25	1150
2.83	36	1590	3.07	24	1130
2.84	35	1580	3.08	23	1110
2.85	35	1570	3.09	23	1090
2.86	35	1560	3.10	22	1070
2.87	34	1550	3.11	22	1050
2.88	34	1530	3.12	21	1030
2.89	33	1510	3.13	21	1010
2.90	33	1490	3.14	20	980
2.91	33	1470	3.15	20	960
2.92	32	1450	3.16	19	940
2.93	31	1430	3.17	19	920
2.94	31	1400	3.18	18	900
2.95	31	1370	3.19	18	870
2.96	30	1350	3.20	17	840
2.97	30	1330	3.21	17	810
2.98	29	1310	3.22	16	780
2.99	28	1290	3.23	16	750
3.00	28	1270	3.24	15	720
3.01	27	1250	3.25	15	690
3.02	27	1230	3.26	14	660
3.03	26	1210	3.27	14	630
3.04	26	1190	3.28	13	600
3.05	25	1170	3.29	12	570

¹ ACT is scored in intervals of 1 point from a minimum of 1 to a maximum of 36.

² SAT I is scored in intervals of 10 points from a minimum of 400 to a maximum of 1,600.

Admission to the University Program for High School Scholars (UPHSS)

The opportunity to enroll in University classes concurrent, usually, with the senior year of high school is available to certain accelerated students. Admission to UPHSS is based upon a combination of criteria including grades, specific preparation in the field of interest, standardized test scores, recommendations, and statement of purpose. Through UPHSS, qualified high school students may enroll in UCI courses, receive grades based on the same standards as full-time students, and receive full University of California credit for their work.

To continue at UCI after high school graduation, a UPHSS student need only complete a change-of-major petition and enroll as a full-time student. The change of major petition must be filed with the Registrar by the third week of the quarter prior to full-time enrollment. Graduation requirements (UC, UCI, school, and major) for UPHSS students will be determined by the year of the first enrollment in a course as a UPHSS student. However, regulations limiting the ways in which matriculated students may fulfill the writing requirements (Subject A, lower- and upper-division) do not apply to UPHSS students until they enroll as regular UCI students after high school graduation.

If the UPHSS participant wishes to attend another University of California campus, the student must follow the regular admissions process and must complete a *UC Undergraduate Application*. More information about UPHSS is available from the Office of Admissions and Relations with Schools and high school counselors.

Admission as a Transfer Applicant

The University defines a transfer applicant as a student who has completed high school and who has been a registered student in another college or university or in college-level extension classes other than a summer session immediately following high school graduation. UCI considers a California community college transfer applicant as a student who has earned at least 28 semester units from a California community college in the last two regular terms of enrollment. A transfer applicant may not disregard the college record and apply for admission as a freshman. (Transfer applicants who are not residents of California should also refer to the section on Nonresident Admission Requirements.)

SELECTION CRITERIA

UCI attempts to accommodate as many qualified transfer applicants as possible. Priority consideration for admission of advanced-standing applicants is given to junior-level applicants (with a minimum of 60 semester/90 quarter units of transferable credit) from California community colleges and is based upon: (1) GPA in transferable courses; (2) depth of preparation toward general education and major requirements; and (3) participation in academically selective honors courses or programs. Junior transfers from four-year colleges, including other UC campuses, and lower-division transfers will be considered as space permits. Applicants for fall quarter admission must complete required English composition and mathematics courses by the end of the spring term. Applicants for winter or spring quarter must complete required English composition and mathematics courses by summer or fall terms, respectively.

In the case that UCI is unable to accommodate all qualified applicants in their first-choice major, those students who indicate a valid alternate major may be offered admission in that major. Students who wish to change their major after enrolling at UCI must file a change of major petition. This is of particular importance to those who apply in majors which are subject to additional course prerequisites and/or have a limit placed on the number of applicants admitted into the major. (See below.)

Some transfer applicants are selected based upon consideration of the academic criteria in conjunction with the following personal achievement criteria: an exceptionally challenging curriculum; outstanding accomplishments relevant to academic aims; hardships or unusual circumstances the applicant has faced, and the ways in which the student has responded to these challenges; a strong, thoughtful match between UCI's programs and the student's academic and career objectives, preparation, talents, and skills; and potential contributions to the campus. The level of performance needed to gain admission varies from year to year depending on the size and the academic quality of the applicant pool and the number of enrollment spaces.

Transfer applicants to majors in Applied Ecology, Biological Sciences, Chemistry, Economics, Engineering, Information and Computer Science, Mathematics, and Physics must complete prerequisite courses for the major as specified below. Note that the number of applicants that can be admitted to major in Biological Sciences, Information and Computer Science, and Psychology and Social Behavior is limited; preference is given to students with the highest GPAs overall.

Applied Ecology: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Applied Ecology major. All applicants must complete one year of general chemistry with laboratory.

Biological Sciences: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Biological Sciences major. All applicants must complete the following required courses: one year of general chemistry with laboratory and an approved sequence of biological science courses. There is a limit on the number of applicants admitted into the major.

Chemistry: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Chemistry major. All applicants must complete the following required courses: one-year of general chemistry with laboratory and one year of approved calculus.

Economics: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Economics major. All applicants must complete the following required courses: one-year of microeconomics and macroeconomics theory and one semester or two quarter courses of approved calculus.

Engineering: Applicants must select either Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Engineering (a general program of study which is open to upper-division students only), Environmental Engineering, or Mechanical Engineering as their major on the application. Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete the following required courses: one year of approved calculus, one year of calculus-based physics with laboratory, one semester or one year of general chemistry (whichever is required for the major) and one course in computational methods, as specified by the major. See the School of Engineering section of this *Catalogue* for information on courses required for junior academic standing.

Information and Computer Science: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Information and Computer Science major. All applicants must complete the following required courses: one year of discrete mathematics or calculus and one year of computer science including a programming course in a modern high-level language such as ADA, C++, Java, Modula-3 (Pascal and C may be used but are not recommended). There is a limit on the number of applicants admitted into the major.

Mathematics: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Mathematics major. All applicants must complete one year of approved calculus.

Physics: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission to the Physics major. All applicants must complete the following required courses: one year of calculus-based physics with laboratory and one year of approved calculus.

TRANSFER STUDENT ADMISSION REQUIREMENTS

The University of California requirements for admission as a transfer applicant vary according to the high school record. Transfer applicants who have completed a California Certificate of Proficiency or the equivalent must also meet regular University entrance requirements.

Transfer applicants should also refer to the section on Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree.

The transcript submitted from the last college attended must show, as a minimum, that the student was in good standing and had

earned a grade point average of 2.00 or better in all transferable course work.

A transfer applicant must also meet **one** of the following conditions:

1. Students who were eligible for admission to the University when they graduated from high school—meaning they satisfied the Subject, Scholarship, and Examination Requirements—are eligible to transfer if they have a C (2.0) average in their transferable college course work.
2. Students who met the Scholarship Requirement but did not satisfy the Subject Requirement must take transferable college courses in the subjects they are missing, earn a grade of C or better in each of these required courses, and earn an overall C (2.0) average in all transferable college course work to be eligible to transfer. Students who met the Scholarship Requirement but did not meet the Examination Requirement must complete a minimum of 12 semester (18 quarter) units of transferable work and earn an overall C (2.0) average in all transferable college course work completed.
3. Students who were not eligible for admission to the University when they graduated from high school because they did not meet the Scholarship Requirement must:
 - a. Complete 90 quarter units or 60 semester units of transferable college credit with a grade point average of at least 2.4, **and**
 - b. Complete the following course pattern requirement, earning a grade of C or better in each course:
 - i. Two transferable college courses (3 semester or 4–5 quarter units each) in English composition; **and**
 - ii. One transferable college course (3 semester or 4–5 quarter units) in mathematical concepts and quantitative reasoning; **and**
 - iii. Four transferable college courses (3 semester or 4–5 quarter units each) chosen from at least two of the following subject areas: the arts and humanities, the social and behavioral sciences, the physical and biological sciences.

NOTE: For UCI, in fulfilling items i and ii above, the courses in English and mathematics should be completed no later than the term indicated below:

Applicants for:	Courses must be completed by:
Fall	Spring term
Winter	Summer term
Spring	Fall term

ADMISSION FOR A SECOND BACHELOR'S DEGREE

A student whose educational objective has changed substantially after receiving the bachelor's degree may be considered for admission to a program for a second degree. Admission as a candidate for a second bachelor's degree requires that the applicant be fully eligible for admission to the University and have strong promise of academic success in the new major. All such admissions are subject to the approval of the dean or director of the UCI school or program in which the second degree will be earned.

Students who have *not* attended UCI as undergraduates during a regular academic quarter should complete an Application for Undergraduate Admission *and* a Supplementary Information for Second Baccalaureate Applicants form, available from the Office of Admissions and Relations with Schools. Students who have attended UCI as undergraduates during a regular academic quarter should obtain and complete a Second Baccalaureate Application form through the Registrar's Office.

Nonresident Admission Requirements

Admission requirements for applicants who are not California residents vary slightly from requirements for California residents. However, all nonresident freshman and transfer applicants are subject to the same selection criteria as California residents, as explained in a previous section. Refer to the Expenses and Fees section for information regarding residence classification for tuition purposes and the Nonresident Tuition Fee.

NONRESIDENT FRESHMAN APPLICANT

A nonresident freshman applicant must (1) graduate from a regionally or state-accredited high school, or complete an appropriate proficiency examination; (2) complete satisfactorily the "a through f" pattern of subject requirements listed under requirements for California residents; (3) earn a grade point average of at least 3.40 or higher in the required high school subjects (3.00 is equal to a B average); and (4) meet the examination requirement: one Aptitude Test either the SAT I (verbal and mathematical scores must be from the same sitting) or the American College Test (ACT) composite score, and three SAT II examinations which must include (a) writing, (b) math, level 1, 1C, or 2C, and (c) one from among English literature, language other than English, sciences, or social studies. (The SAT II examination in Literature may not be substituted for the Writing test.)

Please note that the Freshman Eligibility Index applies to California residents only. To be considered for admission by examination alone, a nonresident applicant must score either 1,400 on the SAT I or 31 on the ACT. The total score on the three SAT II examinations must be 1,850 or higher with a score of at least 530 on each test.

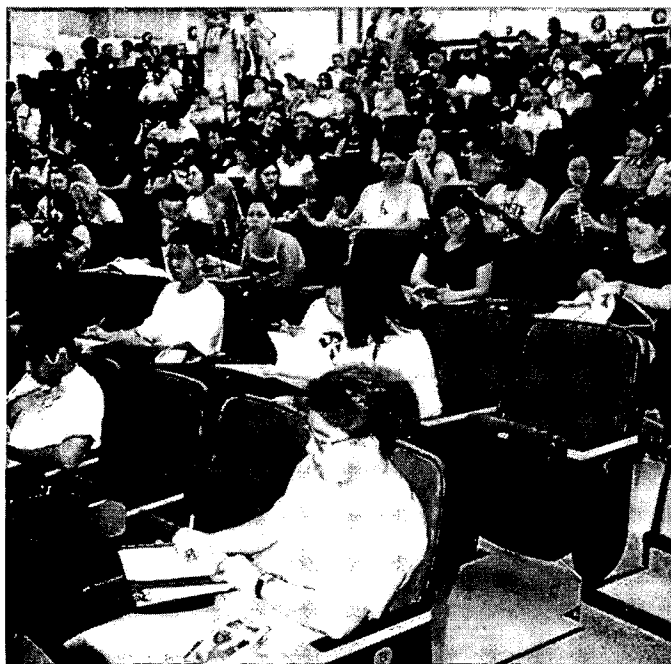
NONRESIDENT TRANSFER APPLICANT

The minimum admission requirements for nonresident transfer applicants are the same as those for residents (see page 40), except that nonresidents must have a grade point average of 2.8 or higher in all transferable college course work.

ADMISSION OF INTERNATIONAL STUDENTS

The credentials of an international undergraduate applicant—a student who holds or expects to hold a student, exchange, visitor, or diplomatic visa and who wishes to attend school in the United States—are evaluated in accordance with the general regulations governing admission. The application should be submitted to the University of California Undergraduate Application Processing Service early in the appropriate application filing period. This will allow time for exchange of necessary correspondence and, if the applicant is admitted, will help the student in obtaining the necessary passport visa. Official certificates and detailed transcripts of records should be submitted directly to the UCI Office of Admissions and Relations with Schools only when requested.

International applicants whose native language is other than English will be required to demonstrate their English proficiency. This is most often accomplished by achieving a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). Arrangements to take the TOEFL may be made by writing directly to TOEFL, Educational Testing Service, P.O. Box 6151, Princeton, NJ 08541-6151, USA; telephone (609) 771-7100; World Wide Web: <http://www.toefl.org/>. Students must request the Educational Testing Service to forward results of their tests to the Office of Admissions and Relations with Schools. Completion of an *acceptable* English composition course (as determined by the Office of Admissions and Relations with Schools) with a grade of C or better will also clear the English proficiency requirement for international applicants.



Students who wish to improve their English proficiency to meet the TOEFL requirement may enroll in the intensive Program in English as a Second Language sponsored by UCI Extension. Information is available from English and Certificate Programs for Internationals, UCI Extension, P.O. Box 6050, Irvine, CA 92616-6050. See Supplementary Educational Programs for additional information.

In addition to achieving a minimum TOEFL score of 550, all international students whose native language is other than English must take an English as a Second Language Placement Test upon arrival and prior to registration. Based upon the results of this test, students may be required to improve certain language skills by enrolling in English as a Second Language courses during their first year, with other major course work being adjusted accordingly.

Generally, financial assistance and scholarships from the University are not available to the nonimmigrant-visa student. International students must provide proof that sufficient funds will be available to meet their educational commitments while studying in the United States. International undergraduate students are considered as nonresidents of California and are required to pay nonresident tuition in addition to fees paid by legal residents of California. Students must also pay the International Student Health Insurance Fee, or have private insurance; see the Student Health Service section for information.

Please direct all inquiries regarding the undergraduate admission of international students to the Office of Admissions and Relations with Schools.

ENGLISH LANGUAGE PROFICIENCY OF PERMANENT RESIDENT, REFUGEE, AND INTERNATIONAL (F-1 VISA) STUDENTS: ENGLISH AS A SECOND LANGUAGE

Any student (a) whose first or native language is not English, (b) who has not satisfied the Universitywide Subject A requirement, and (c) whose score on the verbal portion of the SAT I is 430 or less, or any such student without a verbal SAT I score, must, regardless of the student's TOEFL (Test of English as a Foreign Language) score or TSWE (Test of Standard Written English) score, take an English as a Second Language Placement Test (ESLPT) prior to the first quarter of enrollment. Also, any student



Learning experiences at UCI range from large lecture courses to small seminars (like this one taught by Associate Professor Julia Reinhard Lupton, Department of English and Comparative Literature), and from studios and laboratories to independent research and field study.

who is identified as an ESL student through the Universitywide Subject A Examination must take the ESLPT. The ESLPT is given prior to the beginning of each quarter, during Welcome Week prior to the beginning of fall quarter instruction, and on dates to be announced. Information is available from the Testing Office (telephone 949-824-6207) and the Office of English as a Second Language (telephone 949-824-5991).

Based upon the results of the ESLPT, students may be required to enroll in ESL courses prior to enrolling in any other required writing courses. Students required to enroll in ESL courses must begin satisfying their ESL requirements within their first or second quarter at UCI. They must take these courses in consecutive quarters. The ESL requirements are to be completed within the first six quarters at UCI. Students who have not satisfied the ESL requirement by the end of their sixth quarter will be ineligible to enroll for a seventh quarter at UCI. Subject A must be satisfied during the quarter following the completion of ESL requirements. If the ESL requirements are completed during the first quarter of enrollment, the Subject A requirement must be satisfied before the beginning of the fourth quarter of enrollment.

ESL courses, offered by the School of Humanities and listed in the School's section of this *Catalogue*, include classes in writing, speaking and listening, and reading and vocabulary development.

CREDIT FOR ENGLISH-AS-A-SECOND-LANGUAGE COURSE WORK

Students whose first language is not English may receive up to 12 baccalaureate credits for English-as-a-second-language course work. Students may receive workload credit for courses taken beyond this 12-unit limit but will not receive additional credits applicable to the bachelor's degree.

CREDIT FOR NATIVE LANGUAGE

Students whose first language is not English may receive credit for course work in their native language and literature, provided such courses were completed on the college level in the country of the vernacular, or on the upper-division or graduate level at UCI or another accredited English-speaking institution. Some restrictions apply; see the School of Humanities section for information.

College Board Advanced Placement

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Art			
Art History	3, 4, or 5	8	Art History 40A, 40B, 40C. Satisfies categories IV and VII-B of the UCI breadth requirement.
Studio Art ¹			
Drawing	3, 4, or 5	8	Elective credit only.
General Portfolio	3, 4, or 5	8	Elective credit only.
Biology			
	3, 4, or 5 (Non-Biological Sciences Majors)	8	Satisfies category II of the UCI breadth requirement.
	3 (Biological Sciences Majors)	8	Elective credit only.
	4 or 5	8	Biological Sciences 94 plus 5 units of elective credit.
Chemistry			
	3	8	Elective credit only.
	4 or 5	8	Chemistry 1A plus 4 units of elective credit. (Chemistry 1A/1LA plus 3 units of elective credit for School of Engineering majors.)
Computer Science ²			
A Exam	3	2	Elective credit only.
	4 or 5	2	Engineering E10, CEE10, ECE11, or ICS 21.
AB Exam	3	4	ICS 21. ³
	4	4	Engineering E10, CEE10, ECE11, or ICS 21. ³ Satisfies category V of the UCI breadth requirement
	5	4	ICS 21 and 22; or Engineering E10, CEE10, or ECE11. Satisfies category V of the UCI breadth requirement.
Economics			
Macroeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20C.
Microeconomics	3	4	Elective credit only.
	4 or 5	4	Economics 20A-B.
English ¹			
English Composition and Literature	3 (on either or both exams)	8	Elective credit only. Fulfills Subject A requirement.
English Language and Composition	4 or 5 (on either exam)	8	One course toward category IV of the UCI breadth requirement from the English 28 series plus 4 units of elective credit; may not replace English major or minor requirements.
	4 or 5 (on both exams)	8	Two courses toward category IV of the UCI breadth requirement from the English 28 series; may not replace English major or minor requirements.
French			
French Language	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
French Literature	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
German Language			
	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
Government and Politics			
American Government	3, 4, or 5	4	Elective credit only.
Comparative Government	3, 4, or 5	4	Elective credit only.
History			
European	3, 4, or 5	8	Elective credit only.
United States	3, 4, or 5	8	Elective credit only.
Latin			
Virgil	3 (on one exam)	4	Elective credit only.
	3 (on both exams)	8	Latin 1A-B-C.
Literature	4 or 5 (on one exam)	4	Latin 25.
	4 or 5 (on both exams)	8	Latin 25, 101, 102. Satisfies category VI of the UCI breadth requirement.
Mathematics ¹			
AB Exam	3	4	Elective credit only.
	4 or 5	4	Mathematics 2A.
BC Exam	3	8	Mathematics 2A.
	4 or 5	8	Mathematics 2A-B.
Music Theory			
	3	8	Elective credit only.
	4 or 5	8	Music 5A-B-C and 30A-B-C.

Advanced Placement Examination	AP Score	Unit Credit	Credit Allowed Toward Degree
Physics ¹			
Exam B	3, 4, or 5	8	Elective credit only.
Exam C, Part I or II	3 or 4	4	Elective credit only.
Exam C, Part I (Mechanics)	5	4	Physics 3A or 5A.
Exam C, Part II (Electricity and Magnetism)	5	4	Physics 3B.
Psychology	3, 4, or 5	4	Elective credit only.
Spanish			
Spanish Language	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
Spanish Literature	3	8	First-year language.
	4 or 5	8	Second-year language. Satisfies category VI of the UCI breadth requirement.
Statistics	3, 4, or 5	8	Mathematics 7 or Social Ecology 13, plus 4 units of elective credit.

¹ Maximum credit 8 units.

² Maximum credit 4 units.

³ Additional placement may be available following individual counseling.

Advanced Placement Credit

Students who earn scores of 3, 4, or 5 on the College Board Advanced Placement Examinations will receive credit toward graduation at UCI. The unit and subject credit allowed toward degree requirements assigned to each test are shown in the accompanying chart.

Students cannot earn units or grade points at UCI in courses from which they have been exempted on the basis of Advanced Placement credit. Students who elect to enroll in courses for which they have already received Advanced Placement credit will have those courses specially coded on their transcript without unit or grade credit. However, if a student receives less than full *series* credit (i.e., 8 units of credit for a 12-unit series such as Art History 40A, 40B, 40C or 4 units of credit for an 8-unit series such as Mathematics 2A-B), the student may elect to take the *final* course in the series for credit.

International Baccalaureate

The University grants eight quarter units (five and one-third semester units) of credit for each International Baccalaureate (IB) Higher Level examination on which a student scores 5 or higher. The University does not grant credit for subsidiary level examinations. The units granted for IB examinations are not counted toward the maximum number of credits required for formal declaration of an undergraduate major or the maximum number of units a student may accumulate prior to graduation from the University. Students who enter the University with IB credit do not have to declare a major earlier than other students nor are they required to graduate earlier.

Application Procedures

Application packets for undergraduate admission to the University are available from the counseling office of any California high school or community college, from any University of California Admissions Office, or on the World Wide Web at <http://www.ucop.edu/pathways/>.

Students applying for admission to UCI should complete the application and submit it according to the instructions provided in the *Undergraduate Application for Admission and Scholarships*. A non-refundable application fee of \$40 must accompany the application. This basic fee entitles the applicant to be considered at one campus; for each additional campus selected, an additional \$40 fee is required. Applicants concerned with admission or application procedure questions *specific to UCI* should communicate directly with the Office of Admissions and Relations with Schools, University of

California, Irvine, CA 92697-1075; telephone (949) 824-6703; e-mail: oars@uci.edu; World Wide Web: <http://www.reg.uci.edu/UCI/ADMISSIONS/>. Office hours are 8 a.m. to 5 p.m., Monday through Friday.

WHEN TO APPLY FOR ADMISSION

To ensure that applications will be considered for admission by both UCI (or other University campuses) and the student's choice of major or program of study, the completed application and the application fee should be filed during the priority filing period. Each campus accepts for consideration all applications it receives during this period. Additionally, students required to fulfill the examination requirements for freshman admission should make arrangements to take the standardized tests early. Completing the examination requirement (SAT I or ACT and three SAT II examinations) no later than the December testing date of the senior year of high school is strongly recommended for students applying for the fall quarter.

Quarter to be Admitted at UCI	Priority Application Filing Dates
Winter quarter, 1999	File July 1–30, 1998
Spring quarter, 1999	File October 1–30, 1998
Fall quarter, 1999	File November 1–30, 1998
Winter quarter, 2000	File July 1–30, 1999
Spring quarter, 2000	File October 1–30, 1999

After the priority filing period has ended, campuses will accept applications only if they still have openings for new students.

Students are advised to check with the Admissions Office to find out if applications are being accepted for winter or spring terms.

ADDING A CAMPUS

If the campus or campuses being considered are still accepting applications, students may, after submitting their application, add additional campus choice(s) to that or those initially listed on their application. A \$40 fee for each additional campus will be required. Students should contact the Admissions Office on the campus to be added for information on which programs are still open and the procedures for adding campuses.

Students should be aware that processing an additional campus choice will take several weeks before the new campus actually receives the application and data. Students should also be aware that special program commitments, such as the Educational Opportunity Program or UCLA's Academic Advancement Program may vary from campus to campus. Students can communicate with the

Housing or Financial Aid Office directly for information about deadlines, priorities, and availability of these services.

TRANSCRIPTS

The Office of Admissions and Relations with Schools requires complete, accurate, and up-to-date information about a student's academic program and work in progress in order to process and respond to the application in a timely manner. The transcript and other documents submitted as part of the application become the property of the University; they cannot be returned or forwarded in any form to another college or university.

Freshman Applicants. *Applicants will be notified if a preliminary high school transcript is required.* Applicants are also responsible for asking testing agencies to report examination scores for either the SAT I or ACT tests and three SAT II examinations to the UCI Office of Admissions and Relations with Schools. *An official final high school transcript showing a statement of graduation also must be forwarded to the campus at which the student has decided to register and enroll.* Official final transcripts should arrive in the UCI Office of Admissions and Relations with Schools by July 15 for those students admitted for fall quarter. Those students entering in the winter or spring quarters must have their transcripts in the Office within one month of the completion of the term of the school from which they entered. A California Certificate of Proficiency, the results from a proficiency test from any state, or a General Education Development (GED) Certificate can be accepted in place of a high school diploma.

Transfer Applicants. *Transfer students should not send transcripts unless requested to do so.* It is essential that applicants accurately complete the self-reported college credit information in the application because it will be used for initial admission screening. *Once students are admitted and decide to enroll at UCI, an official transcript from each college attended and the high school from which they graduated must be sent to the Office of Admissions and Relations with Schools.* Unless a student is attending a summer session, final official transcripts should arrive in the UCI Office of Admissions and Relations with Schools by July 15 for those students admitted for the fall quarter. Summer-session transcripts must be submitted by September 15. Students entering UCI in the winter or spring quarters must have their final official transcripts sent to the Office no later than one month after completion of the term of the school they are currently attending. Delays in receiving official transcripts will disadvantage students in the academic advising process and can affect enrollment in appropriate courses.

EXAMINATION ARRANGEMENTS

Students should make arrangements to take the SAT I and SAT II examinations with the Educational Testing Service, College Board/ATP, CN 6200, Princeton, NJ 08541-6200; World Wide Web: <http://cbweb1.collegeboard.org>. For the ACT, students should write to the American College Testing Program Registration Unit, P.O. Box 168, Iowa City, IA 52243. (Test fees should be paid to the testing services, not to the University.) At the same time the test is taken, students should request that their scores be reported to the UCI Office of Admissions and Relations with Schools. To prevent confusion or unnecessary delay, it is important to use precisely the same form of the student's name on both the application for admission and the test materials.

In 1998–99 SAT I and SAT II are offered concurrently on the following Saturday mornings: October 10, 1998; November 7, 1998; December 5, 1998; January 23, 1999; March 27, 1999; May 1, 1999; and June 5, 1999.

The 1998–99 ACT Tests are offered on the following dates: October 24, 1998; December 12, 1998; February 6, 1999; April 10, 1999; and June 12, 1999.

Details on testing are available from the College Board, the American College Testing Program, and from most high school counseling offices.

NOTIFICATION OF ADMISSION

Most fall quarter freshmen applicants are notified of their status between March 1 and 31. Transfer applicants are usually notified by May 1. In some cases for transfer applicants, complete transcripts of course work are required before a final decision can be made; such records will be requested by the Office of Admissions and Relations with Schools. Note that these target dates apply only to those applicants who submitted their applications during the fall priority filing period (November 1–30). Those students who apply after the priority period will be notified as soon as possible after March 31.

Statement of Intent to Register

Students who are accepted for admission will receive, with their notification of admission, a Statement of Intent to Register (SIR) form. The SIR serves to notify each campus of the student's decision to accept or not accept its offer of admission. Before completing and returning the form, students who have applied to more than one campus are advised to take as much time as is appropriate in considering their responses to each campus. However, it is essential that students allow enough time to meet the deadline for returning their SIR. Once they have decided on which campus to attend, students should submit their positive SIR and nonrefundable \$100 deposit (if applicable) to the campus Admissions Office. Students should not submit a positive SIR to more than one campus. Additionally, once the positive SIR and fee have been received, the student cannot transfer to another UC campus.

Freshman students entering in the fall quarter must return their positive SIR by May 1 or by the date indicated on the SIR. Transfer students entering in a fall quarter must return their positive SIR by June 1, or by the date indicated on the SIR. Students entering in a winter or spring quarter must return the SIR by the date indicated on the SIR.

Admission to UCI is not an assurance of receiving financial aid nor does it guarantee assignment to University housing. Separate applications are required of applicants desiring financial aid or University housing, and receipt of communications from the Financial Aid Office, the Housing Office, or any office other than the Office of Admissions and Relations with Schools does not imply that eligibility for admission has been established.

Student Records Access and Disclosure

At UCI, an "applicant" becomes a "student" at the time of submission of the SIR. Information regarding access to student records and disclosure of student record information (both public and confidential) may be found in the Appendix.

INFORMATION FOR ADMITTED STUDENTS

ORIENTATION

Each May information about UCI's orientation programs sponsored by the Office of the Dean of Students is sent to applicants for admission who plan to enroll in the fall.

Student-Parent Orientation Programs (SPOP) are held three different times during the summer. SPOP is designed to help new students with their registration materials and offers informative sessions on academic programs, extracurricular activities, housing choices, and much more. Participants and their parents live in residence halls, and the program fee covers room, board, and program costs. Two **mini-SPOPs** (intensive one-day events) are held in July and August for students and parents who are unable to attend the multi-day programs. One mini-SPOP will be designated for transfer students only. For more information, telephone (949) 824-7759 or send e-mail to jhalvaks@uci.edu.

Uni-Prep is a four-day program for entering students held in August. Participants live in the residence halls and attend workshops and other activities designed to provide them with information about shaping their academic and personal lives at UCI. A fee is charged that covers room, board, and program costs.

Welcome Week features a variety of academic and social activities for new and returning students and is scheduled the week prior to the beginning of fall quarter classes.

DIVISION OF UNDERGRADUATE EDUCATION

The core mission of the Division of Undergraduate Education is to provide campus leadership, programs, and services which enhance the quality of undergraduate education at UCI. An advocate and steward for educational excellence, the Division works with all academic units, programs, and members of the UCI community to foster a climate of learning and discovery for every undergraduate student. Through its diverse and innovative programs and services, the Division provides support for student academic achievement, for a rich and coherent curriculum, and for outstanding teaching through the integration of teaching and research activities and the facilitation of effective pedagogy.

The Division of Undergraduate Education is responsible for the following programs and services: the Campuswide Honors Program, which also administers the Scholarship Opportunities Program; the Center for International Education, which includes the Education Abroad Program and the International Opportunities Program; the Peer Academic Advising Program and academic advising for Undecided/Undeclared students; the Undergraduate Research Opportunities Program; the Learning and Academic Resource Center; Student Academic Advancement Services; the Testing Office; the Instructional Resources Center and the Instructional Technology Center; the Resource Center for Undergraduate Education Grants; and the organization of the campus' student orientation programs in cooperation with the Division of Student Services. The Division's programs and services are described in detail below.

The Division is responsible for the administration of the revised Academic Honesty Policy (adopted by the UCI Academic Senate on December 12, 1996; see the Appendix) as it relates to undergraduates; for maintaining a classroom environment conducive to teaching and learning; and for implementing the Student Recommended Faculty Program, initiated at UCI in 1969. This is the only such program in the U.S. that affords undergraduates the opportunity to

identify, select, and propose recruitment of nonrenewable faculty appointments in curricular areas of particular interest not represented at UCI. Call (714) 824-8658 for information.

Additionally, the Division's Research, Evaluation, and Grants Office evaluates various programs and conducts research on topics related to undergraduate education such as student retention, academic needs, course grades, enrollment patterns, and curricular issues.

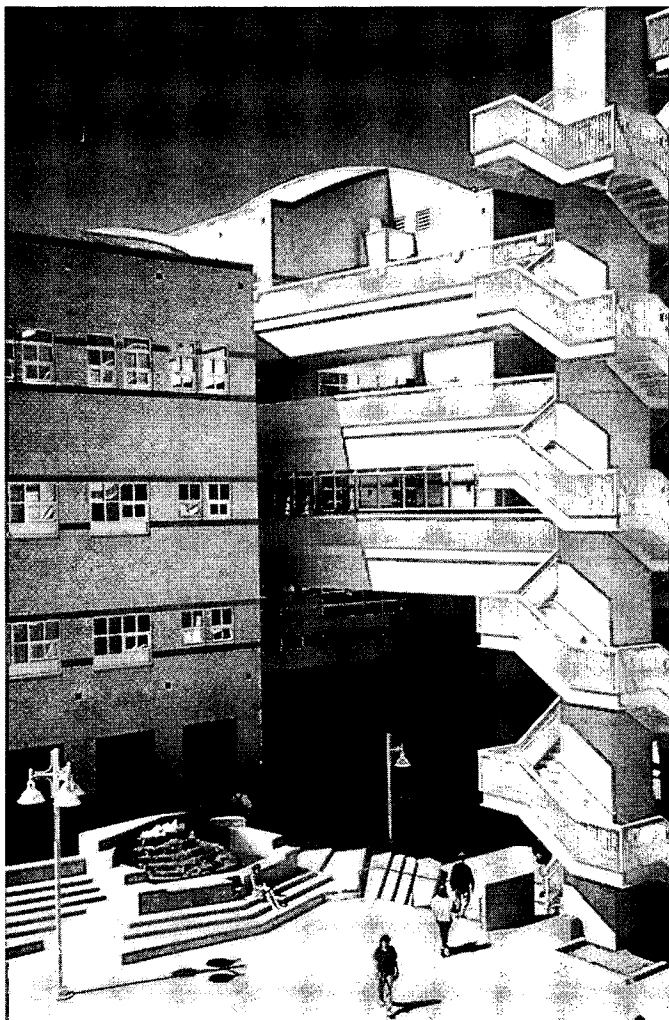
Placement Testing

UCI's Testing Office administers placement tests to new and continuing students to ensure correct placement in selected introductory courses and to help students assess their readiness for University-level work. These tests are selected or developed by UCI faculty who also determine the grading criteria for each test. Results from placement tests are used by students and their academic counselors to formulate a plan of study which is best suited to the students' learning needs and career goals and to determine enrollment in introductory courses. Additional information, such as entrance examination scores, Advanced Placement (AP) scores, and high school work, also may be used to determine course placement.

Placement tests are given in the areas of chemistry, physics, precalculus, mathematical analysis, Chinese, French, and English as a second language:

1. **Chemistry Placement Test.** Students who plan to enroll in an introductory chemistry course (Chemistry 1P, 1A, or H2A) are required to take this test unless otherwise exempt.
2. **Physics Placement Test.** Students who plan to enroll in Physics 5A are required to take this test unless otherwise exempt.
3. **Precalculus Placement Test.** Students who plan to enroll in Mathematics 2A are required to take this test unless otherwise exempt.
4. **Mathematical Analysis Test.** Students who plan to enroll in Mathematics 1A or 1B, or who have not had a prior course in precalculus and who plan to enroll in mathematics courses at UCI are strongly encouraged to take this test.
5. **Chinese Placement Test.** Students who plan to enroll in Chinese 1A, 1B, 1C, 2A, 2B, 2C, 3A, or 3B are required to take this test. An appropriate score on this test will also satisfy the Language Other than English breadth requirement.
6. **French Placement Test.** Students who plan to enroll in French 1A, 1B, 1C, or 2A are required to take this test unless otherwise exempt.
7. **English as a Second Language (ESL) Placement Test.** This test is required of students (a) whose native language is not English, (b) whose verbal score on the SAT I: Reasoning Test is 430 or less, (c) who have not satisfied the Subject A requirement, and (d) who have received a letter from the ESL Program requiring them to take the ESL Placement Test. Scores from the Test of English as a Foreign Language (TOEFL) and the Test of Standard Written English (TSWE) are not considered. The ESL Placement Test also is required of students referred to the ESL Program on the basis of their score on the Universitywide Subject A Examination. See the section on Admission of International Students for additional information.

All newly admitted freshmen will receive a detailed brochure describing the placement tests and the testing schedule for the next quarter. Students should take required tests before registering for



The Social Science Plaza facility houses classrooms, laboratories, a 200-seat lecture hall, a 400-seat auditorium, and departmental offices for the Schools of Social Sciences and Social Ecology.

classes and should discuss their results with an academic counselor or faculty advisor. Students enrolling for the first time in fall quarter are strongly advised to take placement tests at the earliest possible date (usually in May) in order to allow time to receive their results and discuss them with an academic counselor during the summer registration period and prior to enrolling in courses. For the convenience of continuing students, placement tests also are administered every quarter during the academic year; consult the *Schedule of Classes* for dates.

The Testing Office also administers language tests for exemption to the Language Other Than English breadth requirement, and is responsible for the campus-based administration of the Subject A examination.

Further information on placement and language testing may be obtained by calling (949) 824-6207 or by visiting the Office's Web site at <http://www.due.uci.edu/~due/plt/>. The Office is a unit of the Division of Undergraduate Education.

University Subject A Examination

The University of California system has established the University-wide Subject A Examination (see University Requirements). Results from this examination are used to place students in UCI writing and, if needed, ESL courses. There is a \$55 nonrefundable administrative fee associated with the examination. The fee payment process and waiver information are explained in materials students receive in April from the Educational Testing Service. Students who receive admission application fee waivers will automatically have this exam fee waived. Please refer to the section on Requirements for a Bachelor's Degree for complete information on the Universitywide Subject A Examination.

Academic Advising

At the time of admission to UCI every undergraduate student is assigned to the school or program that offers the student's selected major. Students who have indicated "Undecided/Undeclared" as a major on their *UC Application for Admission* receive assistance from the Undecided/Undeclared Advising Program until they select an academic major. This program is located in 256 Administration Building; telephone (949) 824-6987.

Jurisdiction over all questions of academic regulations and academic standing rests with the dean or director of the school or department to which a student is assigned or, in the case of undecided/undeclared majors, with the Dean of the Division of Undergraduate Education. Each academic unit provides academic advising for its students and processes requests to add or drop courses, waive or change graduation or other requirements, or change majors. Students are responsible for knowing the governing regulations of the school or program to which they are assigned.

While each academic unit is responsible for maintaining a system which provides academic advising, these systems differ from unit to unit. In some, all of the faculty serve as advisors; in others, only certain members of the faculty are designated as advisors. All advising offices include academic counselors, professionals who assist students in planning their program, selecting a major, and making progress toward a degree. Peer academic advisors (trained upper-division students) assist students in many of the same areas as academic counselors. In addition, they are able to answer questions relating to student life issues, providing a student perspective. Responsibility for informing students of the names of their advisors rests with the dean or chair of the appropriate academic unit. This is done normally by letter; however, students may obtain information by telephone from the office of the appropriate dean or chair. Telephone numbers for academic advising offices are listed in the academic unit sections of the *Catalogue* and in the *Schedule of Classes*.

New students are encouraged to plan their academic programs with an academic counselor shortly after being admitted. The optimum time to initiate contact with an academic counselor is before the student enrolls in classes. The academic counselor can help the student determine whether the classes the student wishes to take are appropriate to the student's level of preparation, whether the proposed classes fit within the student's educational goals, and whether the classes will help meet some of the requirements for graduation.

In some schools and programs, consultation between students and their faculty advisors is mandatory. Regardless of whether or not consultation between student and advisor is required, students are responsible for initiating and maintaining periodic contact with their assigned faculty advisor. The actual frequency of these meetings will be determined by the desires of the student, the advisor, and the unit's governing regulations.

Each quarter, new students are required to go to the appropriate academic dean's office prior to the beginning of classes for advice concerning class enrollment. These procedures for new students and provisions for continuing students are explained in detail in the quarterly *Schedule of Classes*.

Finish in Four

Many UCI students graduate in four years, with appropriate planning. In addition, UCI provides a Finish in Four Program for all undergraduates who wish to be assured of earning their degree in a timely manner. The goal of the program is to provide information and advising to enable students to make plans and decisions that will result in completion of their degrees in four years. The program involves a series of commitments on the part of the University and the student. Information about the Finish in Four Program is available from the academic advising offices.

Undecided/Undeclared Students

Students who enter the University as freshmen or sophomores, who are uncertain about their major, and who wish to explore, experiment, and then decide, participate in the Undecided/Undeclared Advising Program administered by the Division of Undergraduate Education. The Division is devoted to enriching the learning environment for lower-division students, especially those in the freshman year. Further information is available in the Majors and Careers section of this *Catalogue*.

Learning and Academic Resource Center

The Learning and Academic Resource Center (LARC) is a campuswide academic assistance unit that provides programs designed to help students acquire the skills needed to develop intellectually, become successful learners, and achieve their academic and professional goals.

LARC staff and programs provide students with personal contact and support necessary for academic success on a large and diverse campus where students need to enroll in many large lecture courses. The Center works closely with faculty to develop programs that meet both curricular objectives and the changing needs of students. LARC programs stress the development of academic abilities that all university students need regardless of major: effective study strategies, critical reading, and analytical writing. Other programs focus on specific disciplines and offer students the opportunity to improve their academic skills in such areas as biology, chemistry, mathematics, humanities, social sciences, and computer sciences, among others.

The Center offers adjunct classes, workshops, individual counseling, small peer tutoring groups, and support in all forms of academic writing. Students may enroll in LARC programs through TELE or by calling (949) 824-6451 to make appointments. Additional information including schedules for adjunct classes, workshops, and tutorials may be obtained on the World Wide Web at <http://www.uci.edu/~due/larc/>.

Writing Workshops, sponsored by the Division of Undergraduate Education, seek to provide in-depth writing assistance of a focused and methodical nature to newly admitted students who may find English and Comparative Literature WR39A difficult because of insufficiencies in their University preparation. This assistance addresses specific compositional weaknesses and endeavors to provide students, at an early stage of their course work, with necessary verbal skills. Assistance is given in the form of workshops attached to special sections of English and Comparative Literature WR39A. The Writing Workshops enable instructors to give intensive and individualized attention to students.

Student Academic Advancement Services

Student Academic Advancement Services (SAAS) provides individual counseling and academic support for students who are first-generation college students or low-income students, as well as disabled students (those with physical and/or learning disabilities). SAAS sponsors several major projects and a variety of workshops.

A primary responsibility of SAAS is to monitor the academic progress of its students. To best assist students who are having difficulty with their course work, professional counselors maintain a close liaison with academic departments. When needed, referrals to other campus support services are provided. In conjunction with these academic and service units, a variety of workshops are offered throughout the year by SAAS, as well as a graduate school preparatory course for those students whose career interests require graduate study.

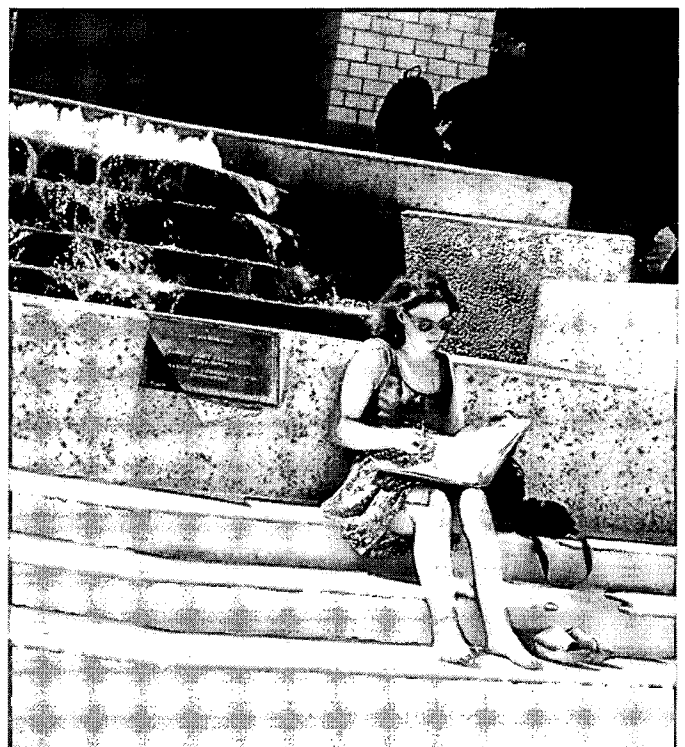
SAAS also sponsors and conducts the Summer Bridge at UCI for underprepared students who demonstrate the potential to succeed at the University. Summer Bridge is designed to provide and refine basic academic skills necessary for students to successfully complete their course work during the regular school year.

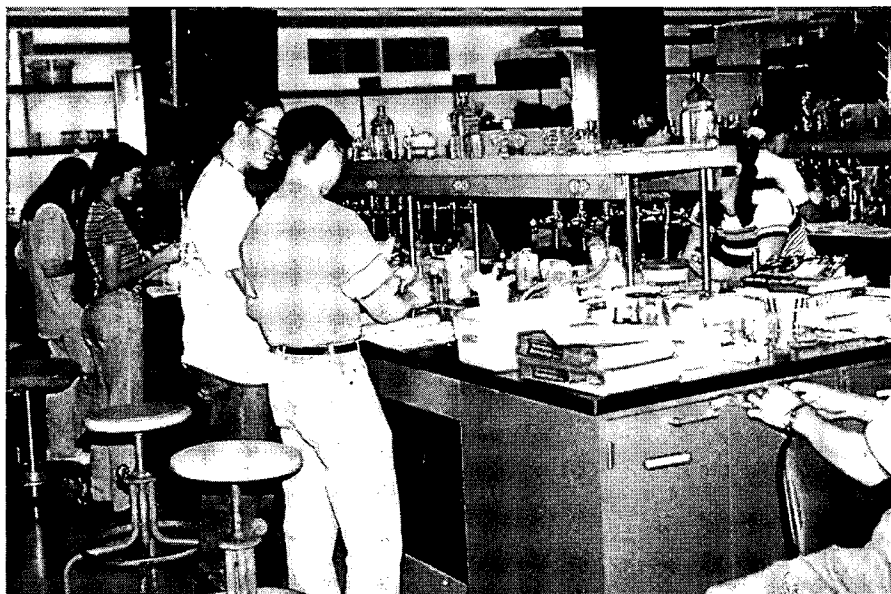
Students are encouraged to make appointments with Student Academic Advancement Services; telephone (949) 824-6234.

Honors Opportunities

UCI offers several challenging honors opportunities to its most motivated students. These include a comprehensive Campuswide Honors Program, which is open to outstanding students from all majors from the freshman through senior years; a variety of major-specific honors programs at the upper-division level; the Humanities Honors Program, also offered at the upper-division level, but open to all majors on campus; and several Excellence in Research programs.

These programs offer some of the advantages usually associated with selective liberal arts colleges: rigorous, small, personalized classes and the intellectual exchange that creates a community of scholars. The difference, however, is that UCI's programs have the





Some of this year's incoming freshmen will receive scholarships from UCI's Distinguished Honors Scholars Program, funded by a \$1 million endowment from an anonymous donor.

support and benefit of the 26-million-volume University of California Library system (of which UCI Library collections number some two million volumes) and of the numerous state-of-the-art laboratories on campus.

Honors students are also encouraged to participate in the Education Abroad Program and/or the International Opportunities Program during their junior or senior year. See the Center for International Education section in this *Catalogue* for additional information.

Campuswide Honors Program

Founded in 1988, the Campuswide Honors Program (CHP) is available to selected high-achieving students in all academic majors from their freshman through senior years. It maintains an active roster of approximately 400 students. About 90 percent of CHP students have continued their studies after graduation from UCI at some of the most prestigious graduate and professional schools in the country.

CHP provides outstanding UCI students with a special curriculum consisting of small, seminar-style classes, close interaction with peers, mentorship by UCI's top faculty, and the opportunity to participate in undergraduate research. Students also receive assistance in applying for scholarships, internships, education abroad, and relevant work experience. Completion of the Campuswide Honors Program is noted on the student's transcript and baccalaureate diploma.

Admission to the program as an incoming UCI freshman is by invitation only; all eligible candidates are reviewed and selected by faculty representatives from each academic unit. Transfer and other students are eligible to apply for admission to CHP up until the first quarter of their junior year, if they have a minimum grade point average of 3.5. CHP seeks to admit students who have a demonstrated passion for learning, a willingness to explore and take risks, a focus within their primary area of interest, and, at the same time, academic excellence in a range of disciplines outside of their major area.

Students pursue three year-long interdisciplinary Honors core courses (one course per quarter), satisfying several categories of the breadth requirement. Many of these courses provide an interdisciplinary approach to major subjects and issues. Faculty from a variety of disciplines are chosen especially for their teaching ability

and scholarship. During their junior and senior years, participants conduct original research under the direct supervision of faculty members, culminating in the production of a senior honors thesis, creative project, or publication-quality paper.

CHP students begin their course of study by taking honors sections of the Humanities Core Course or Arts Core sequence. Team-taught by professors from various disciplines in the School of Humanities, the Humanities Core Course is organized around major themes. The current focus of the course is *Ideas in Dispute* and it explores how major concepts—nature and culture, identity and culture, authority and subversion—form basic tensions underlying Western civilization.

The Arts Core sequence introduces students to concepts and practices fundamental to the arts and to the activities and faculty of the UCI School of the Arts. It explores the ongoing and evolving relationship between the arts and culture/society.

The Critical Issues in the Social Sciences sequence is team-taught by professors from the Schools of Social Sciences and Social Ecology. Topics include human vision; authority (dis)obedience, and human society; decisions and compromises and their rewards and penalties; human language and its disablement; and exotic societies (including our own).

The Idiom and Practice of Science interdisciplinary sequence explores the role science plays in addressing socially significant problems. Students develop the ability to understand scientific models and to judge the content, merit, and limitations of many issues of science in the modern world. The development of analytical and writing skills is emphasized.

Honors General Chemistry, designed for CHP members and other highly qualified students, covers the same material as Chemistry 1A-B-C, but in greater depth.

Extracurricular Activities. CHP students are invited to participate in many social and cultural activities, including weekly coffee hours, beach bonfires, poetry readings, faculty home visits/informal lectures, movie and play nights, trips to museums, and camping retreats. Honors students also produce a quarterly free-form creative writing journal, and continuing Honors students may volunteer for the Peer Mentor Program and Honors Ambassador Program, providing assistance to incoming Honors students.

On-Campus Housing. CHP students have the option of living on campus in Arroyo Vista, where they can choose from three 16-person, one 24-person, and two 32-person houses. These houses offer a valuable living/learning experience with other honors students and the community spirit that is a special feature of CHP. Students bring to the living experience their vitality, creativity, and dynamic dedication to learning. Activities have included get-togethers with honors faculty, staff, and students, international potlucks, off-campus retreats, study breaks, and other events such as workshops and special speakers that are dependent upon the interests of the residents.

Additional information is available from the Campuswide Honors Program, 1200 Student Services II; telephone (949) 824-5461; e-mail: honors@uci.edu; World Wide Web: <http://www.honors.uci.edu/~honors>.

Major-Specific and Humanities Honors Programs

Honors programs for qualified junior- and senior-level students also are available to Drama majors in the School of the Arts; to students from all schools regardless of their majors, by the School of Humanities; to Chemistry and Physics majors in the School of Physical Sciences; to Anthropology, Economics, International Studies, Linguistics, Political Science, Psychology, Social Science, and Sociology majors in the School of Social Sciences; to Information and Computer Science majors; and to all majors in the School of Social Ecology. The focal point of each of these programs is the development of analytical and research skills through the pursuit of research under faculty supervision. An honors-level thesis is required in all the programs except Drama. Additional information is available in the specific academic unit sections of this *Catalogue*.

Excellence in Research Programs

The School of Biological Sciences, the School of Engineering, and the Department of Cognitive Sciences offer students the opportunity to pursue research through their Excellence in Research Programs. Students work on their research projects under faculty supervision and have the opportunity to present their results to peers and faculty and, in certain instances, to have their research papers published. Additional information is available in the specific academic unit sections of this *Catalogue*.

Scholarship Opportunities Program

UCI encourages high-achieving students to learn how they can compete successfully for the most prestigious scholarships, research grants, and graduate fellowships available, and to begin learning about the process as early as possible. The Scholarship Opportunities Program (SOP), offered through the Campuswide Honors Program, presents workshops throughout the year, provides individual and group counseling, and sponsors the Winners' Circle, a club in which students help each other apply for scholarships, fellowships, and other awards. Additional information is available from SOP, 1200 Student Services II; telephone (949) 824-5461; World Wide Web: <http://www.honors.uci.edu/~honors/sop>.

Honors Convocation

The UCI Honors Convocation ceremony is held each June for all students who graduate during that academic year with academic honors (*summa cum laude*, *magna cum laude*, or *cum laude*), receive special awards, and get inducted into honor societies. The criteria used in selecting candidates for these honors are available at the counseling office of each school. One general criterion is that students must have completed at least 72 quarter units in residence at a University of California campus. Students who have on file recorded acts of academic dishonesty, as defined in *Policies Applying to Campus Activities, Organizations, and Students*, shall be excluded by the Associate Deans from consideration for academic honors at graduation. For further information contact the Division of Undergraduate Education at (949) 824-5428.

Phi Beta Kappa

Phi Beta Kappa, founded in 1776, maintains a chapter at UCI. Phi Beta Kappa is the nation's oldest and most prestigious honor society; it recognizes outstanding scholastic achievement in the liberal arts and sciences. Upper-division students whose undergraduate records fulfill certain requirements are eligible for election to membership. Further information can be obtained from the Division of Undergraduate Education, 256 Administration Building.

Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP), in the Division of Undergraduate Education, encourages and facilitates research and creative activities by undergraduates. Research opportunities are available not only from every discipline, interdisciplinary program, and school, but also from many outside agencies, including national laboratories, industrial partners, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, and presenting results of the research at the annual spring Campuswide Undergraduate Research Symposium. Calls for proposals are issued in the fall and spring quarters. Projects supported by UROP may be done at any time during the academic year and/or summer, and the research performed must meet established academic standards and emphasize interaction between the student and the faculty supervisor. In addition, all students participating in faculty-guided research activities are welcome to submit their research papers for faculty review and possible publication in the annual *UCI Undergraduate Research Journal*. For more information, contact the UROP Office, 1100 Student Services II; telephone (949) 824-4189; e-mail: urop@uci.edu; World Wide Web: <http://www.urop.uci.edu/~urop>.

Instructional Resources Center

The Instructional Resources Center (IRC), a unit of the Division of Undergraduate Education, provides instructional support through a variety of services and programs to the UCI teaching community. This support includes teaching development, skills training, and provision of classroom equipment.

Teaching development includes consultation with teaching professionals regarding instructional strategies, methods, and learning theory. Faculty members and Teaching Assistants (TAs) may request consultations, and *all services are free and confidential*. Consultation can be further enhanced by videotaping the teacher in the classroom. Additionally, IRC staff can administer a midterm teaching evaluation to students and then provide the teacher with both statistical feedback and students' written comments. To schedule an appointment for a consultation or other service, call (949) 824-1385.

Other programs and services include: a two-day TA development program during Welcome Week; a quarterly Teaching Colloquy; a quarterly newsletter, *UCIdeas*; workshops specifically for new faculty, experienced faculty, and graduate students; and workshops and individual assistance with the compilation of Teaching Portfolios. IRC also co-hosts the annual "Celebration of Teaching."

IRC also provides services related to computerized presentation technology, video-conferencing, distance learning, audiovisual equipment and rental, film and video research and ordering, equipment repair, lecture hall media support, and video and multimedia production.

IRC's Instructional Technology Center, located on the ground floor of Social Science Tower, includes a 30-seat computer-assisted classroom, a room in which to conduct distance-learning courses, a 20-seat walk-in computer laboratory, and a media center where instructors can produce multimedia resources for their classes. Technicians and instructional specialist are available to advise teachers.

IRC's main office is located in Building 603, next to Humanities Hall. Hours are from 8 a.m. to 12 noon and from 1 to 5 p.m., Monday through Friday. Staff are available after hours and on weekends by special appointment. For general information, call (949) 824-1385.

Center for International Education

The Center for International Education (CIE) includes the Education Abroad Program (EAP) and International Opportunities Program (IOP). The Center is a comprehensive resource and counseling center which helps students take advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, research, and non-credentialed teaching, and prepares students for participation in these programs. Participating in an international educational experience typically introduces students to ways of thinking different from their own, broadens their understanding of the historical and contemporary world, sharpens their interest in particular fields, and enhances their overall intellectual development.

Professional staff and international peer advisors, who have returned from an IOP or EAP experience, are available to guide students in making appropriate choices of international programs for their educational goals. All EAP and IOP participants are provided with pre-departure orientations, an EAP or IOP Student Guide handbook, and reentry orientations upon their return to UCI. The Global Issues and International Perspectives class, offered by the School of Social Sciences, introduces prospective EAP and IOP participants to intellectual and adjustment issues that they may face during an extended stay in a foreign country.

Students can keep up-to-date on CIE events, deadlines, and new international opportunities by subscribing to the biweekly electronic newsletter, *CIE-NEWS*. For information on how to subscribe, contact CIE.

CIE, EAP, and IOP are located in 1100 Student Services II; telephone (949) 824-6343; e-mail: cie@uci.edu; World Wide Web: <http://www.cie.uci.edu/~cie/>.

EDUCATION ABROAD PROGRAM

The Education Abroad Program (EAP) of the University of California offers students the opportunity to experience a different culture while making progress toward degree objectives. EAP is an overseas study program which operates in cooperation with about 100 host universities and colleges in about 30 countries throughout the world. One quarter's participation in EAP fulfills the International/Global Issues breadth requirement (category VII-B). Participation in selected EAP programs also may satisfy the Language Other Than English breadth requirement (category VI); see the Requirements for a Bachelor's Degree section for a list of approved programs.

Admission of UC undergraduate students to the Education Abroad programs is subject to the following qualifications: a minimum 3.0 cumulative grade point average at the time of application and maintained through departure for most programs; junior standing by departure (except for specific short-term programs); completion of language courses as required, with an overall minimum grade point average of 3.0 or the equivalent; and the recommendation of the campus EAP Selection Committee. Some programs require

prior language study, while others either recommend it or do not require it.

Students interested in the language, literature, art, culture, history, government, or social institutions of the countries where EAP study centers are located have the opportunity to gain substantially from first-hand academic experience. Classes in the natural and physical sciences, engineering, and computer science are available at many prestigious host institutions. In addition, whatever their field of study, EAP participants can broaden their outlook and gain new skills as the result of study in a foreign country, as well as experience vastly different cultures and contrasting patterns of thinking while making progress toward a UC degree.

The cost of studying abroad through EAP is often comparable to the cost of studying at UCI. EAP participants are responsible for the same fees as they pay at UCI, including UC registration and educational fees, campus fees, and room, board, books, and personal expenses. The only additional costs directly related to the program are for their round-trip transportation and orientation and intensive language program (depending on the Study Center). Most University of California financial aid, including grants, scholarships, and loans, is available to EAP students who qualify. EAP also offers several other scholarships including individual country incentive scholarships awarded to all students studying in these specific programs; EAP Opportunity Grants available to economically disadvantaged students; and the EAP Alumni Scholarship. Contact CIE for additional information.

Normally, students participate in EAP during their junior year, so application for EAP usually is made in the sophomore year, however, students may apply for participation as fourth- or fifth-year seniors. Some programs are also open to sophomores. In addition, students who have completed at least one full year of graduate study and who have support of their academic department and graduate dean may apply. Students interested in EAP should contact CIE early in the fall quarter to obtain an informative brochure, application forms, and information concerning application deadlines.

Academic Program. Generally, EAP students attend courses taught by faculty of the host university in the language of the host country. The academic program includes (1) an intensive course in the language of the host country, if applicable (this does not apply to programs in the United Kingdom, Ireland, Australia, New Zealand, or Canada in which English is the language of instruction), and (2) a full year or, in some cases, a semester of academic courses. Students may go to Denmark, Egypt, Ghana, Hong Kong, Hungary, India, Indonesia, Israel, Korea, the Netherlands, Sweden, or Thailand, with no prior knowledge of these countries' languages. However, for countries where the language of instruction is not English, students must spend some or all of the summer in intensive language programs which prepare them in the language for the academic year.

University of California faculty who serve as directors and associate directors at most Study Centers provide academic counsel to students while abroad. Full credit is granted for courses satisfactorily completed, and approved courses are recorded on official UC transcripts. With careful planning, most EAP students make normal progress toward their UC degrees. Application of credits earned abroad toward major or graduation requirements is determined by the academic unit in which the participant's major is offered.

EAP participants who satisfy all degree requirements while abroad and who expect to graduate upon completion of their term abroad should file for candidacy to receive their degree one to two quarters after completion of EAP because, unfortunately, grades from abroad take time to reach the home campus. Such returnees, however, may participate in June Commencement.

Study Centers. The courses and fields of study open to EAP participants vary at each center, and some vary from quarter to quarter. Each of the host universities has special areas of excellence and strength, as described in brochures for each country which are available at CIE.

Argentina. National University of Cuyo (Mendoza)

Australia. Australian National University (Canberra), Flinders University (Adelaide), La Trobe University (Melbourne), Monash University (Melbourne), University of Adelaide, University of Melbourne, University of New South Wales (Sydney), University of Queensland (Brisbane), University of Sydney, University of Western Australia (Perth), University of Wollongong

Austria. University of Vienna

Barbados. University of the West Indies (Cave Hill)

Brazil. Pontifical Catholic University (P.U.C.) of Rio de Janeiro

Canada. University of British Columbia (Vancouver)

Chile. University of Chile (Santiago), Pontifical Catholic University of Chile (Santiago)

China. Beijing Normal University, Peking University (Beijing), Tsinghua University (Beijing)

Costa Rica. University of Costa Rica (San José), Las Cruces Biological Station, Monteverde Institute

Denmark. University of Copenhagen

Egypt. The American University (Cairo)

England. University of Birmingham, University of Bristol, University of East Anglia (Norwich), University of Essex, University of Exeter, University of Kent, University of Lancaster, University of Leeds, University of London (Kings, Queen Mary, and Westfield Colleges), University of Nottingham, University of Sheffield, University of Sussex (Brighton), University of Warwick (Coventry), University of York

France. University of Bordeaux, Ecole Normale Supérieure (Paris), Ecole Normale Supérieure at Fontenay-Saint-Cloud (Paris), University of Grenoble, Institut d'Etudes Politiques (Paris), University of Lyon, Paris Center for Critical Studies, University of Toulouse

Germany. University of Bayreuth, Free University (Berlin), Georg-August University (Göttingen), Humboldt University (Berlin), University of Potsdam (Berlin area), Technical University (Berlin)

Ghana. University of Ghana (Accra), University of Science and Technology (Kumasi)

Hong Kong. Chinese University of Hong Kong, Hong Kong University of Science and Technology

Hungary. Eötvös Loránd University (Budapest)

India. University of Delhi

Indonesia. Gadjah Mada University (Yogyakarta), Indonesian Arts Institute (Yogyakarta)

Ireland. University College (Cork), University College (Galway)

Israel. Ben-Gurion University of the Nege, Hebrew University (Jerusalem)

Italy. Bocconi University (Milan), University of Bologna, University of Padua, University of Venice, Scuola Normale Superiore (Pisa), Venice Institute of Architecture, University of Italian Studies for Foreigners (Siena)

Japan. International Christian University (Tokyo), Doshisha University (Kyoto), Meiji Gakuin University (Yokohama), Hitotsubashi University (Tokyo), Kyoto University, Osaka University, Sophia University (Tokyo), Tohoku University (Sendai), Tokyo Institute of Technology, Tokyo University (Hongo and Komaba campuses), University of Tsukuba

Korea. Yonsei University (Seoul)

Mexico. Universidad Nacional Autónoma de México (UNAM), Mexico City and Taxco; Monterrey Institute of Technology, San Nicolás de Hidalgo University of Michoacán (Morelia)

Netherlands. University of Amsterdam

New Zealand. Lincoln University, Massey University (Palmerston North), University of Auckland, University of Canterbury (Christchurch), University of Otago (Dunedin), University of Waikato (Hamilton), Victoria University (Wellington)



The UC Education Abroad Program operates in cooperation with about 100 host universities and colleges in about 30 countries throughout the world.

Russia. European University (Moscow)

Scotland. University of St. Andrews, University of Edinburgh, University of Glasgow, and University of Stirling

Singapore. National University of Singapore

South Africa. University of Natal (Pietermaritzburg)

Spain. University of Alcalá de Henares, University of Barcelona, Autonomous University of Barcelona, University of Granada, Autonomous University of Madrid, Complutense University of Madrid

Sweden. University of Lund

Taiwan. National Taiwan University

Thailand. Chiang Mai University, Chulalongkorn University (Bangkok)

INTERNATIONAL OPPORTUNITIES PROGRAM

UCI's International Opportunities Program (IOP) is the link between UCI students and any international educational experience that occurs outside the boundaries of the U.S. and is not a part of UCI's Education Abroad Program (EAP). Any UCI student (undergraduate, graduating senior, or graduate) in good academic standing, regardless of major, class level, or foreign language ability, may participate in IOP.

IOP staff provide information and counseling to assist students in finding an appropriate program to meet their needs and interests. Students may choose from academic study (with transferable credit), paid work, paid or unpaid internships, unpaid or compensated volunteer service, field research, and paid teaching opportunities in nearly every country in the world. This includes all academic programs sponsored by U.S. institutions that occur on foreign soil or water (as in the case of the Semester at Sea program), direct enrollment at foreign institutions, summer session abroad programs through UCI and other UC campuses, and UCI Independent Study (199) done in foreign countries under the supervision of a UCI faculty member.

With careful planning IOP students participating in study programs may be able to make progress toward their UCI degree by fulfilling major, minor, or breadth requirements. Students may apply for transfer credit and UCI financial aid by completing the International Study Advance Contract. Many scholarships are also available.

To acquaint students with opportunities abroad, IOP sponsors the yearly "Go Abroad Fair" and periodic presentations, orientations, and workshops. It also maintains a library of international resources and publications listing opportunities abroad.

REQUIREMENTS FOR A BACHELOR'S DEGREE

There are four groups of requirements that must be met to earn a baccalaureate degree from UCI: general UC requirements, UCI requirements, school or program requirements, and degree-specific requirements. UC and UCI requirements are described below. School or program and major-specific requirements are described in full in the academic unit sections.

Students with identified learning and/or physical disabilities, including language-acquisition problems, are eligible to receive support through the Office for Disability Services; telephone (949) 824-7494 (voice), 824-6272 (TDD). Staff can assist students from the time they are admitted to UCI until they graduate.

Catalogue Rights

Students enrolled at UCI from their freshman year may elect to meet as graduation requirements (UC, UCI, school, and major): (a) those in effect at the time of entrance; or (b) those subsequently established after entrance.

A readmitted student who has not been enrolled at UCI for three or more consecutive quarters (excluding summer sessions) must adhere to the graduation requirements: (a) in effect for the quarter in which the student is readmitted; or (b) those subsequently established.

Students transferring from other collegiate institutions may elect to meet as graduation requirements either: (a) those in effect at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at UCI when the student first entered a previous, accredited collegiate institution, provided that the student has been continuously enrolled in a collegiate institution and that entry was not more than four years prior to the time of enrollment at UCI.

A transfer student who has had a break of enrollment of two consecutive semesters or three consecutive quarters (excluding summer sessions) may follow the requirements in effect at UCI: (a) at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at the time of reentry into a previous, accredited collegiate institution, provided that reentry was not more than four years prior to enrollment at UCI.

A transfer student who has been continuously enrolled in college for more than four years prior to transfer may use: (a) the requirements in effect at the time of enrollment at UCI; (b) those subsequently established; or (c) those in effect at UCI four years prior to enrollment at UCI.

Transfer students who complete one of the following options will be considered to have met the total UCI breadth requirement except the upper-division writing requirement: (a) students who transfer from a four-year institution and who have completed the general education requirements of that college, upon approval of petition; (b) students who transfer from another UC campus and have met the general education requirements of that campus (may be completed at UCI if in progress at the time of transfer); or (c) transfer students who have completed the Intersegmental General Education Transfer Curriculum prior to transfer.

University Requirements

ENGLISH ("SUBJECT A")

Every undergraduate must demonstrate upon entrance to the University an acceptable level of ability in English composition.

This requirement may be met *before* entrance by:

1. Achieving a grade 3, 4, or 5 in either of the two College Board Advanced Placement Examinations in English; *or*

2. Achieving a score of 660 or better on the SAT II Writing Test; *or*
3. Achieving a score of 5 or above on the International Baccalaureate's Higher Level English A Examination; *or*
4. Entering the University with credentials from another college which show the completion of a transferable one-quarter (four units) or one-semester (three units) course in English composition with a letter grade of C or better; *or*
5. Achieving a score of 8 or higher on the University of California writing proficiency examination (Subject A Examination); *or*
6. Completing the California State University English Equivalency Test with "Pass for two full courses of College English Credit" (this test was discontinued in 1993).

Those students who have not met the Subject A requirement before entrance must satisfy the requirement before the beginning of their fourth quarter at UCI. Students who have not satisfied the requirement by that time will be ineligible to enroll for a fourth quarter.

Students enrolled in Humanities 20A-B-C-D (Writing for Students for Whom English is a Second Language) must enroll in a Subject A course (English and Comparative Literature WR 37, WR 39A, or Humanities 1A S/A) immediately after they are authorized to do so.

The Subject A requirement may be met *after* admission by one of the following three options:

1. Passing the Universitywide Subject A Examination given in mid-May (and on subsequent dates) to all entering freshmen admitted for fall quarter, 1998 (see Placement Testing). Transfer students who have not satisfied the Subject A requirement should contact the UCI Composition Program Office (420 Humanities Instructional Building); telephone (949) 824-6717.
2. Enrolling in sections of the Humanities Core Course designated "S/A." (NOTE: Students held for Subject A and enrolled in the Humanities Core must enroll in a S/A section of the Core Course during their first quarter. Successful completion of the writing component of these sections of this course with a letter grade of C or better will satisfy the Subject A requirement. Students who do not receive a letter grade of C or better in Humanities 1A S/A in fall quarter and who continue to be held for Subject A must enroll in Humanities 1B S/A during the winter quarter and satisfy the requirement by earning a letter grade of C or better.)
3. Taking English and Comparative Literature WR 37 or WR 39A and receiving a letter grade of at least a C in that course.

The Pass/Not Pass grade option may not be used to satisfy the Subject A requirement.

Students enrolled at UCI may take only UCI courses in satisfaction of the Subject A requirement. Continuing UCI students may not take summer courses at another institution to satisfy the Subject A requirement.

AMERICAN HISTORY AND INSTITUTIONS

This requirement may be met by one of the following options:

1. Completion in high school of one year of United States history with grades of C or better, *or* one semester of United States history and one semester of United States government with grades of C or better.
2. Achieving a score of 3, 4, or 5 on the College Board Advanced Placement Examination in United States History.
3. Achieving a score of 550 or better on the SAT II: American History and Social Studies test.

4. Presentation of a certificate of completion of the requirement at another California institution.
5. Completion at another U.S. institution of one year of college-level United States history with grades of C or better, *or* one course in United States history and one in United States government with grades of C or better.
6. Completion at UCI, with a grade of C or better, of one year of United States history (History 40A, 40B, 40C) *or* of one quarter of United States history (History 40A, 40B, or 40C) and one quarter of United States government (Political Science 21A).

UCI Requirements

UNIT REQUIREMENT

Credit for a minimum of 180 quarter units, earned by examination, by other evaluation, or course work is required. A course normally offers four quarter units of credit.

GRADE REQUIREMENT

A minimum grade average of at least C (2.0) is required (1) overall, (2) in all of the courses required for the major program, and (3) in the upper-division courses required for the major program. Higher averages than this may be required only in honors programs. Students who fail to attain a C (2.0) average in courses required in the major program may, at the option of the major unit, be denied the privilege of pursuing a major program in that unit. (In this context, "the courses required in the major program" are defined as the courses required for the major and offered by the program of the student's major.)

RESIDENCE REQUIREMENT

Credit for the last 36 units of work immediately preceding graduation must be earned in residence at the UCI campus. Exceptions to this rule may be allowed, with prior departmental approval, to students enrolled in the Education Abroad Program.

BREADTH REQUIREMENT

Among the many possible purposes for breadth requirements, the one that stands out at UCI is that of introducing students to the basic modes of thought that characterize academic disciplines. In order to know ourselves and the world, we need to know first the ways these can and have been known. Thus the breadth requirement at UCI requires students to devote a substantial amount of their course work, especially in their first years, to connected series of courses which provide a coherent experience within such areas as the natural and social sciences, humanistic inquiry and the arts, and the nature of symbolic systems.

Several other aims that UCI regards as especially desirable are consistent with this chief purpose and are embodied to varying degrees in the UCI breadth requirement: to cultivate a historical consciousness of society and culture; to acquaint students with fundamental ways of thinking different from their own or that of their gender, class, and culture with a view to expanding their sense of human possibilities and awakening an awareness of the conditioned nature of their own assumptions about the world; to equip students with a broad understanding of the contemporary world and its cultural, political, scientific, and technological problems; to equip students with the skills essential to understanding and grappling with these problems; to establish bridges and to understand relationships between academic disciplines; and to provide students with some intellectual experiences which virtually all can be assumed to have had in common and thus to introduce them to what, after all, a university has traditionally been supposed first and foremost to be, an intellectual community.

The breadth requirement is a *graduation* requirement and, with the exception of the lower-division writing requirement, need *not* be satisfied during only the lower-division years. To satisfy the breadth requirement, courses are required in each of the following categories:

- I. Writing
- II. Natural Sciences
- III. Social and Behavioral Sciences
- IV. Humanistic Inquiry
- V. Mathematics and Symbolic Systems
- VI. Language Other Than English
- VII. Multicultural Studies and International/Global Issues

The specific course combinations and sequences in each area which may be used by students to satisfy the requirement are listed below. A number of the courses listed are available in more than one academic unit. When a breadth course is cross-listed with another course, that course also is available for fulfillment of the breadth requirement. Students should refer to the actual descriptions of the courses to determine which are cross-listed.

These course combinations were selected to ensure that students, in meeting the requirement, be exposed to subject matter, problems, and techniques which would serve as a first introduction to an academic area, as well as to a connected set of courses which provide a coherent experience in that academic area.

With the exception of categories I and VII, a student may count toward breadth no more than a year of work taken within the discipline of the major. For example, a student majoring in Philosophy may count no more than three quarter courses in philosophy toward breadth categories II, III, IV, V, or VI.

Students fulfill the UCI breadth requirement by completing courses from the list which follows. Students can select from among a variety of courses, depending upon their area of interest. Some of the course combinations available consist of multiple-quarter courses (such as Chemistry 1A-B-C under the Chemistry subsection of "category II. Natural Sciences"). Multiple-quarter courses are referred to as being "sequential," meaning that the course work in the earlier courses is prerequisite to the later course work. Students must take each part of a sequential course in alphabetical order (e.g., students must take Chemistry 1A before either 1B or 1C). Sequential courses are separated by hyphens. Other course combinations consist of single-quarter courses (e.g., Anthropology 2A, 2B, 2C under the Anthropology subsection of "category III. Social and Behavioral Sciences") which are related to one another but for which no course in the combination is preparatory to any other course in the combination. Single-quarter course combinations may be taken in any order. Single-quarter courses are separated by commas. Semicolons separate complete course combinations.

BREADTH CATEGORIES

I. Writing Requirement. Because of the importance of writing in every academic discipline, the University is committed to developing the writing skills of its students at all levels and in all areas. The Writing Requirement expresses this commitment, but the concern for and attention to clear, accurate writing is expected in all courses.

The Writing Requirement consists of three courses beyond the Subject A Requirement. Except where otherwise noted below, students must satisfy the Subject A Requirement *prior* to fulfilling the Writing Requirement.

Two of the three courses required must be lower-division courses. Effective fall 1997, students who have not completed the lower-division writing requirement before the beginning of their seventh quarter at UCI will be subject to probation. Students transferring to UCI normally should have satisfied the lower-division writing requirement before entering UCI; if, however, they have not, they must complete it within their first three quarters of enrollment or they will be subject to probation. ESL students must complete the



lower-division writing requirement before the beginning of the seventh quarter following the completion of their ESL courses or they will be subject to probation.

The third course must be an upper-division course, and it must be taken only after the successful completion of the lower-division requirement.

Students enrolled at UCI may take only UCI courses in satisfaction of the lower-division and upper-division writing requirements. Continuing UCI students may not take summer courses at another institution to satisfy lower-division or upper-division writing requirements.

Lower-Division Requirement: The two courses taken to fulfill the lower-division requirement must be completed with a minimum grade of C (or a Pass or Credit grade equivalent to C). Students may select from the courses specified below:

1. English and Comparative Literature WR 39B (Expository Writing) and WR 39C (Argument and Research).
2. English and Comparative Literature WR 37 (Intensive Writing) and WR 39C (Argument and Research). Recommended students only.
3. Two quarters of the writing component of the Humanities Core Course (Humanities 1A-B-C) beyond satisfaction of the Subject A requirement. NOTE: Students held for Subject A and enrolled in the Humanities Core must enroll in a section of the Core Course designated S/A during their first quarter. Successful completion of the writing component of these sections of this course with a letter grade of C or better will satisfy the Subject A requirement. (The Pass/Not Pass grade option may not be used to satisfy Subject A.) For these students, the lower-division writing requirement may be satisfied only in the second and third quarters of the Humanities Core Course. Students who do not receive a C or better in Humanities 1A S/A in fall quarter and continue to be held for Subject A must enroll in Humanities 1B S/A during the winter quarter and satisfy the requirement by earning a letter grade of C or better. The lower-division writing requirement will be satisfied in the second and third quarters of the Humanities Core Course for these students.
4. Students who complete English and Comparative Literature WR 37 or WR 39B with a grade of B (3.0) or better may substitute as the second course of the lower-division Writing Requirement one of the following courses in creative writing or nonfiction and journalism: English and Comparative Literature WR 30, WR 31, WR 32, or WR 38.

Upper-Division Requirement: The course taken to fulfill the upper-division requirement must be completed with a minimum grade of C (or a Pass or Credit grade equivalent to C). The requirement may be satisfied by completing any one of the following:

1. An upper-division course designated on a list of approved courses in the quarterly *Schedule of Classes* as approved for satisfaction of the requirement. NOTE: All courses approved to fulfill the upper-division writing requirement should have a "W" suffix. Students are encouraged to consult the *Schedule of Classes* or their advisor to determine the current upper-division writing requirement course offerings. If a course on the approved list is offered without the "W" suffix, it does not satisfy the upper-division writing requirement.
2. English and Comparative Literature WR139W.
3. An approved upper-division course in nonfiction and journalism or creative writing. Such courses frequently have special prerequisites. Students may not use such a course to satisfy the requirement unless they have attained a B or better in both courses taken to satisfy the lower-division Writing Requirement.

Students who fail to attain the required grades in the courses taken in fulfillment of the Writing Requirement should refer to the Academic Regulations and Procedures section for further information.

II. Natural Sciences. Students must select a three-course combination from one of the following areas:

Biological Sciences: Biological Sciences 1A-B and one course from 15, 35, 45, 55, 65, or 75

Chemistry: Chemistry 1A-B-C and 1LB-LC or 1LA-LB; H2A-B-C and 1LB-LC

Earth System Science: Any three courses from Earth System Science 10, 14, 15, 20E, 20F, Physics 18, 20A, 20B, 20C, 20D, Engineering E5

Interdisciplinary: Any three courses from Biological Sciences H90, Chemistry H90, Earth System Science H90, Mathematics H90, Physics H90

Physics: Physics 3A-B-C and 3LB-LC; 5A-B-C and 5LB-LC; three quarters of Physics 7A-B-C-D plus 7LA-LB-LC; three courses from Physics 18, 20A, 20B, 20C, 20D, Earth System Science 10, 14, 15, 20E, 20F, Engineering E5; Physics 17A-B plus one course from Physics 16, 18, 20A, 20B, 20D, Engineering E5

Social Ecology: Environmental Analysis and Design E1, E3, E5

III. Social and Behavioral Sciences. Students must complete a three-course combination, as follows: (1) an introductory course followed by two additional courses in the same area, or (2) an introductory course followed by a second course in the same area plus an introductory course in another area.

Introductory courses are indicated by an asterisk (*).

EXCEPTION: Although Psychology 11E is not introductory, it may be taken without completion of an approved introductory course.

Anthropology: Anthropology 2A*, 2B*, 2C*, 2D*

Economics: Economics 1*, 20A*-B*-C*

Geography: Social Science 5A*, 5B*, 5C*, 5D*, 18A, 18D

Linguistics: Linguistics 3*, 10, 20, 51, 68, 80 (NOTE: Linguistics 3, 10, 20 may be counted toward either category III or V but not both.)

People and Society:

Social Science 61*, 62*, 63*, 70A*, 70B*, 70C*

Political Science: Political Science 6A*, 6B*, 6C*, 21A, 31A, 41A, 51A

Psychology:

Psychology 7A*, 9A*-B-C, 11E, 21A, 46A, 55A, 56L, 78A
Psychology and Social Behavior P9*
Sociology 31

Social Ecology:

Criminology, Law and Society J7*
Environmental Analysis and Design E8*
Social Ecology 10*, H20A*-B*-C*

Social Science: Social Science 1A*, H1E*-F*-G*, 2A*

Sociology: Sociology 1*, 2*, 3*, 23, 31, 62

IV. Humanistic Inquiry. Students must select a three-course series from one of the following areas:

Arts:

Arts Interdisciplinary 1A, 1B, 1C; H1A, H1B, H1C
Dance 90A-B-C; 91A-B-C
Drama 40A, 40B, 40C
Music 14A-B-C; 40B-C-D
Studio Art 1A-B-C; 10A, 10B, 10C

Humanities:

Art History 40A, 40B, 40C; 42A, 42B, 42C
Classics 35A, 35B, 35C
East Asian Languages and Literatures 55 (three different topics)
Film Studies 85A-B-C
German 50 (three different topics)
History 21A, 21B, 21C; 35A, 35B, 35C; 40A, 40B, 40C;
41A, 41B, 41C; 42A, 42B, 42C; 43A, 43B, 43C
Humanities 1A-B-C; 5A, 5B, 5C
Philosophy 1, 4, and either 5 or 9; 1, 6, 7; 10, 12, and either 11 or 13
History 60, Philosophy 40, and any one of the following: Philosophy 140, History 135A, 135B, 135C, 135D, 135E, 135F
Russian 50 (three different topics)

Interdisciplinary:

African-American Studies 40A, 40B, 40C
Women's Studies 50A, 50B, 50C

Literature:

Classics 50A, 50B, 50C
English and Comparative Literature CL 50A, 50B, 50C;
three courses from E 6, E 7, E 8, CL 8;
E 28A or E 28D, E 28B, E 28C or E 28E

V. Mathematics and Symbolic Systems. Students must select one of the following three-course combinations:

Anthropology 10A-B-C
Economics 10A-B-C
Information and Computer Science 1A or 21, plus two courses from 1B, 1C, 1D, 1E, 1F, 10, 22, 23; three courses from 1B, 1C, 1D, 1E, 1F, 10, 11
Linguistics 3, 10, 20 (NOTE: Linguistics 3, 10, 20 may be counted toward either category V or III but not both.)
Mathematics 2A-B and either 2C, 7, or 13; 2A, 6A, 7; 6A, 6B, 6C
Philosophy 29, 30A, and either 30B or 31
Psychology 10A-B-C
Social Ecology 166A-B-C
Social Sciences 10A-B-C; 100A-B-C
Sociology 10A-B-C

VI. Language Other Than English. Students must demonstrate competency in a language other than English by completing one of the following options:

A. College-level course work equivalent to UCI's fourth quarter of study in a language other than English. UCI courses approved to satisfy this requirement are:

Chinese 2A
East Asian Languages and Literatures 2A
French 2A, S2AB
German 2A, S2AB
Greek 25
Italian 2A
Japanese 2A, S2AB
Latin 25
Russian 2A
Spanish 2A, S2AB, 5

For information on UCI's prerequisites and course placement policies, consult the School of Humanities, Foreign Language Placement section in this *Catalogue*.

B. Credit for four years of high school study or its equivalent in a single language other than English with a C average or better in the fourth year.

C. A score of 4 or 5 on a College Board Advanced Placement Examination in a language other than English.

D. A score of 620 or better on a College Board SAT II examination in a language other than English, with the exception of SAT II: Modern Hebrew for which a score of 540 or better is required.

E. Completion of an approved course of study in one of the following Education Abroad Programs (EAP): Argentina, Brazil, Chile, China, Costa Rica, Denmark, France, Germany, Hong Kong, Hungary, Indonesia, Israel, Italy, Japan, Korea, Mexico, Russia, Spain, Sweden, Taiwan, Thailand. (Careful planning is required to ensure that this requirement will be fulfilled. Consult the Center for International Education for other EAP courses of study which also may fulfill this requirement).

F. The equivalent as determined by an appropriate and available means of evaluation. For information on availability of such examinations and testing schedules, consult the Testing Office, Student Services II, (949) 824-6207. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of two years of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.

VII. Multicultural Studies and International/Global Issues.

Students must select one course in multicultural studies and one course on international/global issues from the following lists. In fulfilling category VII, students may use courses which are also being used in fulfillment of other breadth categories. For example, Anthropology 2A simultaneously satisfies category VII-B and a portion of category III. In addition, VII-B may be fulfilled by one quarter's participation in the Education Abroad Program (EAP).

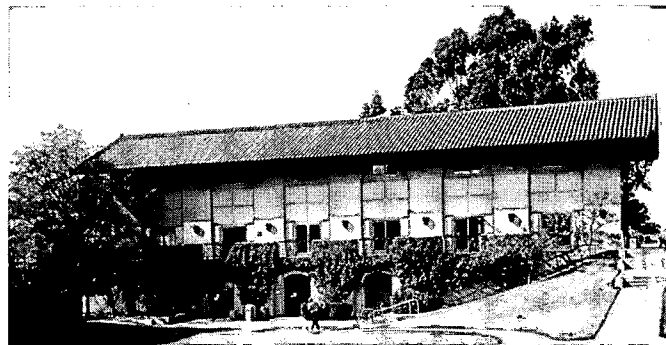
Multicultural Studies (VII-A):

African-American Studies 40A, 40B, 40C
Anthropology 85A, 125X, 136K, 138R, 138T, 161T, 162B
Asian American Studies 60A, 60B, 60C, 110, 111, 111A, 141, 150, 151, 151A, 151B, 151C, 151D, 151E, 151G, 161, 162, 197
Classics 175
Education 104E, 124, 160
English and Comparative Literature CL 9, CL 105, E 105

Environmental Analysis and Design E15, E102U
 History 15A, 15B, 15C, 146A, 146B, 146C, 148A, 148B, 150, 151A, 151B, 152
 Humanities 1C
 Music 78A, 78B
 Philosophy 131E
 Psychology 174A, 174B, 174E, 174F
 Spanish 100E, 110C, 140A, 140B, 142, 143
 Social Science 61, 62, 63, 70A, 70B, 70C, 70T, 78A, 78B, 78C, 166, 167, 168, 170B, 170E, 170F, 171F, 172B, 172C, 172D, 172E, 173F, 173G, 173H, 173I, 173K-L, 175A, 175B, 178B, 178C, 178D, 178E
 Sociology 63, 65, 161
 Studio Art 149
 Women's Studies 50A, 50B, 50C, 51, 150, 160, 161, 162, 163, 170CE, 170CF, 170SA, 170SB, 171A, 171B, 171C, 173B, 180D, 180L, 181A, 183C, 185A, 197

International/Global Issues (VII-B):

Anthropology 2A, 60A, 121A, 121D, 121E, 121H, 121J, 125A, 125B, 125P-Q, 126N, 127A, 135A, 135H, 136D, 138O, 138P, 138Q, 160M, 162A, 163A, 163H, 163K, 164K, 164L, 164P, 174A
 Art History 40A, 40B, 40C, 42A, 42B, 42C
 Asian American Studies 171, 173
 Chinese 3A-B-C, 100A-B-C, 101A-B-C, 115, 180
 Classics 176
 Criminology, Law and Society J191
 Dance 80, 90A-B-C, 91A-B-C
 Drama 40A, 40B, 40C, 120A, 120B, 120C
 East Asian Languages and Literatures 3A-B-C, 55, 101A-B-C, 110, 115, 117, 120, 130, 150, 155, 160, 180, 190
 Economics 148D, 152A, 152P-Q
 English and Comparative Literature CL 40A, CL 40B, CL 40C
 Environmental Analysis and Design E116, E143U
 Film Studies 160
 French 101A-B-C, 110, 116, 117, 118, 119, 120, 125, 127, 139, 150, 160
 German 50, 100A-B-C, 101, 102A, 102B, 117, 118, 119, 120, 150, 160
 History 11, 21A, 21B, 21C, 41A, 41B, 41C, 42A, 42B, 42C, 43A, 43B, 43C, 50, 101, 110A, 110B, 110C, 112C, 112D, 114, 116A, 116B, 117A, 117B, 118A, 118B, 118C, 120A, 120B, 120C, 120D, 122A, 122B, 122C, 124A, 124B, 126A, 126B, 126C, 127A, 127B, 127C, 128, 130A, 130B, 158A, 158B, 158C, 161A, 161B, 161C, 169, 170A, 170B, 170C, 171A, 171B, 171C, 172, 173, 174, 175, 177, 178
 Humanities 5A, 5B, 100, 183B
 Italian 100A-B, 101A, 101B, 101C
 Japanese 3A-B-C, 100A-B, 101A-B-C, 115, 180
 Linguistics 1
 Philosophy 117A
 Political Science 6A, 41A, 42A, 146A, 147A, 151A, 151B, 151C, 151D, 151F, 152B, 152C, 152D, 152F, 154B, 154C, 154F, 154G, 157A
 Portuguese 140A
 Russian 50, 100A-B-C, 101A-B-C, 150, 151, 152
 Spanish 10A-B, 44, 100A, 100B, 100C, 100D, 110A, 110B, 116, 121, 130A, 130B, 130C, 131A, 131B, 131C, 150, 160, 185
 Social Ecology 183B
 Social Science 170C, 170P, 172F, 176A, 183B
 Sociology 44, 77, 165A, 175A, 175B, 177A
 Women's Studies 170EC, 170EJ, 170FA, 170FB, 170FC, 170GA, 170GB, 170GC, 170GD, 170GH, 170GJ, 170SD, 170SE, 170SF, 171F, 180A, 180E, 180F, 180M



Studio 4, School of the Arts

School, Departmental, and Major Requirements

In addition to the University and UCI requirements listed above, each undergraduate student must satisfy the degree requirements for the major and, if applicable, the minor or concentration selected. UCI, school, and departmental or major and minor requirements may overlap; courses taken to fulfill a school or departmental requirement (e.g., the Humanities course requirement in the School of Biological Sciences) may also help fulfill the UCI breadth requirement. Students are urged to make sure that they understand how many courses are permitted to satisfy more than one requirement. Information on specific degree requirements and courses is available in the academic unit sections of this *Catalogue*.

Students must declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation), and should make certain that the background and the preparation prerequisite to junior and senior work in the major have been accomplished. Transfer students should read the section on Information for Transfer Students: Fulfilling Requirements for a Bachelor's Degree.

Students should note that with the exception of courses designated Pass/Not Pass Only, courses taken Pass/Not Pass may *not* be used to satisfy specific course requirements of the student's school and major, unless authorized by the appropriate dean. Additional information on grading is located in the Academic Regulations and Procedures section.

Minor Programs

For certification in a minor, a student must obtain a minimum overall grade point average of at least C (2.0) in all courses required for the minor program. No more than two courses applied to a minor may be taken Pass/Not Pass. Completion of the minor is noted on a student's transcript. (Students are *not* required to minor in a program in order to graduate from UCI.)

Application for Graduation

In order to receive a degree, an undergraduate student should file an Application for Graduation at the appropriate dean's office, preferably during the first quarter of the senior year, but no less than six months before the expected day of graduation. Specific deadline dates for filing are established quarterly by each academic unit so that candidates' academic records can be reviewed to verify that all graduation requirements have been met. These dates vary among academic units. Students should contact their academic counselors for deadline dates.

INFORMATION FOR TRANSFER STUDENTS: FULFILLING REQUIREMENTS FOR A BACHELOR'S DEGREE

This section provides a guide for transfer students in understanding how their course work from another collegiate institution applies to fulfilling UCI degree requirements. Transfer students should use this information in conjunction with the previous section, Requirements for a Bachelor's Degree. Transfer students are required to meet university, breadth, school, department, and major requirements described in the *Catalogue*. The courses and descriptions in this *Catalogue* may be used by prospective transfer students as a guide for selecting courses of similar content and purpose in their own institutions. No student who has taken a course which is accepted for credit by the Office of Admissions and Relations with Schools and which has been mutually determined with a community college as being acceptable toward completion of the UCI breadth requirement shall incur any loss of credit in satisfaction of the requirement.

Transfer students are *strongly* advised to check with the academic counselor in their prospective major or the Office of Admissions and Relations with Schools about courses that may be used to satisfy UCI requirements.

Transfer Students: Completion of the UCI Breadth Requirement

Students transferring to UCI must satisfy the UCI breadth requirement by completing either: (a) the current UCI breadth requirement, (b) one of the options listed in the Catalogue Rights section on page 54, or (c) the Intersegmental General Education Transfer Curriculum.

With the exception of students who complete the Intersegmental General Education Transfer Curriculum, transfer students should not feel that the breadth requirement must be completed prior to matriculating to UCI. The breadth requirement, which must be completed prior to graduation, may be satisfied by college-level courses appropriate to UCI offerings and may be met *at any time* during the undergraduate years, *except* in the case of the lower-division writing requirement, which must be completed within the first three quarters of residency at UCI.

BREADTH CATEGORIES

I. Writing. The lower-division writing requirement is met by taking an approved one-year sequence in English composition. Courses used to meet the lower-division writing requirement must be completed with a minimum grade of C (or a Pass or Credit grade equivalent to C). Transfer students may not count any course designed exclusively for the satisfaction of Subject A toward the completion of the lower-division writing requirement. Any student entering UCI with only one semester or one quarter of English composition through which the Subject A requirement is fulfilled will not have satisfied any part of the writing requirement. Students enrolled at UCI may take only UCI courses in satisfaction of the lower-division and upper-division writing requirements. Continuing UCI students may not take summer courses at another institution to satisfy lower-division or upper-division writing requirements.

II. Natural Sciences. This requirement is met by (a) taking an approved one-year sequence in *one* of the following areas: general biology, general chemistry, basic physics; or by (b) taking two semesters or three quarters of approved courses in biological sciences or physical sciences with the exception of mathematics. These courses may or may not include a laboratory.

III. Social and Behavioral Sciences. This requirement is met by taking a year of approved work in any of the following areas: anthropology, economics, geography, linguistics, people and society, political science, psychology, social sciences, sociology, or social ecology. Students on the semester system may elect to take an introductory course followed by a second course in the same area or an introductory course from each of any two areas. Students on the quarter system may elect to take an introductory course followed by two courses in one area, or an introductory course followed by a second course in the same area plus an introductory course from another area. (History, for the purposes of the breadth requirement, is not considered a social or behavioral science but rather an area of humanistic inquiry.)

IV. Humanistic Inquiry. This requirement is met by taking two semesters or three quarters of approved courses in *one* of the following areas: classics, history, philosophy, humanities, English literature, comparative literature, women's studies, dramatic literature, or the history of art, dance, or music. Performance courses may *not* be used in satisfaction of this requirement.

V. Mathematics and Symbolic Systems. This requirement is met by taking two semesters or three quarters of approved courses in mathematics, computer science, linguistics, or logic.

VI. Language Other Than English. This requirement is met by (a) completing the third semester or fourth quarter of approved college-level study in a language other than English; (b) credit for four years of high school study, or its equivalent, in a single language other than English with a C average or better in the fourth year; (c) a score of 4 or 5 on a College Board Advanced Placement Examination in a language other than English; (d) a score of 620 or better on a SAT II examination in a language other than English, with the exception of SAT II: Modern Hebrew for which a score of 540 or better is required; (e) completion of an approved course of study in an Education Abroad Program; or (f) the equivalent as determined by an appropriate and available means of evaluation. If an appropriate means of evaluating competence in a non-English language of instruction does not exist, satisfactory completion, with a C average or better, of two years of formal schooling at the sixth grade level or higher in an institution where the language of instruction is not English will meet the requirement. Appropriate documentation must be presented to substantiate that the course work was completed.

VII. Multicultural Studies and International/Global Issues. This requirement is met by completing: one course in multicultural studies and one course on international/global issues. One quarter's participation in the Education Abroad Program (EAP) also satisfies the international/global issues portion of the requirement. Courses satisfying the multicultural requirement specifically address the history, society, and/or culture of one or more minority groups in California and the United States. Courses satisfying the international/global requirement focus on significant cultural, economic, geographical, historical, political, and/or sociological aspects of one or more foreign countries.

INTERSEGMENTAL GENERAL EDUCATION TRANSFER CURRICULUM

California community college transfer students may receive credit for the UCI breadth requirement by completing the Intersegmental General Education Transfer Curriculum (IGETC) prior to transfer. The IGETC consists of a series of subject areas and types of courses which, if completed prior to transfer, will satisfy the breadth and general education requirements at any campus of the University of California. Fulfillment of the IGETC does not satisfy the UCI upper-division writing requirement. Students who do not complete the IGETC prior to transferring to UCI must fulfill the UCI breadth requirement in its entirety.

Courses used to fulfill the IGETC must be completed with a grade of C or better. (Courses may also be taken on a Pass/No Pass basis provided Pass is equal to a letter grade of C or better.)

Lists of specific approved courses which may be taken in fulfillment of the IGETC are available from California community colleges and on the World Wide Web at <http://www.assist.org/>.

Intersegmental General Education Transfer Curriculum

1. **Language Other Than English:** Proficiency equivalent to two years of high school study in the same language.
2. **English Communication:** One course in English Composition and a second course in Critical Thinking-English Composition.
3. **Mathematical Concepts and Quantitative Reasoning:** One course in mathematics or mathematical statistics which has a prerequisite of intermediate algebra. Courses on the application of statistics to particular disciplines are not acceptable.
4. **Arts and Humanities:** Three courses, at least one in arts and one in humanities.
5. **Social and Behavioral Sciences:** Three courses in at least two different disciplines.
6. **Physical and Biological Sciences:** One physical science and one biological science course; one must include a laboratory.

Transferability of Credit

The University is committed to serve as fully as possible the educational needs of students who transfer from other California collegiate institutions. The principles covering transferability of unit credit and course credit are explained below and, unless otherwise indicated, are much the same whether transfer is from a two-year or a four-year institution.

UNIT CREDIT FOR WORK TAKEN ELSEWHERE

The University of California grants unit credit for courses completed at other accredited colleges and universities when such courses are consistent with the functions of the University as set forth in the Master Plan for Higher Education in California. Equivalent advanced standing credit from institutions on the semester calendar may be determined at a ratio of one semester unit to one and one-half quarter units. (To graduate from UCI a minimum of 180 quarter units, equivalent to 45 UCI quarter courses, are needed.)

Community Colleges

A student may earn a maximum of 105 quarter units (70 semester units) at a community college toward a University degree. No further unit credit may be transferred from a community college, although subject, major, or breadth credit for courses taken will still be granted.

Students anticipating transfer to UCI are urged to consult with their community college counselors. The counselors, with the aid of that college's UC Transfer Course List Agreement (UCTCA), can advise students about California community college courses and units which will transfer to the University. In addition, staff in the UCI Office of Admissions and Relations with Schools can advise students about the transferability of courses. UCTCAs for all California community colleges are available on the World Wide Web at <http://www.assist.org>.

Four-Year Institutions

Unit credit is granted for courses consistent with the University of California's functions and which have been completed in colleges or universities accredited by the appropriate agencies. While limitations of credit may be imposed in certain subject areas, these are consonant with the curricula for all students in the University of California. No defined maximum number of units which can be earned toward the degree is set for students transferring from

four-year institutions. However, see the Residence Requirement in the UCI Requirements section.

University of California Extension

Extension courses prefixed by XB, XD, XI, XR, XSB, and XSD are granted unit credit on the same basis as courses taken in residence at any accredited collegiate institution.

Students intending to transfer Extension course credit for a degree at another college or university should verify acceptance of the course with that institution. Resident students of the University of California must obtain the consent of the dean of their school or college prior to enrolling for credit in an Extension course. Extension courses are not accepted as part of the residence requirements of the University. Grades earned in University Extension are not used in calculating the University grade point average.

Decisions regarding the acceptability of extension courses taken in institutions other than the University of California rest with the Office of Admissions and Relations with Schools. Decisions regarding the applicability of such courses toward specific degrees and majors rest with the student's academic dean.

COURSE CREDIT FOR WORK TAKEN ELSEWHERE

The policies above refer only to the unit transferability of courses and are uniformly implemented on all UC campuses. Thus, courses which are determined by the University of California to be transferable are assured only of being granted elective course credit. The application of transfer work to specific course and major requirements is determined by the student's academic dean.

The Irvine campus makes every effort to eliminate all barriers to orderly progress from California community colleges into UCI's programs. To this end, courses from many California community colleges have been reviewed by UCI faculty and approved as acceptable toward meeting lower-division major or breadth requirements. Although course equivalencies for the breadth requirement may be liberally interpreted for purposes of transfer, courses to be applied toward school and departmental major requirements must be more precisely equated with UCI courses in unit value and in content.

Many California community colleges have entered into articulation agreements with UCI so that the specific application of their courses to UCI's breadth, school, and departmental major requirements may be readily communicated to prospective transfer students. By careful selection of courses, it is possible for students to satisfy some or all of the lower-division requirements of their intended program or school prior to transfer. It is recommended that transfer students complete as much of the lower-division breadth, school, and major requirements as possible prior to transferring to UCI. Articulation agreements are available on the World Wide Web at <http://www.assist.org>.

Students are urged to consult community college counselors or the Office of Admissions and Relations with Schools for information on planning a program for transfer. Prospective transfer students with specific questions about course work in their major should contact the respective school or department at UCI.

ENROLLMENT AND OTHER PROCEDURES

Except where noted, all information applies to both undergraduate and graduate students. Additional information concerning enrollment and academic policies applying only to graduate students is given in the Graduate Studies and Research section.

Enrollment and Payment of Fees

To receive academic credit for regular courses and other supervised instruction or research, a student must be officially enrolled prior to undertaking such activities. **Registration does not become official until all required fees have been paid, and the student enrolls in classes with the Registrar. Students are responsible for ensuring that their course enrollments are correct.**

A quarterly calendar of dates for enrollment and payment of fees is included in each quarterly *Schedule of Classes*. This booklet is distributed at the UCI Student Center to continuing students during the seventh week of each quarter for the ensuing quarter and also may be purchased at the UCI Bookstore. New students receive the booklet by mail.

The general procedures for enrollment are:

1. Consult the appropriate academic advisor to develop an approved program of study. Secure necessary authorizations for courses that require special approval.

New undergraduate students entering in the fall should seriously consider attending one of the Student-Parent Orientation Program (SPOP) sessions during the summer for academic advising and enrollment assistance.

2. Pay careful attention to deadlines. Enroll in classes during the published registration period.
3. Pay required fees to the Cashier. Any other outstanding obligations must be satisfied at this time also.

NOTE: Late fee payment and/or late enrollment in classes may require the student to enroll in classes using the Add-card procedure.

TELEPHONE REGISTRATION

TELE, UCI's telephone registration system, allows students to enroll in classes from anywhere in the world. Students may add and drop classes, inquire about open sections, change their grading option or units for a variable-unit class, and list their confirmed class schedule. Immediate feedback on the availability of a class and a student's eligibility to enroll is provided; schedule changes may be made during the registration period or the adjustment period. Complete information about TELE is available in each quarterly *Schedule of Classes*.

PAYMENT OF FEES AND ENROLLMENT

Registration fees are assessed quarterly and appear on ZOTBills mailed to students by the Campus Billing Services Office. Students who do not pay all required fees to the Cashier's Office during the published registration period are subject to a late service fee. This fee is graduated: \$25 through the end of the second week of classes; \$50 thereafter.

Students who do not enroll in classes during the published registration period are subject to a late service fee. Between the deadline and the end of the second week of classes, the late service fee is \$25 for undergraduate students. Thereafter it increases to \$50. The fee is \$50 for graduate students after the second week of classes. A signature of the student's dean is required for late enrollment once the quarter begins.



The student is subject to *both* late service fees (either \$50 or \$100) if fees are not paid to the Cashier's Office and the student does not enroll in classes by the registration deadlines, which are published quarterly in the *Schedule of Classes*.

To avoid the expense and inconvenience of late enrollment, students are urged to enroll and pay fees well before the published registration deadlines. Students with financial need should make advance arrangements with the Financial Aid Office, or another source, to have funds available when fees are due.

Late registration (payment of fees and/or enrollment in classes) is permitted only in exceptional circumstances with the authorization of the student's dean. A student who is allowed to apply late and, as a result, must pay fees and enroll late, is required to pay late service fees. Late services charges may be waived *only* if the University is responsible for the late transaction.

CHANGE OF CLASS ENROLLMENT

After officially enrolling with the Registrar, a student may add or drop classes, change sections of a course, change units in a variable unit course, or change the grading option by completing an Add, Drop, or Change Card, available from the student's academic counseling office or the Registrar's Office. In the first two weeks of classes, instructors may authorize the use of TELE for adding, dropping, and changing the grade option.

An undergraduate student may not enroll in more than 20 units or fewer than 12 units of course work during a given quarter without the permission of the student's academic dean or, for undecided/undeclared students, the Dean of the Division of Undergraduate Education. Changes to Pass/Not Pass grading must not cause the student to exceed the limitations to Pass/Not Pass enrollment.

Graduate students may not enroll in more than 16 or fewer than eight units of graduate or upper-division credit without prior approval of the departmental graduate advisor and the Dean of Graduate Studies.

During the first six weeks of instruction, a student may add classes provided approval is granted by the instructor in charge of the class.

To change the grading option of a class during the first two weeks of instruction, students must obtain the signature of the instructor in charge. The Change Card must then be submitted to the Registrar's Office no later than the end of the second week of instruction. Changes in the grading option from the third through the tenth week require approval of the instructor and the student's academic dean.

Students may drop classes from the first through the sixth week of a quarter, inclusive, with the signature of the instructor in charge.

After the sixth week of instruction, students may add or drop a class only with the permission of the instructor and the student's



UCI Student Center patio

academic dean. Permission to drop after the sixth week can be granted only if the student is not failing the course and is not subject to disqualification, and only if dropping the course would be to the educational benefit of the student, of the class as a whole, or both.

A W notation will be recorded for each course dropped after the end of the sixth week of classes. The effective date of a "drop" is the date the approved Drop Card is received in the Registrar's Office.

Students are responsible for their official enrollment and must be officially enrolled in each class they attend. They must officially drop classes they have ceased attending. The student cannot simply discontinue attendance in a class; a Drop Card must be filed before the last day of instruction for the quarter.

The Registrar's Office cannot accept Add, Drop, or Change Cards after the last day of instruction of a particular quarter.

NOTE: Instructors and deans may have earlier deadlines than those mentioned above.

Part-Time Reduced-Fee Study Program

Part-time study for credit leading to an undergraduate or graduate degree is available in academic units in which there exists good educational reason, as determined by the academic unit, to allow part-time study. To take advantage of reduced fees for part-time status, quarterly course enrollment is limited to 10 units or less for undergraduate students and to eight units or less for graduate students. Students enrolled in excess units after the Friday of the third week of instruction are liable for full fees.

The same admissions standards that apply to full-time students apply to part-time students. Under University policy, academic deans (the Dean of the Division of Undergraduate Education, for undecided/undeclared students; the Dean of Graduate Studies, for graduate students) may approve Petitions for Part-Time Status *only* for reasons of occupation, family responsibilities, or health.

In addition to all other required fees, students approved for part-time status pay one-half of the Educational Fee and, if applicable, one-half of the Nonresident Tuition Fee or Professional School Student Fee. Undergraduate petitions are available from academic counselors or the Registrar's Office; graduate students may obtain further information and petitions from the Office of Research and Graduate Studies. Since there are certain restrictions on receiving undergraduate credit for part-time course work, undergraduates

interested in part-time study should read, in addition to the Undergraduate Admissions section, the sections on Expenses and Fees, and Financial Aid. Graduate students should refer to the Research and Graduate Studies section. Additional information is available in the *Schedule of Classes*.

Lapse of Status

A student's status may lapse for the following reasons:

Failure to pay required student fees by the prescribed deadline; failure to respond to official notices; failure to settle financial obligations when due or to make satisfactory arrangements with the Cashier's Office; failure to complete the physical examination; or failure to comply with admission conditions.

Each student who becomes subject to lapse of status is given advance notice and ample time to deal with the situation. However, if the student fails to respond, action will be taken without further notice. A "hold" will be placed on all of the student's records and the student will be entitled to no further services of the University except assistance toward clearing the hold. A student must satisfy the conditions which caused the lapse of status before the hold can be cleared.

Retention of Student Records

The Registrar's Office maintains a permanent record of academic work completed by each student. Support documents for the academic record are kept for one year.

Students are strongly advised to carefully check their academic record quarterly. (Student copies of the academic record are available at the Registrar's Office shortly after the close of each quarter.) Discrepancies in the academic record should be reported to the Registrar immediately. After one year, it is assumed that the student accepts the accuracy of their academic record, and supporting source documents are destroyed.

Transcript of Records

The transcript of a student's academic record will be released only upon receipt of a signed request from the student authorizing the release. Application may be made in person or by mail; telephoned requests cannot be honored because payment is due in advance. Application for a transcript should be submitted to the Cashier's Office with a check or money order payable to Regents-UC for the exact amount due. The fee for transcripts is \$5 per copy. All outstanding debts to the University (with the exception of long-term financial aid loans not yet due and payable) must be paid in full before a transcript will be released.

Requests for transcripts by other than the student whose transcript is being sought can be honored only (1) if the request is accompanied by a written authorization signed by the student whose transcript is sought, and (2) upon approval of the Registrar. Such transcripts can be released by the Registrar only to another college, university, or educationally related agency such as the Law School Data Admissions Service (LSDAS) or the American Medical College Application Service (AMCAS).

When a student orders a transcript to be sent to another college, university, or agency, it is extremely important for the student to provide a complete, accurate mailing address to ensure delivery to the correct office. At least two weeks should be allowed for a transcript to be received by another institution or agency.

Verification of Student Status

The Registrar's Office provides verifications of student status. Verifications may be needed for reference checks, bank loans, applications for good-student-driver insurance rates, and Social Security payments. There is a \$3 fee for each verification, however verifications for the purpose of student loan deferments are free of charge. For verification purposes, enrollment in 12 units or more in regular sessions is considered full-time status; enrollment in 6.0–11.9 units is considered half-time status; enrollment in 5.9 units or less is considered less than half-time status. Enrollment in eight units is considered full-time status for summer session.

Cancellation/Withdrawal

Students who pay fees for a regular academic quarter and then decide to withdraw from the University must submit a Cancellation/Withdrawal form to the Registrar's Office after obtaining the signatures of their academic dean (or the Dean of the Division of Undergraduate Education, for undecided/undeclared students) and the University Ombudsman, for undergraduate students. Medical students must submit the form to the Curricular Affairs Office in the College of Medicine. This form serves two purposes: (1) a refund of fees, if applicable (see Fee Refund section); and (2) automatic withdrawal from classes.

The effective date of withdrawal used in determining the percentage of fees to be refunded is the date on which the student submits the withdrawal form to the Registrar's Office or to the Curricular Affairs Office.

A W notation will be recorded for each course in which enrollment is withdrawn if the student's effective date of withdrawal is after the end of the sixth week of classes. (See W notation in the Grading System section.)

A graduate student in good academic standing who wishes to withdraw and intends to return within one year should submit both the Cancellation/Withdrawal form and an application for a Leave of Absence. Further information appears in the Research and Graduate Studies section.

New undergraduate students are encouraged to seek advice from their admissions or academic counselor to understand the consequences of withdrawal and their eligibility to return.

If an undergraduate student plans to leave the University after completing all academic work for the latest quarter of enrollment and has not paid fees for the next quarter, a formal notice of withdrawal is not necessary.

Readmission: Undergraduate Students

Students are strongly urged to consider the readmission policy in formulating plans for leaving or returning to UCI. Every effort will be made to readmit UCI students who were in good academic standing at the time they ceased attending and who have filed readmission applications by the deadline. Former UCI students who wish to be readmitted should contact the undergraduate counseling office of the school or program which offers their intended major.

Readmission is subject to dean's approval and campus deadlines (August 1 for fall quarter, November 1 for winter quarter, and February 1 for spring quarter). To apply for readmission, a student must first pay a nonrefundable \$40 Application Fee at the Cashier's Office, and then file the Application for Readmission with the Registrar's Office. Remittance of the \$40 Application Fee may be made by bank draft or money order made payable to Regents-UC.

New undergraduate students who cancel registration prior to the first day of the quarter must reapply to UCI; they are not eligible to file for readmission as described above.

If a student has been academically disqualified from the University or has left the University while on probation or subject to disqualification, the student must apply for readmission. The application, however, is subject to the approval of the dean of the school which the student hopes to enter.

Transcripts for work taken at other institutions must be submitted as part of the application.

Readmission: Graduate Students

A graduate student who withdraws and has not been granted a leave of absence approved by the Dean of Graduate Studies can resume graduate study only if readmitted. The Application for Admission must be submitted by the published deadline for graduate admission applications. Please refer to the statement on readmission which appears in the Research and Graduate Studies section.

Intercampus Visitor: Undergraduates Only

A currently registered UCI undergraduate student in good standing may apply for intercampus visitor status at another campus of the University for one quarter. Forms and instructions are available at the Registrar's Office.

California Residence

Detailed information about California residence is available in the *Catalogue's* Expenses and Fees section. All inquiries with regard to the requirements for the establishment of California residence (including exceptions pertaining to minors, aliens, and dependents of military personnel stationed in California) should be directed to the University of California, Irvine, Residence Deputy, Registrar's Office, 215 Administration Building, Irvine, CA 92697-4975, telephone (949) 824-6129.

Commencement

UCI Commencement ceremonies are held each June for all students who graduate any quarter of that academic year. Commencement protocol information is mailed to all prospective graduates in the spring and also is available from academic counselors. Additional information is available from the Commencement Office; telephone (949) 824-6378.

Application for Graduation. In order to receive a degree, an undergraduate student must file an Application for Graduation at the appropriate dean's office, preferably during the first quarter of the senior year, but no less than six months before the expected day of graduation. Specific deadline dates for filing the application are established quarterly so that candidates' academic records can be reviewed to verify that all graduation requirements have been met. Students should contact their academic counselor and see the *Schedule of Classes* for deadline information.

Diplomas. Students are advised by mail when their diplomas are available, which is three to four months after the quarter in which the degrees are awarded. Students may then pick up their diplomas at the Registrar's Office or authorize the Registrar to send their diplomas by certified mail, or registered air mail to locations outside the United States. There is a service charge of \$5 for certified mail, \$10 for registered air mail, payable to Regents-UC. All outstanding debts due to the University, with the exception of long-term financial aid loans, must be paid in full before a student's diploma will be released.

ACADEMIC REGULATIONS AND PROCEDURES

Except where noted, all information applies to both undergraduate and graduate students. Additional information concerning academic regulations applying only to graduate students is given in the Research and Graduate Studies section.

Student Academic Records

Student's official academic records are maintained permanently by the Registrar and are used for purposes such as academic advising, scholarship awards, admission to professional or graduate schools, and future employment.

Each student is responsible for carefully examining their enrollment and academic records and may do so throughout the academic year. Students must promptly notify the Registrar's Office if they find a discrepancy in their records.

Since each student's current quarter class enrollment is put directly into the academic record system from telephone enrollment or source documents completed by the student, it is extremely important for each student to complete these entries or source documents (e.g., Add/Drop/Change Cards) carefully and accurately.

Student academic records may not be changed after one year or, in some cases, in less than one year if Academic Senate regulations specify a shorter time limit. For example, the notation "NR," which means that no grade has been reported, must be removed within one quarter of subsequent enrollment or it will automatically be converted to the grade "F" or "NP" (under Senate Regulation IR 345).

After a student's degree has been certified by the student's dean, the academic record may not be altered except in those cases where a procedural or clerical error on the part of an instructor has occurred.

GRADING SYSTEM

- A — Excellent (4.0 grade points per unit)
- B — Good (3.0 grade points per unit)
- C — Average (2.0 grade points per unit)
- D — Lowest passing grade (1.0 grade point per unit)
- F — Not passing (no grade points)
- I — Incomplete
- P — Pass (equal to grade C or better)
- NP— Not Pass (equal to grade C- or below)
- S — Satisfactory (equal to grade B or better; graduate students only in courses designated by the Graduate Council)
- U — Unsatisfactory (graduate students only in courses so designated by the Graduate Council)
- IP — In Progress (restricted to certain sequential courses, so designated by the Committee on Courses or Graduate Council, for which the final quarter grade of a multi-quarter course is assigned to the previous quarter(s) of the sequence)
- NR— No Report (given when an instructor's final grade course report is not submitted or when the student's name was on the official class roster but the instructor did not report a grade for the student; NR becomes an F or NP after one quarter of subsequent enrollment or at the end of the quarter immediately preceding award of the degree, whichever comes first. The instructor may replace an NR with a grade within one quarter of subsequent enrollment or may authorize the student to drop the class, which would result in the NR becoming a W).

UR— Unauthorized Repeat. A UR notation is recorded for the grade when a student already has a passing grade for a nonrepeatable course and has repeated the course again.

W — Withdrew. A W notation is recorded on a student's permanent record for each course a student drops after the end of the sixth week of instruction in a quarter. Courses in which a W has been entered on a student's record will be disregarded in determining the student's grade point average and will not be considered as courses attempted in assessing the student's satisfaction of the normal progress requirement.

Plus and minus suffixes may be attached to the grades A, B, C, and D.

GRADE POINTS AND GRADE POINT AVERAGE

Grade points are assigned on a four point basis: A, 4 points per unit; B, 3 points per unit; C, 2 points per unit; D, 1 point per unit; F and I, zero points. Plus or minus suffixes modify the above by plus or minus 0.3 grade point per unit, with the exception of the A+ grade which is assigned 4 points per unit.

Requirements for a bachelor's degree, with the exception of certain programs in Engineering, include the accumulation of baccalaureate credit for a minimum of 180 quarter units with an average of at least C (grade point average of at least 2.0). A course at UCI normally offers four quarter units of credit, and, in the following text, the term "course" may be understood to carry four units. The grade point average is the sum of all accumulated grade points (grade points earned in a course taken for a letter grade times the unit value of the course) divided by the sum of all units attempted. P, NP, S, U, NR, IP, and I grades, as well as workload credit, are excluded in computing grade point average.

Baccalaureate credit counts toward degree requirements and is used to compute the grade point average. Workload credit is used to determine full-time status for financial aid, housing, student loans, and other purposes. For most courses at UCI, baccalaureate credit and workload credit are identical. Courses differing in this credit or "workload credit only" courses are identified in the course description.

It should be noted that final grades as reported by professors are normally permanent and final. A professor may not change a final grade except to correct a clerical or procedural error. Clerical or procedural errors should be corrected within one regular academic quarter after the grade is assigned. No grade may be revised by reexamination or, with the exception of I and IP grades, by completing additional work. If a student is dissatisfied with a grade, the student should review their work with the instructor and receive an explanation of the grade assigned. A grade may be appealed on any reasonable grounds to the instructor, the chair of the department, and the dean of the school. If the matter is not resolved, the student may go for counsel to the Office of the University Ombudsman. Under circumstances explained in the Academic Grievance Procedures (Manual of the Irvine Division of the Academic Senate, Appendix II), a grade may be changed if the Academic Grievance Panel has determined that the grade was assigned on the basis of discrimination.

INCOMPLETE GRADES

An I or Incomplete grade is assigned to a student by an instructor when the student's work is of passing quality but is incomplete because of circumstances beyond the student's control, and when the student has been temporarily excused by the instructor from completing the quarter's work.

For currently enrolled students, the maximum time limit for making up an I grade is three quarters of enrollment. After this time the I grade can no longer be replaced and will appear permanently on the record. *The instructor is not obligated to allow the maximum three-quarter period.* The student should consult the instructor to

determine how the Incomplete may be made up. It is strongly recommended that the student and the instructor prepare a written agreement specifying how the Incomplete can be made up and the deadline for doing so. Once the work is completed within the time agreed upon by the instructor, the student should ask the instructor to submit a change of grade form to the counseling office of the school in which the course was offered. The student should *not* reenroll in the course to make up the Incomplete.

Students not currently enrolled at UCI have a maximum of one calendar year in which to replace an Incomplete grade. However, in exceptional individual cases involving the student's prolonged inability to pursue a course of study, extensions of up to two additional years may be granted by the instructor with the approval of the dean of the unit offering the course; students must petition for such an extension within one calendar year following the assignment of the Incomplete grade.

Courses graded I carry no grade points and are not included in computation of the grade point average which appears on the student's permanent record. Any I grade will remain indefinitely on the permanent record unless the work is completed and a grade assigned as described above.

University of California regulations require a grade point average of 2.0 for all units attempted in order to receive a bachelor's degree. *Only when a check for satisfaction of graduation requirements is made are I's treated as F's.* If the student's overall average is at least a 2.0, including the Incomplete grades computed as F's, then the student may graduate. If the Incomplete grades computed as F's decrease the student's average below a 2.0, the student may not graduate until enough I grades have been made up to bring the average up to a 2.0 and this must be done within the time limits specified above.

PASS/NOT PASS

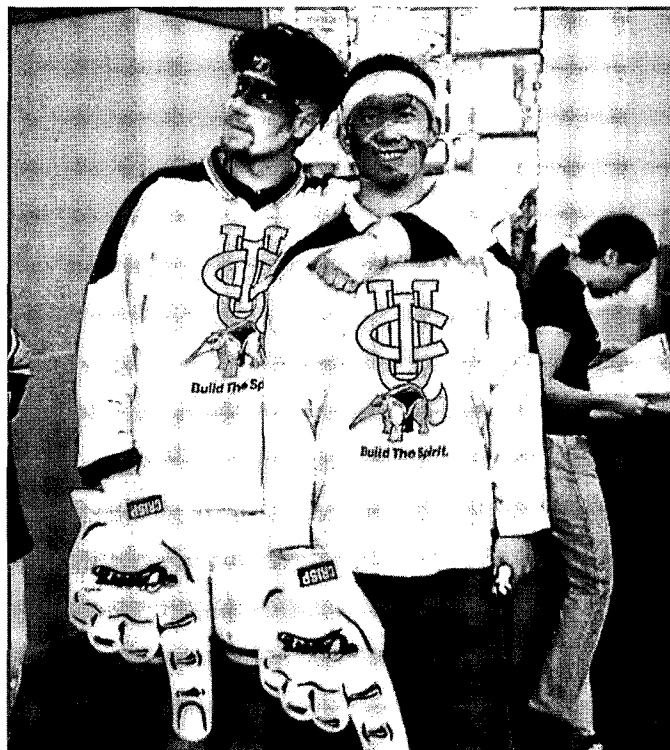
The Pass/Not Pass option is available to encourage students to enroll in courses outside their major field. Courses graded Pass or Not Pass are not included in computation of the grade point average which appears on a student's permanent record. However, if a student receives a Pass in a class, course and unit credit for the class is received, except as provided below. If a Not Pass is received, the student receives no credit for the class.

Some courses are designated by academic units as Pass/Not Pass Only. Students do not have the option of taking these courses for a letter grade.

The use of Pass/Not Pass is governed by all of the following provisions:

1. A student in good standing may take up to an average of four units per quarter on a Pass/Not Pass basis.
2. In addition, students may count a total of 12 units of courses designated Pass/Not Pass Only toward their graduation requirements.
3. A student who earns a grade of C (2.0) or better will have a Pass/Not Pass grade recorded as Pass. If the student earns a grade of C- or below, the grade will be recorded as a Not Pass, and no unit credit will be received for the course. In both cases, the student's grade will not be computed into the grade point average.
4. Courses taken under the Pass/Not Pass option may count toward the unit requirement for the bachelor's degree and toward the breadth requirement. With the exception of courses designated Pass/Not Pass Only, courses taken Pass/Not Pass may not be used to satisfy specific course requirements of the student's school and major, unless authorized by the appropriate dean. No more than two courses applied to a minor may be taken Pass/Not Pass.

Graduate students may take one course (up to four units) per quarter on a Pass/Not Pass basis. However, such courses are not



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considered part of the student's graduate program, may not be applied to the requirements for an advanced degree, and do not count toward the minimum number of units for which a graduate student must enroll.

5. Changes to or from the Pass/Not Pass option must be made during the enrollment period. No changes can be made after the first two weeks of classes without the approval of the dean of the student's school. No changes in the Pass/Not Pass option can be made after the last day of instruction of the quarter.
6. A student on academic probation may not enroll in a course with the Pass/Not Pass option unless the course is offered on that basis only.

SATISFACTORY/UNSATISFACTORY GRADES (GRADUATE STUDENTS ONLY)

Satisfactory/Unsatisfactory grading, unlike Pass/Not Pass, is not a student option. With the consent of the academic units involved, individual study and research or other individual graduate work undertaken by a graduate student may be evaluated by means of the grades S or U. With the approval of the Graduate Council, certain graduate courses are graded S/U Only. Also, the grade S or U may be assigned provisionally in each but the last quarter of a graduate course extending over more than one quarter. Upon completion of the last quarter, letter grades (A to F) replace such provisional grades. When a grade of S or U has been assigned on a provisional basis and the student does not complete all quarters of the course sequence, the instructor may assign a final letter grade or the grade of I to replace the S or U, or let the grade of S or U stand as a final grade. The grade S is defined as equivalent to a grade of B (3.0) or better. No credit will be allowed for work graded Unsatisfactory.

GRADES IN PROGRESS

IP is a transcript notation, restricted to sequential courses which extend over two or more quarters, indicating that the final grade for the individual quarters will not be assigned until the last quarter



of the sequence is completed. The grade for the final quarter is then assigned for all of the previous quarters of the sequence. No credit is given until the student has completed the entire sequence. IP notations may be given only for courses designated by the Academic Senate Committee on Courses or Graduate Council for use of this notation. IP notations are not included in computations of the student's grade point average and do not contribute to the number of quarter units completed.

GRADES NOT REPORTED

A student who receives an NR must immediately contact the instructor and arrange for the removal or replacement of the NR. An NR becomes an F or NP after one quarter of subsequent enrollment or at the end of the quarter immediately preceding award of the degree, whichever comes first. NR transcript notations are not included in computations of the grade point average and do not contribute to the number of quarter units completed.

REPETITION OF COURSES

With approval from their school or program, undergraduates may repeat courses only when grades of C-, D+, D, D-, F, or NP were received or when the course has been approved for repetition. (A C- earned before fall quarter, 1984, is not repeatable.) Degree credit for courses so repeated will be given only once, but the grade assigned at each enrollment shall be permanently recorded. In computing the grade point average of an undergraduate with repeated courses in which a C-, D+, D, D-, F, or NP (if repeated for a letter grade) was received, only the most recently received grades and grade points shall be used for the first 16 units repeated. In case of further repetitions, the grade point average shall be based on all additional grades assigned.

All courses which were originally taken for a letter grade must be repeated for a letter grade. Courses originally taken on a Pass/Not Pass basis may be repeated for a Pass/Not Pass or for a letter grade if the course is so offered.

A graduate student may repeat only once a course in which a grade below B or a grade of U was received. Only the most recently earned grade shall be used in computing the student's grade point average for the first eight units of repeated work; thereafter both the earlier and the later grades will be used.

If a student repeats a course for which a passing grade has already been received and the course is not approved as repeatable for credit, the student will receive a UR and no credit will be given.

Information regarding the repetition of foreign language courses is available in the School of Humanities section.

SATISFACTION OF THE WRITING REQUIREMENT

Students enrolled at UCI may take only UCI courses in satisfaction of the lower-division and upper-division writing requirements. Continuing UCI students may not take summer courses at another institution to satisfy lower-division or upper-division writing requirements. The two courses taken to fulfill the lower-division writing requirement must be completed with a grade of C or better (or a Pass or Credit grade equivalent to C).

1. Students who fail to attain a letter grade of C or better in English and Comparative Literature WR 37 must repeat the course or enroll in the equivalent. It is recommended that these students enroll in WR 39A followed by WR 39B-C to assure completion of this requirement. Students who fail to attain a grade of C or better in WR 39C must repeat the course.
2. Students who fail to attain a grade of C or better in one or both courses of the English and Comparative Literature WR 39B-C sequence must repeat the course or courses in question.
3. Students who fail to attain a grade of C or better in at least two quarters of the writing component of the Humanities Core Course after satisfying the Subject A requirement by attaining a grade of C or better in Humanities 1A S/A, should substitute English and Comparative Literature WR 39C if they need one quarter of additional work to complete the requirement, or English and Comparative Literature WR 39B-C if they need two quarters to complete the requirement. Students who fail to attain a grade of C or better in Humanities 1A S/A, enroll in Humanities 1B S/A and attain a grade of C or better, but fail to attain a grade of C or better in the writing component of Humanities 1C, should substitute English and Comparative Literature WR 39C to complete the requirement.
4. Students who fail to attain a grade of C or better in either Humanities 1A S/A or Humanities 1B S/A, should substitute English and Comparative literature WR 39A-B-C to complete the requirement.

The course taken to fulfill the upper-division writing requirement must be completed with a grade of C or better (or a Pass or Credit grade equivalent to C). See the UCI Requirements section for further information.

Effective fall 1997, students who have not completed the lower-division writing requirement before the beginning of their seventh quarter at UCI will be subject to probation. Students transferring to UCI normally should have satisfied the lower-division writing requirement before entering UCI; if, however, they have not, they must complete it within their first three quarters of enrollment or they will be subject to probation. ESL students must complete the lower-division writing requirement before the beginning of the seventh quarter following the completion of their ESL courses or they will be subject to probation.

Credit by Examination

An enrolled student may obtain credit for many courses by taking a special examination administered by a faculty member who normally teaches that course. Detailed procedures for obtaining credit by examination may be obtained from the office of the dean of the school which offers the course. Approval of any petition for credit by examination must be obtained from the dean of that school before the examination can be administered. After the dean has signed the petition, the student must have it validated by paying a \$5 Credit by Examination Fee at the Cashier's Office.

The instructor giving the examination retains the prerogative (1) to decide whether the course can be taken by examination, (2) to determine the form such an examination may take, and (3) to stipulate whether the grade will be reported as Pass/Not Pass or as a letter grade (e.g., A, B, C, etc.).

A student may take the examination for a particular course only one time. After receiving the grade, the student may accept it or reject it. If the student is not satisfied with the grade received on the examination, the student may choose not to receive credit or a grade. If the student does choose to accept the results of the examination, grades and grade points (if applicable) will be entered on the record in the same manner as those for regular courses of instruction.

Independent Study: Undergraduates Only

Another class option is available primarily to upper-division students at UCI. The independent-study option allows the student to plan with the instructor a course having a clear relationship to the student's academic program. The plan for the course will include a reading list, a group of assignments, examinations, papers, or similar evidence of intellectual achievement on which academic credit will be based. A description of the course and of its requirements must be approved by the instructor responsible for it and by the department chair or dean. Independent-study credit for undergraduates is limited to five units per quarter.

Final Examinations

Final examinations, or their equivalent, are obligatory in all undergraduate courses except laboratory and studio courses, as individually determined by the Committee on Courses. In laboratory and studio courses, the department concerned may at its option require a final examination subject to prior announcement in the *Schedule of Classes* for the term. Normally each such examination shall be conducted in writing and must be completed by all participants by the announced time shown in the *Schedule of Classes* for the quarter in question. These examinations may not exceed three hours duration. Special arrangements may be made for disabled students.

Final grade reports from professors are due in the Registrar's Office within 72 hours after the final examination.

Student Copies of Quarterly Grades

After each quarter, a complimentary copy of the student's permanent record is available from the Registrar's Office. On the copy, the student will find grades for all the quarters taken at UCI, a computation of grade point average at the University of California, and a list of the University requirements completed (Subject A, American History, and American Institutions).

Declaration of Major

All students are required to declare a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation) or they will become subject to disqualification from further registration in the University.

Undergraduate Scholarship Requirements

Requirements for a bachelor's degree, with the exception of certain programs in Engineering, include the accumulation of credit for a minimum of 180 quarter units with an average of at least C (grade point average of at least 2.0).

CLASS LEVEL

Undergraduate students are classified as freshman, sophomore, junior, or senior students, based on the total number of units acquired, as follows:

Freshman	0 — 44.9
Sophomore	45.0 — 89.9
Junior	90.0 — 134.9
Senior	135 +

COURSE LOAD LIMITS

An undergraduate may enroll in as few as 12 units or as many as 20 units. To enroll for more than 20 units or fewer than 12 units, students must obtain the authorization of their dean or, for undecided/undeclared students, the Dean of the Division of Undergraduate Education. Refer to the Part-Time Reduced-Fee Study Program section.

ACADEMIC STANDING

To remain in good academic standing a student must maintain a grade point average of at least 2.0 and make progress toward the degree at a satisfactory rate.

An undergraduate student normally is subject to academic probation if at the end of any quarter the grade point average for that quarter, or the cumulative grade point average, is less than 2.0.

A student whose grade point average falls below a 1.5 for any quarter, or who after two consecutive quarters on probation has not achieved a cumulative grade point average of 2.0 or a satisfactory rate of progress, is subject to disqualification.

NORMAL PROGRESS REQUIREMENT

Regular undergraduate students will become subject to probation or subject to disqualification from further registration in the University if they fail to make normal progress toward the baccalaureate degree, which progress includes declaration of a major by the time they reach junior status (90 units excluding college work completed prior to high school graduation).

1. Normal progress for all regular undergraduate students is defined in the following table, in terms of quarter units completed at the end of quarters enrolled.

Quarter	Normal Progress	Subject to Probation	Subject to Disqualification
1	12–15	8–11	7
2	24–30	16–23	15
3	36–45	24–35	23
4	50–60	40–49	39
5	65–75	56–64	55
6	80–90	72–79	71
7	96–105	89–95	88
8	112–120	106–111	105
9	128–135	124–127	123
10	145–150	142–144	141
11	162–165	160–161	159
12	180	—	—

2. A student who at the end of a given quarter of enrollment has completed the number of units in the range specified in the "Normal Progress" category under (1) is making normal progress. A student who at the end of a given quarter of enrollment has completed a number of units in the range specified in the "Subject to Probation" category under (1) is subject to being placed on probation by the faculty of that student's school or program or its designated agent or, for undecided/undeclared students, by the Faculty Board for Unaffiliated Students or its designated agent. A student who at the end of a given quarter of enrollment has completed no more than a number of units in the range specified in the "Subject to Disqualification" category under (1) is subject to disqualification by the faculty of that student's school or program or its designated agent or, for undecided/undeclared students, by the Faculty Board for Unaffiliated Students or its designated agent.
3. Students who have completed two consecutive quarters on academic probation without having achieved at the end of that period at least the normal rate of progress specified under (1) are subject to disqualification.

A student will be allowed to continue on probation only if the record indicates likely achievement of the required scholastic standing within a reasonable time.

4. For purposes of calculating “Normal Progress,” “Subject to Probation,” and “Subject to Disqualification,” students admitted to the University with advanced standing will be classified with respect to quarter of enrollment at entrance in accordance with the following table:

Quarter at Entrance	Advanced Standing Quarter Units at Entrance
1	0–14
2	15–29
3	30–44
4	45–59
5	60–74
6	75–89
7	90–104
8	105–119
9	120–134
10	135–149

5. Units earned under the following two circumstances are not to be counted toward determination of the quarter at entrance under (4) above: (a) Advanced Placement Examination; (b) concurrent enrollment in college courses while in high school.
6. The quarter of enrollment at entrance of students (including baccalaureate degree candidates who already hold a baccalaureate degree) seeking admission to the University with 150 or more advanced standing units will be determined by the faculty offering the curriculum in which such students seek to enroll. This determination will be made consistent with the program required for such students to obtain the desired degree and with University residence requirements.
7. The Normal Progress requirement described above is not to be confused with the Normal Academic Progress requirement for Financial Aid. The former has to do with academic standing, the latter with receipt of financial aid.

Probation is not a necessary step before disqualification. If a student becomes subject to disqualification, the complete record of grades and other accomplishments will be carefully reviewed by the responsible faculty authorities of the student’s school or, for undecided/undeclared students, by the Faculty Board for Unaffiliated Students. If the record indicates little probability that the student will be able to meet the academic standards of the University of California, the student will be disqualified from further enrollment. Each school and department is obliged by Academic Senate regulations to maintain a procedure under which a student may appeal probation and disqualification actions.

In order to transfer from one campus to another in the University of California or from one UCI school to another, a student who has been disqualified or who is on academic probation must obtain the approval of the appropriate faculty, or its designated agent, into whose jurisdiction the student seeks to transfer.

HONORS

Information about honors opportunities at UCI is found in the Division of Undergraduate Education section and the academic unit sections.

Quarterly Undergraduate Honors

Quarterly undergraduate honors are awarded in each school to students who achieve a quarterly grade point average of 3.5 or better in a minimum of 12 graded units.

Honors at Graduation

Students may graduate with honors, *summa cum laude*, *magna cum laude*, or *cum laude*. The criteria used by each school in selecting candidates for these honors are included in each school’s section of the *Catalogue*. A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Additional information is available in the Division of Undergraduate Education section of this *Catalogue*.

Graduate Scholarship Requirements

For a graduate student, only the grades A+, A, A–, B+, B, and S represent satisfactory scholarship. Information concerning graduate student course load requirements and satisfactory academic progress is given in the Research and Graduate Studies section.

Enrollment in UCI Extension

If a UCI student wishes to enroll in a UCI Extension course concurrently with enrollment in regular courses, the entire program of study must be approved in advance by the dean of the student’s school (the Dean of the Division of Undergraduate Education, for undecided/undeclared students; the Dean of Graduate Studies, for graduate students). Fee information is available from the UCI Extension Registration Office.

Credits From Other Institutions or University Extension: Undergraduate Students

UCI undergraduate students who plan to enroll in courses at another institution in either a summer or regular session and to use such courses to satisfy any UCI requirements should first consult with and secure prior approval from the academic dean or chair of their major who will determine if the credits are applicable to major and breadth requirements.

UCI undergraduate students *must* submit an official transcript of all course work earned at another institution or college to the Office of Admissions and Relations with Schools. If such courses are determined by the Office of Admissions and Relations with Schools to be transferable, do not duplicate other credit granted, and do not exceed limitations of credit, then the units earned may be applied toward the total required for graduation.

Credits From Other Institutions or University Extension: Graduate Students

Graduate students may be granted unit credit (not grade credit) toward a master’s degree for a limited number of acceptable graduate-level courses completed at another institution or through University Extension before enrollment in graduate study at UCI. To receive such credit, the student must submit a formal petition, including an original transcript, after enrollment in graduate study. Approval of the student’s graduate advisor and the Dean of Graduate Studies is required.

While enrolled at UCI or on a leave of absence, a graduate student may receive unit credit for graduate-level courses completed at another institution or through UCI Extension only with the prior approval of the student’s graduate advisor and the Dean of Graduate Studies.

See the Research and Graduate Studies section for further information about graduate transfer credit and the University’s Inter-campus Exchange Program.

SUPPLEMENTARY EDUCATIONAL PROGRAMS

Summer Session and UCI Extension

Philip Nowlen, Assistant Executive Vice Chancellor for Continuing Education and Director of Summer Session

SUMMER SESSION

Several summer sessions are held on the Irvine campus. Session I is scheduled from June 28 through August 4, 1999. Session II is from August 9 through September 15, 1999. An overlapping 10-week session extends from June 28 through September 3, 1999. Those who enroll in these sessions and take an academic program equivalent to a regular quarter may accelerate their progress toward a degree.

A wide variety of courses from the regular session is planned, supplemented by experimental offerings available only during the summer. Admission is open to all university students, high school graduates, community members, and qualified high school students who have completed their junior year. Admission to summer session does not constitute admission to a regular session of the University; therefore, official transcripts of educational records are not required. Fees for summer session are the same for out-of-state students as for California students.

In addition to the regular curriculum, Summer Session also coordinates a summer program for University of California students at Pembroke College in Cambridge, England. Offering a diverse number of course topics, most of which are reflective of the English lifestyle and culture, the program provides students with a sampling of collegiate life abroad.

Information is available from the Summer Session Office in the UCI Extension Building; telephone (949) 824-5493. Application forms and course listings are available in March.

UCI EXTENSION

UCI Extension is the unit through which UCI serves the continuing education needs of the community. Extension provides advanced learning opportunities through more than 1,800 credit and non-credit courses, certificate programs, specialized studies, seminars, workshops, conferences, and lecture programs annually. Call (949) 824-5414 for a free catalogue.

Courses are offered in a wide range of fields. Certificate programs, aimed at providing in-depth expertise in selected areas, are complemented by a number of general interest topics designed to promote lifelong learning and career advancement. Extension offers nearly 40 certificate programs in fields as diverse as the arts and design, business and management, education, health and social sciences, engineering and information technologies, science and technology, and legal programs.

Most of these courses are held in the evenings and on weekends to accommodate the working professional. They are conducted at UCI, at the new UCI Learning Center in Orange, and at other sites throughout Orange County. UCI Extension's Mini Term program offers shorter, more interactive courses on general interest topics ranging from day-long seminars to six-week courses in such areas as culinary arts, foreign languages for business and travel, history, literature, philosophy, and writing. In addition, UCI Extension develops custom education and training programs to meet the specialized, in-house training needs of business and government. A broad spectrum of subjects and topics are offered. Free evaluations of training needs are available from the director of corporate contract training and off-campus delivery at (949) 824-3051.

Extension also provides a means by which members of the general public may take regular UCI courses without formal admission to

the University. The Access UCI Program (also known as concurrent enrollment) is available on a space-available basis with the approval of the course instructor. Call (949) 824-5414 for information.

Several outreach programs further expand the role of UCI Extension. The Women's Opportunities Center (WOC) provides resources and support for women and men who are in need of career management services and educational and vocational guidance. For more information regarding WOC's services call (949) 824-7128.

Center for Orange County Regional Studies

The Center for Orange County Regional Studies supports the UCI campus in multidisciplinary research on Orange County as a region. It brings together Orange County business, science, religious, government, medical, arts, media, and other leaders under the umbrella of the Center to work in conjunction with University scholars. It develops and supports research programs, public forums, publications, course sequences, and other public programs to investigate the forces shaping the Orange County region. For information call (949) 824-1843.

UCI Extension English and Certificate Programs for Internationals

The program in English as a Second Language (ESL), sponsored by UCI Extension, prepares international students to enter and pursue their educational objectives in U.S. colleges and universities, as well as provides practical, state-of-the-art professional education. The unit offers an intensive program in English for academic purposes. Core courses include grammar, writing, reading and vocabulary development, seminar reporting and discussion strategies, listening, note-taking, debate and public speaking, and writing research papers. A variety of elective courses such as TOEFL test preparation, American history and business, and computer English also are available.

UCI Extension also offers professional certificate programs for international students and professionals in an accelerated full-time format. Accelerated certificate programs provide a fast-paced educational environment to give individuals more fluent and effective communication skills in English and increase their career potential in today's competitive global business environment.

Requests for information should be addressed to the English and Certificate Programs for Internationals, UCI Extension, P.O. Box 6050, Irvine, CA 92616-6050; telephone (949) 824-5991.

An ESL program is offered by the School of Humanities to students who have been admitted to UCI. Refer to the section on Admission of International Students.

ROTC

Although actual ROTC courses are not taught on the UCI campus, a cross-town agreement allows qualified UCI students to participate in the Air Force Reserve Officers Training Corps (AFROTC) or the Army Reserve Officer Training Corps (AROTC). Academic units earned in these programs are counted as elective units toward fulfillment of UCI graduation requirements. Additional information is available from the Office of Admissions and Relations with Schools, 204 Administration Building.

AIR FORCE ROTC

Through arrangements with Loyola Marymount University; the University of California, Los Angeles; and the University of Southern California, two- through four-year AFROTC programs are available to all qualified UCI students. Successful completion of the program leads to a commission as an officer in the Air Force. Two- and three-year competitive scholarships are available. Four-year scholarships for incoming students must be applied for before December 1 in the year prior to entering college. Scholarships

provide tuition and fee payments and a stipend of \$150 per month. More information is available from the Department of Aerospace Studies, Loyola Marymount University, 7107 80th Street, Los Angeles, CA 90045-2699; telephone (310) 338-2770; e-mail: det055a@popmail.lmu.edu.

ARMY ROTC

Through arrangements with the Department of Military Science at the University of Southern California and The Claremont Colleges Extension Office at California State University, Fullerton, two- and four-year AROTC programs are available to all qualified UCI students. Successful completion of the program leads to a commission as a Second Lieutenant in the U.S. Army (Active, Reserve, or National Guard). Two-, three-, and four-year competitive scholarships which provide tuition and fee payments at UCI, payment for books, and a stipend of \$150 per month are available. Qualified students currently serving in any Reserve or National Guard unit may transfer to the AROTC program to complete their commissioning requirements. More information is available from the Department of Military Science, University of Southern California, University Park, Los Angeles, CA 90089-0653; telephone (213) 740-4026; e-mail: dulchino@usc.edu.

MAJOR CAMPUS PUBLICATIONS

In addition to the *UCI General Catalogue*, various publications available on campus provide information about academic programs, student activities and services, enrollment in classes, and specifics pertaining to the individual departments and schools. Some of these publications are described here. A wide variety of information is also available on the World Wide Web at <http://www.uci.edu/>.

Schedule of Classes

The *Schedule of Classes* contains current information on fees; how to enroll in classes; final examination schedules; registration dates for each quarter; lists of all classes to be offered each quarter and the time, room, and instructor scheduled for each; and any enrollment restrictions on classes, such as consent of instructor required. Just prior to the first day of instruction for each quarter, the Registrar's Office issues an addendum that lists added and cancelled classes and changes in time, instructor, or classroom assignments. The Registrar's Office also provides online information on the World Wide Web at <http://www.reg.uci.edu/>.



UCI's student-run radio station, broadcasting to Orange County since 1969, plays a wide range of music from underground to classical and features cultural affairs programming.

Because the *Schedule* is published quarterly, it is a timely source of information on new or changed policies, procedures, and fees that could not be included in the *Catalogue* because of the latter's annual publication schedule. The *Schedule of Classes* is available just prior to the beginning of each quarter's registration period (four weeks before the end of each quarter). It is distributed to new and continuing students at the UCI Student Center and also may be purchased from the UCI Bookstore.

Departmental and School Announcements

Publications by schools and academic departments contain a wide assortment of academic information of immediate, timely interest to students at the UCI Student Center and can be obtained from departmental offices.

Policies Applying to Campus Activities, Organizations, and Students

This booklet, available in the Office of the Dean of Students, contains policies and procedures which govern aspects of student conduct and discipline; campus organizations; the use of University facilities; and time, place, and manner of public expression for which the University is required to implement campus regulations.

UCI Student Handbook

The *UCI Student Handbook* is published in the fall and is available (at no cost) while supplies last. A handy resource guide to UCI, it contains a broad spectrum of information for students, ranging from how to obtain a leave of absence to jobs to suggestions for amusement or involvement.

Student-Produced Media

UCI students publish the weekly campus newspaper the *New University* and operate a radio station, KUCI (88.9 FM).

UCI Journal and UCI News

The *UCI Journal*, published twice yearly, contains feature stories on UCI research, programs, and people; information on gifts, grants, students, and campus events; and commentaries on current issues. *UCI News*, a twice-monthly newspaper, features information on campus research, programs, events, and people, plus a calendar of upcoming events. Both of these publications are also available on the World Wide Web at <http://www.communications.uci.edu/~inform/>.

LIFE ON CAMPUS

UCI Bookstore

The **UCI Bookstore**, located in the UCI Student Center, stocks all required and recommended course books for classes taught at UCI. In addition, the Bookstore features an extensive selection of general and technical books, periodicals, school supplies, UCI clothing and insignia items, and gifts and greeting cards. Hours of operation are 8 a.m. to 6 p.m., Monday through Friday, and 10 a.m. to 4 p.m. on Saturday; telephone (949) 824-BOOK; World Wide Web: <http://www.book.uci.edu>. Electronic inquiries and orders may be sent to books@uci.edu.

Bookstore satellites include the **UCI Computer Store**, located in the Student Center; **alt.ant**, the best in Japanese animation items; and the **Clone Factory**, a one-stop printing and copy center. The **UCI Professional Bookstore**, located across Campus Drive from UCI in University Center, stocks course books required for UCI Extension and the College of Medicine, medical reference books and instruments, supplies, and gifts. Hours are 10 a.m. to 7 p.m., Monday through Thursday; 10 a.m. to 6 p.m., Friday and Saturday; telephone (949) 854-7365.

UCI Career Center

The UCI Career Center assists UCI students in career planning and decision making through workshops, individual counseling, employment opportunities, and internships. The Center also assists students and alumni seeking career employment opportunities; teaches job-search skills and interviewing techniques; provides career job listings and a full program of on-campus recruitment; and provides graduate and professional school information. Vocational interest testing and a computerized guidance system are available on a fee-for-service basis.

The Center's Student Internship Program provides UCI students with opportunities to obtain career-related work experience in business, industry, and government. The Center also sponsors the UCDC Internship Program, which selects UCI undergraduate and graduate students for internships (primarily during the summer) in Washington, D.C. and provides a behind-the-scenes look at the activities that shape and implement the nation's future course.

The Center's Educational Career Services assists candidates for Teaching Credentials as well as master's and Ph.D. degree candidates seeking teaching, administrative, and counseling positions in education. Candidate files containing letters of recommendation are maintained and kept active free of charge for currently enrolled master's and Ph.D. candidates seeking positions in higher education; a \$75 reactivation fee is charged after six months past graduation for one year of service. A mailing fee of \$5 per file applies to all candidates, enrolled or not.

In addition, the Center offers services and programs to meet specialized needs of specific student populations, including the disabled, women, culturally diverse and disadvantaged students, and returning students. Additional information is available from the Center; telephone (949) 824-6881.

Child Care Services

Child Care Services includes six Centers offering full- and part-time programs for children from three months to 12 years of age. The programs are open to children of UCI students, faculty, and staff, with priority enrollment and tuition subsidy available to students at three of the Centers. Information may be obtained by visiting the Centers or telephoning (949) 824-2100.

Counseling Center

The Counseling Center offers a variety of programs through which students can learn cognitive, affective, and behavioral skills which will enable them to function more effectively in an educational environment. Individual, group, couple, and family psychotherapy are available to all students, as well as crisis intervention services when needed. Staff also provide students with a wide range of workshops and academic courses related to learning and interpersonal issues including stress reduction, assertiveness, coping with depression, human sexuality, cross-cultural interaction, and intimacy and friendships. Staff psychologists train student group leaders, student interns, resident assistants, peer academic advisors, and administrative personnel on topics including stress management, communication, listening, leadership, group dynamics, and crisis intervention skills. The Counseling Center is located on the second floor of Student Services I; telephone (949) 824-6457.

Office of the Dean of Students

The Office of the Dean of Students is dedicated to assuring that the diversity of student services and programs offered complement and enrich the educational and out-of-class life of UCI students. This goal is achieved through the provision of a comprehensive range of cultural, social, and intellectual opportunities which promote student learning and development. Additional information is available from the Office; telephone (949) 824-5181; e-mail: deanstu@uci.edu; World Wide Web: <http://www.uci.edu/~students>.

CENTRAL OFFICES

The central office of the Dean of Students houses a number of services. More than 275 **clubs and organizations** with a combined membership exceeding 14,000 students encompass a wide range of interests including academic, environmental, faculty/staff, multicultural, political, recreational, religious, service, social, and sports.

UCI's Greek community includes 29 **sororities and fraternities** with more than 1,400 members. Programs include Rush (membership recruitment), New Member Education Conference, Greek Leadership Retreat, Faculty Recognition Dinner, Greek Songfest, Greek Service Day, and Greek Awards Night. Most of UCI's fraternities and sororities maintain houses on the campus.

The Office also serves as the "home base" for the **UCI Human Service Corps**, a confederation of campus service clubs and organizations which sponsors community service programs and involvement opportunities for UCI students.

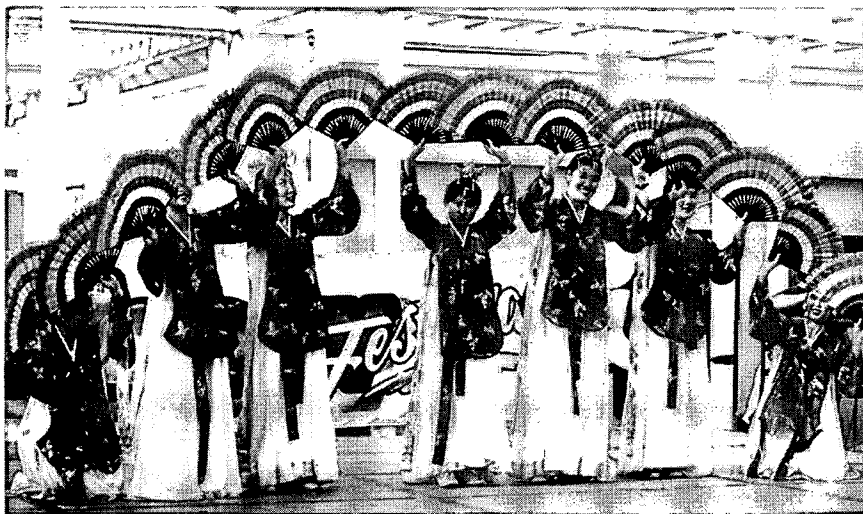
To assist students in becoming more effective leaders, the Office of the Dean of Students offers a variety of leadership programs and opportunities. The **All-University Leadership Conference** is the cornerstone of UCI's leadership offerings. This annual weekend program occurs off campus and involves more than 200 emerging and established student leaders representing the full diversity of campus interest groups. The **Winter Leadership Symposium** is a mid-year on-campus program that explores leadership issues relevant to club and organizational leaders. **Passport for the 21st Century** seminars provide a pathway for students who are interested in maximizing their potential as leaders. More than 30 seminars are offered annually. Topics range from leadership and diversity to effective communication and event planning. For those interested, the option is available to acquire a UCI Leadership Certificate.

The **Undergraduate Administrative Intern Program** provides participating students with administrative and leadership experience designed to develop personal and professional skills as well as to increase their knowledge of complex organizational structures. Fifteen to 20 students annually are assigned to campus administrative units where they develop programs and projects. Academic credit is earned through participation in a weekly seminar. Information is available from the Office of the Dean of Students in the UCI Student Center; telephone (949) 824-5182.

New Student Programs provides assistance and information to students who are in the process of being admitted to UCI and coordinates a variety of orientation programs. The office is located in the UCI Student Center; telephone (949) 824-5182.

The Office of the Dean of Students also handles **student discipline and individual grievances**. Information is provided in the *Student Handbook and Policies Applying to Campus Activities, Organizations, and Students*, which is available from the Office of the Dean of Students, in the UCI Student Center; telephone (949) 824-5590.

A variety of other programs including the Welcome Week Fair, Presidents' Dinner, College Bowl Tournament, and Student Organization Recognition Night are coordinated through the Office. Additional information about any of these programs is available from the Office; telephone (949) 824-5181; World Wide Web: <http://www.uci.edu/~students>.



Annual special events hosted by the Cross-Cultural Center include dance and musical performances and presentations, as well as conferences, panel discussions, and guest speakers.



RESOURCE CENTERS

The Office of the Dean of Students provides support for a number of campus resource centers.

The **Cross-Cultural Center** offers a friendly atmosphere and supportive environment for UCI's diverse student body. It provides meeting space and serves as "home base" for nearly 50 registered multicultural organizations. Center facilities include a conference room for group meetings, a lounge for socializing, a study room, and a computer work station. The annual Rainbow Festival, a three-day program that recognizes and reinforces UCI's commitment to ethnic diversity, is one of the major programs administered by the Center. The Center also supports a variety of annual special events such as African Consciousness Quarter, Asian/Pacific American Heritage Week, Cinco de Mayo, and American Indian Culture and Education Days. In addition, the Center sponsors a Faculty-in-Residence program and faculty colloquia designed to support the educational, cultural, and leadership development of UCI's ethnic and culturally diverse students. Additional information is available at the Center; telephone (949) 824-7215; e-mail: caespino@uci.edu.

Disability Services offers disabled students opportunities to participate in the academic community at UCI. Students with varying disabilities including those who use wheelchairs, semi-ambulatory, blind or visually impaired, deaf or hard of hearing, learning disabled, or who have chronic health problems may be eligible for reasonable disability accommodations through this program. Staff assist students from the point of their admission to UCI through graduation. Specialized services may include reader services, testing accommodations, priority registration, individual tutors,

document conversion, campus orientation, special equipment, and information regarding disability legal rights in the university setting. Also considered are provision of notetakers and interpreters, liaison with faculty and campus departments, on-campus transportation, and special parking. A Disabilities and Computing Lab in the office provides special computer technology and training. In addition, special on-campus transportation is provided for students with mobility impairments and temporary disabilities. There is no cost to the student for the support services or accommodations provided by Disability Services. Students are responsible for fully acquainting themselves with the detailed procedures for use of accommodations. These written procedures are available at Disability Services.

Students with disabilities may qualify for reasonable accommodations based on disability-related needs. Students must provide appropriate documentation about their disability to Disability Services. Documentation provided to Disability Services is confidential. It is the responsibility of the applicant or students to provide this documentation and, if necessary, to cover the cost for such documentation. This includes the cost for professional assessments for such disabilities as learning disabilities, attention deficit disorder, and psychiatric disabilities. The applicant or student should contact Disability Services for more information about disability documentation requirements. In some cases there is need for recent or very detailed documentation about the disability. UCI reserves the right to determine the most effective and timely accommodations after consultation with the student about the disability and

previous use of accommodations. The provision or use of a disability accommodation does not guarantee or ensure a certain level of achievement for the student. Students with disabilities must meet the same academic standards as nondisabled students. Some academic accommodations may require approval of the chair or dean of the student's academic unit.

Disabled students who require accommodations for the classroom (such as the service of an interpreter or notetaker) are strongly urged to contact the Office for Disability Services as soon as possible after admission in order to acquaint themselves with the policies and services of the campus. The Office is located next to the Humanities Trailer Complex; telephone (949) 824-7494 (voice), 824-6272 (TDD); e-mail: ods@uci.edu; World Wide Web: <http://www.disability.uci.edu>.

The **International Center** provides services such as assistance with visa and immigration forms and the interpretation of government regulations to international students, permanent residents, refugees, international faculty members and scholars, and their families. The staff provides information about housing, tutoring, orientation, registration, financial aid, student activities, and referrals to other campus support services as necessary; for additional information telephone (949) 824-7249; World Wide Web: <http://www.ic.uci.edu/~ic>.

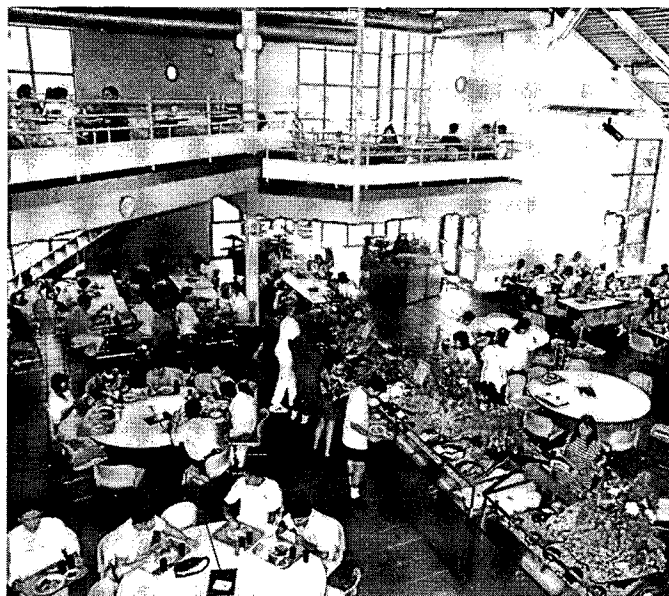
The International Center also provides services for veterans. The **Veterans Program** emphasizes support services for veteran students and eligible dependents of veterans. Assistance includes benefit certification, work-study, and orientation and outreach programs. Telephone (949) 824-6477 for additional information.

The **Lesbian, Gay, and Bisexual Resource Center (LGBRC)** fosters an inclusive and supportive campus climate for all students, staff, and faculty and hosts educational programs and workshops to raise campus and community awareness of LGB issues. LGBRC provides peer counseling, information and referral to campus and community resources, and leadership training and volunteer opportunities. It is open Monday through Friday, 9 a.m. to 5 p.m. and is located in Gateway Commons facing Aldrich Park; telephone (949) 824-3277; e-mail: plwalsh@uci.edu; World Wide Web: <http://www.uci.edu/~lgbtrc>.

The **Center for Women and Gender Education** offers programs to raise awareness of gender issues for women and men, as well as services designed to meet the special needs and interests of women. Programs include workshops on topics such as male-female communication, rape prevention, sexual harassment, and cultural influences on gender roles. Services include a library, women's self-defense training, notification for student parents in case of children's medical emergencies, peer and professional counseling, Campus Assault Prevention Program, and referral to services in the community. The Center is on the ground floor of Gateway Commons across from the Main Library; telephone (949) 824-6000; e-mail: plgoldsm@uci.edu; World Wide Web: <http://www.uci.edu/~students/CWGE>.

Health Education

Health Education offers the campus community individual consultation and educational programs, a resource library, educational videos, and pamphlets and brochures on a variety of health and wellness topics. Programs include Sexual Health, Nutrition, and Alcohol and Drug Education. The Center sponsors a three-quarter academic course for student peer educators and coordinates student volunteer placement in the Student Health Service and in community health care settings. Health Education is located in the UCI Student Center; telephone (949) 824-5806. Hours are 9 a.m. to 5 p.m., Monday through Friday.



Pippin dining commons in the Middle Earth residence hall

Housing

ON-CAMPUS HOUSING

Housing Administrative Services coordinates application procedures and contracts with campus residents. Approximately 32 percent of UCI's student body is housed on campus.

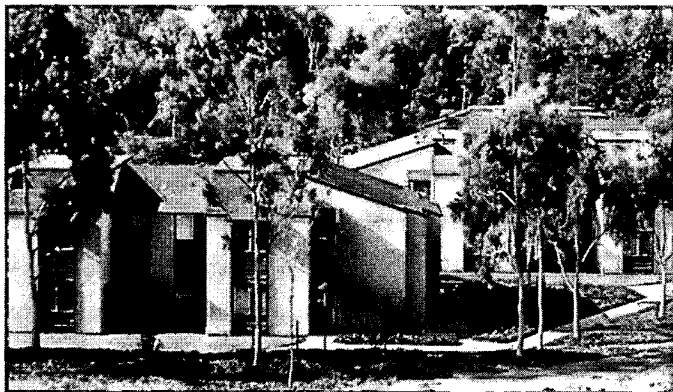
Undergraduate Housing

Mesa Court and **Middle Earth**, UCI's residence halls, house 2,500 single undergraduate students. Each hall houses from 40 to 60 students and a student resident assistant. The small-scale buildings provide excellent opportunities for social interaction, student government, and leadership experience. Each hall has distinctive characteristics and often focuses on a specific interest or life-style such as the arts, the humanities, the outdoors, or crafts. The residences are divided into suites of four or five double rooms, with living room and bath; each residence also contains a lounge and recreation and study rooms. A limited number of single and triple rooms also are available. Every room has carpeting, window coverings, a bed, desk, chair, closet, and bookshelves for each student.

Mesa Court and Middle Earth have complete food service and dining commons. Students who live in the residence halls participate in prepaid 14- or 19-meal-per-week plans. Meals are served cafeteria-style three times daily on weekdays (brunch and dinner on weekends), and the menu offers a wide selection of food. A registered dietician is available to assist students with dietary needs. The halls are closed during the winter recess, and although they remain open over the Thanksgiving holiday and the spring recess, no meals are served.

The Mesa Court and Middle Earth Student Programs Offices have responsibility for providing residents with an environment conducive to their intellectual, social, and personal growth, and work closely with students to create opportunities for educational exploration and interpersonal skills development including such things as weekend field trips and retreats.

Charges for the 1998-99 academic year (late September through mid-June) are \$6,673-6,772 for a single room, \$5,983-6,079 for a double room, and \$5,233-5,329 for a triple room; rates include a \$21 annual community association fee. An increase in cost is anticipated for the 1999-2000 academic year. Charges are paid in monthly or quarterly payments.



Fall-quarter move-in day signals the beginning of another academic year. Approximately one-third of UCI's student body lives on campus in residence halls, apartments, and group houses.

Campus Village, an apartment community for single undergraduates, offers 200 two-bedroom apartments housing 800 students. Most of the units are furnished; all include carpeting, draperies, a stove, and a refrigerator. Various programs are offered in the Community Center, lounges, and recreation buildings. Rates for the 1998-99 academic year, including utilities, are \$2,593 per student for an unfurnished apartment and \$2,903 per student for a furnished apartment. Campus Village also offers a limited number of year-long contracts. Current rates for this option are \$3,451 per student for an unfurnished apartment and \$3,863 per student for a furnished apartment. These rates also include utilities. An increase in rates for 1999-2000 is anticipated.

Arroyo Vista Housing is an undergraduate community of 35 houses arranged in neighborhoods. The houses accommodate 16, 24, or 32 students, making the total population of the community approximately 800. Two or three students share a furnished room, and all residents can enjoy the spacious living room with fireplace and the fully equipped kitchen.

More than two-thirds of the houses are designated Academic Theme Houses which are sponsored by academic programs and offer an educational component to enhance the academic experience, as well as the living experience, of their residents. The rate for the 1998-99 academic year is \$2,936 for a double occupancy room. An increase in cost is anticipated for 1999-2000. A meal plan is not provided in the contract, but may be purchased separately.

The remaining houses are leased to fraternity and sorority chapter organizations; consult individual Greek chapters for information.

Undergraduate and Graduate Housing

An unusual housing option at UCI is the 79-space recreational vehicle park, **Irvine Meadows West**, which provides housing for graduate and undergraduate students. The rate for 1998-99 is \$130 per month per space. Students must provide their own recreational vehicle or trailer which must contain a sink, hardware for running water, and a stove. Laundry facilities, showers, and restrooms are centrally located within the park.

Quenya residence hall houses primarily upper-division undergraduates and first-year, single graduate students in 60 single rooms. Located within the Middle Earth residence hall community, Quenya is available during the *academic year only*. Each unit is furnished with a bed, desk, bookshelf, and closet. Public areas include bathrooms, suite study rooms, kitchenettes, laundries, and sun balconies. Fourteen- or 19-meal-per-week plans are included.

Graduate Housing

The University has 862 one-, two-, and three-bedroom apartments in **Verano Place** for full-time, registered graduate students, and for students who are married, single parents, or who are single and 25 years of age or older. The majority of the apartments are unfurnished, and all have carpeting, draperies, a stove, and a refrigerator. They are attractive and considerably lower in rent than comparable units in local communities.

Palo Verde apartments consists of three- and four-story buildings in a setting of landscaped courtyards and pathways. This 203-unit complex for full-time graduate students, medical residents, and postdoctoral students was designed primarily for adult living, and there are no playgrounds for children.

Current rates for Verano Place, Palo Verde, and Quenya residence hall are contained in the Graduate/Family Housing booklet.

To Apply

A housing brochure and application are mailed to all admitted UCI freshmen and all transfer applicants. Graduate applicants may receive a housing application by checking the appropriate box on the *Application for Graduate Admission*. A \$20 nonrefundable application fee must accompany the housing application. Students who do not receive application materials should telephone the Housing Office at (949) 824-7247.

On-campus housing in the fall is guaranteed for all new, single undergraduate students under the age of 25 who meet the housing application and contract return deadlines. To qualify for this guarantee, students must apply for housing and submit their Statement of Intent to Register (SIR) by May 1, 1999 (transfer students must submit their SIR by June 1, 1999). Applications received after these respective dates will be handled in the order received.

Persons applying for Verano Place, Palo Verde, Quenya, and Irvine Meadows West do not have to be registered students to apply, but must show proof of enrollment when they sign their residence contract. Interested applicants are urged to apply as early as possible as there is a waiting list for these facilities.

HOUSING IN THE COMMUNITY

The Housing Office also provides information and services to help new and returning UCI students locate and obtain off-campus housing. Information provided includes lists of apartments and houses for rent, rooms for rent in private homes, roommates wanted, roommates available, and temporary housing. In addition, the Office publishes *Living Around UCI*, a guide to local apartment communities which includes information about rental prices, local realtors, budgeting expenses, roommate selection, and tenant/landlord rights and responsibilities.

Representative monthly rental prices for apartments (both furnished and unfurnished) in the local area in spring 1998 ranged from \$675

for a studio to \$1,500 for a three-bedroom unit. A student's individual rent costs will be determined by the number of people sharing the unit.

Advisors are available to answer questions and provide additional information. The Housing Office is located in 209 Administration Building and is open from 8 a.m. to 5 p.m. weekdays; telephone (949) 824-7247.

Meal Plans for Nonresidents

Students who live off campus or in UCI apartments may wish to take advantage of a Nonresident Meal contract which enables them to eat meals in the residence halls. In 1998-99, the 19-meal-per-week plan provides three meals a day, Monday through Friday, and brunch and dinner on weekends for \$609.90 per quarter. Other plans are available.

Meal Punch Cards are also available for students who do not live in the residence halls. In 1998-99, punch cards are available at \$2.45 per punch, discounted to \$2.35 per punch when more than 50 punches are purchased. Breakfast costs one punch, lunch two punches, and dinner three punches. Contact UCI Residential Dining at (949) 824-4182 for additional information.

UCI Student Center

The UCI Student Center is the destination for anyone at UCI who is looking for a place to study, surf the web, make travel arrangements, relax, be entertained, pick up a bite to eat, or shop for books, flowers, bicycles, and skates. Lounges include those for quiet study, recreation, music listening, and television viewing. Eating establishments include the Cornerstone Cafe, 'Eaters Food Court (the Green Burrito, Rice Garden, Togo's, Chicago Chicago Pizza, Kikka Sushi, and Carl's Jr.), and the Anthill Pub & Grille. For additional information and hours of operation, telephone (949) 824-2419; World Wide Web: <http://www.stcenter.uci.edu/~stcenter>.

Student Government

ASSOCIATED STUDENTS

The Associated Students of the University of California Irvine, better known on-campus as **ASUCI**, embraces all registered undergraduate students. Annually elected student body officers and representatives, in conjunction with the professional staff, direct a full array of valuable programs, services, and publications. Elected executives are fiscally responsible for overseeing the quarterly student fees that underwrite all general student programs and services.

During academic quarters, the Legislative Council meets Tuesdays and Thursdays, 5 to 7 p.m., in the UCI Student Center, and meetings are open to all students. Students are urged to learn about campus issues and student options by attending council meetings.

ASUCI Events include the annual E-Week Dance, Homecoming, Wayzgoose, and ReggaeFest; AS Presents events such as noon programs, major concerts, comedy nights, and video showings; and senior services such as senior portraits, Senior Information Day, and Senior Class Picnic.

ASUCI Advocacy and Awareness Programs include Book Exchange, Disability Awareness, Elections, External Affairs, Parking and Transportation, Safety, Special Projects, Student Recommended Faculty Program (SRFP), and Visions, a 1.3-unit leadership and internship seminar course.

ASUCI Communications and Publications include *TEACH: Teacher Evaluation and Course Handbook*; *New Student Profile*; *Quarterly Events Calendar*; *Student Voice*, a bi-quarterly student government newsletter; *UCI Yearbook*, a Columbia Press Association Award-winning publication; and the ASUCI Web site at <http://www.asuci.uci.edu/~asuci>.

ASUCI Services include:

Club and Organization Accounting: The ASUCI Business Office provides banking and accounting services to registered campus organizations.

Express Shuttle: A full-service shuttle (Monday through Friday) serving Balboa Island, Park West, and Newport. Schedules and shuttle passes are available at the ASUCI Information Desk.

Outroads Travel: Outroads is the only on-campus, full-service travel agency serving the special needs and budgets of students, staff, and faculty. The office is located just off the UCI Student Center Terrace in Room 215C.

UCItems and UCI Photo I.D.s: UCItems is an on-campus specialty shop featuring electronic goods, Greek and club incidentals, silkscreening, discount entertainment tickets, and an eclectic selection of gifts. It is also the place where official Anteater I.D. cards are prepared and distributed. The store is located just off the UCI Student Terrace in Room 208C.

ASUCI Inquiries and Updates: The general offices of the Associated Students of UCI are located at 200 Student Center (directly behind the UCI Student Center Information Desk). For information regarding programs and services, call (949) 824-5547 or visit <http://www.asuci.uci.edu/~asuci> on the World Wide Web.

ASSOCIATED GRADUATE STUDENTS

All graduate and professional school students are members of the Associated Graduate Students (AGS). AGS promotes and provides for the distinct needs and priorities of graduate students, and functions as a liaison between graduate students and the UCI administration, faculty, and staff by addressing concerns and working to resolve grievances. Call AGS at (949) 824-6351 for information.

AGS provides graduate students with numerous student-operated services including social and cultural events of benefit to the graduate community. It sets aside funds each year to be used specifically for graduate student development, academic unit services, and special projects. These funds are allocated on a rolling basis to petitioning clubs and organizations on campus.

In partnership with the UCI Student Center, AGS also operates the Anthill Pub & Grille which offers food, international beers, and live entertainment at student-friendly prices.

The AGS Council nominates graduate students for positions on UCI administrative, Academic Senate, and ad hoc committees, and UC Office of the President committees. AGS representatives work with the UC Student Association and other campus organizations to advocate policies supportive of students and vital to the social needs of the community at large.

ASSOCIATED MEDICAL STUDENTS

The Associated Medical Students (AMS) Council, along with the AGS Council, represents the medical student body in all matters relating to the UCI campus, the UC Office of the President, and the community. Medical students are members of AGS and have access to those services. In addition, AMS utilizes a portion of the quarterly AGS fee to provide funding for medical student activities that benefit the medical school community.

GRADUATE SCHOOL OF MANAGEMENT STUDENT ASSOCIATION

The GSMSA Council, along with the AGS Council, represents the graduate Management student body in all matters relating to the UCI campus, the UC Office of the President, and the community. Graduate Management students are members of AGS and have access to those services. In addition, the GSMSA uses a portion of the quarterly AGS fee to provide funding for Management student activities that benefit the Graduate School of Management community.

Student Health Service

All fully registered students and students approved for part-time study are eligible for services from the Student Health Service, located at the corner of East Peltason Drive and Pereira Drive. Facilities include an outpatient clinic staffed by physicians, nurse practitioners, physician assistants, and nursing staff; an x-ray and clinical laboratory; and a pharmacy. General medical clinics are held 7:30 a.m. to 5 p.m. every day during the week and are available by appointment or on an urgent care basis. Specialty clinics are held at variously scheduled times by appointment and include dermatology, gynecology, orthopedics, mental health, women's health, men's health, minor surgery, eye, dental, urology, and ear, nose, and throat.

Fully registered students who have a medical history and physical examination on file at the clinic may see the practitioner or clinician (existing insurance will be billed). If the student is uninsured, there may be an out-of-pocket expense for the professional component of certain clinics. Payment arrangements are available. Coverage begins the first day of Welcome Week in the fall and continues through the last day of finals week in June. Those who do not have a physical examination and medical history on file pay a fee to see the medical professional, and may arrange for the physical examination within the next week. All students pay for their laboratory, pharmacy, and x-ray charges, whether or not they have a physical on file; those with medical insurance may then bill their insurance plans for reimbursement. Medical history and physical examination forms are mailed to new and readmitted students as their names become available to the Student Health Service. Medical students receive the packets from the College of Medicine Admissions Office. International students' packets are mailed by the Office of International Services with their initial registration packet.

An optional insurance plan covering major medical occurrences for undergraduates, spouses, and children including coverage for the summer or one unregistered quarter each year is available. Enrollment in this plan, which is limited to a short time at the beginning of each quarter, is strongly recommended. To ensure coverage, students should visit the Student Health Service during the first week of each quarter for information and application forms.

All graduate, medical, and international students are required to carry adequate health insurance. Those students who have private insurance which is equal or superior to the policy provided through the University may be eligible to have the mandatory fee waived. Additional information is available in the Expenses and Fees section of this *Catalogue* and from the Student Health Service Insurance Coordinator; telephone (949) 824-7093.

Physical Examinations and Health Clearances. All new students and students returning to UCI after an absence of two or more quarters are required to have a complete physical examination within 90 days prior to the first day of the quarter. The examination may be performed by the student's own physician. If this is impractical, the examination can be completed at the clinic for a fee. Telephone (949) 824-5304 for an appointment. Students transferring from another UC campus where their medical records are on file should have the records transferred to the UCI Student Health Service.

The clinic provides as many services as possible at no charge; however, some services are available only on a fee-for-service basis. These include immunizations; prescriptions from the Student Health Pharmacy; cosmetic dermatology; minor surgery including dental services; and, time permitting, physical examinations for employment, insurance, or a marriage license. Professional counseling and help for emotional problems are available through the clinic's Mental Health Division. Psychiatric and psychological services, as well as headache and biofeedback relaxation training, are available to those students with a physical and history on file. This

is a fee-for-service clinic. The cost varies based on the level of professional services provided. Eye and dental care are available on a fee-for-service basis to students and their spouses; call (949) 824-5304 for an appointment.

INTERCOLLEGIATE ATHLETICS AND CAMPUS RECREATION

Intercollegiate Athletics

UCI's Intercollegiate Athletic Program features 19 sports, with 10 men's teams, eight women's teams, and one coed sailing team. Men's sports include basketball, crew, cross country, golf, soccer, swimming and diving, tennis, track and field, volleyball, and water polo. UCI's men's teams compete in the National Collegiate Athletic Association (NCAA) Division I, and the University is a member of the 12-school Big West Conference. UCI also competes in the Mountain Pacific Sports Federation in men's soccer, men's volleyball, and water polo. UCI's sailing team competes in the Intercollegiate Yacht Racing Association (ICYRA), and crew competes in the Pacific Coast Championships. The UCI women's teams also are members of NCAA Division I and the Big West Conference, competing in basketball, crew, cross country, soccer, swimming and diving, tennis, track and field, and volleyball.

UCI has captured 21 national team championships in eight different sports since opening in 1965, with 63 individuals winning national titles and well over 400 earning All-American honors. UCI has won 41 Big West conference championships since 1977. Each spring, the University presents the Big West Scholar-Athlete Award to those student-athletes who maintained a 3.0 GPA over the previous three quarters. In the last 15 years, 1,370 UCI student-athletes have earned the award.

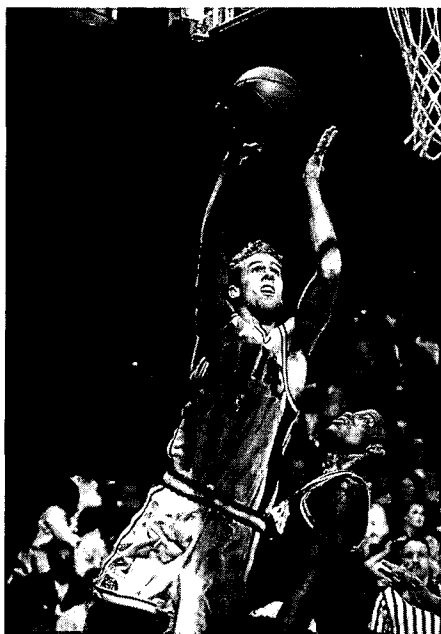
TEAM UCI features Anteater student-athletes, coaches, and staff members participating in community outreach activities, such as visiting local elementary and middle schools to provide motivational talks. Intercollegiate Athletics also features a UCI Hall of Fame, honoring former athletes, coaches, and administrators. Thirty-three Anteaters have received this recognition. The University is proud of the 24 outstanding UCI men and women who have participated in Olympic competition. Currently there are approximately a dozen former Anteater athletes competing professionally throughout the world.

The Intercollegiate Athletic offices are located in Crawford Hall; telephone (949) 824-6931.

Campus Recreation

The Campus Recreation program offers noncredit instruction, intramural activities, club sports, fitness, sailing, and informal recreation opportunities to all officially enrolled students, as well as faculty and staff.

Recreational instruction provides UCI students, faculty, and staff with an opportunity to enhance their campus experience by developing and maintaining a physically active lifestyle through participation in noncredit classes. Martial arts classes include Karate, Judo, Tai Chi, Iaido, Wushu, and Kung Fu. Opportunities in fitness range from basic step aerobics, jogging, weight training, and party dancing, to cardio jam/hip hop, yoga, and massage. Sports activities vary from the classic "lifetime" sports such as tennis, golf, volleyball, and softball to specialty sports like rock climbing, roller hockey, ice skating, and fencing. Classes are taught by members of UCI's Division I coaching staff along with expert specialty instructors.



Intramural activities feature men's, women's, and co-rec team sports, and many special events and tournaments. Team sports include flag football, volleyball, basketball, softball, soccer, badminton, and team tennis. Special events and tournaments include: badminton, tennis, track and field, three-on-three basketball, and wrestling. The emphasis is on participation, and activities are offered at all ability levels from novice to advanced. Registration begins on the first day of each quarter.

Sailing instruction is offered at the Intercollegiate Sailing Base located on Newport Harbor, six miles from campus. Classes are offered from beginning to advanced levels on UCI's fleet of 14' Lido's and 30' Shields. Weekend and weekday classes are offered all year long. Through the UCI Sailing Association, students and other members of the UCI community may check out boats not being used for classes. This program is offered to those who complete a basic proficiency test and pay a nominal fee.

The Masters Swim Program provides structured, coached workouts for students, faculty, and staff of all age and ability levels. Morning and evening workouts are scheduled. (This program is temporarily unavailable but will resume upon completion of the Crawford Hall pool construction.)

For students interested in competing in sports not offered through Intercollegiate Athletics, club sports are available. Club Sports are student run and University facilitated. Some clubs are organized for competition against other universities' clubs, while others are oriented toward mutual interest and instruction. Active clubs include: badminton, bike racing, cricket, fencing, golf, roller hockey, rugby, scuba diving, table tennis, volleyball, men's water polo, women's water polo, and wrestling. Experience is not a prerequisite for membership in any club sport. New clubs can be formed by any student in a sport not currently offered.

Informal recreation is facility time made available to serve the diverse needs of the UCI community on a drop-in basis. The facilities in and around Crawford Hall are the primary location for these opportunities. Activities include: badminton, indoor and outdoor basketball, jogging, tennis, volleyball, and weight lifting. All UCI students and Recreation Card holders can participate in informal recreation activities. Hours are listed in the quarterly *Recreation Release*. Gym activity times are also updated monthly in the *Monthly Gym Schedule*. Equipment such as basketballs, volleyballs, racquets, and other items may be checked out on a daily

basis in the Sports Equipment Service Center; telephone 824-6401 for information regarding facility hours or equipment rental.

Additional information is available from the Campus Recreation Office, 1368 Crawford Hall, telephone (949) 824-5346, or on the World Wide Web at <http://www.campusrec.uci.edu/>.

Sports Facilities

On-campus facilities include the Bren Events Center, which seats 5,000 for intercollegiate basketball and volleyball events; Crawford Hall, which features activity areas for badminton, basketball, combatives, fencing, volleyball, and weight training; Anteater Field, a 1,000-seat lighted stadium which is home to the UCI soccer teams; Anteater Stadium, a multipurpose 2,500-seat facility for track and soccer events; and the tennis stadium, which seats 500, features 12 courts, six of which are lighted. The campus also has lighted outdoor basketball courts, a swimming pool, and multipurpose recreational fields.

Off-campus facilities include a sailing and crew base in Newport Beach and access to nearby facilities for bowling, roller skating, ice skating, and equestrian use. City and State beaches on the Pacific Ocean are also within minutes of the campus.

RESEARCH AND GRADUATE STUDIES

Frederic Yui-Ming Wan, Vice Chancellor for Research and Dean of Graduate Studies

Research and graduate education, two major areas of responsibility of the Office of Research and Graduate Studies, are vital and integral parts of academic life at UCI. Programs leading to doctoral or master's degrees are offered in about 100 academic and professional areas. Many of UCI's graduate programs and research activities have achieved national reputations for excellence, and several are internationally recognized as leaders in their respective fields. UCI graduate programs continue to grow and to evolve in directions that are consistent with the University's teaching, research, and public service missions. Graduate study at UCI provides the excitement and satisfaction that spring from the discovery and dissemination of new knowledge, as well as from meeting new challenges.

The Vice Chancellor for Research and Dean of Graduate Studies has general administrative responsibility for research and graduate education. In the area of research, the Vice Chancellor has responsibility for the administration of extramurally funded research and training grants, general research administration, and research policy development and implementation. Graduate education responsibilities include admissions, graduate student services, degree awards, fellowship and assistantship administration, and the Graduate and Professional Opportunity Program, which facilitates student and faculty diversity within graduate programs at UCI.

The Office of Research and Graduate Studies also is administratively responsible for Organized Research Units, Irvine Research Units, Focused Research Programs, contract and grant administration, University/Industry relations, and other campus research activities.

Additional information is available on the World Wide Web at <http://www.rgs.uci.edu/>.

RESEARCH

A primary mission for UCI is faculty research and scholarship, which plays a valuable role in the education of both graduate and undergraduate students. UCI has established national and worldwide visibility in traditional disciplines such as physics and chemistry, which have earned two Nobel Prizes, along with "new" interdisciplinary pursuits. In the Humanities, UCI has become a center in critical theory. Biological and biomedical investigators conduct both basic science and clinical research in areas such as neuroscience, molecular biology, genetics, and cancer.

A recent campuswide initiative focuses on informatics, the application of computer and information technology to benefit research, scholarship, and education in other disciplines. Information and Computer Science faculty members have formed collaborative partnerships to intensify the use of informatics in other departments in areas such as bioinformatics and digital arts.

The Vice Chancellor for Research has responsibility for research policy, research development, animal research administration, UCI-industry relations, and research administration, which includes submission of grant proposals and negotiation and administration of awards. The Vice Chancellor also administers UCI's Organized Research Units, large interdisciplinary groups of faculty pursuing unique problems that cross departmental and school boundaries.

Office of University/Industry Research and Technology

The Office of University/Industry Research and Technology (UIRT) fosters research partnerships and transfers of technology between UCI and industry that lead to rapid commercialization of research results for the public benefit. Specific services for faculty include assistance with invention disclosures, patentability assessment, technology marketing and licensing, industry-sponsored research collaborations, biological material transfer agreements, and copyrights. Specific services for business and industry include access and linkages to faculty researchers, licensing technology, assistance with research contracts, intellectual property, research materials transfer, and technology information. UIRT hosts the UCI Faculty Profile System (<http://www.faculty.uci.edu>) and makes many of its services available over the Internet at <http://www.uirt.uci.edu>.

THE UC-ACCESS PROGRAM

The UC-ACCESS Program facilitates research partnering, technology transfer, and resource sharing throughout the UC system and with outside entities, particularly industry. Headquartered at UCI within UIRT, UC-ACCESS is an online system of databases and matchmaking services available via the World Wide Web. Covering resources available at UC's nine campuses and three UC-managed Department of Energy National Laboratories, UC-ACCESS includes information on faculty expertise, equipment and facilities available for sharing, research centers, technologies available for licensing, and company technology needs. Search capabilities allow the University user to discover collaboration opportunities within the UC system, identify potential industry research sponsors, and locate suitable technology licensees. For assistance in locating and utilizing the UC-ACCESS system, please call (949) 824-7295 or send e-mail to ucaccess@uci.edu.

University of California Humanities Research Institute

The University of California Humanities Research Institute, located at UCI, was founded in 1987 to serve as the humanities center for the nine campuses of the University of California. HRI's distinctive mission is to foster intellectual community across campus boundaries, to mobilize the strength of the University of California humanities faculty as a whole, and to promote innovative collaborative and interdisciplinary research in the humanities and related disciplines. An advisory committee represents each campus and advises the HRI director on programs.

At the heart of HRI's activities are the Residential Research Groups which bring together both UC and non-UC faculty and advanced UC graduate students to work in collaboration on interdisciplinary topics. The Institute also offers the possibility of multi-year programs of coordinated residential research groups and conferences. Office space for up to 23 resident fellows and modest housing on the UCI campus is provided.

HRI sponsors scholarly conferences both at the Institute and on the various UC campuses, as well as seminars and workshops for a variety of planning purposes. In addition, HRI has an agreement with the University of California Press regarding publication of scholarly work from its conferences and residential groups; scholarly work done under the auspices of HRI has also appeared under a variety of other imprints.



Senior Lecturer Judy B. Rosener, Graduate School of Management and School of Social Ecology, teaches courses and conducts research in business and government, managing cultural diversity, and gender and management.

Faculty who wish to propose research projects, conferences, workshops, disciplinary forums, or other programs should contact HRI Director Professor Patricia O'Brien, University of California Humanities Research Institute, 307 Administration Building, Irvine, CA 92697-3350; telephone (949) 824-8177; e-mail: UCHRI@uci.edu.

Organized Research Units

Organized Research Units (ORUs) normally consist of an interdepartmental group of faculty, students, and other researchers engaged in a continuing program of multidisciplinary or interdisciplinary research, supported by both University and extramural funding. The work of some ORUs is directed toward the solution of complex contemporary problems, while others conduct basic research essential to the understanding of natural or social phenomena or of humanistic ideas and expressions. The following ORUs have been established on the Irvine campus by The Regents of the University.

CANCER RESEARCH INSTITUTE

The Cancer Research Institute provides leadership and support for researchers working toward understanding and controlling cancer. The Institute serves as a means of focusing, coordinating, and directing efforts of scholars in basic and clinical sciences from several departments of the School of Biological Sciences and the College of Medicine. It provides a central source of information concerning cancer-related research, as well as a forum in which

basic researchers and clinicians can assess advances that may be of immediate value in the diagnosis and treatment of cancer, and in the detection of chemicals or conditions that cause cancer. Ongoing and projected research activities involve the regulation of cell function, viral carcinogenesis, immunology, and basic molecular processes relevant to cancer. The Cancer Research Institute serves as the basic science arm of UCI's Chao Family Comprehensive Cancer Center, a National Cancer Institute-designated comprehensive cancer center. Other units of the center include the Chao Family Clinical Cancer Research Center and the Cancer Surveillance Program of Orange County.

CENTER FOR THE NEUROBIOLOGY OF LEARNING AND MEMORY

The Center for the Neurobiology of Learning and Memory (CNLM) is a multidisciplinary research institute founded on the Irvine campus in 1983 to foster and support collaborative research investigating the brain processes underlying learning and memory. CNLM's research teams, consisting of faculty, research associates, postdoctoral fellows, graduate and undergraduate students, and visiting scholars, are involved in this effort at several levels of analysis—from studies of molecular and cellular processes to studies of the effects of pharmacological agents on memory in animal and human subjects.

Current research projects include investigations of the role of specific genes in memory formation, mechanisms of synaptic plasticity, learning-induced changes in cortical functioning, theoretical modeling of neuronal processes and memory, the roles of brain systems in emotionally influenced memory, and effects of drugs and stress hormones on long-term memory. The Center's basic research has important implications for the treatment of human disorders and diseases of learning and memory.

CNLM organizes seminars and colloquia throughout the year, as well as periodic workshops and international conferences for the neuroscience community. In addition, it sponsors programs for local schools and the general public, including a lecture series on health issues related to brain and memory.

CNLM members include faculty from the UCI Departments of Psychobiology, Cognitive Sciences, Pharmacology, and Physics and Astronomy, as well as faculty from several other UC campuses and the University of Southern California. CNLM is located in the Bonney and Qureshey Research Laboratories of the Herklotz Research Facility.

CENTER FOR RESEARCH ON INFORMATION TECHNOLOGY AND ORGANIZATIONS

The Center for Research on Information Technology and Organizations (CRITO) is a multidisciplinary Organized Research Unit that conducts theoretical and empirical research in the field of information technology (IT). CRITO focuses on the management, use, and impact of IT in the emerging global, competitive marketplace, and the policy issues raised by its use. Under its umbrella, CRITO researchers pursue three programs of study: organizational implications of information technology, management of information technology, and technology policy and societal issues.

Faculty from the Graduate School of Management, the Department of Information and Computer Science, the School of Social Sciences, and the Department of Education conduct research through the unit. There are approximately 15 faculty associates and 30–45 students involved in research administered by CRITO.

CRITO's research projects also reflect a multidisciplinary nature. Ongoing research includes: nationwide study of computers and educational reform in schools; nationwide study of computers, multimedia, and the Internet in the home; cross-national study of the payoffs from investments in computers; national study of the effects of computers on firm performance in Fortune 1000 companies; computers and coordination in manufacturing firms; the impacts of computing on work groups; the effects of IT on the restructuring of work, employee performance, and quality of work life; and studies of the global spread of production and use of computers and the Internet. Faculty research also involves the effects of computerization on work in organizations; interorganizational systems; effectiveness of computers in government; computer support systems for group decision making; informatization of society; and estimation of demand for computing in the U.S.

In support of these research programs, CRITO sponsors regular seminars among faculty and students; cosponsors and hosts talks by nationally and internationally distinguished researchers in the field; assists in the preparation of proposals to government, foundations, and industry for extramural funding to support research programs and training of the next generation of researchers; and maintains a working paper series of reports and publications documenting its research. In addition, CRITO works with the campus academic units to match students with graduate assistantships and work-study positions that are available in conjunction with CRITO research projects.

CRITICAL THEORY INSTITUTE

The Critical Theory Institute provides a locus for the conduct and support of collaborative, interdisciplinary research focused on the theoretical underpinnings of such fields as history, literature, philosophy, art, and politics. The Institute's principal function is to provide a forum for debate among competing movements in contemporary critical theory so that existing theoretical models can be challenged and refined. The Institute's research consists not only of the application of theory to data but also of self-reflexive investigation of theoretical presuppositions in order to produce alternative theoretical constructs and strategies.

The Institute investigates problems according to three-year research programs, which are concluded with the publication of results. A recently completed research project of the Institute concerns the interest in the concept of "culture" in various kinds of critical theory and cultural study in recent years. The results of this research project are being published as *"Culture" and the Problem of the Disciplines*, edited by John Carlos Rowe (Columbia University Press, 1998).

The Institute's newest research project, "The Forces of Globalization," will investigate four networks contributing to new theories of international and global organization: corporate, cultural, technological, and environmental. This project began with research contributions from members of the Institute and distinguished visitors to the Institute in 1995 and will be completed in 1999.

The Institute also sponsors various research ventures with other institutions of higher education, including the 1997 Summer Institute on "Global Cultures and Local Communities," sponsored by the National Endowment for the Humanities, Division of Education, and involving faculty from high schools, community colleges, and four-year colleges and universities in the Southern California region.

The Institute organizes colloquia, lectures, seminars, and workshops in which leading theorists from the United States and abroad participate in its research projects. It also sponsors the annual Wellek Library Lectures in which a leading theorist gives a series of lectures on a topic of importance in critical theory.

DEVELOPMENTAL BIOLOGY CENTER

The Developmental Biology Center (DBC) provides focus and support for research in developmental biology in several departments of the School of Biological Sciences and the College of Medicine. The research activities are concerned with identifying the activities of cells that convert the fertilized egg into a fully formed and functioning organism. DBC investigators are studying the processes of cell division, migration, and differentiation at the molecular, genetic, and cellular levels using a variety of experimental organisms, as well as human material. DBC manages shared facilities for confocal microscopy, computer-based image processing and analysis, flow cytometry and single-cell microinjection. These facilities are part of the Optical Biology Shared Resource Facility of UCI's National Cancer Institute-designated Chao Family Comprehensive Cancer Center.

Two National Institutes of Health training grants administered by DBC, one in developmental mechanisms underlying congenital defects and one in developmental neurobiology, provide support for both graduate students and postdoctoral investigators.

DBC sponsors regular seminars; organizes local, national, and international conferences; and hosts visiting scientists for collaborative research. The results of the work will contribute to the understanding of normal development, growth control, and the regeneration of body parts as well as abnormalities that lead to birth defects, cancer, and nervous-system malfunction in the human body.

Additional information is available on the World Wide Web at <http://mamba.bio.uci.edu/~pjbryant/dbc/index.htm>.

INSTITUTE FOR BRAIN AGING AND DEMENTIA

The goal of the Institute is to mobilize and unify University resources to discover meaningful ways to prevent decline in brain function with aging prior to its inception and to reverse loss of function once it has occurred. The elusive, yet attainable goal of "successful aging," maintaining functionality in one's later years, is one of the great challenges facing the nation in the next century. While many individuals continue to maintain and even improve their intellectual and cognitive skills, others suffer a serious and seemingly irreversible loss of cognitive function and develop dementias, most commonly Alzheimer's disease. The Institute is a fully integrated basic science/clinical research program that operates: a Dementia Assessment and Treatment Clinic; a Brain Imaging Acquisition/Analysis Unit; a Tissue Repository for cellular and molecular analysis of the aged and Alzheimer's brain; and a comprehensive database of clinical and research data. Research is multidisciplinary employing the latest techniques in computer science, artificial intelligence, molecular biology, and neuroscience. The Institute also sponsors a specialized educational track in brain aging and dementia for advanced students who wish to develop a career opportunity in an exciting and expanding field. The Institute is the site of a National Institute on Aging Alzheimer's Disease Research Center (jointly with the University of Southern California) and a State of California Department of Health Alzheimer's Disease Diagnostic and Treatment Center.

Faculty from the Departments of Psychobiology, Neurology, Radiology, Anatomy and Neurobiology, Molecular Biology and Biochemistry, Microbiology and Molecular Genetics, Cognitive Sciences, Information and Computer Science, and Electrical and Computer Engineering, and the School of Social Ecology comprise the Institute's core group of investigators.

INSTITUTE FOR MATHEMATICAL BEHAVIORAL SCIENCES

The goal of the Institute for Mathematical Behavioral Sciences is to foster research in the application of mathematical methods to describe and to better understand human behavior, both individual and social. The Institute sponsors specialized seminars and colloquia, a visiting scholars program, summer workshops, and focused research groups of faculty, students, and visitors, and it maintains a Technical Report Series. Facilities include a computer network for research purposes. Participants include faculty from the Departments of Cognitive Sciences, Economics, Politics and Society, Anthropology, and Sociology in the School of Social Sciences; the Department of Mathematics in the School of Physical Sciences; the Department of Philosophy in the School of Humanities; the Department of Electrical and Computer Engineering in the School of Engineering; and the Graduate School of Management.

INSTITUTE FOR SURFACE AND INTERFACE SCIENCE

The Institute for Surface and Interface Science (ISIS) brings together faculty and researchers in the fields of chemistry, physics, and electrical engineering for collaborative projects aimed at advancing knowledge through interdisciplinary research. ISIS affiliates engage in the study of phenomena which occur at the boundaries between phases of matter. The properties of surfaces and interfaces control a wide variety of technologically important effects and processes. Among these are corrosion and lubrication incidents, the behavior of semiconductor devices, the fabrication of integrated circuits, and the performance of catalysts used in automobile exhaust systems and throughout the chemical industry. Research conducted within the Institute is funded by a variety of

extramural sources including private industry as well as several federal agencies. Collectively, research funds also help support a number of ISIS-sponsored activities, including a Distinguished Lecturer Program which brings senior scholars from around the world to UCI, visiting fellows programs, postdoctoral fellowships, seminar presentations, student research forums, and workshops.

INSTITUTE OF TRANSPORTATION STUDIES

The Institute of Transportation Studies (ITS), a University of California Organized Research Unit with branches at Irvine, Davis, and Berkeley, was established to foster research, education, and training in the field of transportation. A fundamental goal of the Institute is the stimulation of interdisciplinary research on contemporary transportation issues. ITS research at UCI involves faculty and students from the Schools of Engineering, Social Ecology, and Social Sciences; the Graduate School of Management; and the Department of Information and Computer Science. The Institute also hosts visiting scholars from the U.S. and abroad to facilitate collaborative research and information exchange, and sponsors conferences and colloquia to disseminate research results.

Research at ITS covers a broad spectrum of transportation issues. Current funded research projects at ITS Irvine focus upon: intelligent transportation systems, particularly advanced transportation management systems; planning and analysis of transportation systems; transportation systems operation and control; artificial intelligence applications; transportation engineering; transportation safety; fiscal and administrative issues in public transit; and environmental and energy issues.

The Institute is part of the University of California Transportation Center, one of 10 Federally designated centers for transportation research. The ITS Advanced Transportation Management Systems (ATMS) Laboratories provide facilities for the teaching, research, and development of intelligent transportation systems. These laboratories form the backbone of the State of California's research initiative in ATMS.

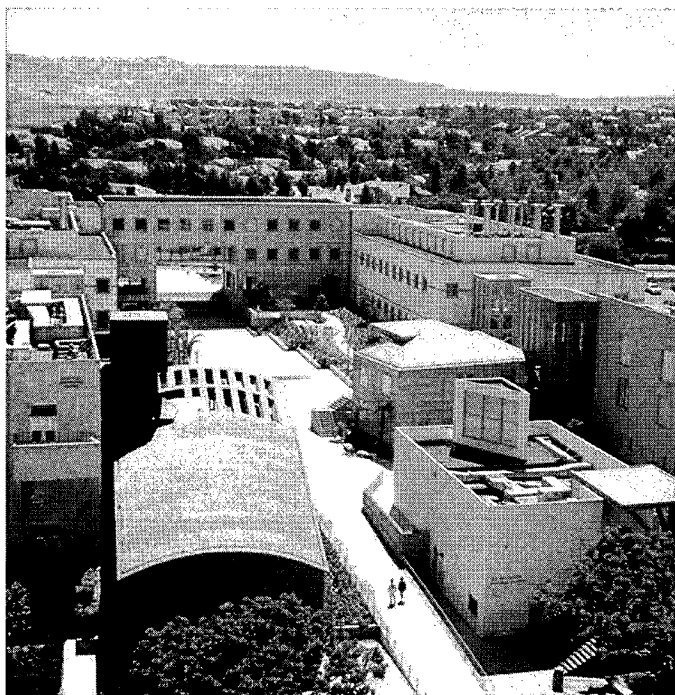
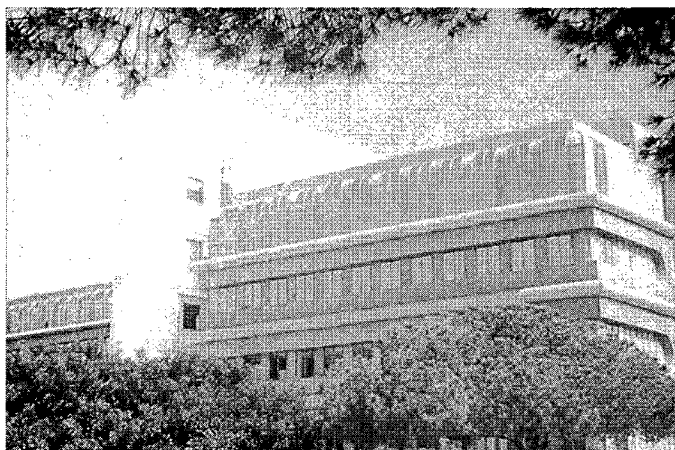
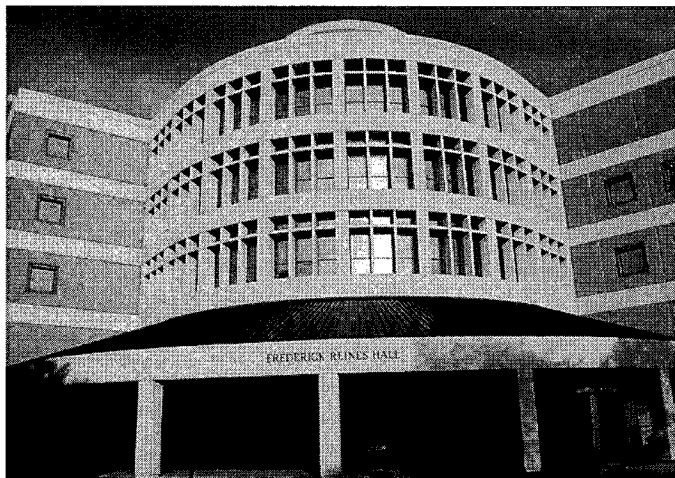
The transportation research program at UCI is supported by the ITS Transportation Library at UC Berkeley. In addition, ITS at UCI subscribes to all transportation research journals and offers a variety of computer-based information retrieval services.

The Institute maintains a regular publication series which documents research conducted within its programs. ITS also is the editorial headquarters of four international journals—*Transportation Research Part A: Policy and Practice*; *Transportation Research Part B: Methodological*; *Transportation Research Part C: Emerging Technologies*; and *Accident Analysis and Prevention*. These journals are received by over 2,000 subscribers worldwide.

The Institute works closely with campus academic units to enhance graduate education in the areas of transportation planning, engineering, management, and policy. Courses of study leading to graduate degrees in the Schools of Engineering, Social Ecology, and Social Sciences are available for students interested in transportation studies. ITS extends its support to a large number of graduate students from these various disciplines, enabling students to enrich their studies by participating in ongoing research.

Irvine Research Units

Irvine Research Units (IRU) are established on the Irvine campus for the purpose of providing an organizational structure for the conduct of research that is difficult or infeasible to be carried out within the normal school or departmental structure. IRUs normally are established for a period of five years, and may provide the basis for establishment of extramurally supported research centers or Organized Research Units.



From top to bottom: *Frederick Reines Hall*, named after UCI's 1995 Nobel Laureate in Physics; *Biological Sciences II*; *School of Engineering and Department of Information and Computer Science* facilities.

ADVANCED COMPUTING

The IRU in Advanced Computing (known as RUAC) was created with the purpose of providing a common research home for all investigators who use highly complex and advanced computing in theoretical or experimental research. RUAC promotes focused or interdisciplinary research where high-performance computing or computational sciences are the main tool or objective. RUAC has also initiated an Industry/University Consortium Center for Numerical Algorithm Development. Its activities include, but are not limited to: seminars, public lectures, symposia, formal or informal gatherings, and one-day work group sessions which include industry. Undergraduate, graduate, postdoctoral, and continuing education research opportunities are actively pursued as part of RUAC's activities.

ANIMAL VIROLOGY

The Program in Animal Virology combines basic science and clinical faculty in the Departments of Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, and Psychobiology in the School of Biological Sciences, and the Departments of Biological Chemistry, Microbiology and Molecular Genetics, Neurology, and Pathology in the College of Medicine in an interactive and collaborative environment united with a common interest in aspects of animal virology. The program is also an integral part of the National Cancer Institute-designated Chao Family Comprehensive Cancer Center at UCI. The major goal of the program is to provide a collaborative resource for the dissemination of expertise in a number of animal virus systems as models and vectors for the study of molecular aspects of pathogenesis, gene expression, and gene delivery, including laboratory facilities for work with recombinant virus for gene therapy. It also sponsors a seminar series, symposia, and laboratory training for postdoctoral fellows and graduate students in animal virology and viral-based gene therapy.

COMPUTER SYSTEMS DESIGN

The IRU in Computer Systems Design includes faculty from the Department of Information and Computer Science and the Department of Electrical and Computer Engineering who are interested in methodologies, tools, and designs of complex information and computer systems for consumer, industrial, communication, automation, military, automotive, entertainment, medical, scientific, and engineering applications. Faculty and students are involved in a variety of projects in parallel processing, algorithms, software tools, parallel compilers, distributed computing, networking, real-time systems, VLSI architecture, computer-aided design, estimation, fault tolerant and highly reliable systems, software/hardware code-sign, and design science.

The goal of the IRU is to provide a broad spectrum of research opportunities for graduate and undergraduate students, to enhance interaction with distinguished scientists from both industry and universities from the United States and abroad, and to foster greater cooperation between the University and industry in solving real-world problems.

GLOBAL PEACE AND CONFLICT STUDIES

Although housed in the School of Social Sciences, participating faculty in the IRU in Global Peace and Conflict Studies are also drawn from the Schools of Humanities and Social Ecology, and from the natural sciences. The goals of the IRU are: (1) interdisciplinary research on the international and domestic conditions necessary for the avoidance of war or civil strife, and the creation of a stable and fruitful peace; (2) education of graduate and undergraduate students about these conditions; (3) enhancement of international studies in general at UCI; and (4) dissemination of research and education in the community at large.

Five interconnected themes characterize the cross-disciplinary research of the cooperating faculty: the interaction of foreign policy making and domestic affairs, the strategy and ethics of armament and disarmament, the role of international organizations in the creation of a more enduring peace, global ecological and environmental factors in peace and conflict, and the shaping of human attitudes and perceptions with respect to peace and conflict.

In support of its research activities, GPACS annually awards two graduate fellowships to incoming doctoral students as well as six to eight faculty research grants. In addition, GPACS sponsors a public forum series, research seminars, and a colloquium series on international society and institutions. GPACS publications include the annual student journal and the GPACS working papers.

HEALTH POLICY AND RESEARCH

The IRU in Health Policy and Research fosters multidisciplinary studies on access to medical care and prevention among special populations. Faculty from the College of Medicine, the Schools of Social Sciences and Social Ecology, and the Graduate School of Management comprise the core group of investigators.

The IRU's goals include conducting multidisciplinary research to address important questions related to access to medical care and prevention in special populations; exploring interventions and health policy options that will improve access to medical care and prevention in these groups; helping to guide policy makers in their decisions about health care initiatives for special populations; and facilitating the collaboration of faculty, students, and the professional community through the expertise, facilities, and activities of the unit.

Ongoing studies include: (1) evaluation of cancer-related knowledge, attitudes, and behaviors among Latino and American Samoan populations; (2) assessment of AIDS prevention strategies among Latinos; (3) investigation of injury prevention among children; and (4) exploration of the epidemiology of sexual activity, contraception, and pregnancy in adolescents.

In support of research, the IRU sponsors seminars during which faculty associates and guests discuss ongoing or planned research; guest lectureships conducted by nationally distinguished researchers and practitioners; and workshops on topics related to the unit's focus for faculty, students, government officials, and community members. In addition, the IRU helps health policy researchers to develop and submit grant proposals and administers grants which have been funded.

SOFTWARE

Computer software development and maintenance is a major component of the county's, state's, and nation's economy. The IRU in Software (IRUS) is focused on enhancing abilities to design, produce, assess, and maintain diverse types of software through a program of applied research and technology partnerships with industry. Technical emphases of IRUS include software processes, workflow, and process improvement; computer-supported cooperative work; analysis and testing; extensible systems; software architectures; hyperware and World Wide Web protocols; distributed object technologies; metrics and measurement; and software understanding.

In support of these objectives IRUS sponsors monthly technical interchange meetings, which bring over 100 professionals from California industry to campus each month. One of these meetings is the Southern California Software Process Improvement Network (SPIN). IRUS also sponsors several annual events, including a symposium on software technology.

Information on IRUS and its regular activities can be obtained on the World Wide Web at <http://www.ics.uci.edu/IRUS>, or by telephone at (949) 824-2260.

GRADUATE EDUCATION

With the exception of programs conducted by the College of Medicine for the training of medical professionals, the Dean of Graduate Studies administers graduate education in accordance with academic policies established by the Academic Senate and by the Graduate Council, a standing committee of the Irvine Division of the Academic Senate. There is no separate graduate faculty at UCI; graduate work is supervised by academic units and faculties which have concurrent responsibility for undergraduate studies.

Information about graduate education at UCI is published here in the *UCI General Catalogue* and in individual graduate program publications. The staff of the Office of Research and Graduate Studies is prepared to answer questions about admission, academic policies and procedures, graduate programs and degrees, financial assistance, student services, and other matters of concern to applicants or graduate students. The Office is located in 120 Administration Building; telephone (949) 824-6761.

The University of California recently reaffirmed that a diverse student and faculty population is integral to academic excellence and is critical to promoting the lively intellectual exchange and the variety of ideas and perspectives that are essential to advanced research. The University remains committed to expand outreach, recruitment, and retention efforts. Through the Graduate and Professional Opportunity Program (GPOP), steps are taken to increase the participation of diverse groups who traditionally have been underserved in graduate education in the United States. GPOP programmatic and eligibility guidelines are set forth by the Academic Career Development Program sponsored by the UC Office of the President.

It is the goal of UCI's Office of Research and Graduate Studies to award fellowships to a diverse group of students. Diversity fellowships for new and continuing graduate students are based on demonstrated scholastic achievement, full-time status, and U.S. citizenship. Although Proposition 209 prohibits selection based on race, gender, ethnicity, religion, or national origin, socioeconomic and educational limitations can be considered. Each academic department identifies those students whose background and life experiences can enhance the level of diversity within the department or discipline.

Admission to Graduate Standing

Applicants for admission to graduate study at UCI must apply for acceptance into a specific graduate program to work toward an advanced degree. A general requirement for admission is that the applicant hold the degree of Bachelor of Arts, Letters, Philosophy, or Science (or an acceptable equivalent) from a recognized academic institution. A grade point average of at least B (3.0 on a 4.0 scale) is required.

Each applicant's file is evaluated by the admissions committee of the specific graduate program on the basis of such factors as academic subject preparation, scholarship, letters of recommendation, test scores, and examples of previous work. A critical question is whether the applicant's academic objectives can reasonably be satisfied by a graduate program on this campus. The University of California does not have the capacity to accommodate all applicants who meet the minimum admission requirements.

Application Procedures

HOW TO APPLY

The *Application for Graduate Admission* must be completed either electronically or by using a paper application. The electronic application is available on the World Wide Web at <http://www.rgs.uci.edu/grad/>. A paper application may be obtained by contacting a



specific graduate program or the Office of Research and Graduate Studies.

The application fee is \$40 and is nonrefundable. Payment instructions are available in both the electronic and paper versions of the application. Need-based application fee waivers are available for domestic students.

Detailed instructions for both the electronic and paper applications are included in their respective formats. For additional information or to obtain a paper application, call (949) 824-6761, or send e-mail to ogsfront@ccmail.rgs.uci.edu.

WHEN TO APPLY

For all graduate programs, applications should be completed by January 15 to receive full consideration for fellowship and assistantship awards. Some academic units will accept applications for winter or spring quarter admission for which deadlines are October 15 and January 15, respectively. In order to process applications in time for the applicant to receive full consideration, letters of recommendation, official transcripts, and test scores must be received before the published deadlines. Some schools and departments have earlier or later deadlines for filing the application. Applicants should consult their prospective department or school for information. Telephone numbers for the schools and departments may be obtained by calling (949) 824-6761.

Required Supporting Documents

LETTERS OF RECOMMENDATION

Applicants should arrange to have three letters of recommendation forwarded directly to their prospective major department or program. Recommendation forms are enclosed in the application packet. Only one set of recommendation letters needs to be submitted in support of an application for admission and fellowship or assistantship consideration. It is important that letters of recommendation be completed by professors or instructors in disciplines related to the proposed course of study who are in a position to analyze an applicant's abilities and academic promise.

GRADUATE RECORD EXAMINATION (GRE) SCORES

All applicants are required to take the Graduate Record Examination (GRE) General Test, with the following exceptions: (1) the Graduate School of Management requires that M.B.A. applicants take the Graduate Management Admission Test (GMAT), and (2) no standardized tests are required of those who seek the Master of Fine Arts degree or the Master of Arts in Teaching. There is no minimum GRE score. Several programs also require, or strongly recommend, that an applicant report the score of a GRE Subject Test. Applicants should register for either the October or December test dates to ensure the timely receipt of their score results for admission consideration. (A computerized version of the GRE is now offered Monday through Saturday at Sylvan Technology Learning Centers.) The standard written GRE is administered five times a year in the United States and in 96 other countries. In addition, several administrative service tests are given each year in major U.S. cities (dates vary). Applications for the GRE may be obtained from the Educational Testing Service, P.O. Box 6000, Princeton, NJ 08541-6000.

ACADEMIC RECORDS

Domestic applicants should request that official transcripts be forwarded directly to their prospective major department or program. Two complete sets of official records covering all postsecondary academic work attempted, regardless of length of attendance, are required. University of California transcripts must also be submitted by applicants, with the exception of those who are UCI undergraduates. Applicants with academic work in progress must expect to complete their undergraduate degree programs before the intended date of enrollment at UCI and must submit evidence of degree conferral before officially enrolling.

FOREIGN ACADEMIC RECORDS

Official records from overseas institutions should be sent *directly* to the prospective major department or program at UCI. Records of academic study from foreign institutions must be official, bearing the signature of the registrar and the seal of the issuing institution. Applicants should not send the original of an academic record which cannot be replaced; they should obtain instead properly certified copies. Unless academic records and diplomas are issued in English by the institution, the official records in their original language must be submitted with an authorized, complete, and exact English translation. Foreign academic records must be in duplicate and include all subjects or courses taken on a yearly basis, together with the units of credit or time allotted to each subject each term or year and the marks or ratings in each subject or examination passed. In all cases the institutional grading scale or other standard of evaluation, including maximal passing and failing marks and definition of grades between them, should appear on official records or as an official attachment. Official evidence of degree conferral must also be supplied, together with evidence of rank in class if available.

TEST OF ENGLISH AS A FOREIGN LANGUAGE (TOEFL)

All applicants whose primary language is not English are required to submit the test results of the TOEFL. The TOEFL should be taken at the earliest available date to allow for scores to be reported in time to meet the application deadlines. A score of 550 or better is required for admission consideration. (The Graduate School of Management requires a minimum score of 570.) Arrangements for taking the TOEFL may be made through the nearest United States Embassy or by writing to the Educational Testing Service, P.O. Box 6151, Princeton, NJ 08541-6151, USA. The TOEFL is given at UCI.

TEST OF SPOKEN ENGLISH (TSE)

All applicants whose primary language is not English and who wish to be considered for a Teaching Assistantship must take the Test of Spoken English (TSE) and pass with a score of 50 or above. The TSE is given six times during the year at TOEFL test centers around the world. Information may be obtained by writing to the Test of Spoken English, P.O. Box 6157, Princeton, NJ 08541-6157, USA. The TSE is given at UCI.

SPECIAL NOTE TO FOREIGN APPLICANTS

Foreign applicants are required to certify that they possess sufficient funds to cover all fees, transportation, and living expenses for the first year of their studies at UCI. A Foreign Applicant Questionnaire for the purpose of verifying the amount and source of funds available for graduate study will be forwarded to foreign applicants upon admission to graduate study. The required financial verification must be provided before visa forms can be issued.

Admission and Registration

A formal notice of the admission decision is sent to each applicant as soon as possible after the application and complete records are received, and after the department has made a recommendation. The official notification will be mailed well in advance of the beginning of the quarter for which application has been made.

Admission to graduate standing does not constitute registration for classes. A student is not officially registered for classes until the entire registration procedure is completed each quarter. Information on registration dates and procedures will be mailed to new applicants prior to the registration cycle.

If any applicant wishes to defer admission to a later academic quarter, the Office of Research and Graduate Studies must be notified in writing. After formal admission has been offered, a request for deferral must be approved by the academic unit.

Limited Status

University of California academic regulations provide for the admission of students to Limited Status for two purposes: (1) to prepare for admission to a graduate or professional program by enrolling for a prescribed set of courses; or (2) to pursue a specific academic program which does not lead to a graduate degree. The general requirements for admission to Limited Status are the same as those for graduate admission, with the exception that Graduate Record Examination scores are not required. Admission to Limited Status is ordinarily for a period of three quarters (one academic year) and does not imply admission to a UCI graduate degree program at some later date.

Although Limited Status does not represent graduate standing, admission is offered by the Dean of Graduate Studies upon the recommendation of an academic unit which has agreed to oversee the student's program. Graduate courses taken while in Limited Status ordinarily qualify for transfer credit toward advanced degree requirements, but will not satisfy minimum degree or residency

requirements for any UC graduate program to which the student eventually might be admitted.

Academic Advising

In each academic unit with an advanced degree program, there is at least one formally appointed graduate advisor or director of graduate studies. The graduate advisor is a regular faculty member responsible for supervising graduate study in that unit, for monitoring the academic progress of graduate students, and for seeing that each graduate student is assigned a faculty advisor. The graduate advisor plays a key role in the academic lives of graduate students, advising students and other faculty members about program requirements and the academic policies of the Office of Research and Graduate Studies, approving study lists, and evaluating academic petitions. In many academic units the graduate advisor is instrumental in the nomination of students for fellowship support, the selection of students for assistantship and fellowship appointments, and in the supervision of graduate student teachers. In most schools there also is an associate dean for graduate studies who coordinates many of the functions which affect graduate students within that school. Both graduate advisors and deans are important links between the student and the Dean of Graduate Studies.

Most graduate students also will have an individual faculty advisor or advising committee, especially after the first year of advanced study. When a student is advanced to candidacy for the Ph.D., the doctoral committee becomes the primary source of academic guidance; however, student academic petitions still must be approved by the Graduate Advisor.

Academic Policies

The academic policies described here apply to students enrolled in study leading to graduate degrees and California education credentials. Other regulations and procedures are covered in the Academic Regulations and Enrollment and Other Procedures sections, and in the description of each graduate program.

SCHOLASTIC REQUIREMENTS

A graduate student is expected to make satisfactory progress toward an approved academic objective, as defined by the faculty of the program in accordance with policies of the Graduate Council, and to maintain a satisfactory grade point average for all work undertaken while enrolled in graduate study. Satisfactory progress is determined on the basis of both the recent academic record and overall performance. A graduate student normally is expected to complete satisfactorily at least eight units of academic credit applicable to the graduate program in each regular academic session (unless on an approved leave of absence), and satisfy all requirements of the academic program according to an approved schedule. For a graduate student, only the grades A+, A, A-, B+, B, and S represent satisfactory scholarship and may be applied toward advanced degree requirements. However, upon petition, a UCI course in which a grade of B- is earned may be accepted in partial satisfaction of the degree requirements if the student has a grade point average of at least 3.0 in all courses applicable to the degree. Graduate students may not apply courses graded Pass or Not Pass toward any degree or satisfactory progress requirements. A grade point average below the B level (3.0 on a 4.0 scale) is not satisfactory, and a student whose grade point average is below that level is subject to academic disqualification.

A student's academic progress ordinarily is evaluated on the basis of the academic record. A few weeks after the end of a quarter, an updated copy of each enrolled student's permanent academic record is available from the Registrar. This record lists all UCI courses for which a graduate student was enrolled (including courses taken through the Intercampus Exchange Program), the grades assigned, and the cumulative grade point average. Formal

candidacy for an advanced degree, degrees conferred, certain examinations passed, unit credit accepted from other institutions, and other important academic information is recorded also.

A graduate student who has not demonstrated satisfactory progress is not eligible for any academic appointment such as Reader, Graduate Student Researcher, or Teaching Assistant, and may not hold a fellowship or other award which is based upon academic merit.

GRADING

With the consent of the academic units involved, individual study and research courses at the graduate level may be graded Satisfactory or Unsatisfactory (S/U). With the approval of the Graduate Council certain graduate courses are graded S/U only. A grade of S is equivalent to a grade of B (3.0) or better. No credit is given for a course in which a grade of U was assigned.

Graduate students may take one course (up to four units) per quarter on a Pass/Not Pass basis. However, such courses are not considered part of the student's graduate program and may not be applied toward the requirements for an advanced degree.

The grade of Incomplete (I) may be assigned by an instructor when the student's work is of passing quality but is incomplete because of circumstances beyond the student's control. Although Incomplete grades do not affect a graduate student's grade point average, they are an important factor in evaluating academic progress. The maximum amount of time that an instructor may allow for making up incomplete work is three quarters of enrollment but stricter limits may be applied. When work is completed within the time allowed, the student should ask the instructor to submit a change-of-grade notice to the Registrar, ordinarily through the dean of the school in which the course was offered. If not made up within the time allowed, an I grade is recorded permanently.

IP (In Progress) is a transcript notation restricted to sequential courses extending over two or more quarters for which use of the IP notation has been approved. When the last quarter of the sequence is completed, the grade for the final quarter is assigned for all quarters of the sequence. No credit is given until the student has completed the entire sequence.

A student who received an NR (No Report) transcript notation must immediately contact the instructor and arrange for the removal or replacement of the NR. After one quarter, an NR becomes an F or NP which will remain permanently upon the student's record.

A graduate student may repeat once a course in which a grade below B (3.0) or a grade of U was received. Only the most recently earned grade is used in computing the student's grade point average for the first eight units of repeated work; thereafter both the earlier and the later grades are used.

Additional information about grading may be found in the Academic Regulations section.

ACADEMIC DISQUALIFICATION

After consultation with the student's academic unit, the Dean of Graduate Studies may disqualify a student who has a grade point average in graduate and upper-division courses below 3.0 for two or more successive quarters; or fails to pass (or does not take) a required examination within the time specified for that graduate program; or does not maintain satisfactory academic progress toward completion of an approved program of study.

Unsatisfactory academic progress may be determined on the basis of explicit requirements, but the professional judgment of the faculty upon review of all graduate work undertaken by the student is paramount. Ordinarily, a student whose work does not meet academic standards will be given written notice and a reasonable period of time in which to make up all deficiencies.

Prior to taking final action to disqualify, the Dean of Graduate Studies ordinarily will notify a student who is subject to academic disqualification and will provide reasonable opportunity for the student to correct erroneous or outdated academic records, to submit other information or comments in writing, or to request a second review of his or her academic performance.

Upon written notice of academic disqualification by the Dean of Graduate Studies, disqualification will be noted on the formal academic record of that student. Following the formal notice of disqualification, the student may appeal to the Dean of Graduate Studies only on the basis of procedural error.

ACADEMIC RESIDENCE

A graduate student is considered to be in residence during an academic quarter if at least four units of academic credit are earned in regular upper-division or graduate courses. Credit for one academic quarter of residence may be earned by completing at least two units of credit in approved courses in each of two six-week summer sessions, or four units of credit in an eight- or ten-week summer session. In the case of Ph.D. students, these must be consecutive sessions.

ENROLLMENT POLICY

Full-time academic enrollment is expected of graduate students at the University of California. Study for the Ph.D. requires a full-time commitment from the doctoral student. Full-time study is defined as enrollment in at least 12 units of upper-division or graduate academic credit per quarter, including credit for supervised research or teaching. Graduate students may enroll in lower-division courses with the approval of their academic advisors, but such courses are not considered to be part of any graduate program.

Graduate students ordinarily may not receive credit for more than 12 units per quarter in graduate courses, or 16 units in upper-division courses, or a proportionate number in combination. Course loads in excess of 16 units must be approved in advance by the student's Graduate Advisor and the Dean of Graduate Studies.

Although in most instances completion of an advanced degree at UCI requires full-time study, the University recognizes the legitimate need for part-time study opportunities and is committed to providing those opportunities wherever possible. Graduate degree programs may be opened to part-time students wherever good educational reasons exist for so doing. In general, part-time status is available in master's and credential programs where part-time study has been judged academically feasible by faculty and approved by the Graduate Council. Under this policy, part-time enrollment at the graduate level is defined as enrollment for eight units or less. Within the guidelines and limitations on the application form available in the Office of Research and Graduate Studies, graduate students may petition for part-time status and, if the petition is approved, shall pay the full University Registration Fee and student activities fees, one-half the Educational Fee, and one-half the Nonresident Tuition Fee (if applicable).

CONTINUOUS REGISTRATION

A graduate student is expected to enroll for each regular academic session (fall, winter, and spring quarters) until all requirements for an advanced degree or credential have been completed, including final examinations and the submission of an approved thesis or dissertation. Enrollment is not official until all required fees have been paid and the student has enrolled in classes. Students are responsible for ensuring that their course enrollment is correct. For more information, see the Enrollment and Other Procedures section.

A student engaged in study or research outside the State of California for an entire quarter ordinarily will register in absentia. Unless an official leave of absence has been granted, or a petition to pay the Filing Fee in lieu of registration has been approved by the

Dean of Graduate Studies, a student who does not register by the final deadline for any regular quarter will lose graduate standing, and candidacy for any advanced degree will lapse. Prior to resuming graduate study in the University, a former student must successfully apply for readmission. A readmitted student must register and then be advanced or reinstated to candidacy at least one quarter before receiving an advanced degree. A degree cannot be conferred earlier than the second quarter following readmission.

A graduate student who decides to leave the University after enrolling and paying fees for a quarter must file an official Notice of Withdrawal or Cancellation with the Dean of Graduate Studies. A graduate student in good academic standing who withdraws from graduate study and intends to return within one year may submit an application for a leave of absence. If the leave is approved, the student remains in good standing and need not apply for readmission in order to enroll at the expiration of the leave period.

LEAVE OF ABSENCE

A graduate student who withdraws from the University with the intention of returning within one year and wishes to avoid a lapse of student status should request a leave of absence. A leave of absence of up to one year's duration may be granted by the Dean of Graduate Studies upon the recommendation of the student's academic unit, subject to the following guidelines:

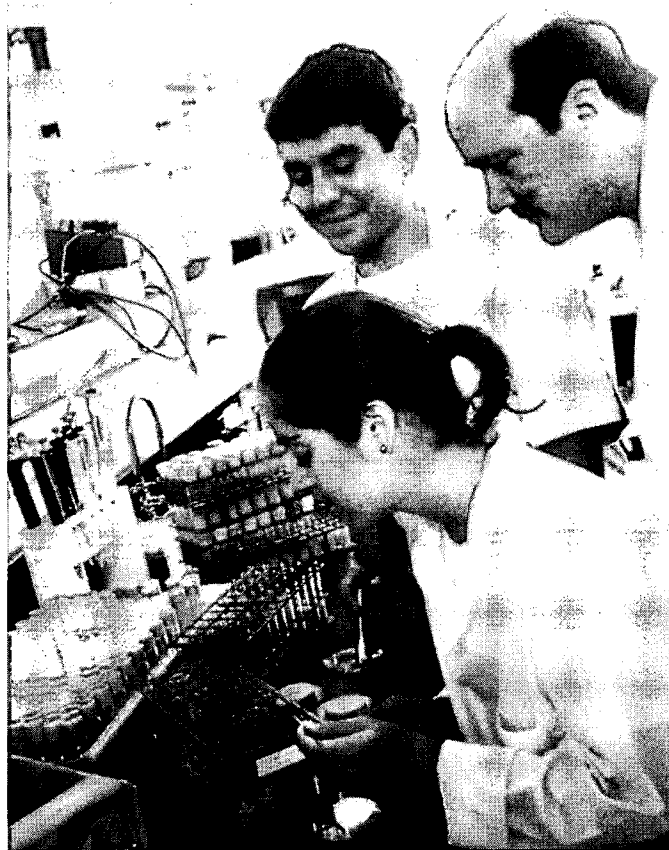
1. The student must have completed satisfactorily at least one quarter in residence and be in good academic standing. The leave must be consistent with the student's academic objectives.
2. Leave ordinarily is approved in cases of serious illness or other temporary disability, or temporary interruption of the student's academic program for other appropriate reasons.
3. A student on leave is not eligible for assistance from a University fellowship, research grant, or financial aid program, and may not hold an academic appointment or comparable University employment. During a period of leave, a student may not take comprehensive or qualifying examinations or earn academic credit (except by a transfer of credit from another institution approved in advance by the Dean of Graduate Studies). University resources and facilities, including housing, are ordinarily unavailable to students on leave.
4. A student failing to register for the next regular academic session following the expiration of leave will lose graduate standing and will be subject to the following readmission policy.

READMISSION

A student who previously withdrew from the University, or whose student status has lapsed, may request readmission to graduate study by submitting an Application for Admission with a \$40 fee, which is nonrefundable. The Dean of Graduate Studies may grant readmission when recommended by the academic unit. If readmitted, a student's previous academic work will be applied toward the requirements for an advanced degree only with the approval of the graduate advisor and the Dean of Graduate Studies. A readmitted student must satisfy the academic requirements in effect at the time of readmission and may be required to satisfy certain requirements a second time, including those for formal advancement to candidacy. A readmitted student must register and then be advanced or reinstated to candidacy at least one quarter before receiving an advanced degree, which will be conferred no earlier than the second quarter following readmission.

INTERCAMPUS EXCHANGE PROGRAM

A graduate student in good standing who wishes to take advantage of educational opportunities available only at another campus of the University of California may do so through the Intercampus Exchange Program. Ordinarily, an exchange student will have



Professor Robert H. Blanks, Departments of Anatomy and Neurobiology and Otolaryngology, and his students conduct research in the anatomy and physiology of the visual and vestibular systems.

demonstrated a high level of scholarship during at least one quarter of graduate study at the home campus and will have well-defined academic objectives. Approval of the faculty advisor, the host department(s), and the respective deans of graduate studies is required. Direct arrangements between faculty members on the two campuses are encouraged so as to ensure that courses, seminars, or facilities will be available to meet the participating student's needs. Students may take courses on more than one campus of the University in the same academic session.

The exchange student enrolls and pays fees on the home campus and then enrolls at the host campus, following the procedures of that Registrar's Office. A report of academic work completed will be transferred to the student's academic record on the home campus after the term has ended. Although eligible for all normal student services, the exchange student is a visitor and is not formally admitted to graduate study at the host campus. Application forms for the Intercampus Exchange Program may be obtained from the Office of Research and Graduate Studies and should be filed with the Office at least four weeks before the beginning of the quarter in order to avoid penalties.

TRANSFERS OF CREDIT

At least one-half of the course requirement for a master's degree must be completed while in residence as a graduate student at UCI. Credit for up to one-fifth of the minimum number of units required for a master's degree may be allowed for graduate-level work completed at another institution or through University Extension prior to first graduate enrollment at UCI. Such courses do not count toward the required number of units in 200-series courses. Up to

one-half the units required may be accepted from another graduate division of the University of California. After enrollment, the student must initiate a formal petition for such credit and submit an original transcript. The acceptance of unit credit earned in another program must be recommended by the academic unit to which the student has been admitted and be approved by the Dean of Graduate Studies. No units of transfer credit will be given for any course in which a grade below B (3.0) or equivalent was assigned. Under no circumstances will grade credit be transferred.

A student currently enrolled in a master's degree program or on a leave of absence may receive unit credit (not grade credit) for graduate-level work completed at another institution or through University Extension only with the prior approval of the departmental graduate advisor and the Dean of Graduate Studies. No transfer credit will be given for any course in which a grade below B or equivalent was assigned.

A student who begins graduate study at UCI in the fall quarter will receive appropriate credit for courses taken in preceding UCI summer sessions, provided that the formal date of admission precedes summer session enrollment. Continuing graduate students will receive credit for courses taken in intervening UCI summer sessions.

Graduate Degrees

MASTER'S DEGREES

The master's degree is conferred at the end of the academic quarter in which all requirements have been satisfied, subject to the final approval of the Graduate Council. The student must be advanced to candidacy for the degree prior to the beginning of the final quarter of enrollment. Therefore, an application for advancement to candidacy, initiated by the student and approved by the academic unit, should be submitted to the Dean of Graduate Studies at least 30 days before the opening of the quarter in which the degree is expected.

The Master of Arts (M.A.) or Master of Science (M.S.) degree normally is attained by one of two routes: Plan I, a thesis; or Plan II, a comprehensive examination. Both require a minimum of one year in residence, satisfactory completion of prescribed course work, and an appropriate demonstration of achievement. Plan I includes a minimum of seven courses (28 units), 20 units or more of which must be at the graduate level; a thesis; and a general examination. Plan II requires at least nine courses (36 units), including 24 units or more at the graduate level, and a comprehensive examination covering a broad range of subject matter in the discipline. Only approved 200-series courses completed while in residence at the University satisfy the minimum graduate course requirement. Some programs will have course requirements exceeding the minimums cited above and may have additional or alternative degree requirements. Please refer to the description of the specific program for more information.

Master of Fine Arts (M.F.A.) degrees are awarded by the School of the Arts (M.F.A. in Dance, Drama, Music, or Studio Art) and by the Program in Writing (M.F.A. in English) upon successful completion of the equivalent of two years or more of full-time study with an emphasis upon creative expression and professional development. Special thesis or comprehensive examination requirements are established for these programs.

Master of Arts in Teaching (M.A.T.) degrees are awarded upon successful completion of programs designed for the professional development of secondary school teachers and college instructors. A minimum of one year in residence is required, usually including summer session course work. A thesis project or other comparable evidence of professional attainment is part of each M.A.T. program.

Master of Business Administration (M.B.A.) degrees are awarded by the Graduate School of Management upon successful completion of the equivalent of two years of full-time study in the development of professional managerial skills.

Master of Urban and Regional Planning (M.U.R.P.) degrees are awarded by the School of Social Ecology upon successful completion of the equivalent of two years of full-time study in contemporary methods of planning and policy analysis.

DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy (Ph.D.) degree is awarded on the basis of evidence that the recipient possesses knowledge of a broad field of learning and expert mastery of a particular area of concentration within it. The research dissertation is expected to demonstrate critical judgment, intellectual synthesis, creativity, and skill in written communication.

The candidate for the Ph.D. is expected to be in full-time residence for at least six regular academic quarters. Four to six years of full-time academic work beyond the bachelor's degree typically is required to complete the degree. At the end of the first year or so of full-time study, many programs administer a preliminary examination on the student's mastery of fundamental knowledge in the discipline. Upon successfully demonstrating a high level of scholarship on this examination and after further study, the student will continue to a series of qualifying examinations which lead to formal advancement to candidacy for the Ph.D.

Graduate students ordinarily attain candidacy status for the Ph.D. degree when all preparatory work has been completed, when qualifying examinations have been passed, and when they are ready for the dissertation phase. Students are recommended for advancement to candidacy by unanimous vote of the candidacy committee appointed by the academic unit on behalf of the Graduate Council. The Report on Qualifying Examination for the Degree of Doctor of Philosophy (Form I) must be signed by the committee at the time the candidacy examination is concluded and submitted to the Dean of Graduate Studies. Following a unanimous favorable vote of the committee, the student will be advanced to candidacy upon payment of the \$50 Candidacy Fee. Candidacy for the Ph.D. will lapse automatically if the student loses graduate standing by academic disqualification or failure to comply with the University policy on continuous registration. A readmitted student who was a candidate for the Ph.D. must again advance to candidacy and thereafter enroll as a candidate for at least one academic quarter before the Ph.D. may be conferred.

Following advancement to candidacy for the Ph.D., a doctoral committee appointed by the academic unit chair (on behalf of the Dean of Graduate Studies and the Graduate Council) supervises the student's program, approves the dissertation, and conducts the final oral examination if required. The chair of the doctoral committee is the member of the faculty responsible for providing primary guidance of the student's dissertation. Ordinarily, the final examination will be given just prior to completion of the dissertation and while the student is in residence during a regular academic session, and will be open to all members of the academic community. Ph.D. degrees are conferred, subject to the final approval of the Graduate Council, as of the last day of the regular academic quarter in which all requirements have been satisfied.

DOCTOR OF EDUCATION DEGREE

The Doctor of Education (Ed.D.) is awarded by UCI in conjunction with the School of Education at the University of California, Los Angeles. Refer to the Department of Education section of this *Catalogue* for more information.

THESES AND DISSERTATIONS

Candidates for the Ph.D., Ed.D., and certain master's degrees must conduct an extensive research project and submit a dissertation or thesis in order to fulfill degree requirements. Research expenses are not supported by the University, and the cost of preparing the dissertation or thesis ordinarily ranges from \$200 to \$1,000, but may be considerably more.

After approval by the doctoral or thesis committee appointed for each candidate by the academic unit, on behalf of the Graduate Council, two copies of the dissertation or thesis must be filed for placement in the UCI Library. The final copy must meet the University's requirements for style, format, and appearance before the degree can be conferred. A thesis and dissertation manuscript preparation manual is available for sale in the UCI Bookstore, in the Library for photocopying, and on the World Wide Web at http://www.editor.uci.edu/~editor/td_manual/.

Dissertations and theses must be filed by the deadline published in the quarterly *Schedule of Classes* in order for them to be reviewed and accepted in time for the degree to be conferred in that quarter.

Those students who complete requirements and submit theses/dissertations after the end of the tenth week of classes and prior to the start of the subsequent quarter will earn a degree for the following quarter, but *will not* be required to pay fees for that quarter. Please note that in order to avoid payment of fees, manuscripts, all forms, and degree paperwork must be submitted prior to the first day of the quarter in which the degree is to be earned.

THE FILING FEE

Under certain circumstances, a student who has advanced to candidacy for a graduate degree may be eligible to pay a Filing Fee equal to half of the Registration Fee in lieu of registration, subject to the approval of the Dean of Graduate Studies. In general, all requirements for a degree must have been satisfied prior to the start of the quarter, except for the submission of the final version of the dissertation or thesis, or the completion of a final oral or comprehensive examination. The student who intends to make use of any University resource, to hold any academic appointment or comparable University employment, or to receive any student service for which official registration and payment of regular fees is a requirement is not eligible to pay the Filing Fee in lieu of registration. A Filing Fee will not be accepted immediately following readmission and will be accepted immediately following a leave of absence only under exceptional circumstances. The date for payment of the Filing Fee is the same as that for the payment of other student fees. If all degree requirements are not completed during the quarter in which the Filing Fee is paid, the student must subsequently register and pay all applicable fees.

NONRESIDENT TUITION

Following advancement to candidacy, doctoral students who are not California residents will have their Nonresident Tuition Fee reduced by 75 percent for a period of up to three years. Any such student who continues to be enrolled or who re-enrolls after receiving the reduced fee for three years will be charged the full Nonresident Tuition Fee that is in effect at that time.

CONFERRAL OF GRADUATE DEGREES

Prior to the beginning of the quarter in which an advanced degree is to be conferred, the student must have advanced to candidacy for that degree and should have received formal notice confirming candidacy from the Dean of Graduate Studies. The student should consult the departmental graduate advisor to determine which degree requirements, if any, have not yet been satisfied.

Students are advised by mail when their diplomas are available, which is approximately six months after the quarter in which the degrees are awarded.

Financial Assistance for Graduate Students

Several types of financial assistance are available to graduate students at UCI. These include fellowships, teaching and research assistantships, tuition fellowships for nonresident students, grants-in-aid, student loans, and work-study.

All graduate students are encouraged to submit a financial aid application each year to access state and federal grants and loans. The *Free Application for Federal Student Aid* is available in the Office of Graduate Studies and the Financial Aid Office after January 1, with a deadline of March 2 each year. The Financial Aid section in this *Catalogue* and the *Financial Aid at UCI* handbook, available from the Financial Aid Office, contain information about assistance based upon financial need that is administered by the Financial Aid Office.

Applicants interested in assistantships or fellowships should so indicate on their application when applying for admission. For all graduate programs, applications should be completed by January 15 to receive full consideration for fellowship and assistantship awards. Continuing students interested in an assistantship or fellowship should contact the Graduate Advisor for their program. The awarding of fellowships for the following academic year begins in the winter quarter.

UCI subscribes to the agreement of the Council of Graduate Schools of the United States, under which successful applicants for awards of financial support are given until April 15 to accept or decline such awards. An award accepted from one of the member universities may be resigned at any time through April 15. However, an acceptance given or left in force after that date commits the student to not accepting another appointment without first obtaining formal release for that purpose from the awarding institution.

Regents', UCI Chancellor's Fellowships, and Chancellor's Opportunity Fellowships are awarded to a number of promising students entering graduate study at UCI leading to the Doctor of Philosophy, Doctor of Education, or Master of Fine Arts degree. Awards may include a stipend, all required student fees, and, if applicable, Nonresident Tuition. Other fellowships are offered, including tuition awards for outstanding applicants who are not residents of California. In many cases, fellowship stipends may be supplemented by partial assistantship appointments.

Entering or continuing graduate students may be awarded research or teaching assistantships for all or part of the academic year. The types of assistantships, number available, and required duties vary according to the activities of the academic unit. A graduate assistant who is not a California resident also may receive a tuition fellowship.

Through the Graduate and Profession Opportunity Program (GPOP), a number of diversity fellowships and assistantships are awarded to entering and continuing graduate students from groups who traditionally have been underserved in higher education in the United States. Departments nominate candidates on the basis of their merit and contribution to the diversity of the department or discipline. Individuals from diverse cultural, linguistic, geographic, and socioeconomic backgrounds are especially encouraged to apply to UCI's graduate programs. In accordance with State law, applicants may not be given preferential treatment on the basis of race, ethnicity, gender, religion, or national origin.

SCHOOL OF THE ARTS

Jill Beck, **Dean**

Arts Student Affairs
101 Mesa Arts Building; (949) 824-6646
World Wide Web: <http://www.arts.uci.edu/>

The School of the Arts is dedicated to the study, creation, and performance of the arts within the context of their history and theory. The School consists of the Departments of Dance, Drama, Music, and Studio Art, and the program in Arts Interdisciplinary, which includes a minor in Digital Arts. Both undergraduate and graduate degree programs are offered and include extensive studio, workshop, and performing experiences; theoretical and historical studies; and work in arts and technology and criticism.

The School's departments are located near each other, facilitating daily interaction among student and faculty in all Arts disciplines. Facilities include studios and classrooms, four theatres, a concert hall, the University Art Gallery, the Visual Resources Collection, the Gassmann Electronic Studio, the Music Media Center, the Arts Computing Laboratory, the Digital Arts Teaching and Research Laboratories, a television studio, and professionally managed and staffed theatrical production shops and publicity and box offices supporting the School's extensive production and performance schedule.

Arts students regularly participate in choirs, instrumental ensembles, drama and dance productions, and art exhibitions. Qualified students from other academic areas also are eligible to participate in many of these activities and are encouraged to do so. Many of the School's productions take place in the Irvine Barclay Theatre, a fully equipped, 750-seat performing facility.

In addition to the artists, scholars, and performers who are members of the Arts faculty, visits by distinguished guest artists/teachers are a feature of the School's activities.

Students receive assistance with program planning and a variety of other support services from the professional staff in the Office of the Arts Student Affairs. The staff also assists the faculty in providing academic counseling to Arts students.

DEGREES

Arts Interdisciplinary	B.A.
Dance	B.A., B.F.A., M.F.A.
Drama	B.A., M.F.A.
Fine Arts	M.F.A.†
Music	B.A., B.Mus., M.F.A.
Studio Art	B.A., M.F.A.

†Admission unavailable until further notice.

Special Programs of Study

CONCENTRATION IN MEDIEVAL STUDIES

The concentration in Medieval Studies allows undergraduate students in the Schools of the Arts and Humanities to augment their major by completing a coherent program of courses in the area of medieval studies. See the School of Humanities section for additional information.

MINOR IN DIGITAL ARTS

The Minor in Digital Arts is geared toward students with computer skills who want a grounding in the arts. This program allows students to acquire a working knowledge of digital imaging and related technological skills within an arts context. See page 92 for additional information.

MINOR IN RELIGIOUS STUDIES

The interdisciplinary minor in Religious Studies focuses on the comparative study of religions in various cultural settings around the world. The curriculum seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society through study in the Schools of Humanities, Social Science, Social Ecology, and the Arts. See the Interdisciplinary Studies section for additional information.

EDUCATION ABROAD PROGRAM

Upper-division, and in some cases graduate, students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Education Abroad Program section for additional information.

3-2 PROGRAM WITH THE GRADUATE SCHOOL OF MANAGEMENT

Outstanding Arts majors who are interested in a career in arts management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for further information.

Honors

Students who have distinguished themselves academically will be considered for honors at graduation. General criteria are that students must have completed at least 72 units in residence at a University of California campus and must have a grade point average of 3.0 or better. More specific criteria include, but are not limited to, cumulative grade point average in the major, curriculum breadth, and extracurricular efforts such as service to the major or the School, and creative/artistic activities; additional information is available from the individual departments. In keeping with the Academic Senate Resolution no more than 12 percent of the graduating seniors may receive honors. Other important factors are considered (see page 51).

The School of the Arts has some scholarship monies available to incoming and to continuing students on both the undergraduate and graduate levels. For complete information, please contact the Arts Student Affairs Office.

Scholarships

ArtsBridge. \$500–\$3,000 awarded quarterly to students who provide arts education and enrichment in schools, libraries, and community centers throughout Orange County. Application and/or audition required.

Edna Helen Beach Scholarship. Provides \$1,000 per year for two years for an incoming freshman student, and \$1,000 for one year for an incoming transfer student. Recipient must be gifted and talented, and will be selected from eligible students with special emphasis on those from underprivileged backgrounds who would not otherwise be able to attend a major research institution.

Bret Beilin Memorial Scholarship. Various \$1,000 awards for Music majors in any instrument or voice.

California China Painters Art Association Scholarship. \$1,000 awarded to an outstanding artist annually.

Dunnicliffe Scholarship. \$500 awarded to a Drama major based on excellence and financial need.

Leo Freedman Graduate Fellowship. For outstanding applicants from Orange County, California, preferably from Anaheim; \$7,500 covers tuition and fees and includes a small stipend.

Ann and Gordon Getty Foundation Scholarship. \$500–\$1,250 awarded to a Music major in any instrument or voice.

Lucille Kuehn Scholarship. Up to \$1,000 awarded to a Drama major based on excellence and financial need.

Laguna Beach Festival of the Arts Foundation Scholarship. Amount varies annually; approximately \$2,000 in recent years. Awarded at the discretion of the Dean of the School of the Arts to students with extraordinary research or study opportunities.

Alice Lowell Memorial Scholarship. Up to \$5,000 awarded to a Music major in any instrument or voice.

Steve Lyle Memorial Scholarship. Awarded to continuing students in Drama; selected by application and recommendation.

Molly Lynch Scholarship. \$5,000 awarded to an outstanding undergraduate Dance major.

Mary and Phillip Lyons Scholarship. Up to \$5,000 awarded to a Music major in any instrument or voice.

Carol McGahan Memorial Scholarship. For continuing Dance majors selected by the Dance faculty scholarship committee.

Philharmonic Society of Orange County Scholarship Program. All recipients are selected by the UCI Music faculty scholarship committee through an audition process.

Ladislav Reday Memorial Scholarship. Up to \$1,250 awarded to a Music major in any instrument or voice.

David Lee Shanbrom Memorial Music Scholarship. Up to \$5,000 awarded to an outstanding Music student in any instrument or voice.

Winifred W. Smith Music Scholarship. \$2,500 awarded to a student with stringed instrument specialization.

Marcella Louise and Leonard Seiber Jones Music Scholarship. \$1,250 awarded to an incoming Music student in any instrument or voice.

Timothy Phillips Memorial Scholarship. Provides \$2,000 annually to a Music major.

Frank and Nancy Posch Scholarship. \$1,000 awarded to an outstanding Dance student.

Marjorie and Robert Rawlins Scholarship. Provides several \$5,000 scholarships, renewable for four years of undergraduate study, to be awarded to students majoring in piano, violin, viola, or cello. Recipients must be full-time Music majors and must maintain a 3.2 GPA. By audition with the Music faculty scholarship committee.

Harry and Majorie Slim Memorial Scholarship. Provides up to \$1,500 annually to a Music student.

Winifred W. Smith Scholarship. \$5,000 awarded to a student studying cello, violin, or piano (preferably cello). Renewable if student meets scholarship criteria.

Gregory Donnell Smithe Memorial Scholarship. Up to \$1,000 awarded to a violoncello or string student.

Elizabeth D. Stahr Dance Scholarship. Up to \$5,000 awarded to an outstanding Dance student.

Elizabeth and Thomas Tierney Scholarship. Provides five \$1,500 awards annually. Students nominated by the faculty; final selection made by individual department and the Dean.

UCI Town and Gown Music Scholarships. Up to \$1,000 annually; awarded to Music students in any instrument or voice.

Undergraduate Program

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements: Refer to individual departments.

Graduate Program

The primary endeavor of the School of the Arts is the creative act. Research activities are pursued both as an end in themselves and as a source that can inform both performance and the studio experience. The intellectual activity of theoretical, literary, and historical courses complements the practical work in studio workshops and performance. The aim of the M.F.A. programs in Dance, Drama, Music, and Studio Art is, thus, to produce artists literate in both traditional and digital media who are responsive to intellectual stimuli, disciplined, and capable of integrating existing knowledge into creative projects. It is the strong belief of the School that intellectual integrity and creative excellence cannot exist without each other.

ADMISSION TO THE PROGRAM

Applications are accepted for fall quarter admission only, and ordinarily must be completed by March 1 for all the Master of Fine Arts degrees, as the number of graduate students that can be admitted to the School of the Arts is limited. Applicants are advised to arrange for auditions, interviews, and the submission of portfolios, compositions, and dossiers, as appropriate, by March 1. Students applying for scholarships and fellowships should do so by January 15, and are also encouraged to apply for financial assistance through the Financial Aid Office. The School of the Arts has a modest number of teaching assistantships available in all areas, and all candidates are automatically reviewed for teaching assistantship positions; the School informs successful candidates by June 1 for the following academic year.

Upon admission to the program the student is assigned an advisor. The student should discuss with this advisor the scope of undergraduate preparation to determine any areas which may need strengthening if full benefit from graduate study is to be derived.

Arts Interdisciplinary

101 Mesa Arts Building; (949) 824-6646
Stephen Barker, **Director**

Faculty

Stephen Barker, Ph.D. University of Arizona, *Director of Arts Interdisciplinary and Professor of Drama*

The program in Arts Interdisciplinary is designed for undergraduate students who wish to investigate particular issues in specific disciplines in and beyond the arts. Although participation in studio classes is required, the program emphasizes the study of the history, theory, and criticism of the arts in the School's various departments and their relations to other disciplines. The nature of the program provides each student the opportunity to plan a uniquely individual course of study with the approval of the Director or an appropriate advisor. Because the program is designed for students with a strong sense of personal direction and a desire for an academic appreciation of the arts, students wishing to enter the program must submit a statement of purpose to the Director prior to the quarter in which they intend to declare their major. Admission to the program is based upon the statement of purpose and upon the student's prior record of high academic performance. The program leads to a B.A. degree in Arts Interdisciplinary.

The University's Education Abroad Program may be of particular interest to the Arts Interdisciplinary major. Centers emphasizing study in the history, theory, and criticism of the arts are located in Vienna, Austria (music, art), Copenhagen, Denmark (medieval studies), Paris, France (French critical thought and film criticism), Göttingen, Germany (music, archaeology), and Bologna, Italy (music, art, drama). Arts courses also are part of the general curriculum in other study centers in France, Hungary, Spain, Israel, and Sweden, in addition to arts courses in English-language study centers in the United Kingdom, Ireland, Australia, New Zealand, Ghana, Egypt, and India.

MINOR IN DIGITAL ARTS

The minor in Digital Arts is geared toward students with computer skills who want a grounding in the arts. This program allows students to acquire a working knowledge of digital imaging and related technological skills within an arts context. It provides the tools necessary to understand the basic aesthetic components of the new digital media, relating digital arts to traditional art forms. These tools range from a basic understanding of "art" to sophisticated applications of state-of-the-art computer software, in various forms of art production including CD-ROM, digital video and photography, website and other network applications, installations, and others.

For entry into the minor, students must show ability to use e-mail, surf the net, and use productivity tools such as word processing or spreadsheets. Students should see <http://www.arts.uci.edu/saffairs> on the World Wide Web, then come to the School of the Arts Student Affairs Office to complete forms required for entry into the minor. It is highly recommended that students in the minor have their own computer.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: None.

Program Requirements

Three one-year surveys in three different areas of the arts selected from Art History 40A, 40B, 40C, Dance 90A-B-C, Drama 40A-B-C, or Music 40B-C-D; nine performance/studio courses (e.g., acting, ballet, drawing, chorus, orchestra); six upper-division courses in the history, theory, and criticism of the arts in at least two areas of the arts, including Arts 130; a senior thesis; two years in a language other than English at University level or equivalent competence; related courses in disciplines other than the arts are encouraged.

Sample Program for Freshmen

Fall	Winter	Spring
Survey Course	Survey Course	Survey Course
Foreign Language	Studio Course	Studio Course
English and Comp	Foreign Language	Foreign Language
Lit. WR39A	English and Comp.	English and Comp.
	Lit. WR39B	Lit. WR39C

With the exception of the courses listed here, Arts Interdisciplinary majors choose courses, in accordance with the program requirements, from those listed under Dance, Drama, Music, and Studio Art.

REQUIREMENTS FOR THE MINOR IN DIGITAL ARTS

The Minor in Digital Arts consists of a minimum of eight courses which fall into three categories: I. Required, II. Elective (background), and III. Elective (applied).

I. Required: Arts 1A, 1B, 1C

II. Elective (background). At least two of the following: Dance 21A (Music for Dancers); Dance 30A (Ballet I), Dance 40A (Modern Dance I), or Dance 50A (Jazz I); Dance 110 (Ethnic Dance); Studio Art 20 (Basic Drawing); Studio Art 30 (Basic Painting); Studio Art 71 (Basic Photography); Studio Art 81 (Basic Video); Drama 30A (Acting); Drama 50A (Introduction to Costume Design), Drama 50B (Introduction to Scenic Design), or Drama 50C (Introduction to Lighting Design); Music 25 (Fundamentals of Music); two quarters (4 units) of any of the music performance ensembles (Music 7, 160, 161, 162, 171, 173, 174, 175, 176, 178).

III. Elective (applied). At least three of the following, *one of which must be from the Digital Imaging group*: Studio Art 65 (Basic Digital Imaging: Photography), Studio Art 106 (Interactive Digital Media: Sound and Video), Studio Art 110 (Interdisciplinary Digital Arts), Studio Art 166 (Advanced Collaborative Project), Music 51 (Music Technology and Computers), Music 151 (Computer Music Composition), Arts 50 (Multimedia Arts), Drama 158 (Studio in Theatre Design), Dance 180A (Laban Studies).

Each of these courses may be taken one time only for credit toward the minor. No course in the Elective (applied) requirements may be taken Pass/Not Pass.

Courses in Arts Interdisciplinary

LOWER-DIVISION

1A, B, C Arts Core (4, 4, 4) F, W, S. Introduction to the central themes, issues, and practice of the arts. **A:** General overview. **B, C:** Explores the nature of the disciplinary areas in the UCI School of the Arts (dance, drama, music, studio art). Prerequisite to 1B and 1C: 1A. (IV)

H1A, H1B, H1C Honors Arts Core (4, 4, 4) F, W, S. Same description as above, but open to Campuswide Honors Program Students only. (IV)

40A-B-C Selected Interdisciplinary Topics (4-4-4) F, W, S. Studies in the historic and theoretical interrelationships of artistic disciplines, including such fields as dance, music, art, and/or drama; and investigation of their underlying social and aesthetic bases and the influence of one art upon another. Topics vary.

50 Multimedia Arts: History, Criticism, and Technology (4) F, W, S. Introduction to the history, criticism, and practices of multimedia technology. Students learn through hands-on experience, work in multimedia, in its various forms. Prerequisite: prior computer experience with Macintosh or Windows.

UPPER-DIVISION

100A-B-C The Senior Thesis (4-4-4) F, W, S. Planning, drafting, writing, and presentation of an academic thesis. Open to Arts Interdisciplinary majors, who will interrelate two or more artistic disciplines, and to Campuswide Honors Program students, who will focus their thesis on one or more major areas in the Arts. Prerequisite for 100B: 100A. Prerequisites for 100C: 100B and satisfactory completion of the lower-division writing requirement.

130 Crossing Boundaries: An Introduction to Interdisciplinary Study (4) F, W, S. Investigation of interdisciplinary thought and action beginning with the nature of discipline and extending to the relationship between science and art, politics/society and art, and struggles within the arts between theory and practice and across apparently segregating boundaries. Prerequisite: upper-division standing. May be taken for credit three times as topics vary.

150 Introduction to the Alexander Technique (2) F, W, S. Group lessons. Applying the principles of the Alexander Technique to all movement, including professional activities. Expanding awareness through development of the kinesthetic sense; exploring choices in movement through recognition of habit patterns. Increased ease of movement, enhanced coordination, stress reduction, poise.

DEPARTMENT OF DANCE

301 Mesa Arts Building; (949) 824-7283

Mary Corey, **Department Chair**

Faculty

- David Allan, Choreographer/Former Soloist, National Ballet of Canada; Choreographer, ballet companies, operas, film, and television, *Assistant Professor of Dance* (ballet, pas de deux, choreography)
- Jill Beck, Ph.D. City University of New York, *Dean of the School of the Arts and Professor of Dance* (dance notation and reconstruction)
- Don Bradburn, Former Dancer/Choreographer, Columbia Broadcasting System (CBS-TV), *Lecturer in Dance* (ballet, choreography, video choreography, dance photography)
- Mary Corey, M.A. University of California, Riverside, Certified Professional Labanotator, *Associate Dean of the School of the Arts and Department Chair and Associate Professor of Dance* (dance history, modern dance, notation and reconstruction, dance and digital technology)
- Diane Diefenderfer, Former Soloist, Los Angeles Ballet, Eglevsky Ballet Company, Frankfurt Ballet Company, Technique, *Lecturer in Dance* (ballet, pointe)
- Israel "El" Gabriel, Former Assistant Artistic Director, Bat Dor Dance Company of Israel, *Lecturer in Dance* (ballet, modern, pas de deux, repertory)
- Donald McKayle, Choreographer/Director, concert, theatre, film, television, *Graduate Choreography Advisor, Artistic Director of UCI Dance, and Professor of Dance* (choreography, modern dance)
- James Penrod, M.F.A. University of California, Irvine; C.M.A. Laban Institute of Movement Studies, *Professor Emeritus of Dance* (ballet, modern, dance notation, choreography, movement analysis)
- Janice Gudde Plastino, Ph.D. University of Southern California, *Professor of Dance* (modern, kinesiology/anatomy, research methods, choreography, dance science/medicine)
- Barbara Bailey Plunk, Former Dancer/Choreographer, M.G.M., NBC-TV, Board of Directors American School of Dance, *Lecturer in Dance* (ballet, pointe, teaching of dance, administration)
- Larry Rosenberg, B.A. University of California, Los Angeles; Former Dancer, Eliot Feld Ballet, *Lecturer in Dance* (ballet, repertory, pas de deux)
- Nancy Lee Ruyter, Ph.D. Claremont Graduate School, *Associate Professor of Dance* (dance history, Spanish dance, choreography, and research methods)
- Deidre Sklar, Ph.D. New York University, *Assistant Professor of Dance* (philosophy/aesthetics/criticism, dance ethnology, research methods, dance history)
- Alan Terricciano, M.A. Eastman School of Music, *Assistant Professor of Dance* (musical resources, music for dancers, dance accompaniment, composition, multimedia arts)

The Department of Dance fosters an educational environment in which performance opportunities, creative projects, and theoretical studies complement and reinforce each other and provide a foundation for careers in dance. The program focuses on studio experience in the techniques of classical ballet, modern dance, jazz, tap, and selected ethnic dance forms. Theoretical studies include history; philosophy, aesthetics, and criticism; Laban studies; dance training methods; and dance science.

The objective of studio work is to develop kinesthetic resources, precision, flexibility, creativity, and freedom in a coordinated and intelligently responsive dancer. The techniques of classical ballet, modern dance, and jazz constitute crafts and styles for the dancer that serve not only as a basis for the training of the body, but also as a basic language of movement for the choreographer.

The theoretical, historical, and scientific courses are designed both to broaden the perspective of those students whose first interest is performance or choreography, and to provide a foundation for those students who plan to pursue careers in the academic, scientific, or administrative fields of dance.

The dance archives in the UCI Library Special Collections offer a rich source of research materials which enhance the Dance program. Among other special holdings, the archives include the extensive Ruth Clark Lert collection of dance books, journals, photographs, original costume sketches, and memorabilia of dance in Europe and the United States from pre-World War I to the present.

CAREERS FOR THE DANCE MAJOR

Careers in dance require excellent training and extraordinary discipline, tenacity, and dedication. Graduates of the Department have an excellent record of placement in the many fields of dance. Some have become professional dancers in ballet companies (including the San Francisco, Frankfurt, and Tanz-Forum companies); in modern dance companies (including the Limón West Dance Project, MOMIX, and Martha Graham Dance Ensemble); in musicals (including touring companies of *Phantom of the Opera*, *Carousel*, and off-Broadway, *Anything Goes*); and in films, television, and theatre.

In addition to training for professional dance performance and choreography, the major in dance serves as a basis for graduate study or job opportunities in fields such as dance history, dance science, dance pedagogy, dance reconstruction, dance criticism, and dance video. Related fields, such as arts administration, law in relation to the arts, arts therapies, design and production, and music also offer positions for graduates. Students who are interested in a career in physical therapy or dance science will find a major in Dance, with related course work in chemistry, physics, biology, and mathematics, to be excellent preparation for further study.

THE UNDERGRADUATE PROGRAM

The Bachelor of Arts (B.A.) is designed for those who wish to obtain a broad undergraduate background as preparation for careers or graduate work and related fields. It offers students a dance education that stresses performance and choreography, and, at the same time, intellectual depth and scope. In addition to the core, 12 units of elective Dance courses are required. The remaining elective units required for graduation may be chosen from Dance or other disciplines in relation to a student's individual interest. While the program of study in Dance stresses technical proficiency and academic understanding in dance, the B.A. degree program also enables students to pursue elective subjects in their special areas of interest in other academic disciplines.

The Bachelor of Fine Arts (B.F.A.) degree program with specializations in Performance and Choreography, is designed for students who wish to prepare intensively for careers in those areas. The courses required in addition to the core are primarily in Dance. The B.F.A. program allows for a few free electives in other areas. Admission to the B.F.A. program with a specialization in Choreography is by faculty approval only.

The B.F.A. program with a specialization in Performance does not require additional faculty approval beyond the required audition for admission to the Dance major; students should declare their intention to pursue this specialization during spring quarter of their sophomore year.

Proficiency Levels

In addition to meeting the general requirements for admission to UCI, applicants must demonstrate technical/creative promise. The Department holds annual entrance auditions for potential freshmen and transfer students during winter quarter prior to the fall quarter when entrance is anticipated. First-year students wishing to major in Dance must be at technique level II in at least one of the three major genres (ballet, modern, jazz).

Placement auditions for admitted students are held during Welcome Week to determine levels of technical ability for placement in courses. It is suggested that transfer students wishing to pursue a B.A. degree in Dance complete, in addition to their breadth requirements, one course in choreography, two courses in dance technique, and one course in music for dancers prior to transfer to UCI.

Previously admitted majors who wish to obtain a B.F.A. degree must notify the School of the Arts Student Affairs Office during the spring quarter of their sophomore year. Admission to the B.F.A. Choreography specialization requires the submission of an application which

may be obtained from the undergraduate advisor in Dance. Students applying for this specialization must have completed or be in the process of completing Dance 60A-B-C.

Transfer students wishing to pursue the B.F.A. degree must declare their intention in writing at the time of their entrance audition and demonstrate technique and/or choreography levels appropriate to their year. It is suggested that transfer students complete, in addition to their breadth requirements, one course in choreography, two courses in dance technique, one course in music for dancers, and one course in dance performance prior to transfer to UCI.

Students deficient in level of performance or academic preparation should be prepared to extend their studies beyond the normal four-year program in order to meet the requirements for graduation.

REQUIREMENTS FOR THE B.A. DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements for the Major

Dance 2 (Injury Prevention/Technique Analysis); Dance 21A (Music for Dancers); Dance 60A (Choreography); Dance 90A-B-C (Dance History); Dance 100 (Kinesiology); Dance 180A, B or A, C (Laban Studies); Dance 185 (Philosophy, Aesthetics, and Criticism).

Technique: Students must complete at least one Dance technique course each quarter in residence. At a minimum, students must complete level II in Ballet, Modern, and Jazz (Dance 132A-B-C, Dance 142A-B-C, and Dance 152A-B-C) and level III in either Ballet or Modern (Dance 133A-B-C or Dance 143A-B-C). Students who place above level II in any technique must take a year of that technique at the next higher level. All students must also complete one course chosen from Dance 11A, 11B, 11C (Mexican Dance), 12A, 12B, 12C (Spanish Dance), 14 (Social Dance), 52A, 52B, 52C (Tap I), 110 (Ethnic Dance), 138 (Character Dance), or 150A, 150B, 150C (Tap II). NOTE: Units earned in ballet, jazz, and modern technique courses beyond the required amount do not count toward departmental elective requirements but may count toward University requirements.

Performance: Two performances from any of the Dance 170 series; four units of Drama 101 (Theater Production), taken during the first year in residence.

Electives: 12 units of electives must be completed within the major.

REQUIREMENTS FOR THE B.F.A. DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements for the Major

Students must complete the departmental requirements as listed for the B.A. degree in Dance. In addition, B.F.A. students must complete the requirements for either the specialization in Choreography or Performance.

Choreography Specialization: Dance 60B-C (Choreography I); Dance 127A (Costume Design for Dance); Drama 30A (Acting); Drama 50C (Lighting Design); any three quarters of courses chosen from Dance 162A-B-C (Choreography II) and Dance 164A-B-C (Video Choreography); two courses in Dance 165 (Choreographic Projects—one original choreographic work, approved by the faculty, must be presented in both the junior and senior years); four units (one or two courses) in Art History, Music, Studio Art, or Drama (in addition to Drama 30A, Drama 50C, and Drama 101 requirements).

Performance Specialization: Technique: Dance 134A-B-C (Ballet IV) or Dance 135A-B-C (Ballet V) or Dance 144A-B-C (Modern IV); Dance 153A-B-C (Jazz III); Dance 139 (Partnering).

Performance: Dance 137 (Repertory) or Dance 179 (Etude Ensemble); Dance 170 series: must be in three additional performances beyond the B.A. requirements, and must perform at least once in Dance 170, 171, 172, and 174; Drama 30A (Acting) or a fourth additional performance in the Dance 170 series. Dance 171 and 172 may be repeated for credit. Students must demonstrate proficiency in at least two dance genres in these performances.

Sample Program for Freshmen (B.A. and B.F.A. Programs)

Fall	Winter	Spring
English and Comp. Lit. WR39A	English and Comp. Lit. WR39B	English and Comp. Lit. WR39C
Dance 21A	Breadth	Breadth
Technique	Breadth	Dance 2
Technique	Technique	Technique
	Technique	Technique
	Drama 101 (2 units)	Drama 101 (2 units)

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Dance.

General Information

The M.F.A. program is an intensive program requiring a core of courses in studio and academic areas. The student's individual area of interest is explored through the thesis project in the second year. Projects or written theses may be pursued in choreography, video choreography, dance training, dance history, dance science, dance reconstruction, and dance and digital technology.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A. or B.F.A. in Dance or the equivalent. Candidates must meet the minimum requirements for the B.A. degree in Dance at UCI. A paper of 500 words or more on a dance subject and proposals for three choreographic works that could be completed in the graduate program must be submitted. An audition in ballet and modern technique is required for admission and is held in winter quarter. At this audition, applicants must also present a prepared five-minute choreographed piece, which can be a solo performed by the applicant, and/or a videotape of the applicant's choreography. Interviews with faculty are conducted following the audition, and applicants are given a short writing exercise.

Teaching Assistantships

Graduate students are encouraged to apply for teaching assistantships in areas such as notation, dance science, history, music for dancers, choreography, ethnic, dance video, philosophy, and all technique classes. Students with expertise in any of these areas are given special consideration.

General Degree Requirements

Normally two years of residence are required. Each candidate must enroll for three courses each quarter for six quarters, exclusive of summer sessions.

In the second year, satisfactory attainment must be demonstrated by a major thesis: in choreography this consists of the composition and production of a choreographic work; in other areas, such as dance history, dance training, or dance science, this consists of a written thesis or a comprehensive project in a chosen area of study. All theses must be defended in a one-hour oral examination which may also test the candidate's general knowledge in the area.

The degree must be completed within three years of entering the program. Students who do not complete the degree within that time will be dropped from the program.

Specific Degree Requirements

Seventy-two quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. Not more than 20 units in upper-division courses may count toward the degree. Fulfillment of the technique course requirements must be approved by the faculty advisor. All graduate students in Dance are required to take one production-running crew assignment the first year they are in residence.

Required Courses

Six courses chosen from any graduate or upper-division dance technique course; Kinesiology for Dance (Dance 201); Musical Resources (Dance 222); Teaching of Dance Techniques (Dance 225); Costume Design (Dance 227); two courses in Graduate Choreography (Dance 261); Movement Analysis (Dance 282); Philosophy, Aesthetics, and Criticism (Dance 283); Bibliography and Research (Dance 284); Thesis (Dance 286); Proseminar in Dance History (Dance 296).

By the end of their first year, students will choose their area of study for their thesis. Students who wish to produce a choreographic thesis must apply to the graduate choreography advisor during winter of their first year. The faculty will review the applications and will consider the quality of the student's work in Dance 261, as well as the choreographic proposal, in making their selection.

Courses in Dance

LOWER-DIVISION

NOTE: Some courses are not offered every year. Please check with the department advisor.

2 Injury Prevention/Technique Analysis (2). The analysis, management, and prevention of dance injuries. Analysis of body types and technical ability and the means by which to improve dance ability. Formerly Dance 25.

11A-B-C Studio Workshop in Mexican Dance I (2-2-2) F, W, S. Principles of Mexican folk dance including basic movement techniques, rhythms, regional dance forms and styles, and cultural context. May be taken for credit three times. Formerly Dance 55A-B-C.

12A-B-C Studio Workshop in Spanish Dance I (2-2-2) F, W, S. Principles of Spanish dance with focus on basic movement techniques, castanet work, and introduction to the genres of flamenco, folk, classical, and neoclassical dance forms. May be taken for credit three times. Formerly Dance 54A-B-C.

14 Social Dance Forms (2). Contemporary and historical forms. Current ballroom, disco, and Western square dance forms; Latin ballroom dances; Dances from the 20s, 30s, and 40s. Pass/Not Pass only.

21A-B Music for Dancers (4-4). Emphasis on the development of musical skills most pertinent to the dancer: vocabulary, notational literacy, rhythmic and melodic acuity, score reading, and fundamental analysis; working with live accompaniment.

30A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (30) Summer. Fundamentals of ballet technique: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Pass/Not Pass only. May be taken for credit twice.

34 Men's Studio Workshop in Ballet (2) F, W, S. Emphasis on men's traditional ballet, techniques, and movements. Prerequisites: Dance 30A-B-C. May be repeated for credit.

40A-B-C Studio Workshop in Modern I (2-2-2) F, W, S, (40) Summer. Fundamentals of modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman. Pass/Not Pass only. May be taken for credit twice.

44 Weight Training for Dancers (.7). Principles and theories of weight training specifically designed for the dancer. Special programs are devised to strengthen problem areas in the dancer's body.

50A-B-C Studio Workshop in Jazz I (2-2-2) F, W, S, (50) Summer. Fundamentals of jazz: principles of jazz dance and contemporary forms incorporating the personal point of view of the instructor. Pass/Not Pass only. May be taken for credit twice.

52A-B-C Workshop in Tap I (2-2-2) F, W, S. Beginning tap: principles of rhythm and basic tap steps. Course sequence may be taken for credit twice.

60A-B-C Choreography I (4-4-4) F, W, S. Beginning-to-intermediate study of principles of dance composition. May include composition assignments for stage and video. By audition, works may be shown quarterly in public studio performances.

80 Introduction to Dance (4) F, W, S. Survey of nineteenth- and twentieth-century ballet, modern dance, and theatre dance. For non-majors only. Dance 80 and Dance 90A-B-C may not both be taken for credit. (VII-B)

90A-B-C Dance History A, B, C (4-4-4) F, W, S. **90A:** Introduction to non-western dance. Dance in the western tradition from prehistory through the Middle Ages. **90B:** The history of dance in the western tradition from the Renaissance through the nineteenth century. **90C:** The history of dance in the western tradition: the twentieth century. Dance 90A-B-C and Dance 80 may not both be taken for credit. (IV, VII-B)

91A-B-C Dance in the Hispanic World (4-4-4) F, W, S. History and current state of Hispanic dance with particular attention to Spain and Mexico. **91A:** Dance traditions in Spain and her colonies to 1898. **91B:** Ritual, folk and social dance genres: twentieth-century survivals and developments. **91C:** Theatrical genres: adapted folk and social dance; ballet; modern. (IV, VII-B)

UPPER-DIVISION

100 Kinesiology for Dance (4). The study of the production of dance movement or lack of dance movement by the muscles of the body. Anatomical and dynamic analysis of dance movement.

102 Screening of the Dancer (4) F, W, S, Summer. Methods and analyses of the preparticipation physical screening of the dancer to improve performance and identify possible injury and physical problems before extensive dance performance. Prerequisite: Dance 100.

103 Body Conditioning and Alignment (2) F, W, S. Basics of technique emphasizing alignment, breath control, correction of muscular imbalances. Use of the Universal Reformer. Prerequisites: Dance 133A-B-C, 143A-B-C.

110 Ethnic Dance (2). Studio workshop of dances and movement sources of specified countries or areas. May be taken for credit six times as topic varies.

111A-B-C Studio Workshop in Mexican Dance II (2-2-2) F, W, S. Intermediate Mexican folk dance including movement techniques, rhythms, regional dance forms and styles, and cultural context. May be taken for credit twice.

112A-B-C Studio Workshop in Spanish Dance II (2-2-2) F, W, S. Intermediate Spanish dance including movement, techniques, castanet work, rhythms, and continued development of flamenco, folk, classical, and neoclassical styles and forms. May be taken for credit twice.

123 Dance Accompaniment (4). Examination of technique and etiquette of instrumental accompaniment for dance in lecture and studio environments. Keyboards, percussion, and other instruments are demonstrated. Prerequisites: Dance 21A-B.

125A-B Teaching of Dance (4-4) W, S. **125A:** Pedagogy. The methods and theory of teaching dance forms. **125B:** Practicum. The application of theory in the studio. Prerequisites: Dance 133A-B-C and 143A-B-C; upper-division standing. Formerly Dance 111A-B.

127A-B-C Costume Design for Dance (4-4-4). Costume design and construction specific to the body in motion. Theoretical study and practical execution.

130A-B-C Pointe Class (2-2-2) F, W, S. Beginning and intermediate pointe work; principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Emphasis on basic pointe techniques and performance styles. Prerequisites: Dance 132A-B-C. May be taken for credit three times.

132A-B-C Studio Workshop in Ballet II (2-2-2) F, W, S, (132) Summer. Intermediate ballet: principles of Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 30A-B-C or audition. May be taken for credit twice.

133A-B-C Advanced Studio Workshop in Ballet III (2-2-2) F, W, S, (133) Summer. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 132A-B-C or audition. May be taken for credit twice.

134A-B-C Advanced Studio Workshop in Ballet IV (2-2-2) F, W, S, (134) Summer. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 133A-B-C or audition. May be repeated for credit.

135A-B-C Advanced Studio Workshop in Ballet V (2-2-2) F, W, S. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. Prerequisites: Dance 134A-B-C or audition. May be taken for credit three times.

137 Repertory (2) F, W, S. Rehearsal and performance of repertoire from established ballet or modern dance choreographers. Prerequisites: Dance 133A-B-C or 143A-B-C or consent of instructor. May be taken for credit twice.

138 Character Dance (1). A dance style mainly based upon the national traditions of the Polish, Russian, and Hungarian dance techniques as used in classical ballet repertoire. Character or jazz shoes required. Prerequisites: Dance 30A-B-C. May be repeated for credit.

139 Partnering (2). Principles of partnering techniques in various dance performance styles. Prerequisites: Dance 133A-B-C, Dance 143A-B-C, or by audition. May be taken for credit four times.

142A-B-C Studio Workshop in Modern II (2-2-2) F, W, S, (142) Summer. Intermediate modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal point of view of the instructor. Prerequisites: Dance 40A-B-C or audition. May be taken for credit twice.

143A-B-C Advanced Studio Workshop in Modern III (2-2-2) F, W, S, (143) Summer. Advanced modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal view of the instructor. Prerequisites: Dance 142A-B-C. May be taken for credit twice.

144A-B-C Advanced Studio Workshop in Modern IV (2-2-2) F, W, S. Advanced modern dance. In-depth study of styles, performance elements and principles of modern dance developed from Graham, Horton, Humphrey, Wigman, and current influences incorporating the personal view of the instructor. Prerequisite: Dance 143A-B-C or consent of instructor. May be taken for credit three times.

150A-B-C Studio Workshop in Tap II (2-2-2). Intermediate tap: principles of beginning tap continued and developed. Prerequisite: Dance 52A-B-C or consent of instructor. Formerly Dance 150.

151A-B-C Studio Workshop in Tap III (2-2-2). An overview of tap concentrating on the development of various technique forms using intermediate and advanced principles. Prerequisites: Dance 150 and consent of instructor. May be taken for credit twice.

152A-B-C Intermediate Studio Workshop in Jazz II (2-2-2) F, W, S. Intermediate jazz: principles of jazz dance and contemporary forms incorporating the personal views of the instructor. Prerequisites: Dance 50A-B-C. May be taken for credit twice.

153A-B-C Advanced Studio Workshop in Jazz III (2-2-2) F, W, S. Advanced jazz: principles of jazz dance and contemporary forms incorporating the personal views of the instructor. Prerequisites: Dance 152A-B-C. May be taken for credit twice.

154A-B-C Advanced Jazz: Performance Techniques IV (2-2-2) F, W, S. Advanced jazz emphasizing performance techniques. Prerequisites: Dance 153A-B-C. May be taken for credit twice.

160 Improvisation (2). Structured and experiential improvisation to heighten the personal intuitive processes, the kinesthetic sense, spatial and temporal awareness, and to encourage insights into the potential movement resources of the individual for performance and choreography. Course encourages freedom of exploration. May be taken for credit two times. Formerly Dance 148.

162A-B-C Choreography II (4-4-4) F, W, S. Directed choreographic projects for stage or video integrating the elements of stagecraft. In process or completed works may be shown quarterly in public studio or stage performances. By audition only. Prerequisites: Dance 60A-B-C.

163A-B-C Choreography III (4-4-4) F, W, S. Directed choreographic projects. May include choreography for groups. Projects may be presented in public concert. Prerequisites: Dance 162A-B-C.

164A-B-C Video Choreography (4-4-4) F, W, S. Introduction and overview of video dance, choreography for the camera, and documentation of existing stage choreography. History and aesthetics of dance on video and basics of technical equipment, video techniques, and editing. A major final project is required.

165 Choreographic Projects (1 to 4) F, W, S. Supervised choreographic projects for workshop productions. By audition and approval of faculty. May be taken for credit twice.

170 Dance Performance (1 to 4). Rehearsal and performance in a faculty-choreographed production. By audition only. May be taken for credit twice.

171 Dance Workshop (1 to 4) F, W, S. Rehearsal and performance in a student-choreographed production. By audition only. May be taken for credit three times.

172 Master of Fine Arts Concert (1 to 4). Rehearsal and performance in a graduate student-choreographed production. By audition only. May be taken for credit three times.

173 Composer-Choreographer Workshop (2). Choreographers and composers collaborate under the supervision of dance and music faculty to produce a work for the Dance Workshop Concert. Prerequisite: consent of instructor. May be taken for credit twice.

174 UCI Dance Ensemble Performance (1 to 4). Performance with the UCI Dance Ensemble. Prerequisite: consent of instructor. May be taken for credit twice.

175 Dance Touring Ensemble (1 to 4). Student performance group tours Northern and Southern California for 10 to 14 days. All forms of dance are utilized in a lecture/performance format. Faculty-directed, student/faculty choreographed. Prerequisite: audition, consent of instructor. May be taken for credit twice.

177 UCI Spanish Dance Ensemble (1 to 4) F, W, S. Rehearsal and performance with the UCI Spanish Dance Ensemble. Flamenco, regional, classical, and neoclassical Spanish dances are presented throughout the year for campus and off-campus events. Prerequisite: consent of instructor. May be taken for credit 12 times.

178 Performance Laboratory (2) F, W, S. Rehearsal and performance of student choreographed theatre and concert dance works. Prerequisite: consent of instructor. May be taken for credit six times.

179 UCI Etude Ensemble (2) F, W, S. Repertory and performances by undergraduate Dance majors. Concert presentations on and off campus. Faculty directed, student/faculty choreographed. By audition only. Pass/Not Pass only. May be taken for credit three times.

180A, B, C Laban Studies (4, 4, 4) F, W, S. **180A:** Elementary Labanotation and introduction to Laban Writer software. **180B:** Intermediate Labanotation and work with Laban Writer software. **180C:** Laban movement analysis and motif writing. Prerequisites: Dance 21A and 132A-B-C or consent of instructor; Dance 180A is required for 180B.

185 Philosophy, Aesthetics, and Criticism of Dance (4) S. Introduction to comparative aesthetic and philosophical theories of dance; application of philosophical and critical analysis to dance performances. Prerequisites: satisfaction of the lower-division writing requirement and Dance 90A-B-C.

191 History of World Dance (4) F, W, S. Specified areas from prehistoric to contemporary.

193 Selected Topics in Dance (1 to 4). Directed group studies of topics in dance. May be repeated for credit when topic changes.

197 Independent Study (1 to 4) F, W, S. Individual independent projects in experimental laboratory, library, field, performance, under instructor's direction. Students can receive conceptual, creative, and theoretical instruction in the successful completion of a written report or performance. Prerequisite: consent of instructor. May be repeated for credit.

199 Senior Thesis (4) F, W, S. Directed research or creative activity for senior Dance majors. Research consists of a substantial essay on dance history, research in dance science, or the creation of original or reconstructed choreography. Pass/Not Pass only. May be repeated for credit.

GRADUATE

NOTE: Some courses are not offered every year. Please check with the Department advisor.

201 Seminar in Kinesiology for Dance (4) F, W, S. Brief introduction to biomechanics, physiology of exercise and equipment, movement principles, and their application to dance techniques. Prerequisite: Dance 290.

210 Graduate Studio: Ethnic Dance (2) F, W, S. Principles, techniques, and styles of selected genres of ethnic dance such as those of Mexico, Spain, Japan, or other cultures. Prerequisite: consent of instructor. May be taken for credit six times.

221 Graduate Music for Dancers (4) W. Detailed analysis of the various relationships between music and dance; structural, harmonic, and orchestration analysis; developing kinesthetic rhythmic acuity; enriching musical communicative skills. Formerly Dance 221A.

222 Musical Resources (4). Detailed study of music as it relates to dance. Historical overview of musical form, style, and other elements. Analysis of various affinities between music and dance. Practical applications. Prerequisites: Dance 21A-B.

225 Seminar in the Teaching of Dance Techniques (4). Principles and theories of teaching dance techniques. Supervised presentation and teaching of technique class.

226 Administration and Management: Dance (4). Introduction to practice and theory of administration of dance companies, dance departments, and dance schools.

227A, B, C Costume Design for Dance (4, 4, 4) F, W, S. Overview of basic design elements, draping and drafting techniques, and costume construction.

231A-B-C Graduate Studio: Ballet (2-2-2) F, W, S. Advanced ballet, pointe work, and performance style: principles of the Classical tradition developed from Noverre, Petipa, and Cecchetti. By audition only. May be repeated for credit.

241A-B-C Graduate Studio: Modern (2-2-2) F, W, S. Advanced modern dance: principles of modern tradition developed from Graham, Humphrey, and Wigman, incorporating the personal view of the instructor. By audition only. May be repeated for credit.

251A-B-C Graduate Studio: Jazz (2-2-2) F, W, S. Principles of jazz dance and contemporary forms, incorporating the personal views of the instructor. By audition only. May be repeated for credit.

252A-B-C Graduate Studio: Tap (2-2-2) F, W, S. An overview of tap concentrating on the development of various technique forms using basic and intermediate principles. May be taken for credit four times.

261A-B-C Graduate Seminar in Choreography (4-4-4) F, W, S. Graduate work in dance composition emphasizing the individual aesthetic. Assignments in movement discovery, solo and group forms, with the main emphasis on independent work. May be repeated for credit.

264 Video Choreography (4). Directed choreographic projects for the video camera. Video techniques which create the hybrid art form called video dance. Production of an individual video choreography project. Prerequisites: Dance 164A-B-C.

281A-B Dance and Digital Technology (4-4) F, W, S. 281A: Interactive multimedia. 281B: Continuing work and more complex projects in interactive multimedia for dance.

282 Seminar in Movement Analysis (4) W, S. Theories of movement analysis and nonverbal communication applied to dance.

283 Philosophy, Aesthetics, and Criticism (4). Discussion of aesthetics and philosophy as they specifically apply to dance. Cross-cultural comparisons and advanced critical skills are presented. Written critiques and descriptive analyses are required. Prerequisite: Dance 284.

284 Bibliography and Research (4) F. Survey and practice of primary and secondary research methods in dance including electronic searches. Development of writing for presentation, publication, and thesis essay.

285 Graduate Projects (4). Projects may be educational, choreographic, scientific, historical, or philosophical in scope and must have faculty advisor approval. May be taken for credit six times. Formerly Dance 240.

286 Thesis (4). Substantial research in a topic approved by the student's graduate committee. Results of the research must be written in approved thesis style. Prerequisite: consent of department. May be taken for credit six times. Formerly Dance 260.

287 Graduate Lectures in Dance (1 to 4). A series of lectures and discussions of announced topics in dance. Content may be from history, ethnology, notation, medicine, music, or other areas in the field. Prerequisite: consent of instructor. May be repeated for credit as topics change. Formerly Dance 295.

290 Graduate History of Dance (4) F, W, S. Survey of selected period of Western dance history: prehistory through the Middle Ages; the Renaissance through the mid-nineteenth century; or 1850 through the twentieth century. May be taken for credit three times as topic changes. Prerequisite: consent of instructor.

293 Dance and Related Arts (4). A core course of study on the natures of the performing arts, with particular relevance to the relationship between dance and its sister arts. May be repeated for credit.

295 Graduate Colloquium in Dance (1) F, W, S. Weekly reports and colloquia by faculty, students, and visiting artists on current research in dance. May be repeated for credit.

296 Proseminar in Dance History (4). Discussion seminar with emphasis on reading and thinking about problems in dance history; presentation of oral and written reports. Topics vary. Prerequisite: Dance 290. May be repeated for credit.

297 Directed Reading (1 to 4). Topic to be approved by instructor. Paper required. Prerequisite: consent of instructor. May be repeated for credit.

399 University Teaching (1 to 4). Limited to Teaching Assistants. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF DRAMA

249 Drama Building; (949) 824-6614
Cameron Harvey, **Department Chair**

Faculty

Keith Bangs, M.F.A. Yale University, *Lecturer in Drama* (technical production)
Stephen Barker, Ph.D. University of Arizona, *Director of Arts Interdisciplinary and Professor of Drama* (theory, criticism, literature)
Dennis Castellano, M.F.A. University of California, Irvine, *Lecturer in Drama and Head of Music Theatre* (music theatre)
Robert Cohen, D.F.A. Yale University, *Professor of Drama* (acting, directing, dramatic literature)
Myrona Delaney, M.F.A. University of California, Irvine, *Lecturer in Drama* (music theatre, acting)
Clifford Faulkner, M.A. California State University, Long Beach, *Lecturer in Drama* (scenic design)
Keith Fowler, D.F.A. Yale University, *Associate Professor of Drama and Head of Directing* (directing, acting, and dramatic literature)
Clayton Garrison, Ph.D. Stanford University, *Professor Emeritus of Drama* (opera and musical theatre, movement, dramatic literature)
Douglas-Scott Goheen, Ph.D. University of Denver; M.F.A. Yale University, *Professor of Drama* (scenic design)
Julie Haber, M.F.A. Yale University, *Lecturer in Drama* (stage management)
Cameron Harvey, M.F.A. University of California, Irvine, *Department Chair, Head of Theatre Design, and Professor of Drama* (lighting design, production)
Dudley Knight, M.F.A. Yale University, *Department Vice Chair and Associate Professor of Drama* (voice, speech for actors, acting)
Madeline Ann Kozlowski, M.F.A. Brandeis University, *Assistant Professor of Drama* (costume design)
Annie Loui, *Assistant Professor of Drama* (movement)
David McDonald, Ph.D. Stanford University, M.F.A. Yale University, *Associate Professor of Drama and Head of Playwriting* (critical theory, dramatic literature, and playwriting)
David Pecoraro, M.F.A. Temple University, *Lecturer in Drama* (stage management)
Thomas Ruzika, M.F.A. University of California, Irvine, *Lecturer in Drama* (lighting design)
Mahlon Schanzenbach, M.A. California State University, Long Beach, *Lecturer in Drama* (voice)
Eli Simon, M.F.A. Brandeis University, *Associate Professor of Drama and Head of Acting* (acting, directing)

Richard Triplett, Otis Art Institute, *Professor Emeritus of Drama* (scenery and costume design, history of design)

Christopher Villa, *Lecturer in Drama* (stage combat)

Lynn Watson, M.F.A. University of California, Irvine, *Lecturer in Drama* (voice)

Robert Weimann, Ph.D. Humbolt University (Germany), *Professor of Drama* (theory, criticism, literature)

Shigeru Yaji, M.F.A. California State University, Long Beach, *Lecturer in Drama* (costume design)

The program leading to the Bachelor of Arts in Drama combines broad liberal study and comprehensive training in several subdisciplines of drama. Each Drama major studies and practices in each of several mutually related areas of the theatre: performance, literature, history, criticism, design and stage management, and production. The curriculum is structured to relate studio practices, technical resources, and production techniques to the development of dramatic literature and current critical theory.

The program is designed for students who, while not necessarily planning to make the theatre their vocation, have a serious interest in the literature, theory, and practice of drama, as well as for students preparing to work professionally in the theatre, often after more specialized training at the graduate level.

CAREERS FOR THE DRAMA MAJOR

A degree in Drama may or may not lead to professional employment in theatre or film.

Graduates in Drama at UCI have performed in Broadway plays, regional and summer theatres, and in films and television. They serve as artistic directors, designers, art directors, business managers, and performers at more than 100 theatre companies, and as faculty at more than 75 institutions of higher learning.

Not all Drama students become professional theatre artists. Many embark upon careers in law, business, arts management, advertising, and teaching; others pursue further study at UCI or elsewhere.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: None.

Departmental Requirements for the Major

One year survey in the development of dramatic literature (Drama 40A, B, C); one year in acting (Drama 30A-B-C); three courses in design (Drama 50A, B, C); an introductory course in production theory (Drama 10); one year in the development of theatre (Drama 120A, B, C); two upper-division courses in dramatic literature; three upper-division courses in addition to the two in dramatic literature mentioned above (these may be in studio work and/or dramatic literature, playwriting, and criticism); two quarters in dance (these courses may be taken Pass/Not Pass); eight units of theatre production (Drama 101) of which four units must be completed during the first year of residence at UCI.

Students are required to take Drama 40A, B, C in their sophomore year, after completion of the lower-division writing requirement.

Students entering the Department as freshmen must complete Drama 50A, B, C by the end of their junior year. All other students must complete these courses within one year of entering the major.

Sample Program for Freshmen

Fall	Winter	Spring
Drama 30A	Drama 30B	Drama 30C
Drama 50	Drama 50 or 10	Drama 50 or 10
Drama 101 (2 units)	Drama 101 (2 units)	English and Comp.
English and Comp. Lit. WR39A	English and Comp. Lit. WR39B	Lit. WR39C Elective

Departmental Requirements for the Minor

Drama 10 (Introduction to Production Theory); Drama 30A-B-C (Acting); Drama 40A, B, C (Development of Drama); seven upper-division courses in drama, each of which must be taken at UCI, including Drama 120A, B, C (Development of Theatre) and one course in Drama 101 (Theatre Production).

Honors in Acting Program

Admission to the Honors in Acting Program requires both eligibility and a special audition. The eligibility requirements are: (1) at least one year in good standing as a UCI Drama major; (2) completion of Drama 130A-B and at least one section of either Drama 135 or Drama 165, all at UCI, with a combined grade point average in all acting courses of 3.2 or higher; (3) performance in at least three official Drama at UCI productions (including mainstage, stage 2, stage 3, workshop, or cabaret); (4) completion of all Drama 101 (Theatre Production) assignments; and (5) completion of the eligibility form.

A student's audition will determine final admission to the Honors in Acting program. Only truly exceptional students, no more than 10 to 20 percent of those eligible, will be admitted. The Honors auditions, for eligible candidates only, are held at the end of fall quarter and by special arrangement. Auditions will consist of a standard presentation.

Honors in Acting Program students receive: (1) the "Honors in Acting" notation on their official transcript; (2) nomination and recommendation for national University/Resident Theatre Association (U/RTA) auditions; (3) eligibility, on a space available basis, for South Coast Repertory Theatre internships, currently available only to M.F.A. students; (4) eligibility to audition at UCI-screened Shakespearean Festivals; and (5) eligibility to audition for the Santley Showcase Productions.

The Santley Showcase is a UCI-sponsored professional showcase production presented annually in New York and Los Angeles for casting directors, agents, directors, and producers. All travel and production funds are provided from the Santley bequest. Honors in Acting status does not guarantee final selection for the Santley Showcase, but only Honors in Acting students, third-year M.F.A. students, and alumni are eligible to audition for this presentation.

Honors in Music Theatre Program

Musical theatre performers need to possess strong and competitive skills in acting, singing, and dancing. The Honors in Music Theatre Program is a unique series of courses which provide advanced training in scene study, song interpretation, dance, voice, acting, and audition technique. Studies include the history of the American musical, and performance experiences vary from fully staged musicals to intimate revues. Honors students are introduced to Broadway performance techniques through the New York Satellite Program (a four-week intensive series of master classes held in New York during the month of May).

Admission to the Honors in Music Theatre Program is competitive. After completing the prerequisite, Drama 165 (Beginning Music Theatre Workshop), candidates may audition for Drama 166 (Advanced Music Theatre Workshop). This audition will assess the student's proficiency at singing, dancing, and acting along with music reading skills at the piano. Auditions are scheduled twice each year: once during orientation week and again during finals week of the fall quarter. If accepted into Drama 166, honors candidates must possess and maintain an overall GPA of 3.20 and a grade of B or better in all Drama course work. Undergraduate Drama majors can be admitted into the program as early as the winter quarter of their freshman year but no later than the winter quarter of their junior year.

Students in the Honors in Music Theatre Program need to fulfill all the courses required of the regular Drama major with the following qualifications and additions:

1. The two upper-division courses in Dramatic Literature must be satisfied with Drama 148A-B (The History of Music Theatre). (This course is taught during the fall and winter quarters every other academic year. Junior transfer students who enter UCI during the year in which the course is offered will need to enroll in the course during their first fall quarter before actually qualifying for the honors program).
2. The three upper-division courses in Drama must be satisfied with Drama 166A, B, C (Advanced Music Theatre Workshop). (Semi-private voice lessons will be offered in special laboratory sessions exclusively for the honors candidates.)
3. The two Dance classes must be satisfied by taking two quarters of ballet.
4. Additional required courses: Drama 35 (Speech for the Theatre); Drama 100 (University Theatre; specifically, a musical production); Drama 130A (Advanced Acting); Drama 165N (New York Music Theatre Workshop; winter and spring quarters); Drama 166M (Music Proficiency for Actors; this course is waived if the student already possesses basic keyboard reading skills); two quarters of tap and two quarters of jazz (Dance Department).

Honors candidates will meet with the head of the Music Theatre Program at the beginning of every quarter to evaluate their progress and to check that all grade and course requirements are being satisfied. Successful graduating seniors will receive the "Honors in Music Theatre" notation on their official transcript.

NOTE: Except for Drama 166M and the voice lessons offered in the laboratories of Drama 166A, B, C, all of the above courses are open to all students even though they may not qualify for the Honors Program.

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Drama, with emphasis in Acting, Directing, or Design and Stage Management.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A., B.F.A., or higher degree.

Applicants must submit dossiers of biographical information and theatrical experience, together with photographs, essays, reviews, production books, and portfolios, as appropriate.

Normally an audition is required for all applicants who intend to follow the curriculum in Acting. UCI coordinates its auditions with the University/Resident Theatre Association (U/RTA), and conducts auditions, both for U/RTA finalists and UCI applicants, in New York, Chicago, and Irvine during February. Interviews for applicants in Directing and in Design and Stage Management also are required.

General Degree Requirements

Normally three years of residence is required. Each candidate must enroll for three courses each quarter for nine quarters, exclusive of summer sessions.

During the first year of residence each candidate will prepare, for credit, two graduate projects, in either acting, directing, design, stage management, theatrical research, or a combination of two of these.

Satisfactory completion of these projects, as determined by the faculty, is prerequisite to entering the second year of the program.

The required thesis normally consists of directing, designing, stage managing, or playing a principal role in a major production, and collecting in essay form the evidences of research, analysis, and judgments which formed a part of the production experience.

Each graduate student is expected to participate in productions throughout residence at UCI.

In addition, Acting students must take one Drama mainstage or two Stage 2 production running-crew assignment(s) in their first year of residence.

A total of 108 quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. Specific course requirements must be satisfied in one of the following three areas:

Acting

Nine graduate studios in acting (Drama 200), taken in tandem with nine graduate studios in voice (Drama 201), stage speech (Drama 202), stage movement (Drama 203) or dance (Dance 231, 241, 251, 150, or 151), and Voice/Movement Dynamics (Drama 206); three master classes in acting, objective drama, or music theatre (Drama 219, 289, 216, or 135); one seminar in script analysis and research (Drama 235); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two seminars in dramatic literature, performance theory, criticism, history of theatre, or contemporary theatre (Drama 220–223, 225, or 230); six graduate projects, of which two may be professional internships (Drama 240 or 295).

Design and Stage Management

Nine graduate studios in design/stage management, one of which is the thesis (Drama 255); seven courses in graduate projects, two of which may be a professional internship (Drama 240, 295); two elective courses; three courses in development of theatre (Drama 120A, B, C)—faculty head may approve substitutions depending on student's prior academic experience; two courses in production techniques (Drama 150–162, 167–171); one course in conceptualization and collaboration (Drama 245, must be taken the first quarter in residence); one seminar in script analysis and research (Drama 235); two courses in dramatic literature, performance theory, criticism, contemporary theatre, or history of music theatre (Drama 220, 221, 223, 230, or 248).

Directing

Nine graduate studios in directing (Drama 211); three courses in development of theatre (Drama 120A, B, C)—faculty program head may approve substitutions depending on student's prior academic experience; two courses in acting (Drama 130A-B, or 135 as qualified); one seminar in script analysis and research (Drama 235); one course in conceptualization and collaboration (Drama 245); two seminars in dramatic literature, performance theory, criticism, theatre history (Drama 220–223, 248); seven projects, of which one is the thesis, one is a project in theatre production, one may be a professional internship, and three must be directed (non-thesis) productions; two or three electives.

Courses in Drama

LOWER-DIVISION

10 Introduction to Production Theory (4) F, W, S. An introduction to modern production techniques as practiced in realizing scenic designs. Equipment, theories, techniques, and history of production practices in the technical theatre; class instruction integrated with practical applications.

20 The Nature of Drama: Structure and Style (4). A general introduction to the dramatic literature of several periods, with an emphasis on dramatic form and meaning.

30A-B-C Acting (4-4-4), (30A) F, Summer, (30B) W, (30C) S. A one-year course in basic acting technique and discipline. (NOTE: All acting classes require strict adherence to stage discipline; unexcused class absences, for example, are not permitted.) **30A:** Stage technique and stage discipline. Freeing vocal and physical movement and liberating emotional power. Elementary stage movement and voice. Elimination of regionalisms in speech. Overcoming stage fright. Readings in acting theory. **30B:** Improvisations and scenes. Rehearsal and presentation of at least two scenes with different partners. Developing stage contact with tactics in a "play" situation. Prerequisite: Drama 30A. **30C:** Characterization, scenes and auditioning. Development of character in at least three rehearsed scenes from different plays. Script analysis and performance technique. Preparation of audition pieces. The profession of acting. Prerequisites: Drama 30A-B.

32 Beginning Playwriting (4). Writing of assigned exercises and the completion of the equivalent of a one-act play. Analysis of alternative forms: Absurdist, Brechtian, Naturalistic, and Symbolic, as well as the more traditional forms of comedy, tragedy, and melodrama. Same as English and Comparative Literature WR32.

34 Movement for Actors (4-4-4) F, W, S. Introduces the basics of stage movement for actors: the theory and practical application of physical relaxation, centering, focus, and balance. The body is trained to express a wide range of creative impulses for performance.

35 Speech for the Theatre (4) F, W, S. A course aimed at (1) improving natural, clear, unaffected speech and (2) eliminating negative habits and regional accents: exercises for physical tension, vocal support, tone production, vocal quality, and articulation. Open only to Arts majors. May be repeated for credit.

40A, B, C Development of Drama (4, 4, 4) F, W, S. A one-year lecture-discussion course (each quarter may be taken independently) in the development of Western Drama, concentrating on the drama's intellectual, social, and artistic foundations. About 10 plays and supplementary critical material are read each quarter. **40A:** Greek Drama through Shakespeare. Readings from Aeschylus, Sophocles, Euripides, Aristophanes, Marlowe, Shakespeare, and the anonymous playwrights of the medieval theatre. **40B:** Restoration Drama through Ibsen. Readings from Neoclassic, Romantic, and Naturalistic European playwrights in the eighteenth and nineteenth centuries. Molière, Racine, Congreve, Goethe, Ibsen, and Chekhov are included. **40C:** Contemporary Drama. Post Naturalistic theatre: Expressionism, Epic Theatre, Theatre of the Absurd, and Contemporary American Theatre. Among the playwrights studied are Stein, Shaw, Pirandello, Ionesco, Beckett, Williams, Brecht, Weiss, Albee, Churchill, and Duras. Same as English and Comparative Literature CL 40A, B, C. (IV, VII-B)

50A Introduction to Costume Design (4) F, W, S. An introduction to the process and procedures employed by the costume designer for the theatre. The elements of design are discussed in the context of character development, historical period, and style. Exercises extend to drawing, rendering, and investigation of human proportions.

50B Introduction to Scenic Design (4) F, W, S. Introduction to the principles and practice of scenic design. Weekly problems include research into various periods and styles of production with an emphasis on the conceptual idea. Perspective drawing, rendering, and model building are covered in studio exercises and assignments. Prerequisite: Drama 10.

50C Introduction to Lighting Design (4) F, W, S. Introduction to the principles, theories, and equipment employed by the lighting designer for the stage. Areas of investigation include history, technology, and script analysis. Detailed studio attention is given to the theory and practice of design.

UPPER-DIVISION

100 University Theatre (4). Rehearsal and performance in a faculty-directed production. By audition only. May be repeated for credit.

101 Theatre Production. The production courses are offered to give students the opportunity to participate in departmental productions. Students engage in the production and construction of designed work as well as its applied execution during performance. Prerequisite: consent of instructor. May be taken for credit 12 times for a maximum of 24 units provided productions change.

101A Theatre Production: Costume (2 to 6) F, W, S. Pass/Not Pass only.

101B Theatre Production: Scenic (2 to 6) F, W, S. Pass/Not Pass only.

101C Theatre Production: Lighting (2 to 6) F, W, S. Pass/Not Pass only.

101D Theatre Production: Stage Management (2 to 8) F, W, S

101E Theatre Production: Audio (2 to 6) F, W, S. Pass/Not Pass only.

103 Lectures in Dramatic Literature (4). Courses include Medieval and Tudor Drama, Elizabethan and Jacobean Drama, Shakespeare, Restoration and Eighteenth-Century Drama, Modern British Drama, Modern American Drama, Tragedy, and Comedy. May be repeated, provided topic changes.

104 Greek Drama (4). A concentrated examination of the major works of Aeschylus, Sophocles, Euripides, and Aristophanes, with additional readings in Greek dramatic theory and theatre history.

117 Russian Stage and Film Drama (4). Development of the Russian theatre through the Symbolist drama to Futurism and the post-Revolutionary era. The innovation of twentieth-century stage directors, and masterpieces of the Soviet. Open to freshmen. Lectures, readings, and discussions in English.

120A, B, C Development of Theatre (4, 4, 4). A one-year lecture course concentrating on the development of world theatre from a visual point of view, from the earliest storytelling rituals through international stage development to contemporary theatrical forms. Prerequisite or corequisite: Drama 40 A, B, C. (VII-B)

130A-B Advanced Acting (4-4). **130A:** Rehearsal and presentation of at least five scenes from contemporary material. Exercises in developing relationship communication and character-to-character contact. May be repeated for credit. **130B:** Rehearsal and performance of four scenes developing characters in depth; examination of the credibility and theatricality of characterization and style. Prerequisite for 130A: Drama 30A-B-C. Prerequisite for 130B: Drama 130A. May be repeated for credit.

132 Advanced Playwriting (4). Completion of a full-length play or its equivalent; discussion of student writing and of relevant literary texts. Prerequisites: Drama 32 and consent of instructor. May be repeated for credit as topics vary.

135 Master Classes in Acting (1 to 4). Acting in specialized areas including television acting, improvisation, movement for the actor, body language, Shakespeare, Molière restoration, theories, Kabuki, and modern Japanese theatre. Prerequisites: Drama 130A-B. May be repeated for credit.

140 Contemporary American Theatre (4). A close examination of works and trends in the American theatre since World War II, including current playwrighting as represented by new plays produced in Los Angeles, New York, Chicago, and other major repertory theatre centers.

141 Contemporary British Theatre (4). A close examination of British theatre in the post-Suez (1956-on) period, with special attention to political trends in current British playwrighting.

142 Contemporary Continental Drama (4). A close examination of continental European dramatic literature and theory. Readings from Camus, Sartre, Beckett, Ionesco, Genet, Mrozek, Handke, Brecht, and others.

148A-B History of Music Theatre (4-4) F, W. Discusses the composers, librettists, directors, choreographers, and performers in the American musical theatre. **148A:** Early 1700–1940s: types—ballad opera, minstrels, vaudeville, burlesque, operetta, revues, early musical comedy. **148B:** 1940s–present: types—musical comedy, the concept musical, the Broadway opera. Concurrent with Drama 248A-B.

150 Costume Production Techniques (4). Studio instruction in pattern making, draping, millinery, and construction techniques. Prerequisite: Drama 50A. May be repeated for credit.

151 Scenery Production Techniques (4). Theatre architecture, the physical stage and its equipment, the principles of scenery construction, and the nature and sources of scenic materials are among the lecture topics. Theatre engineering is studied as a drawing subject. Particular emphasis is given to the maintenance of design integrity in scenic execution. Prerequisite: Drama 50B.

152 Lighting Production Techniques (4). An exploration of the methods and resources used by the lighting designer in the theatre. Class tours are conducted to leading theatres and commercial suppliers to examine equipment and procedures first hand. Detailed studio attention is given to the development of stage lighting graphics and problems related to road troupeing. Prerequisite: Drama 50C.

153 Makeup Production Techniques (4). A studio laboratory course in the techniques of stage makeup including projects in prosthetics and ventilation of hair. Prerequisite: consent of instructor.

155 Lighting Systems (4). A study of basic electrical practice used in theatrical lighting. Areas of investigation include control system design, system wiring, maintenance of equipment, and new developments in the field of lighting and illumination. Prerequisite: Drama 50C.

156 Scene Painting (4). A studio course in scenery painting. Full-scale projects in the techniques of the scenic artist will be practiced in the scenery studio. Prerequisite: Drama 50B or consent of instructor.

157 Lighting Composition (4). Provides an opportunity for students to pursue stage lighting composition in a studio atmosphere. Laboratory practice includes weekly exercises in style and genre. Emphasis is placed on the realization of conceptual ideas. Prerequisite: Drama 50C. May be repeated for credit.

158 Studio in Theatre Design (4). Examines the various functions of scenery and costume: locale, historical period, mood, and atmosphere, with special assignments in each area. Discussion of problems in scenic metaphors and visualization, with emphasis on techniques of planning and presentation (e.g., floor plans, models, and rendering). Prerequisite: Drama 50A or 50B, or consent of instructor. May be repeated for credit.

159 Proseminar in Theatre Design (4). Content varies. Prerequisite: consent of instructor. May be repeated for credit.

160 Light Plotting Techniques (4). A study of the development of theatrical lighting plots from initial conceptualization through final documentation. Areas of emphasis include script analysis, visual approaches, equipment selection and compositional qualities of light. Prerequisite: Drama 50C.

161 Stage Lighting Graphics (4) S. A studio course in the various graphic methods employed by lighting designers in the theatre. Investigations will include manual and computer-aided techniques. Prerequisite: Drama 50C.

162 History of Stage Lighting (4) W. A historical study of lighting design methods, techniques, and innovation. Areas of emphasis include the development of light sources, equipment, and design styles.

163 Introduction to Stage Management (4) F. A basic study of theatrical, dance, and opera stage management practices, forms, and methods, from first script reading to closing night. Opportunity to observe professionals at work in regional and touring situations as available.

165 Beginning Music Theatre Workshop (4). A workshop in audition technique and song interpretation. May be taken for credit six times. Formerly Music 165A.

165N New York Music Theatre Workshop (4). Music theatre workshop specifically for the New York Satellite Program. Prerequisite: by audition. May be taken for credit six times.

166A, B, C Advanced Music Theatre Workshop (4) F, W. Scene study and song repertoire examine works according to era. **166A:** 1900s–1930s: operetta, revue, early musical comedy. **166B:** 1940s–1960s: book musicals. **166C:** 1970s–present: rock musicals, Broadway opera. Prerequisites: Drama 165 and audition. May be taken for credit six times.

166M Music Proficiency for Actors (0). Tutorial in basic keyboard reading skills for candidates in the Honors in Music Theatre Program. Course may be repeated until student learns a vocal line from a piano/vocal score. Pass/Not Pass only. Corequisite: Drama 166A, B, C. Open only to students in the Honors in Music Theatre Program.

167 A, B Fabric Modification Techniques (4, 4). Exploration of various dying, printing, painting, and texture modification techniques. Prerequisite: Drama 50A.

168 Theatrical Mask Techniques (4). Design and construction of theatrical masks including paper mache, leather, plastics, and latex. Projects employ traditional and contemporary techniques. Prerequisites: Drama 50A.

169 Costume Rendering Techniques (4). Development of costume rendering skills and techniques. Explores collage, pastel, and ink and emphasizes watercolor. Prerequisite: Drama 50A.

170 Directing (4) F. The principles of stage directing, covering the director's functions in the areas of interpretation, composition, coaching, and styling a theatrical production. Directing exercises and projects; the final project is the preparation of a hypothetical proposal for a play production. May be repeated for credit.

171 Production Management (4) F. An examination of stage and production management. Areas of study include production organization, management practices, production scheduling, rehearsal and performance duties, union regulations, and production touring.

173A Theatre Orchestra (2)

175 Staging Shakespeare (4) W. A seminar in Shakespearean staging practice, both Elizabethan and contemporary. Students prepare a hypothetical production book for an assigned play as it could have been produced at the Globe Theatre in 1610, and a proposal to produce the same play in a contemporary manner today. Prerequisites: Drama 170 and consent of instructor. May be repeated for credit.

180 Contemporary Dramatic Criticism and Theory (4). Reading and analysis of theories and critical approaches to contemporary theatre: Stanislavski, Brecht, Artaud, and others who have contributed to the form and idea of the modern theatre. Writing of assigned exercises in dramatic criticism. May be repeated for credit.

182 History of Dramatic Criticism (4). Reading and analysis of the principal theorists and critics of dramatic art, including Aristotle, Corneille, Diderot, Dryden, Lessing, Coleridge, Zola, and Nietzsche, among others.

185 Advanced Directing (4). A seminar in directorial organization and research. Student prepares a textual and dramaturgical analysis, a production timetable, and a hypothetical production book of an assigned play. Prerequisites: Drama 170 and consent of instructor. May be repeated for credit.

188 Showcase Performance (4). Rehearsal and public performance in departmentally sponsored acting showcase in New York and Los Angeles. Prerequisites: Drama 130A and 135; senior standing; audition and consent of instructor.

190 Studio in Acting (4). May be repeated for credit.

198 Drama Workshop (4) F, W, S. By audition or accepted proposal only. Consists of directing or acting in a regularly scheduled Drama Workshop production and submitting a final evaluation of all work performed. Workshop productions must be proposed by directors on departmental forms, and each project must be approved by the Workshop Committee. Pass/Not Pass only. May be repeated for credit.

199 Project in Theatre (1 to 4) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

GRADUATE

NOTE: All graduate courses in Drama may be repeated for credit.

200 Graduate Studio: Acting (2) F, W, S. Work in graduate studio taken in tandem with graduate studios in stage voice (Drama 201), stage speech (Drama 202), and stage movement (Drama 203).

201 Graduate Studio: Voice (1) F, W, S. Graduate studio in vocal production for actors.

202 Graduate Studio: Speech (1). Graduate studio in speech for actors.

203 Graduate Studio: Movement (2). Work in graduate studio: stage movement taken in tandem with nine graduate studios in acting (Drama 200), voice (Drama 201), speech (Drama 202), and voice/movement dynamics (Drama 206).

206 Graduate Studio: Voice/Movement Dynamics (2) F, W, S. Daily conditioning exercises.

211 Graduate Studio: Directing (4) F, W, S

212 Graduate Studio: Playwriting (4). Completion of a full-length play or its equivalent and production of a staged reading of the play at the end of the spring quarter. Discussion of relevant literary texts and student writings.

219 Graduate Master Class (1 to 4) F, W, S. Various topics such as Shakespeare, comedy, Molière, improvisation, Kabuki, television acting.

220 Seminar in Dramatic Literature (4) F, W, S

221 Seminar in Criticism (4)

222 Seminar in Theatre History (4)

223 Seminar in Performance Theory (4). A study of major performance theories since Diderot's *Paradox of Acting*.

225 Seminar on Theatre Pedagogy (4) F, W, S. A seminar on the major teaching systems in the dramatic arts with particular attention to professional arts training. Graduate students in Drama only; required prior to applying for Teaching Assistantships in studio areas.

230 Seminar in Contemporary Theatre (4)

235 Script Analysis and Research (4) F. Analysis of dramatic scripts. Examination of dramaturgic structure, character intentions and interactions, historical and literary milieu, and potentials for theatrical realization.

240 Graduate Projects (1 to 4) F, W, S, Summer. Various projects depending on student's concentration (acting, design, musical theatre, directing).

245 Conceptualization and Collaboration (4) F. A study of the potential for directorial conceptualization and collaboration with designers in the areas of scenery, costume, lighting, and sound.

248A-B History of Music Theatre (4-4) F, W. Discusses the composers, librettists, directors, choreographers and performers in the American musical theatre. **248A:** Early 1700–1940s: types—ballad opera, minstrelsy, vaudeville, burlesque, operetta, revues, early musical comedy. **248B:** 1940s–present: types—musical comedy, the concept musical, the Broadway opera. Must be taken in sequence. Limited to graduate students only. Concurrent with Drama 148A-B.

250 Directed Reading (4)

255 Graduate Design and Stage Management (4) F, W, S. Studio exercises and projects in costume, scenery, lighting design, and stage management. Open only to Drama graduate students pursuing the Design and Stage Management emphasis. May be repeated for credit as topic varies.

256 Designers' Presentational Techniques (4) F. A studio course in rendering techniques employed by costume and scenic designers for the stage. Projects will include graphic development for costume plates, atmospheric rendering, painters' elevations, and model building.

287 Cabaret Performance (1). Rehearsal and public performance of cabaret material. Prerequisites: audition and consent of instructor. May be taken for credit six times as performance changes.

295 Professional Internship (1 to 8) F, W, S, (1 to 12) Summer. An arranged internship at the South Coast Repertory Theatre, or other equity theatre company, for qualifying M.F.A. students in acting and directing. A stipend and equity points are provided by the theatre company.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF MUSIC

292 Music Building; (949) 824-6615

Faculty

Kei Akagi, B.A. International Christian University, Tokyo, *Lecturer in Music* (jazz studies)
 Haroutune Bedelian, Associate of the Royal Academy of Music, London, *Associate Professor of Music* (violin)
 Rae Linda Brown, Ph.D. Yale University, *Associate Professor of Music and Faculty Assistant to the Executive Vice Chancellor* (history, American musics)
 Ellie Choate, M.A. California State University, Long Beach, *Lecturer in Music* (harp)
 Thomas Cockrell, D.M.A. State University of New York at Stony Brook, *Assistant Professor of Music and Director of the University Orchestra* (conducting, analysis)
 Christina Dahlin, M.F.A. University of California, Irvine, *Lecturer in Music* (voice, opera)
 Jonathan Davis, M.M. The Julliard School of Music, *Lecturer in Music* (oboe)
 Russell Dicey, B.F.A. California Institute of the Arts, *Lecturer in Music* (French horn)
 Theresa Dimond, D.M.A. University of Southern California, *Lecturer in Music* (percussion)
 Christopher Dobrian, Ph.D. University of California, San Diego, *Assistant Professor of Music and of Information and Computer Science* (electronic music)
 Nina Gilbert, D.M.A. Stanford University, *Lecturer in Music* (choral ensembles)
 Bernard Gilmore, D.M.A. Stanford University, *Professor of Music* (composition, theory)
 Gary Ginstling, M.M. The Julliard School of Music, *Lecturer in Music* (clarinet)
 Patrick Goesser, M.A. University of Iowa, *Lecturer in Music* (voice)
 Frederick Greene, M.Mus. Ed. University of Southern California, *Lecturer in Music* (tuba)
 Lorna Griffith, D.M. Indiana University, *Lecturer in Music* (piano)

Robert Hickok, B.Mus. Yale University, *Professor Emeritus of Music* (choral conducting)
 Nina Hinson, M.M. University of Southern California, *Lecturer in Music* (voice, opera, vocal pedagogy)
 William C. Holmes, Ph.D. Columbia University, *Professor Emeritus of Music* (history, opera)
 Joseph B. Huszti, M.Mus. Northwestern University, *Professor of Music and Director of Voice and Choral Music* (conducting, choral ensembles, voice)
 Rosemary Hyler-Ritter, B.Mus. Catholic University of America, *Lecturer in Music* (accompanying, piano, vocal coaching)
 Larry Kaplan, Performance Certificate, Academie International in France, *Lecturer in Music* (flute)
 Andrew Klein, B.F.A. California Institute of the Arts, *Lecturer in Music* (bassoon)
 Laura Kuennen-Poper, M.M. Eastman School of Music, *Lecturer in Music* (viola)
 Alfred Lang, M.F.A. University of California, Irvine, *Assistant Professor of Music* (trumpet, rock music)
 Margaret Murata, Ph.D. University of Chicago, *Professor of Music* (history, theory)
 James Newton, B.M. California State University, Los Angeles, *Professor of Music* (jazz studies, composition)
 Peter S. Odegard, Ph.D. University of California, Berkeley, *Professor Emeritus of Music* (theory, composition)
 Charles M. Owens, B.M. California State University, Los Angeles, *Lecturer in Music* (jazz studies)
 Margaret Parkins, D.M.A. State University of New York, *Lecturer in Music* (cello)
 Mahlon Schanzenbach, M.A. California State University, Long Beach, *Lecturer in Music* (voice)
 John Schneiderman, B.Mus. University of California, Irvine, *Lecturer in Music* (lute, guitar)
 Nina Scolnik, B.Mus. Oberlin Conservatory, Performance Diploma, The Julliard School, *Lecturer in Music* (piano)
 Juliette Singler, D.M.A. Claremont Graduate School, *Lecturer in Music* (voice)
 H. Colin Slim, Ph.D. Harvard University, *Professor Emeritus of Music* (history)
 David Stetson, B.M. University of Southern California, *Lecturer in Music* (trombone)

Additional professional staff in instrumental music supplement the faculty in accordance with the needs of the program.

PROGRAMS OF STUDY

The Department of Music offers two undergraduate degrees (the Bachelor of Arts in Music and the Bachelor of Music) and the Master of Fine Arts degree in Music. The minor in Music is unavailable until further notice.

The **Bachelor of Music (B.Mus.)** degree program is performance-oriented. It offers students the opportunity to specialize in one of the following: bassoon, clarinet, composition, contrabass, flute, French horn, harp, lute and guitar, oboe, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin, violoncello, or voice. (The specialization appears on the student's UCI transcript.) At the discretion of the Department, selected specializations may wholly or partially be in the area of jazz performance. In addition, B.Mus. students may qualify for the Special String Performance option, an intensified curriculum for professional-level students. All B.Mus. students receive continuous private instruction, for a maximum of 12 quarters for entering freshmen or six quarters for transfers and composition students, and present a solo recital during their senior year. B.Mus. students participate in performance classes each quarter. Vocal performance students focus on diction, movement, stage presentation, repertory, criticism, and style. Guitar and lute students focus on ensemble work, repertory with other instruments and voice, criticism, and pedagogy. Piano students give weekly solo performances before other students, and also focus on criticism, style, and interpretation. String, wind, brass, percussion, and also piano students focus on quartet work, small ensembles, and solo sonatas privately coached and presented in afternoon recitals.

The **Bachelor of Arts (B.A.)** degree program enables students to pursue elective subjects in music (such as analysis, history, or jazz), in the arts, or in other academic disciplines. Students receive two years of instrumental or vocal instruction and participate at the same time in two years of ensemble or repertory classes. Students also complete a senior project in an area of particular interest (a historical project, a composition, or a lecture/performance).

Music scholarships are offered to promising undergraduate performers. Awarding of scholarships is generally based on the preadmission auditions which are held in February.

The University's Education Abroad Program offers students the opportunity to study abroad during their junior year. Music majors may enroll in conservatories and universities in several countries; highly qualified performers may be eligible to attend the Conservatorio G. B. Martini in Bologna, Italy. See the Educational Abroad Program section for additional information.

In each baccalaureate degree program, students receive private lessons on their instruments or in voice, and perform in orchestral or choral concerts, in chamber ensembles, and in solo recitals; however, such participation varies according to which degree the student elects to pursue.

A five-year program coordinated with the UCI Department of Education is available for students interested in obtaining a California Teaching Credential.

The **Master of Fine Arts (M.F.A.)** degree program in Music emphasizes composition, choral conducting, voice performance, piano performance, and instrumental performance.

PERFORMANCE OPPORTUNITIES

Choral/Vocal

The Department offers a variety of choral ensembles that give every student, regardless of major, the opportunity to sing. Some groups participate in international concert tours. The California Chamber Singers, Concert Choir, Madrigal Singers, Women's Chorus, and Men's Chorus make up the permanent ensembles. Additional performances are presented in conjunction with professional orchestras, invitational festivals, and Southern California concert venues. In December, the Department also produces the annual series of Madrigal Dinners that celebrate the Christmas season at the court of Henry VIII.

Instrumental

The UCI Symphony Orchestra offers participants an opportunity to explore the great masterworks of the standard orchestral repertory. The orchestra performs a number of programs each year and each performance features a guest artist. Artists have included Lincoln Mayorga, piano; Margaret Batjer, violin; Stephen Erdody, violoncello; and the UCI Choral Union in Mendelssohn's *Elija*. Johann Strauss Jr.'s *Die Fledermaus* was presented in conjunction with the Departments of Drama and Dance.

Additional student performance opportunities are available with three bands: the Wind Ensemble performs great works from the concert band literature; the Jazz Ensemble is a standard 18-piece big band; and the UCI Band plays at athletic events, including the men's basketball season home games.

Composition

Students have the opportunity to compose works for performances by undergraduates and graduates, chamber groups, and a student modern music chamber ensemble. Selected student works may be read by the large performing ensembles.

CAREERS IN MUSIC

A degree in Music offers many career opportunities. Music is a highly competitive profession and a degree may or may not lead to

professional employment with an orchestra or as a concert artist. Many graduates do, however, become successful freelance members of symphony orchestras, composers, and performers. Many others go on to pursue graduate degrees in performance, music history, conducting, arts management, music librarianship, composition, or secondary or postsecondary education. Some graduates have made careers in music publishing and in the recording industry.

RECOMMENDED PROFICIENCY LEVELS FOR ENTERING FRESHMEN

All applicants for admission are required to pass an audition in their principal performing medium and will receive information concerning the mandatory audition approximately 60 days following the close of the application period.

Freshmen students wishing to enter either of the baccalaureate degree programs in Music must demonstrate appropriate performance proficiency and should have had a minimum of two years of instrumental or vocal instruction and should know scales, fundamental notation, and triads. In addition, they should have the ability to read music in both treble and bass clefs. Basic keyboard skill is highly desirable, as is experience as a solo performer. Choral, orchestral, band, or stage experience is desirable. Freshmen students who wish to pursue the B.Mus. degree should have, in addition to the above, at least three years (instead of two years) of private instruction; knowledge of scales, chords, and arpeggios; sight-reading ability; and a solo repertory from the sonata or chamber literature or the art song and oratorio literature.

Transfer students pursuing either undergraduate degree should have had college-level private instrumental or vocal instruction; two years of music theory; the history of western music; ear-training; sight-singing; sight-reading; and piano. *All transfer students must pass a performance audition in order to enter either baccalaureate degree program.*

For transfer students pursuing the B.Mus. degree, results of the audition will determine the minimum number of quarters necessary to complete degree requirements. All transfer students also must take placement tests in musicianship, theory, and history in order to transfer these courses in fulfillment of the UCI Music degree requirements. These placement exams are given just before the beginning of the student's first quarter of study at UCI.

It is strongly recommended that all entering B.Mus. students have at least the following experience and/or abilities in music:

Composition students—instrumental or vocal performance proficiency as listed for the appropriate instrument; submission of original instrumental and/or electronic compositions (scores and/or tapes) demonstrating creative talent and writing ability.

Guitar and lute students—knowledge of basic chord shapes, ability to read basic chord progressions and staff notation or tablature. Prior knowledge of the lute is desirable but not required. Guitarists with a nonclassical background (fingerstyle, jazz, rock) will be considered if they have adequate facility on the instrument and the desire to explore the classical guitar and lute repertory.

Percussion students—mastery of rudimentary snare drum techniques to include open and closed rolls, flams, ruffs, and drags; familiarity with mallet percussion instruments (including bells, xylophone, and marimba) and ability to play rolls on tympani; knowledge of tuning techniques and basic rhythmic reading, major and minor scales, and basic note reading skills.

Piano students—ability to perform from memory a prelude and fugue from Bach's *Well-Tempered Clavier*, the first movement of a classical sonata of the difficulty of a Beethoven sonata, excluding op. 49 nos. 1 and 2 and op. 79, and a composition from the romantic period or twentieth century.

Special String Performance students—Violin: major and minor scales and arpeggios through three octaves, one movement from a Bach unaccompanied sonata or partita, one movement from a Classical or Romantic sonata, two contrasting movements of a Classical or Romantic concerto from the standard repertory; **Viola:** major and minor scales and arpeggios through three octaves, one movement from a Bach suite, one movement of a sonata or concerto from the standard repertory (e.g., Brahms sonata, or concertos by Handel, Hoffmeister, Bartók, or Telemann); **Violoncello:** major and minor scales and arpeggios through three octaves, one movement from a Classical sonata (e.g., Sammartini G major sonata, Beethoven sonata) or two contrasting movements from a Bach suite, one movement from a Romantic sonata (e.g., Brahms, Strauss) or one movement from a concerto from the standard repertory (e.g., Lalo, Saint-Saëns, Dvôrák, Haydn, Boccherini); **Double Bass:** major and minor scales and arpeggios, a solo from Saint-Saëns' *Carnival of the Animals* or comparable work, two contrasting movements from any concerto of the standard repertory.

String students—ability to produce a clear tone and precise intonation with and without vibrato; controlled vibrato; slurred, *detaché*, *louré*, *staccato*, and simple *spiccato* bow strokes; knowledge of all major and minor scales and arpeggios; ability to play and read repertory of a difficulty comparable to the symphonies of Haydn, Mozart, Beethoven, and Schubert as well as demonstrable knowledge of the sonata and/or chamber music literature for the particular instrument.

Voice students—ability to perform solo literature; at least two years of private study and/or participation in choral or instrumental ensemble; some facility at the keyboard; a background in Italian, French, and German art songs.

Woodwind and brass students—ability to sustain tone production; accurate intonation over a dynamic range (from *pianissimo* to *fortissimo*); control of breath and articulation; all major and minor scales and arpeggios (*legato* and *staccato*) commensurate with the range and technique of the particular instrument; ability to play and read repertory from the seventeenth century to the present with a demonstrable knowledge of the sonata literature for the particular instrument.

Course Groups by Specialization

	Composition
Private Lesson	Music 157
Ensembles	Music 160, 161, 162, 171, 174, 176, 178
	Guitar/Lute
Private Lesson	Music 170
Solo Performance Class	Music 174
Ensemble	Music 176
	Percussion
Private Lesson	Music 169
Solo Performance Class	Music 176
Ensemble	Music 160, 161, or 178
	Piano
Private Lesson	Music 165
Solo Performance Class	Music 175
Ensemble	Music 176
	String
Private Lesson	Music 166
Solo Performance Class	Music 176 or 194
Ensemble	Music 160
	Voice
Private Lesson	Music 168
Solo Performance Class	Music 63, 163
Ensemble	Music 162
	Woodwind/Brass
Private Lesson	Music 167
Solo Performance Class	Music 176
Ensemble	Music 160, 161, or 178

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements—Core

Four quarters of theory/musicianship (Music 16A-B-C-D); two quarters of courses chosen from post-tonal theory (Music 35A-B), jazz theory (Music 36A-B), advanced counterpoint (Music 135), instrumentation (Music 136), composition (Music 150A-B-C), music technology (Music 151 or 152); one year of music history (Music 40B-C-D); attainment of a passing score on the Piano Sight-Reading Examination, to be taken no later than the first quarter of the junior year.

NOTE: Composition students may not use Music 136, 150A-B-C, and 151 to satisfy core requirements.

Bachelor of Arts Degree: Satisfactory completion of the Core requirements; one quarter of analysis (Music 155A); one quarter upper-division topics course chosen from the Music 140–147 series or Music 155B; two years of instrumental or vocal instruction (12 units maximum, selected from Music 65–68, 168–170); two years of ensemble or repertory classes as assigned by the Department (12 units selected from Music 63, 160–164, 171–176, 178, 194, or 197). Transfer students must complete at least six units of instrumental or vocal instruction in residence and six units in ensemble or repertory courses in residence.

Students may choose to emphasize Analysis, History, Performance, and Jazz. One of the following senior projects must be completed: (1) a lecture or lecture/performance (including jazz) of approximately 20 minutes in length on a musical subject presented to students, faculty, and guests, which can be a revision of a paper or project prepared for a course; (2) a composition or group of compositions of appropriate length; or (3) a thesis on a musical subject of at least 15 typed, double-spaced pages, which can be based on material taken from a course other than Music 155B. Proposed projects must be approved by the B.A. advisor by the end of the fall quarter of the year in which graduation is expected. Upon approval of the project proposal and with faculty supervision, a student may take Music 199 to research and write the thesis.

Bachelor of Music Degree: Satisfactory completion of the Core requirements; one quarter of analysis (Music 155A); one quarter upper-division topics course chosen from the Music 140–147 series or Music 155B; instrumental or vocal students receive instruction each quarter of residence (Music 165–170) for a maximum of 12 quarters for entering freshmen and six quarters for transfer students. Composition students receive instruction for six quarters (Music 157) normally in their junior and senior years. Instruction beyond the maximum must be approved by the department; senior recital (Music 192S); completion of the following courses according to the approved Bachelor of Music specialization:

Composition: six quarters of ensemble performance selected from orchestra (Music 160), wind ensemble (Music 161), chorus (Music 162 or 171), chamber ensembles (Music 174 or 176), or jazz ensemble (Music 178); one quarter instrumentation (Music 136); two quarters of music technology (Music 51 and 151); three quarters of composition (Music 150A-B-C). A senior project (Music 192P) may be substituted for the recital (Music 192S).

Guitar and Lute: guitar and lute workshop (Music 174) and chamber ensembles (Music 176) each quarter of residence.

Orchestral or Band instruments: orchestra, wind ensemble, or jazz band, as assigned by the Department (Music 160, 161, or 178) and chamber ensembles (Music 176) each quarter of residence.

Piano: piano repertory (Music 175 each quarter of residence); six quarters of ensemble performance (three quarters of Music 76P and three quarters of Music 176), for any quarters of which may be

Sample Program — B.A.

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Lessons	Lessons	Lessons
Ensemble	Ensemble	Ensemble
Lower-division writing	Lower-division writing	Lower-division writing
Sophomore		
Music 16D	Music elective ¹	Music elective ¹
Lessons	Lessons	Lessons
Ensemble	Ensemble	Ensemble
Breadth II	Breadth II	Breadth II
Breadth VI	Breadth VI	Breadth VI
Junior²		
Music 40B	Music 40C	Music 40D
Breadth III	Breadth III	Upper-division writing
Breadth VI	Breadth V	Breadth V
Breadth V	Elective	Elective
Senior		
Music 155A	Music 140-147, or 155B	Music 192P
Breadth VII	Breadth VII	Breadth III
Elective	Elective	Elective
Elective	Elective	Elective

¹ Selected from the following: Music 35A-B, 36A-B, 135, 136, 150A-B-C, 151, or 152.

² Piano sight-reading examination should be taken in first quarter of junior year.

Sample Program — B.Mus.

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Major group ¹	Major group ¹	Major group ¹
Lower-division writing	Lower-division writing	Lower-division writing
Sophomore		
Music 16D	Music elective ²	Music elective ²
Major group ¹	Major group ¹	Major group ¹
Breadth II	Breadth II	Breadth II
Breadth VI	Breadth VI	Breadth VI
Junior³		
Music 40B	Music 40C	Music 40D
Major group ¹	Major group ¹	Major group ¹
Breadth VI	Breadth III	Upper-division writing
Breadth V	Breadth V	Breadth V
Senior		
Music 155A	Music 140-147, or 155B	Major group ¹
Major group ¹	Major group ¹	Music 192S
Breadth VII	Breadth VII	Breadth III
		Breadth III

¹ Three courses taken concurrently that are determined by the student's major. See Course Groups by Specialization chart.

² Selected from the following: Music 35A-B, 36A-B, 135, 136, 150A-B-C, 151, or 152.

³ Piano sight-reading examination should be taken in first quarter of junior year.

Sample Program — B.Mus. in Composition

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Ensemble ¹	Ensemble ¹	Ensemble ¹
Lower-division writing	Lower-division writing	Lower-division writing
Breadth II	Breadth II	Breadth II
Sophomore		
Music 16D	Music elective ²	Music elective ²
Music 150A	Music 150B	Music 150C
Ensemble ¹	Ensemble ¹	Ensemble ¹
Breadth V	Breadth V	Breadth V
Junior³		
Music 40B	Music 40C	Music 40D
Music 51	Music 151	Music 136
Music 157	Music 157	Music 157
Breadth VI	Breadth VI	Upper-division writing
		Breadth VI
Senior		
Music 155A	Music 140-147, or 155B	Music 157
Music 157	Music 157	Music 192P or 192S
Breadth VI	Breadth III	Breadth III
Breadth VII	Breadth VII	Breadth III
		Elective

¹ Selected from the following: Music 160, 161, 162, 171, 174, 176, or 178.

² Selected from the following: Music 35A-B, 36A-B, 135, or 152.

³ Piano sight-reading examination should be taken in first quarter of junior year.

Sample Program — B.Mus. in Special String Performance

FALL	WINTER	SPRING
Freshman		
Music 16A	Music 16B	Music 16C
Music 77	Music 77	Music 77
Music 160	Music 160	Music 160
Lower-division writing	Lower-division writing	Lower-division writing
Sophomore		
Music 16D	Music elective ¹	Music elective ¹
Music 77	Music 77	Music 77
Music 160	Music 160	Music 160
Arts course ²	Arts course ²	Arts course ²
Breadth II	Breadth II	Breadth II
Breadth VI	Breadth VI	Breadth VI
Junior³		
Music 40B	Music 40C	Music 40D
Music 177	Music 177	Music 177
Music 160	Music 160	Music 160
Music 194	Music 194	Music 194
Breadth VI	Breadth III	Upper-division writing
Breadth V	Breadth V	Breadth V
Senior		
Music 177	Music 177	Music 177
Music 160	Music 160	Music 160
Music 194	Music 194	Music 194
Breadth VII	Breadth III	Breadth III
	Breadth VII	

¹ Selected from the following: Music 35A-B, 36A-B, 135, 136, 150A-B-C, 151, or 152.

² Any three courses in history or criticism of art, dance history, development of drama, dramatic literature, or film criticism.

³ Piano sight-reading examination should be taken in first quarter of junior year.

substituted Music 160P, 161P, 166P, 178P, or 194 with the consent of the instructor; and three quarters of choral/vocal accompaniment, to be chosen from Music 162P, 164P, or 197; transfer students in piano distribute this requirement in a 2:1 ratio over quarters of residence.

Voice: chorus (Music 162) and vocal performance (Music 63 or 163) each quarter of residence. With written permission of the director of the program in voice, a student when in residence may substitute two quarters of acting (Drama 30A-B) and two quarters of music theatre workshop (Drama 165) for a maximum of four quarters of vocal performance (Music 63 or 163). During the quarter of their senior recital, students, with written permission of the Music faculty, may be exempted from their ensemble requirement.

Bachelor of Music Degree (Special String Performance): Satisfactory completion of the Core requirements; four years of instruction in the major instrument (Music 77 and 177); four years of orchestra (Music 160); two years of chamber music (Music 194); any three courses in history or criticism of art, dance history, development of drama, dramatic literature, or film criticism; four to eight units of a music elective selected from Music 135, 140–147, 155A-B; senior recital (Music 196).

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Music, with emphasis in composition, choral conducting, vocal performance, piano performance, and instrumental performance.

Admission

Applications for admission to the degree program should be submitted by March 1 for the following fall quarter. Applicants must meet the general requirements for admission to graduate study and hold a B.A. in Music, or B.Mus., or the equivalent. Applicants should have completed at least two years of college study, or the equivalent, of one of the following languages: French, German, Italian, Spanish, or Latin.

Applicants must also submit an eight- to ten-page paper on a musical subject (analytical, theoretical, historical); this requirement may be fulfilled by the submission of an undergraduate term paper.

All applicants for programs in performance must audition for members of the Music faculty by March 1. In special cases, a recently recorded demonstration of performance may be accepted. Applicants for the program in composition must submit scores and tapes of their works.

All applicants for admission must demonstrate competence in basic musical skills: sight-singing, written and keyboard harmony, dictation, and minimal facility at the keyboard (including sight-reading). The examination will be administered in late March for all applicants who live within a 100-mile radius of UCI; all other applicants will be sent information concerning a proctored examination. In some cases, students who do not demonstrate appropriate proficiency in some area may be considered for admission. If admitted, these students will be required to make up any deficiency by the end of the first year of residency.

General Degree Requirements

Normally, two years of residence are required. Each candidate must enroll for at least 12 units each quarter (normally consisting of three courses) for six quarters, exclusive of summer sessions. Students in choral conducting, vocal performance, and keyboard performance must demonstrate reading knowledge of French, German, Italian, Spanish, or Latin by passing a written examination administered through the Department of Music, or by passing the appropriate language course (level 2A) for one quarter. This course must be passed with a grade of B or better to fulfill the foreign language

requirement. Students who are required to fulfill this requirement must do so prior to the comprehensive examination.

Comprehensive examinations are taken after the fourth quarter in residence as a prerequisite to candidacy for the M.F.A. degree. A student who fails the comprehensive examination may reschedule it once in the following quarter. Participation in performance at UCI as assigned by the Department throughout residence is required.

Specific Degree Requirements

Seventy-two quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B in each course. Not more than 20 units in upper-division courses may count toward the degree. Specific course requirements must be completed in one of the following areas:

Choral Conducting: one course in bibliography (Music 200); two courses in analysis (Music 201A-B); one course in history (Music 220); two quarters of tutorials (Music 190); five courses in graduate studio vocal literature (Music 210); one quarter of tutorials (Music 191); one course in directed reading (Music 250); two quarters of graduate projects (Music 240); four electives; participation in performance as assigned by the Department of Music each quarter of residence; preparation of a thesis project in performance, supported by a written essay.

Composition: one course in bibliography (Music 200); two courses in analysis (Music 201A-B); one course in history (Music 220); one course in directed reading (Music 250); six courses in graduate studio composition (Music 212); two courses in graduate projects (Music 240); two quarters of tutorials (Music 190); one quarter of tutorials (Music 191); three electives; participation in recitals of student compositions as assigned by the Department of Music each quarter of residence; preparation of a project in composition, supported by a written essay.

Instrumental Performance: one course in bibliography (Music 200); two courses in analysis (Music 201A-B); one course in history (Music 220); six courses in graduate studio instrumental literature (Music 211); six quarters of chamber ensembles and performance, of which at least two will be devoted to contemporary music (Music 176); two quarters of graduate projects (Music 240); three electives; participation in a large ensemble each quarter of residence, as assigned by the Department of Music. There will be a solo recital at the end of the second year of residence.

Piano Performance: one course in bibliography (Music 200); two courses in analysis (Music 201A-B); one course in history (Music 220); six courses in graduate studio instrumental literature (Music 211); two quarters of graduate projects (Music 240); six quarters of chamber ensembles and performance, of which at least two will be devoted to contemporary music (Music 176); three electives. There will be a solo recital at the end of each of the two years of residence.

Vocal Performance: one course in bibliography (Music 200); two courses in analysis (Music 201A-B); one course in history (Music 220); one quarter of tutorials (Music 190); two quarters of tutorials (Music 191); five courses in graduate studio vocal literature (Music 210); two courses in graduate projects (Music 240); one course in directed reading (Music 250); four electives; participation in performance as assigned by the Department of Music each quarter of residence; preparation of a thesis project in performance, supported by a written essay.

Courses in Music

LOWER-DIVISION

2 Percussion Laboratory (1). Introduction to percussion instruments and basic performing skills and notations. Prerequisites: restricted to Office of Teacher Education students pursuing a teaching credential; ability to read music.

6 Instrumental Laboratory (2). Basic studio introduction to strings, winds, and brass instruments. Students must provide their own instruments. Prerequisites: restricted to Office of Teacher Education students entering in or enrolled in the single-subject teaching credential program; Music 25 or equivalent.

7 Gospel Choir (2). American spirituals and gospels. Approach is one of cultural authenticity rather than "musically straight." Several performances are given throughout the year. May be repeated for credit.

9 History of Rock (4) S. Explores the development of rock music—its history and stylistic development from a political, sociological, and musical perspective.

10 Piano for Majors (2) F, W, S. For Music majors with little or no piano experience. Provides the necessary background for realizing keyboard exercises required in the theory and harmony courses, and develops skills to play and sight-read simple music from different periods. Pass/Not Pass only. May be taken for credit three times.

14A-B-C European and American Music: 1700—Twentieth Century (4-4-4) F, W, S. Survey of European and American music from the Baroque period through the twentieth century. **14A:** Baroque and Classical music with adequate attention given to the Medieval and Renaissance periods. **14B:** The nineteenth and twentieth centuries. **14C:** Selected topics in American music. (IV)

16A-B-C-D Theory/Musicianship (6-6-6-6) F, W, S. **16A:** Basic concepts and materials. Major and minor scales, intervals between pitches, key signatures, elements of rhythm, diatonic chords in root position, and inversion. Simple and compound meters. **16B:** Principles of voice-leading, harmonic progression. Triads in first inversion. Triads in second inversion (6-4 chords). Syncopation in simple and compound meters. **16C:** Phrase structure, non-chord tones, the V7 chord and its resolutions, inversions of the V7 chord, II7 and VII7, other diatonic seventh chords. Non-symmetrical meters and mixed meters. **16D:** Chromaticism and altered chords, secondary (applied) V and V7 chords, secondary VII7 chords, common—chord and common—tone modulations, other modulations, mode mixture, the Neapolitan chord, augmented-sixth chords, altered dominant chords, extended chords (ninth, eleventh, and thirteenth chords), harmonic practices of the late nineteenth century.

18 Basic Voice (2) F, W, S, Summer. Class instruction for nonmusic majors. Students must be enrolled in Music 162 in the current year. Prerequisite: Music 25 or consent of instructor.

25 Fundamentals of Music (2) F, S, Summer. Scales, key signatures, notation, basic progressions, intervals, reading, intonation, transposition, basic rhythms.

35A-B Post-Tonal Theory (4-4) F, W, S. Two-, three-, and four-part writing; altered and chromatic chords; extended modulations and large-scale harmonic structure. Prerequisite: Music 16D.

36A-B Jazz Theory (4-4) W, S. **36A:** Introduction to the jazz symbols and terminology. Study of the most basic harmonic and melodic devices used by the jazz improviser. Emphasis is placed on understanding harmonization. Prerequisite: Music 16D. **36B:** Continuation of the study of harmonic and melodic devices in jazz with emphasis on role that bi-tonality has in modern idiom. Use of non-chordal notes is examined as well as a look at reharmonization of pre-existing melodies. Prerequisite: Music 36A.

40B-C History of European Music to Wagner (4-4) F, W. A survey of Western music. An introduction to the analysis of musical styles and forms and to the sources for constructing music history and reconstructing historical music. **40B:** to J.S. Bach; **40C:** to Richard Wagner. Prerequisites: Music 16C; Music 35B recommended for 40C. Open to Music majors only. (IV)

40D Twentieth-Century Music (4). Survey of principal composers, movements, and compositional techniques of Western art music of the modern era. Prerequisites: Music 16D and 40B-C. (IV)

41 Great Composers (4). Study of the works of an important composer with emphasis on their significance in historical and social contexts. Composers selected represent a wide variety of historical periods, nationalities, and stylistic orientations. Primarily for non-music majors; majors may enroll with permission. May be taken for credit two times as topics vary.

43 Counterpoint (4) S. Studies in contrapuntal practices of various style periods such as the sixteenth, eighteenth, and twentieth centuries. Prerequisite: Music 16D.

51 Music Technology and Computers (4) F. A study of the influence of technology on the musical culture and aesthetics of America in the twentieth century, with particular emphasis on the role of the computer. Work includes lectures, readings, listenings, discussions, demonstrations, writing, and experimentation.

63A-B-C Vocal Performance: Diction and Movement (2-2-2) F, W, S. Diction and movement techniques; the International Phonetic Alphabet and fundamentals of song interpretation for the stage. Music majors and Music minors concentrating in voice only. **63A:** English and Italian; **63B:** French and German; **63C:** Topic varies. May be repeated for credit.

65 Intermediate Piano (1 to 2) F, W, S. Private weekly lessons for piano students in the B.A. program and Music minors. By audition only. May be repeated for a maximum of 12 units of credit.

68 Intermediate Voice (1 to 2) F, W, S. Private weekly lessons and coaching for lower-division students in voice, upper-division voice students in the B.A. program, and Music minors. Corequisite: Music 162 or 171. May be repeated for a maximum of 12 units of credit.

76P Chamber Ensembles (2) F, W, S. Chamber ensembles for sophomore piano majors only. Meets with Music 176. May be taken for credit three times.

77 Private Lesson (Special String Performance majors) (4) F, W, S. A one-hour weekly private lesson. Instruction in technique and literature. For lower-division Special String Performance students only. May be repeated for credit.

78A, B History of Jazz (4, 4) F, W. **78A:** Development of jazz from its African and African-American folk origins through blues, early jazz and the swing era. **78B:** Continuation of the above survey, concentrating on bebop, "cool" jazz, and fusion. (VII-A)

92 Sophomore Recital (0) F, W, S. Solo or joint public recital by audition only and with departmental approval. Prerequisite: Music 16C. Corequisite: Music 174, 175, or 176. Open only to Music majors, except students concentrating in voice. Pass/Not Pass only.

UPPER-DIVISION

135 Advanced Counterpoint (4) W. Advanced exercises and composition in two- and three-part tonal writing, canon, and fugue, as well as some contemporary forms. Prerequisite: Music 43. Formerly Music 135B.

136 Instrumentation (4) W. Ranges and capabilities of modern orchestral instruments. Exercise in writing for various combinations of wind, string, and percussion instruments and for full orchestra. Prerequisite: Music 16C.

NOTE: Courses in the 140–147 sequence are for Music majors and include such topics as: The Motet in the Thirteenth and Fourteenth Centuries (140), Renaissance Keyboard Music (141), The Cantatas of Bach (142), Mozart's Operas (143), Early Nineteenth-Century Opera (144), Schoenberg, Bartók, and Stravinsky (145), Duke Ellington, Miles Davis, and Billie Holiday (146). Topics vary from quarter to quarter; each course may be repeated for credit. In addition, special courses in the 140–147 series numbered N are also offered for nonmajors.

140 Studies in Medieval Music (4)

141 Studies in Renaissance Music (4)

142 Studies in Baroque Music (4)

143 Studies in Classical Music (4)

144 Studies in Romantic Music (4)

145 Studies in Twentieth-Century Music (4). Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing.

146 Studies in Jazz Music (4)

147 Studies in Music Technology (4) F, W, S. Specialized topics in electronic music, computer-aided music, and other aspects of music technology.

150A-B-C Composition (4-4-4) F, W, S. Exercises and projects for diverse instrumental-vocal combinations; contemporary techniques and problems. Participation in the improvisation ensemble and working with electronic media. Prerequisite: Music 16C or consent of instructor. May be repeated for credit.

151 Computer Music Composition (4) W. Exercises in the composition of music uniquely possible by computer, including digital signal processing, computer control of synthesizers and processors, and algorithmic composition. Demonstrations and musical analyses in class; considerable studio work outside class. Prerequisite: Music 51 or consent of instructor.

152 Interactive Arts Programming (4) S. Study of artistic issues and programming techniques involved in the development of interactive computer art and music. Theoretical background, basic tenets of programming, and practical exercises in programming interactive computer multimedia art. Prerequisite: Music 151 or Studio Art 106 or consent of instructor.

155A-B Analysis (4-4) F, W. Methods of formal analysis applicable to all Western musical styles: additive, continuous, transformational, and hierarchic forms; rhythm, texture, and sonority as form and process. Prerequisite: Music 16D and 40B-C, or equivalent; satisfactory completion of the lower-division writing requirement.

157 Advanced Study in Composition (2) F, W, S. Individual weekly lessons in composition. Prerequisite: Music 150C. Open only to upper-division Music majors.

160 University Orchestra (1 to 2) F, W, S. Study and performance of standard orchestral repertory and works by contemporary composers. Emphasis on ensemble techniques including articulation, balance, phrasing, expression, accompanying. Two concerts per quarter; musicians required to attend all rehearsals. One unit of credit for Music majors; two units of credit for Music minors and nonmajors. May be repeated for credit.

160L Orchestral Tutorial (1 to 2) F, W, S. Tutorial instruction for individual players in the University Orchestra, combining private instruction with independent practice. Corequisite: Music 160. Open to Music minors and Music majors in the B.A. program who have completed 12 units of tutorial credit; and only upon consent of the Director of the Orchestra.

160P University Orchestra: Keyboard (1 to 2) F, W, S. Participation in University Orchestra for keyboard players (harpsichord, piano, celestra, organ), depending on repertory. Prerequisite: consent of instructor. May be repeated for credit.

161 University Wind Ensemble (2). An ensemble devoted to the study and performance of music written for varying combinations of wind and percussion instruments. Concerts typically include works for small groups (e.g., octets), as well as those for full symphonic wind ensemble. Membership open to both Music majors and nonmajors by audition only. May be repeated for credit.

161P Wind Ensemble: Keyboard (1 to 2) F, W, S. Participation in University Ensemble for keyboard players (piano, synthesizer, celesta, organ), depending on repertory. Prerequisite: consent of instructor. May be repeated for credit.

162 University Chorus (2) F, W, S. Included in the University Chorus are Concert Choir, Freshman Chorus, Men's Chorus, Women's Chorus, Jazz Choir, Collegium Musicum. Each quarter a major concert is prepared, often with orchestral accompaniment. Membership is open by audition. May be repeated for credit.

162L Basic Voice Laboratory (2) F, W, S. Vocal technique and musicianship for selected singers in UCI's choral organizations. Not open to Music majors. Corequisite: Music 162. Prerequisite: consent of Director of the choral group. May be repeated for credit.

162P University Chorus: Accompanying (2) F, W, S. Keyboard accompanying for one of the UCI choral organizations, with individual coaching in sight reading, score reading, and other accompanying skills. Prerequisite: consent of instructor. May be repeated for credit.

163A Vocal Performance: Repertory I (2) F. Technique, diction, and interpretation through the preparation in repertory of English and Italian (in alternate years), mastering the International Phonetic Alphabet, developing a critical ear for intelligibility. Students prepare songs from the standard repertory to be presented in public recitals. Limited to Music majors and minors concentrating in voice and to University Extension students by audition. May be repeated for credit.

163B Vocal Performance: Repertory II (2) W. Technique, diction, and interpretation through preparation of repertory in French and German (in alternate years), mastering the International Phonetic Alphabet, and developing stage presentation and style. Limited to Music majors and minors concentrating in voice and to University Extension students by audition. May be repeated for credit.

163C Vocal Performance: Special Topics (2) S. A workshop on changing topics such as operatic scenes, modern music, extended vocal techniques, single composers (e.g., Mozart). Gesture, stance, stage presence, and acting are stressed. Only for Music majors concentrating in voice. May be repeated for credit.

164 Opera Workshop (2). Students participate in staged performances of scenes from complete operas. The aim is to broaden the repertoire of singers by offering them opportunities to become acquainted with a wide variety of operatic roles.

164P Opera Workshop: Rehearsal (2) F, W, S. Training in repertoire techniques and operatic repertory for keyboard players. Prerequisite: consent of instructor. May be taken for credit six times.

165 Advanced Study in Piano (1 to 2) F, W, S. Designed to give students the technique, musical insight, and performance experience for interpreting works of the piano literature in concert performances. Private weekly lessons. Open to Music majors and minors only. May be repeated for credit.

166 Advanced Study for String Instruments (2) F, W, S. Private weekly lessons. Open to Music majors and minors only. Corequisite: Music 160, 161, 162, or 178. May be repeated for credit.

166P String Accompaniment (2) F, W, S. Chamber ensemble experience with the solo string repertory for keyboard, participation in the weekly string master class, performance in public recitals. Prerequisite: consent of instructor. May be taken for credit three times.

167 Advanced Study for Wind Instruments (2) F, W, S. Private weekly lessons. Open to Music majors and minors only. Corequisite: Music 160, 161, 162, or 178. May be repeated for credit.

168 Advanced Study in Voice (2) F, W, S. Designed for voice majors; students are selected by audition. Private weekly lessons. Corequisite: concurrent enrollment in Music 162 or 171. May be repeated for credit.

169 Advanced Study for Percussion Instruments (2) F, W, S. Private weekly lessons. Corequisite: Music 160, 161, or 178 as assigned by the Department. Open to Music majors only. May be repeated for credit.

170 Advanced Study for Guitar and Lute (2) F, W, S. Private weekly lessons. Corequisite: Music 174. Open to Music majors and minors only. May be repeated for credit.

171 Chamber Singers (2). A select ensemble specializing in vocal chamber music from all periods. Frequent performances on and off campus. Membership is open to all UCI members by audition.

173 Band (2). A 40- to 50-member ensemble which plays classical, jazz, and pop arrangements for athletic events and social and charity functions both on and off campus.

174 Guitar and Lute Workshop (2) F, W, S. An informal master class for the discussion of solo repertory and performance practice, this workshop also includes special topics such as historical notational systems, traditional American guitar styles, and demonstrations of period plucked instruments.

175 Piano Repertory (2) F, W, S. Weekly two-hour meetings for students to perform before each other, followed by open discussion. The aim is to develop a sense of self-criticism and the ability to listen intelligently. Normally each student also participates quarterly in piano recitals. May be repeated for credit.

176 Chamber Ensembles and Performance (2) F, W, S. A class for instrumental majors (woodwind, brass, strings, percussion, guitar, lute, piano) wherein members perform solo and chamber music at each meeting before their fellow students. Critical listening and constructive criticism are encouraged. May be repeated for credit.

177 Private Lesson (Special String Performance majors) (4) F, W, S. A one-hour weekly private lesson. Instruction in technique and literature for Special String Performance option at junior and senior levels. Corequisite: Music 196. May be repeated for credit.

178 Jazz Band (2) F, W, S. Rehearsal and performance of literature written for large jazz ensemble with emphasis on methods and materials. Laboratory setting for new arrangers and/or composers of modern jazz pieces. Prerequisite: consent of instructor. May be repeated for credit.

178P Jazz Ensemble: Keyboard (1 to 2) F, W, S. Participation in Jazz Ensemble for keyboard players (harpsichord, piano, celestra, organ), depending on repertory. Prerequisites: audition and consent of instructor. May be taken for credit three times.

180 Music Criticism (4). Topics vary.

181A Beginning Jazz Improvisation (2) F, W. Develops the student's basic understanding of the fundamentals of jazz improvisation. Basic harmonic patterns, blues, modality, and simpler song forms are covered. Prerequisite: Music 16C or equivalent. Formerly Music 178I.

181B Intermediate Jazz Improvisation (2) W, S. Continuation of beginning jazz improvisation which covers various 32-bar song forms, modal improvisation and more sophisticated blues forms. Studies the development of improvisation through history of jazz including composers Ellington, Monk, Morton, Mingus, Coltrane, Silver, and others. Prerequisite: Music 181A.

189 Accompanying for Plucked Strings: Continuo and Changes (2) F, W, S. Students apply theory to their instruments as they learn the basics of pre-1800 continuo playing and post-1900 jazz charts. Includes discussions of appropriate repertory, treatment of harmonic progressions, and finer points of style and technique. Prerequisite: Music 16C. May be taken for credit eight times.

190 Studio Tutorials in Music (2) F, W, S. Private lessons for Music majors and minors in guitar/lute and percussion, as well as for graduate composition students in piano, strings, winds, voice, guitar/lute, and percussion. May be repeated for credit.

191 Tutorial in Music (4) F, W, S. May be repeated for credit.

192J Junior Recital (0) F, W, S. Solo or joint public recital by audition only and with departmental approval. Corequisite: Music 163, 174, 175, or 176. Prerequisite: Music 16D. Open to Music majors only. Pass/Not Pass only.

192P Senior Project (0) F, W, S. Senior project for Music majors in the B.A. program. Open to Music majors only. Pass/Not Pass only.

192S Senior Recital (0) F, W, S. Performance of solo public recital with departmental approval. The recital must include at least one work composed since 1945. Corequisites: Music 163, 174, 175, or 176. Prerequisites: Music 16D, 40B-C-D or equivalent; and Music 155A. Pass/Not Pass only.

193 Conducting (4) S. Fundamentals of baton technique, score study, transposition, and orchestration. Prerequisites: Music 16D and 40B-C-D or equivalent. May be taken for credit twice.

194 Chamber Music (2) F, W, S. Performance of classical, romantic, and contemporary chamber music works. Includes private coaching (every other week) and an open forum for constructive criticism by class members. Open to string players and a limited number of woodwind players and pianists by audition. May be repeated for credit.

196 Special String Senior Recital (4) F, W, S. A full, public recital to be given in the senior year. The program must include works from the major periods of music (e.g., Baroque, classical, romantic, modern). The recital must include at least one work composed since 1945. For Special String Performance students only. Corequisite: Music 177. May be taken for credit two times.

197 Vocal Accompanying (2) F, W, S. Designed for advanced singers and pianists. Performance practice, styles of vocal literature: German *Lieder*, French *mélodies*, twentieth-century art song.

199 Independent Study (2) F, W, S. Research, writing, or composition work, under the guidance of a faculty member, normally undertaken in conjunction with preparation of the B.A. Senior Project. Prerequisite: consent of instructor. May be taken for credit two times.

GRADUATE

All graduate courses may be repeated for credit except Music 201A-B.

200 Bibliography and Research (4) F, W. Required of all entering students. A systematic introduction to the bibliographical tools both in the general field of music and in the students' areas of specialization.

201A-B Analysis (4-4) F, W. Various approaches to analysis through concentrated study of a number of selected works. Formerly Music 201.

210 Topic Varies: Vocal or Choral Literature (4) F, W, S. Includes studies in vocal or choral literature, vocal pedagogy, and diction and performance. May be taken for credit six times.

210R M.F.A. Vocal/Choral Recital (0) F, W, S. Performance of public recital. The recital must include at least one work composed since 1945. Satisfactory/Unsatisfactory only.

211 Graduate Studio: Instrumental Literature (4) F, W, S. Contents vary according to the student's major instrument. The core of this course is

intensive private instruction and study of the various instrumental literatures. May be taken for credit six times.

211R M.F.A. Instrumental Recital (0) F, W, S. Performance of public recital. The recital must include at least one work composed since 1945. Satisfactory/Unsatisfactory only. May be taken for credit two times.

212 Graduate Studio: Composition (4-4-4) F, W, S. Intensive work in composition geared to each student's level of competence.

220 Seminar in Music History (4)

240 Graduate Projects (4) F, W, S. Substantial projects in performance, conducting, or composition (other than those specifically required for the degree), accompanied by a summary paper.

250 Directed Reading (4). Individual research projects, resulting in the writing of a substantial paper pertaining to the principal area of concentration. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF STUDIO ART

176 Sculpture Studio; (949) 824-6648

David Trend, **Department Chair**

Faculty

Ed Bereal, Chouinard Art Institute, *Senior Lecturer Emeritus in Studio Art*
Tony DeLap, Claremont Graduate School, *Professor Emeritus of Studio Art*
Ulysses Jenkins, M.F.A. Otis Parsons Art Institute, *Assistant Professor of Studio Art* (video)

John Paul Jones, M.F.A. State University of Iowa, *Professor Emeritus of Studio Art*

Craig Kauffman, M.F.A. University of California, Los Angeles, *Professor Emeritus of Studio Art*

Betty Lee, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)

Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical theory, feminism, photography)

Daniel Martinez, B.F.A. California Institute of the Arts, *Assistant Professor of Studio Art* (public art, sculpture, installation, performance)

Yong Soon Min, M.F.A. University of California, Berkeley, *Assistant Professor of Studio Art* (sculpture)

Gifford C. Myers, M.F.A. University of California, Irvine, *Associate Professor of Studio Art* (ceramic sculpture)

Connie Samaras, M.F.A. Eastern Michigan University, *Associate Professor of Studio Art* (photography, media theory, contemporary art issues)

David Trend, Ph.D. School of Education, Miami University, *Department Chair and Associate Professor of Studio Art* (video, photography, visual studies, curriculum)

Pat Ward-Williams, M.F.A. Maryland Institute College of Art, *Associate Professor of Studio Art* (photography, installation)

John White, M.F.A. Otis Parsons Art Institute, *Lecturer in Studio Art* (performance)

Visiting Lecturers

Robert Blanchon, M.F.A. The School of the Art Institute of Chicago, *Lecturer in Studio Art* (contemporary art, theory, criticism)

Andrea Bowers, M.F.A. Bowling Green State University, *Lecturer in Studio Art* (painting, drawing)

Steven Crique, B.A. University of California, San Diego, *Lecturer in Studio Art* (painting, art history, criticism)

Annetta Kapon, M.F.A. University of California, Los Angeles, *Lecturer in Studio Art* (new genres, sculpture, video)

Mara Lonner, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (drawing, sculpture)

Catherine Opie, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)

William "Shelby" Roberts, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (photography)

Kim-Trang T. Tran, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (video, painting, multimedia)

Anne Walsh, M.F.A. California Institute of the Arts, *Lecturer in Studio Art* (visual fundamentals, studio methods)

Larry Wasserman, M.A. University of California, Los Angeles, *Lecturer in Studio Art* (ceramics)

The Department of Studio Art takes a wide-ranging, interdisciplinary view of contemporary art practice. The Department emphasizes a demanding, conceptual approach to work in process in addition to traditional notions of product. Students are encouraged to develop an individual, disciplined direction through an experimental approach to media, materials, and techniques. To further this end, the curriculum provides studio experiences in drawing, painting, sculpture, ceramics, photography, digital imaging, and video, in addition to emphasizing cultural studies in relation to contemporary practice. Visiting artists and theorists who teach on a quarterly basis, or who make shorter guest appearances, are an integral part of the program.

The University's Education Abroad Program offers students the opportunity to study abroad. Special programs for Studio Art majors are offered in Venice (for graduate-level study also) and in Florence; the latter program, at Il Bisonte, focuses on lithography and intaglio printmaking.

CAREERS FOR THE STUDIO ART MAJOR

Departmental faculty and the range of artists whose work is represented in the UCI Art Gallery exhibitions provide diverse career models. Some graduates go on to careers as exhibiting artists or teachers; others work in arts-related activities in museums, galleries, and artists' organizations. A bachelor's degree in Studio Art is usually required as preparation for graduate-level study in studio art.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: None.

Departmental Requirements for the Major

Studio Art 1A-B-C (taken the first year in residence); Studio Art 10A, B, C; Art History 40A, B, C or 42A, B, C; five lower-division courses in at least three different media (Studio Art 20-99); upper-division courses totaling 48 units as follows: three intermediate-level courses with no more than two in one area (Studio Art 102-115); six advanced or project courses (Studio Art 100, 101, 130-195, 199); three issues courses (Studio Art 116-129); Senior Thesis Exhibition (Studio Art 198).

Sample Program for Freshmen

Fall	Winter	Spring
Studio Art 1A	Studio Art 1B	Studio Art 1C
Art History 40A/42A	Art History 40B/42B	Art History 40C/42C
English and Comp.	Elective	Elective
Lit. WR39A	English and Comp.	English and Comp.
	Lit. WR39B	Lit. WR39C

Departmental Requirements for the Minor

Studio Art 1A-B-C; Studio Art 10A, B, C; three lower-division studio classes in three media (Studio Art 20-99); five upper-division courses divided as follows: one from intermediate-level courses (Studio Art 102-115) with no repetition of any course; one from issues courses (Studio Art 116-129); one from advanced or project courses (Studio Art 100, 101, 130-195, 199); plus two additional upper-division courses selected from any of these groups.

MASTER OF FINE ARTS PROGRAM

Degree Offered

M.F.A. in Studio Art.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

General Information

The M.F.A. program is a small program directed to the independently motivated student. The focus is on defining, and refining, individual direction in relation to contemporary practice. The emphasis is on experimental, intermedia approaches rather than on the acquisition of traditional techniques. Independent work with faculty is encouraged, and maximum latitude is given in developing individual research and exhibition projects. Graduate courses combine rigorous critique situations, with faculty as well as visiting artists, and seminars focusing on various aspects of contemporary art theory. Graduate students have regular opportunities to exhibit in the UCI Art Gallery.

The program of visiting artists and lecturers is an integral part of the graduate experience. Recent visitors have included Hung Liu, Margo Machida, Larry Johnson, Millie Wilson, John Greyson, Guillermo Gomez-Peña, Trinh T. Minh-ha, Emily Cheng, Coco Fusco, Carrie Mae Weems, Deborah Bright, May Sun, Li Huai, David Avalos, Jon O'Brien, Douglas Crimp, Hachivi Edgar Heap of Birds, Lari Pittman, Sunil Gupta, Barbara Kruger, Connie Hatch, Nancy Buchanan, O. Fumilayo Makarah, Megan Williams, Fred Wilson, Karen Finely, and Amalia Mesa-Bains.

Individual studio space is assigned by the Department Chair. Facilities support wood and metal work, ceramics, video, photography, digital imaging, sound, painting (including mural painting), and sculpture.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study, hold a B.A. or B.F.A. in Art, have completed one year of twentieth-century art history (students who have not completed this will be required to do so as part of their graduate studies), and submit by February 15 a portfolio of their creative work of a maximum of 20 slides, on a #80 Kodak Carousel tray, of their most recent work, or video tape (VHS; no more than 10 minutes, cued up). A short incisive statement about the work is required. Normally, anyone who has earned an M.F.A. degree in Studio Art will not be considered for admission into the program.

General Degree Requirements

Normally two years of residence are required. Each candidate must enroll for three courses each quarter for six quarters, exclusive of summer sessions.

The student's progress and body of work will be reviewed by a faculty committee yearly. A satisfactory opinion by this committee will allow the student to progress to candidacy for the degree.

Satisfactory attainment must be demonstrated by a specific creative project, which usually takes the form of a graduate exhibition in the University Art Gallery. This project is to be supported by a thesis incorporating visual and written material relevant to the project and the candidate's creative research while at UCI. Oral defense of the project is required.

Specific Degree Requirements

Seventy-two quarter units in graduate or approved upper-division undergraduate courses must be completed with a grade of at least B or a Satisfactory in each course. Not more than 20 units in upper-division courses may count toward the degree. Students are encouraged to take courses in other relevant disciplines, e.g., women's studies, film studies, comparative culture, and critical

theory. Electives may be taken in any discipline. The 72 units will normally be made up in the following manner:

First Year: three courses in Issues in Contemporary Art (Studio Art 215, 220); three courses in Graduate Critique (Studio Art 230); 12 units in graduate projects (Studio Art 240).

Second Year: two courses in Issues in Contemporary Art (Studio Art 215, 220); two courses in Graduate Critique (Studio Art 230), one additional course in Studio Art 220 or Studio Art 230; twelve units in graduate projects (Studio Art 240); one course in thesis (Studio Art 260).

Courses in Studio Art

LOWER-DIVISION

1A-B-C Topics in Visual Culture: Foundation Projects (4-4-4). Approaches to postwar art and culture. Solving visual problems and developing understanding of how gender, sexuality, race, nationality influence contemporary cultures. Examines individual's relation to being an artist, encouraging experimentation rather than repeating received ideas. (IV)

10A, B, C Issues in Contemporary Art and Visual Culture (4, 4, 4). Contemporary art and cultural practice of the past 40 years; slide presentations and film/video screenings. Recent history of visual art. Topics relating to those various critiques of the canon presented by multicultural studies, feminism, and gay and lesbian studies. (IV)

20 Basic Drawing (4). Encourages an investigation of the premises and limits of drawing, primarily, but not inevitably, as a two-dimensional medium. Includes slide presentations and discussions of the historical uses of a wide range of drawing. May be taken for credit twice.

30 Basic Painting (4). Encourages an experimental use of painting techniques, including issues of color, surface, and space. Slide presentations and critiques of student work. May be taken for credit twice.

31A-B Mural Painting I-II (4-4). Introduction to skills and history of mural painting. Includes training in rendering, coloration and scale, as well as presentations on contemporary muralists. Prerequisites for 31A: at least one basic painting course and consent of instructor. Prerequisite for 31B: 31A.

40 Basic Sculpture (4). The practice of sculpture in the contemporary arts; inclusion of spatial interventions, site-specific and environmental design, appropriation of found materials; techniques in cutting, joining, and assembly of wood, metals, and plastics. May include casting, welding, and ceramics. May be taken for credit twice. Materials fee.

51 Basic Ceramic Sculpture (4). Exploration of use of clay as sculptural basis with an emphasis on development of an idea and its relation to contemporary and experimental art practice. Hand-building, glazing, finishing processes, and use of other structural materials. Materials fee. May be taken for credit twice.

61 Basic Non-Silver Imaging (4). Focuses on means of image reproduction other than silver imaging. Explores historical and contemporary uses of such technologies. May include cyanotype, silkscreen, etching, xerox, and various dot-matrix and laser print outputs. Materials fee. May be taken for credit twice.

65 Basic Digital Imaging: Photography (4). An introduction to basic techniques for producing digital images. The development of skills to create and manipulate still images using paint and photographic-based programs is emphasized. Materials fee. May be taken for credit twice.

71 Basic Photography (4). Photography as an aspect of contemporary art practice, including its relation to the documentary tradition. Slide lectures and field trips. Basic technical skills of black and white photography, including cameras, film developing, and printing. Students must have a 35 mm. non-automatic camera. Materials fee. May be taken for credit twice.

81 Basic Video (4). Introduction to the strategies and range of contemporary video production, including screening/discussions on experimental and independent productions. Focuses on acquisition of basic skills in cameras, lighting, sounds, and editing. Readings and screenings are assigned. Materials fee.

91 Basic Performance Art (4). Concepts and history of experimental performance art, including its relation to contemporary artistic practice. An exploration of basic elements, including skills of audience- and non-audience-oriented performance. May be taken for credit twice.

UPPER-DIVISION

100 Special Topics in Studio Art (4). Prerequisites: Studio Art 10A, B, C; upper-division standing or consent of instructor. Same as Women's Studies 174H when topic is appropriate. May be taken for credit six times as topics vary.

101 Artists as Writers (4). Contemporary art practice involves text, as final form or an integral element. Many contemporary artists consider writing as essential to their practice. Covers historical and contemporary uses of text and image as well as artists' writings. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

102 Intermediate Drawing (4). Continuation of the investigation initiated in Studio Art 20, with an emphasis on experimentation, personal investigation, and the development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

103 Intermediate Painting (4). Continuation of the investigation initiated in basic painting, with an emphasis on experimentation, personal investigation, development of conceptual working premises, as well as the acquisition of necessary skills. Group discussion and critique are emphasized. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

104 Intermediate Sculpture (4). Investigation of three-dimensional space, including the construction of objects and the manipulation of the environment. Students define personal projects and translate personal, social, and political experience into visual meaning. Work of a range of artists introduced. Group discussion and critiques. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

105 Intermediate Ceramic Sculpture (4). Further investigation of the use of clay as a medium, with emphasis on experimental practice and the relationship to contemporary visual art. Emphasizes discussion of ideas, and provides information on clay body, fabrication, glazing, and firing. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

106 Interactive Digital Media: Sound and Video (4). Students learn how to prepare and present multimedia materials within interactive formats. Programs for digitizing and altering sound and video are introduced. Various strategies for editing and arranging materials within temporal parameters are discussed. Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be taken for credit twice.

107 Intermediate Photography (4). An in-depth continuation of the critical and technical skills explored in Studio Art 71. Experimentation, photographic interests and vocabulary, critical abilities and development of independent projects. Slide lectures, readings, technical demonstrations, criticism, and social histories of photography. Prerequisites: Studio Art 1A-B-C and 71 or consent of instructor. May be taken for credit twice.

108 Intermediate Video Production (4). Designed to further enable the producer to conceive, develop, and produce an original videotape (single channel, multiple channel, or installation). Use of TV studio and editing facilities. Issues of film and computer compatibility. Readings, screenings, field trips, group critiques. Materials fee. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

109 Intermediate Performance Art (4). Continued investigation of the concepts and history of experimental performance art, including its relation to contemporary artistic practice. Continues to refine technical skills, as well as space, audiences, and cultural connections. Prerequisites: Studio Art 1A-B-C or consent of instructor. Recommended: two basic courses in related medium. May be taken for credit twice.

110 Interdisciplinary Digital Arts (4) F, W, S. Covers a range of interdisciplinary approaches for utilizing computer systems. Investigates such topics as World Wide Web design and authoring, digital mail art, computer installations, and performance within video conferencing contexts. Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be taken for credit twice.

116 Feminist Issues in Studio Arts (4). Feminist perspectives and topics in relation to cultural production. Feminist debates on sexuality, perspectives on women of color, on race and gender, feminist film criticism, histories of the first and second waves of feminism, histories of feminist art. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice. Same as Women's Studies 174J.

117 Issues in Critical Theory (4). Examines a range of critical theories in relation to visual language, contemporary and modern art, and/or issues of representation. Content varies and may include semiotics, structuralism, post structuralism, psychoanalysis, literary criticism, Marxism, critiques of modernism. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

118 Issues in Urban Space, Housing, Community Development, and Architecture (4). Social histories and cultural critiques of urban, suburban, and architectural spaces and the social construction of community and public spaces. Content varies and may deal with a variety of geographic locations, cultures, social perspectives, and artists' strategies of public address. Prerequisites: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

120 Issues in Narrative (4). Emphasizes the construction of narratives in different media—painting, photography, sculpture, video. Particular attention paid to the development of personal and community histories as a working base. Prerequisites: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

121 Issues in Race and Representation (4). Emphasizes the construction of racial difference and stereotyping in the visual and performing arts, and on the histories of cultures and artists who functioned outside the contemporary mainstream. Readings assigned. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

122 Issues in Lesbian and Gay Visual Representation (4). History of lesbian and gay culture in relation to the visual and performing arts; the construction of sexual difference, debates around positive and negative representations, queer activism, and the intersections of sexuality with gender and race. Readings assigned. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice. Same as Women's Studies 161B.

123 Issues in Cultural Display (4). Lecture/seminar on issues of the production and representation of culture, including patronage, museum history, exhibition design and history, arts funding, cultural identity, and cultural diversity. Field trips, screening and slide lectures are generally assigned. Prerequisites: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

124 Issues in the History of Intermedia (4). Examines, in a nonlinear and eclectic fashion of contemporary oppositional art practices, work not considered art-making within conventional definitions, and intermedia approaches from the postwar period. Reading and lectures will be drawn from a wide range of sources. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice.

126A, B Issues in Computer Media and Technology: Women's Place in Cyberspace (4, 4). Focuses on polarization of gender roles and feminist issues through computers and programming. Issues include male/female stereotypes built into software, internet and bulletin boards, pornography programs, multimedia literature, and economy in production of technology. Previous computer experience helpful. Prerequisite: Studio Art 10A, B, C or consent of instructor.

127A, B Issues in Video History (4, 4). History of the video medium outside its use as television, ranging from the 1950s–90s. Topics include: electronics, conceptual and non-edited work, surveillance, documentary and documentation, performance art, and its use in installations and sculpture. Prerequisite: Studio Art 10A, B, C or consent of instructor.

130 Projects in New Technologies (4). Working with media such as electronic still cameras, desktop publishing, faxes, satellites, virtual reality, digitized imaging. Cultural issues pertinent to the emergence of new technology (e.g., ethical concerns, social impact, copyright laws, nontraditional approaches to distribution, cyberpunk, global markets). Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

131 Projects in Installation (4). Investigates interior installation in particular spaces. Working in teams, students install, discuss, and remove projects. Technical information and hands-on experience with various media is provided. Prerequisites: two intermediate courses or consent of instructor. May be repeated for credit as topics vary.

132 Projects in Collaboration (4). Focuses on various approaches, historical precedents, and contemporary strategies to artists' collaborations. Students work in collaboration with other students and/or with people outside the class. Course content and structure varies according to instructor(s). Prerequisites: two intermediate courses or consent of instructor. May be repeated for credit as topics vary.

133 Projects in Documentary Practices (4). An investigation and discussion of a variety of critical stances and approaches to making documentary, as well as a project-based exploration of documentary strategies in all media. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

134 Projects in Sound (4). Explores ways to create sound ranging from electronic/computerized equipment to nontraditional instruments to found noises. Related cultural and social critiques (rap, rock and roll, jazz, MTV, blues, "world" music, new technologies, sampling, copyright laws). Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

135 Projects in Mural Painting and Site-Specific Art (4). Methods and histories of mural painting and development of audiences outside museums and galleries. Examines ways public art producers facilitate community involvement, methods of researching cultural contexts in relation to specific sites, and diverse approaches to collaboration. Students produce a mural. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

136 Projects in Ecologies and Environmental Art (4). Focus on developing studio projects concerned with ecological issues and land use. A wide range of contemporary art, social strategies and diverse political critiques addressing environmental and land use concerns considered. Prerequisites: two intermediate courses. May be repeated for credit as topics vary.

137 Projects in Autobiography, Personal Narratives, and Community Histories (4). An investigation of personal narratives, storytelling, and oral histories as a basis for art. Issues of interpretation and subjectivity. Considers autobiography as a means to make visible voices, histories, experiences and perceptions marginalized, misrepresented, and/or absented from dominant representations. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

138 Projects in Public Art (4). Addresses the formation of culturally diverse arts audiences, institutions, boundaries, and barriers, including presentations on artists and strategies of exhibition/distribution outside the mainstream. Class projects, collaborative work, and group investigation. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

139 Projects in Intermedia (4). Investigation of artistic practices not necessarily object-oriented or bound to the distribution strategies of traditional media. Emphasizes interdisciplinary conceptualization and research, using digital information storage, as well as "low-tech" means such as the body. Individual or group projects required. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

140 Projects in Interdisciplinary Studies (4). An individually directed study critique and/or topics course for students interested in researching and integrating ideas in their studio work from fields outside of visual art. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

141 Projects in Video Sketchbook (4). Devoted to using the camera as a sketchbook or diary. Goal is to develop sources of inspiration in order to produce several short video pieces. Students employ various techniques and experiment with various strategies. Development and shaping of each student's individual voice. Prerequisite: Studio Art 81. May be taken for credit twice.

142 Projects in Pre-Production Methods and Strategies (4). Deals with concerns relative to developing concepts and strategies prior to shooting. Focuses on developing practical and creative concerns, including script development, storyboarding, development of camera movements, and sequences relating to theoretical concerns. Prerequisite: Studio Art 141 or consent of instructor. May be taken for credit twice.

149 Multimedia and the Arts in the Multicultural Classroom (4) F, W, S. Multiculturalism and underrepresented U.S. minorities and the visual and performing arts: perspectives in artistic perception, creative expression, historical and cultural context, and aesthetic valuing, and media literacy in the interpretation and production of multimedia arts products and applications for K–12 classrooms. Same as Education 104E. (VII-A)

150 Advanced Studio Topics/Painting (4). Provides an intensive and specialized working environment. Thematic issues and material strategies explored. Prerequisites: two intermediate courses and consent of instructor. May be repeated for credit as topics vary.

150C Advanced Drawing (4). Advanced studio problems for visual exploration. Students pursue individual solutions to self-defined and presubscribed projects. Techniques/materials are individual choice. Continual analysis of the personal process. Prerequisites: Studio Art 20, 102. May be repeated for credit with consent of instructor.

151 Advanced Studio Topics/Sculpture (4). Provides an intensive and specialized working environment. Thematic issues and material strategies will be explored. Prerequisites: two intermediate courses and consent of instructor. Materials fee. May be repeated for credit as topics vary.

152 Advanced Studio Topics/Photography (4). Focused investigation of a range of issues in photographic practice, with an emphasis on defining individual projects and refining critical and conceptual approaches. Readings, slide lectures, and field trips. Materials fee. Prerequisites: Studio Art 107 or consent of instructor. May be repeated for credit as topics vary.

153 Advanced Studio Topics/Video (4). The class will be directed to the production of individual or collaborative videotapes, using studio, portable camera, and editing facilities and sound and computer elements. Emphasis will be on individually initiated projects. Readings and screenings are assigned. Materials fee. Prerequisites: Studio Art 108 or consent of instructor. May be repeated for credit as topics vary.

154 Advanced Studio Topics/Performance (4). An intensive investigation of the practice of performance art, with an emphasis on the development of individual projects, and the refinement of various technical skills, as well as audiences, spaces, and cultural connections. Prerequisites: Studio Art 10A, B, C, 109, and consent of instructor. May be repeated for credit as topics vary.

155 Advanced Studio Topics/Large-Scale Photography (4). Large-scale black and white photographic production and discussion of contemporary art and photographic practices. Methods and approaches; related topics, e.g., documentary practices, advertising imagery and the construction of public space, artists' billboard images. Materials fee. Prerequisites: two intermediate photography courses.

156 Advanced Studio Topics/Ceramic Sculpture (4). Discussion of ideas, techniques, and personal control of form. Clay body, fabrication, glazing, and firing. Emphasis on development of personal direction. Prerequisites: Studio Art 105. Materials fee. May be repeated for credit with consent of instructor.

157 Color Photography (4). Introduction to color photographic theory, process, and practice. Also serves as an introduction to critical and historical issues specific to color photography as contemporary art practice. Slide lectures, readings, technical demonstrations, and critiques. Prerequisites: Studio Art 71 and 107 or consent of instructor. May be taken for credit twice.

160 Advanced Color Photography (4). For advanced photography students who wish to perfect their skills in traditional color photography methods. An accelerated course geared toward refining critical abilities and developing individual photographic vision through directed projects. Emphasis on color photography as a contemporary art practice. Prerequisites: Studio Art 1A-B-C and 157, or consent of instructor.

166 Advanced Collaborative Projects (4). Organized around the design and completion of a group project such as authoring a CD-ROM or engineering a complex collaborative performance or curating a Web-based exhibition site. Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be taken for credit twice.

175 Digital Art Aesthetics (4). Focuses on current theoretical and political research related to digital imaging, including ethical implications of artificial life, significance of identity politics, gender/race in cyberspace, access to computing systems, issues of post-structuralist aesthetics. Showing of contemporary artists in this field. Prerequisites: Studio Art 1A-B-C and 65 or consent of instructor. May be taken for credit twice.

190 Senior Project (4). Directed-study critique class in preparation for final project and life after graduation; documentation and portfolio preparation for graduate school. Investigation of exhibition spaces and funding opportunities, participation in artists' communities outside the university, artists' rights issues. Prerequisite: senior standing.

191 Studio Problems: Methods and Materials (4). An open media discussion and critique course emphasizing the development of working ideas and the execution of projects in all media. Readings assigned as required; field trips, slide and film/video presentations are integral. Prerequisites: two intermediate courses. May be repeated for credit as topics vary. Same as Women's Studies 174I when topic is appropriate.

192 Studio in Painting (4)

193 Studio in Sculpture (4)

197 Studio Art Internship (1 to 3). Under faculty supervision, students participate directly in a variety of art institutions/settings, including museums, galleries, and nonprofit organizations. Prerequisites: junior standing, consent of instructor, and consent of department chair. May be repeated for credit for a total of nine units.

198 Senior Exhibition (0). Preparation, installation, and participation in the annual senior exhibition. Pass/Not Pass only. Four units of workload credit only. Prerequisite: senior standing; Studio Art majors only.

199 Independent Study (1 to 4). Individual study or directed creative projects as arranged with faculty member. Prerequisite: consent of instructor. May be repeated for credit.

GRADUATE

215 Seminar: Issues in Contemporary Art (4) F, W, S. Issues of contemporary art and media practice: feminism, multicultural studies, gay and lesbian studies, communications theory, border cultures, structuralism and poststructuralism, psychoanalysis. Performance art, sound, painting, sculpture, photography, film, video, and fiction. Readings, screenings, field trips. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. May be taken for credit six times.

220 Seminar: Issues in Contemporary Art (4) F, W, S. An in-depth extension of Studio Art 215 leading to focused analysis and research on contemporary issues. May be team taught in conjunction with faculty from art history, film studies, ethnic studies, or women's studies. Visiting artists/critics. Satisfactory/Unsatisfactory only. Prerequisite: Studio Art 215. May be taken for credit twice.

230 Graduate Critique: Issues in Studio Practice (4) F, W, S. A critique-based course focusing on the studio production of the individuals enrolled and aiming to develop a serious and sophisticated environment for peer critique. Readings, screenings, and field trips are generally assigned. Satisfactory/Unsatisfactory only. Open to upper-division undergraduates at the discretion of the instructor. May be taken for credit six times.

235 Graduate Seminar: Digital Imaging (4) F, W, S. Introduction to digital imaging methods and concepts. Emphasis is placed on extensions and translations of the students' previous work in other media into appropriate computer applications. May be taken for credit twice.

240 Graduate Projects (1 to 4) F, W, S. Independent projects under faculty supervision. May be repeated for credit up to a total of 24 units.

250 Directed Reading (4). May be repeated for credit.

260 Thesis (4) S. Limited to second-year graduate students preparing for candidacy during their final quarter.

399 University Teaching (4) F, W, S. Limited to Teaching Assistants. May be repeated for credit.

SCHOOL OF BIOLOGICAL SCIENCES

Shin Lin, Dean

101 Biological Sciences Administration
Undergraduate Counseling: (949) 824-5318
Graduate Programs: (949) 824-8145
World Wide Web: <http://www.bio.uci.edu/>

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Robert H. Blanks, Ph.D. University of California, Los Angeles, *Professor of Anatomy and Neurobiology, Otolaryngology, and Biological Sciences*
Hans R. Bode, Ph.D. Yale University, *Associate Director of the Developmental Biology Center and Professor of Biological Sciences*
Peter A. Bowler, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design, UC Natural Reserve System Academic Coordinator, and Director of the UCI Arboretum*
Timothy J. Bradley, Ph.D. University of British Columbia, *Chair of the Department of Ecology and Evolutionary Biology and Professor of Biological Sciences*
Ralph A. Bradshaw, Ph.D. Duke University, *Professor of Physiology and Biophysics and of Biological Sciences*
Peter J. Bryant, Ph.D. University of Sussex, *Director of the Developmental Biology Center and Professor of Biological Sciences*
Susan V. Bryant, Ph.D. University of London, *Professor of Biological Sciences*
Barbara K. Burgess, Ph.D. Purdue University, *Professor of Molecular Biology and Biochemistry and Biological Sciences*
Nancy Burley, Ph.D. University of Texas, Austin, *Professor of Biological Sciences*
Michael D. Cahalan, Ph.D. University of Washington, *Professor of Physiology and Biophysics and Biological Sciences*
Lawrence F. Cahill, Ph.D. University of California, Irvine, *Assistant Professor of Biological Sciences*
Anne L. Calof, Ph.D. University of California, San Francisco, *Associate Professor of Anatomy and Neurobiology and Developmental and Cell Biology*
Diane R. Campbell, Ph.D. Duke University, *Professor of Biological Sciences*

Richard D. Campbell, Ph.D. The Rockefeller Institute, *Professor of Biological Sciences*
F. Lynn Carpenter, Ph.D. University of California, Berkeley, *Professor of Biological Sciences*
K. George Chandy, Ph.D. University of Birmingham (England), M.B.B.S. Christian Medical College, Vellore (India), *Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*
Ken W.-Y. Cho, Ph.D. University of Pennsylvania, *Associate Professor of Biological Sciences*
Olivier Civelli, Ph.D. Swiss Institute of Technology, *Professor of Pharmacology and Developmental and Cell Biology and Eric L. and Lila D. Nelson Chair in Neuropharmacology*
Carl Cotman, Ph.D. Indiana University, *Professor of Neurology, Psychiatry and Human Behavior, and Biological Sciences*
Michael G. Cumsy, Ph.D. University of California, Berkeley, *Associate Professor of Biological Sciences and Molecular Biology and Biochemistry*
Dennis D. Cunningham, Ph.D. University of Chicago, *Senior Associate Dean for Academic Affairs, College of Medicine, and Professor of Microbiology and Molecular Genetics and Biological Sciences*
Rowland H. Davis, Ph.D. Harvard University, *Professor of Molecular Biology and Biochemistry and Biological Sciences*
James H. Fallon, Ph.D. University of Illinois, *Professor of Anatomy and Neurobiology and Biological Sciences*
Hung Fan, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Sciences*
Walter M. Fitch, Ph.D. University of California, Berkeley, *Professor of Biological Sciences*
Donald E. Fosket, Ph.D. University of Idaho, *Professor Emeritus of Biological Sciences*
Steven A. Frank, Ph.D. University of Michigan, *Professor of Biological Sciences*
Ron D. Frostig, Ph.D. University of California, Los Angeles, *Associate Professor of Biological Sciences*
Christine M. Gall, Ph.D. University of California, Irvine, *Vice Chair of the Department of Anatomy and Neurobiology and Professor of Anatomy and Neurobiology, Psychobiology, and Biological Sciences*
Brandon S. Gaut, Ph.D. University of California, Riverside, *Assistant Professor of Biological Sciences*
Allen G. Gibbs, Ph.D. University of California, San Diego, *Assistant Professor of Biological Sciences*
Roland A. Giolli, Ph.D. University of California, Berkeley, *Professor of Anatomy and Neurobiology and Biological Sciences*
Charles Glabe, Ph.D. University of California, Davis, *Professor of Biological Sciences*
Alan L. Goldin, M.D., Ph.D. University of Michigan, *Associate Professor of Microbiology and Molecular Genetics, Physiology and Biophysics, and Biological Sciences*
Sidney H. Golub, Ph.D. Temple University, *Executive Vice Chancellor and Professor of Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, and Surgery*
Deborah Grady, Ph.D. The Johns Hopkins University, *Adjunct Assistant Professor of Biological Chemistry*
Gale A. Granger, Ph.D. University of Washington, *Professor of Biological Sciences and Pathology*
Chris L. Greer, Ph.D. University of California, Berkeley, *Associate Professor of Biological Chemistry and Biological Sciences*
George A. Gutman, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics, Physiology and Biophysics, and Biological Sciences*
Harry T. Haigler, Ph.D. Vanderbilt University, *Professor of Physiology and Biophysics, Biological Sciences, and Biological Chemistry*
James E. Hall, Ph.D. University of California, Riverside, *Professor of Physiology and Biophysics and Biological Sciences*
Barbara A. Hamkalo, Ph.D. University of Massachusetts, *Associate Dean for Graduate Studies and Research in the Biological Sciences and Professor of Biological Sciences*
G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology and Molecular Genetics, Biological Sciences, and Biochemical Engineering*
Bradford A. Hawkins, Ph.D. University of California, Riverside, *Associate Professor of Biological Sciences*

- Patrick L. Healey, Ph.D. University of California, Berkeley, *Professor Emeritus of Biological Sciences*
- Agnes Henschen-Edman, M.D. Karolinska Institute (Stockholm), *Professor of Biological Sciences*
- James W. Hicks, Ph.D. University of New Mexico, *Associate Professor of Biological Sciences*
- Franz Hoffmann, Ph.D. University of Hohenheim, *Associate Professor of Biological Sciences*
- Christopher C. W. Hughes, Ph.D. University of London, *Assistant Professor of Molecular Biology and Biochemistry, Biological Sciences, and Pathology*
- George L. Hunt, Jr., Ph.D. Harvard University, *Professor of Biological Sciences*
- Anthony A. James, Ph.D. University of California, Irvine, *Associate Professor of Biological Sciences*
- Edward G. Jones, M.D. University of Otago (New Zealand); Ph.D. Oxford University, *Professor of Anatomy and Neurobiology*
- Robert K. Josephson, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*
- Frances A. Jurnak, Ph.D. University of California, Berkeley, *Professor of Physiology and Biophysics and Biological Sciences*
- Keith Justice, Ph.D. University of Arizona, *Professor Emeritus of Biological Sciences*
- Herbert P. Killackey, Ph.D. Duke University, *Associate Executive Vice Chancellor Academic Personnel, Chair of the Department of Psychobiology, and Professor of Biological Sciences and of Anatomy and Neurobiology*
- Leonard M. Kitzes, Ph.D. University of California, Irvine, *Professor of Anatomy and Neurobiology, Otolaryngology, and Biological Sciences*
- Daniel J. Knauer, Ph.D. University of Nebraska, *Associate Professor of Biological Sciences*
- Harold Koopowitz, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*
- Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor of Biological Sciences*
- Frank LaFerla, Ph.D. University of Minnesota, *Assistant Professor of Biological Sciences*
- Arthur D. Lander, Ph.D. University of California, San Francisco, *Associate Director of the Developmental Biology Center and Associate Professor of Biological Sciences and Pharmacology*
- Janos K. Lanyi, Ph.D. Harvard University, *Department Chair of Physiology and Biophysics and Professor of Physiology and Biophysics, Microbiology and Molecular Genetics, and Biological Sciences*
- George V. Lauder, Ph.D. Harvard University, *Professor of Biological Sciences*
- Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor Emeritus of Biological Sciences*
- Frances M. Leslie, Ph.D. Aberdeen University (Scotland), *Associate Vice Chancellor for Research and Professor of Pharmacology and Anatomy and Neurobiology*
- Michael Leon, Ph.D. University of Chicago, *Associate Dean of Undergraduate Affairs of the School of Biological Sciences and Professor of Biological Sciences*
- Shin Lin, Ph.D. University of California, Los Angeles, *Dean of the School of Biological Sciences and Professor of Biological Sciences and Physiology and Biophysics*
- Ian W. Lipkin, M.D. Rush Medical School, *Professor of Neurology, Anatomy and Neurobiology, and Microbiology and Molecular Genetics*
- Haoping Liu, Ph.D. Cornell University, *Assistant Professor of Biological Chemistry and Biological Sciences*
- Anthony D. Long, Ph.D. McMaster University, *Assistant Professor of Biological Sciences*
- Kenneth J. Longmuir, Ph.D. University of Oregon, *Associate Professor of Physiology and Biophysics and Biological Sciences*
- Hartmut Luecke, Ph.D. Rice University, *Assistant Professor of Molecular Biology and Biochemistry, Physiology and Biophysics, and Biological Sciences*
- Gary S. Lynch, Ph.D. Princeton University, *Professor of Biological Sciences, Information and Computer Science, and Cognitive Sciences*
- Richard E. MacMillen, Ph.D. University of California, Los Angeles, *Professor Emeritus of Biological Sciences*
- Jerry E. Manning, Ph.D. University of Utah, *Chair of the Department of Molecular Biology and Biochemistry and Professor of Biological Sciences*
- J. Lawrence Marsh, Ph.D. University of Washington, *Chair of the Department of Developmental and Cell Biology and Professor of Biological Sciences*
- John F. Marshall, Ph.D. University of Pennsylvania, *Professor of Biological Sciences*
- James L. McGaugh, Ph.D. University of California, Berkeley, *Director of the Center for the Neurobiology of Learning and Memory and Research Professor of Biological Sciences*
- Calvin S. McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry, Biological Sciences, Ophthalmology, and Community and Environmental Medicine*
- Alexander McPherson, Ph.D. Purdue University, *Professor of Biological Sciences*
- Raju S. Metherate, Ph.D. McGill University, Montreal, *Assistant Professor of Biological Sciences*
- Ronald L. Meyer, Ph.D. California Institute of Technology, *Professor of Biological Sciences*
- Ricardo Miledi, M.D. Universidad Nacional Autónoma de México, UCI *Distinguished Professor of Psychobiology and Molecular Biology and Biochemistry*
- Robert K. Moyzis, Ph.D. The Johns Hopkins University, *Professor of Biological Chemistry and Biological Sciences*
- Laurence D. Mueller, Ph.D. University of California, Davis, *Professor of Biological Sciences*
- R. Michael Mulligan, Ph.D. Michigan State University, *Associate Professor of Biological Sciences*
- Masayasu Nomura, Ph.D. University of Tokyo, *Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences and Grace Beekhuis Bell Chair in Biological Chemistry*
- Diane K. O'Dowd, Ph.D. University of California, San Diego, *Associate Professor of Biological Sciences and Anatomy and Neurobiology*
- Timothy F. Osborne, Ph.D. University of California, Los Angeles, *Associate Professor of Biological Sciences*
- Ian Parker, Ph.D. University College, London, *Professor of Biological Sciences*
- Thomas L. Poulos, Ph.D. University of California, San Diego, *Professor of Molecular Biology and Biochemistry, Physiology and Biophysics, and Biological Sciences*
- Charles E. Ribak, Ph.D. Boston University, *Professor of Anatomy and Neurobiology and Biological Sciences*
- Richard T. Robertson, Ph.D. University of California, Irvine, *Chair of the Department of Anatomy and Neurobiology and Professor of Anatomy and Neurobiology and Biological Sciences*
- W. Edward Robinson, M.D., Ph.D. Vanderbilt University, *Assistant Professor of Pathology and Microbiology and Molecular Genetics in Residence*
- Michael R. Rose, Ph.D. University of Sussex, *Professor of Biological Sciences*
- Ann K. Sakai, Ph.D. University of Michigan, *Associate Professor of Biological Sciences*
- Suzanne B. Sandmeyer, Ph.D. University of Washington, *Chair of the Department of Biological Chemistry and Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences*
- Rozanne Sandri-Goldin, Ph.D. The Johns Hopkins University, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Michael E. Selsted, Ph.D. University of California, Los Angeles, *Professor of Pathology and Microbiology and Molecular Genetics*
- Bert L. Semler, Ph.D. University of California, San Diego, *Chair of the Department of Microbiology and Molecular Genetics and Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Donald Seneor, Ph.D. University of Washington, *Associate Professor of Biological Sciences*
- Martin A. Smith, Ph.D. University of Newcastle Upon Tyne, *Associate Professor of Anatomy and Neurobiology*
- Ivan Soltesz, Ph.D. L. Eötvös University (Hungary), *Assistant Professor of Anatomy and Neurobiology, Physiology and Biophysics, and Biological Sciences*
- George Sperling, Ph.D. Harvard University, *UCI Distinguished Professor of Cognitive Sciences and Biological Sciences*
- Eric J. Stanbridge, Ph.D. Stanford University, *Professor of Microbiology and Molecular Genetics and Biological Sciences*
- Wendell M. Stanley, Jr., Ph.D. University of Wisconsin, *Senior Lecturer Emeritus in Biochemistry*
- Robert Steele, Ph.D. Yale University, *Associate Professor of Biological Chemistry and Biological Sciences*
- Grover C. Stephens, Ph.D. Northwestern University, *Professor Emeritus of Biological Sciences*
- Georg Striedter, Ph.D. University of California, San Diego, *Assistant Professor of Biological Sciences*

Katumi Sumikawa, Ph.D. Imperial College, London (England), *Associate Professor of Biological Sciences*
 Richard Symanski, Ph.D. Syracuse University, *Senior Lecturer in Biological Sciences*
 Andrea J. Tenner, Ph.D. University of California, San Diego, *Professor of Molecular Biology and Biochemistry and Biological Sciences*
 Krishna K. Tewari, Ph.D. Lucknow University, *Professor of Biological Sciences*
 Sujata Tewari, Ph.D. McGill University, *Associate Professor of Psychiatry and Human Behavior and Biological Sciences*
 Leslie M. Thompson, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Biological Chemistry*
 Marcel Verzeano, M.D. University of Pisa Medical School (Italy), *Professor Emeritus of Psychobiology*
 Larry E. Vickery, Ph.D. University of California, Santa Barbara, *Professor of Physiology and Biophysics, Biological Chemistry, and Biological Sciences*
 Luis P. Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences and Neurology*
 Edward K. Wagner, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Sciences*
 Robert C. Warner, Ph.D. New York University, *Professor Emeritus of Biological Sciences*
 Marian Waterman, Ph.D. University of California, San Diego, *Assistant Professor of Microbiology and Molecular Genetics and of Biological Sciences*
 Norman M. Weinberger, Ph.D. Western Reserve University, *Professor of Biological Sciences and Cognitive Sciences*
 Arthur E. Weis, Ph.D. University of Illinois, *Professor of Biological Sciences*
 John H. Weiss, M.D., Ph.D. Stanford University, *Associate Professor of Neurology, Anatomy and Neurobiology, and Biological Sciences*
 Stephen G. Weller, Ph.D. University of California, Berkeley, *Professor of Biological Sciences*
 Stephen H. White, Ph.D. University of Washington, *Professor of Physiology and Biophysics and Biological Sciences*
 Clifford A. Woolfolk, Ph.D. University of Washington, *Professor Emeritus of Biological Sciences*
 Pauline I. Yahr, Ph.D. University of Texas, *Professor of Biological Sciences*
 Kyoko Yokomori, Ph.D. University of Southern California, Ph.D. of Agriculture (Veterinary Medicine) University of Tokyo, *Assistant Professor of Biological Chemistry and Biological Sciences*

OVERVIEW

No one can predict the future, but this much is known: the next quarter century is the time of the biologist, who will be in the forefront of the most challenging, intellectual problems, such as understanding the most elemental building blocks of the mechanisms of life, the mechanisms of memory and of learning, the molecular basis of embryonic development, and the rules that help predict the behavior of the environment. Biology also lies at the heart of major social problems that face the human race in the coming decade, such as sensible management of the environment and the effective control of human populations. It is vital that educated people understand the contributions that biological sciences have made and will continue to make for the future welfare of human beings.

The School of Biological Sciences reflects new concepts of biology in both its curriculum and its research programs. The faculty is dedicated to providing students with the opportunity to learn the principles and facts in this ever-expanding field of biology. The curriculum is designed to meet present and future educational needs of majors and nonmajors. In keeping with the responsibilities of the University, the School encourages vigorous faculty and student research programs. It strongly believes that excellence in research is essential for effective, enthusiastic, and up-to-date teaching. The School provides an excellent opportunity for undergraduates to participate in research, through the Biological Sciences 199 program. Each quarter more than 900 undergraduate students and 200 graduate and postdoctoral students participate in independent research programs.

In addition to the regular University requirements for admission, students interested in the biological sciences should include in their

high school curriculum, in addition to a course in biology, four years of mathematics, as well as courses in chemistry and physics, which are now an integral part of most contemporary biological work.

The biological sciences are presented as an integrated area of study through the nine-quarter Biological Sciences Core. Upper-division laboratories and satellite courses developing the major concepts of modern biology expand upon and intensify areas covered in the Core and provide students with the opportunity to specialize in a particular area of the biological sciences. Introductory courses for nonmajors are designed to make the biological sciences meaningful and interesting and to inform intelligent citizens of biological phenomena that affect their daily lives. Graduate courses are offered in all the departments.

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in the biological mechanisms of behavior are advised to consult the course listings here in the School of Biological Sciences section. Students interested in other areas of psychology are advised to consult the course listings in the School of Social Ecology and the Department of Cognitive Sciences sections of the *Catalogue*.

Students with an interest in the application of ecology to human needs may choose the Applied Ecology major, which is offered jointly by the School of Biological Sciences and the School of Social Ecology. Information is available in the School of Social Ecology section.

Degrees

Biological Sciences B.S., M.S., Ph.D.

Undergraduate specializations are available in the areas of Cell Biology, Developmental Biology, Ecology, Evolution, Microbiology, Molecular Biology and Biochemistry, Neurosciences, Physiology, and Plant Sciences.

Opportunities are available at the graduate level to specialize in Anatomy and Neurobiology, Biological Chemistry, Developmental and Cell Biology, Ecology and Evolutionary Biology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, Physiology and Biophysics, Protein Engineering Science, and Psychobiology.

Applied Ecology B.S.
 (offered jointly with the School of Social Ecology)

Honors

Graduation with Honors. Of the graduating seniors, no more than 12 percent will receive honors: approximately 1 percent *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. The selection for these awards is based on winter quarter rank-ordered grade point averages. To be eligible for honors at graduation, the student must, by the end of winter quarter of the senior year, file an application to graduate in the Biological Sciences Student Affairs Office and have completed at least 72 units in residence at a University of California campus. In addition, any corrections to the student's academic record must be processed by the Registrar's Office by the end of the second week of spring quarter. Other important factors are considered (see page 51).

Biological Sciences Scholastic Honor Society. The Biological Sciences Scholastic Honor Society is composed of students who graduate with an overall grade point average of 3.5 or better and have carried 12 or more graded units with a grade point average of 3.5 per quarter for a minimum of six quarters.

Dean's Honor List. The quarterly Dean's Honor List is composed of students who have received a 3.5 grade point average while carrying a minimum of 12 graded units.

Dean's Academic Achievement and Service Awards. Awards are based on academic excellence and exceptional service to the School of Biological Sciences.

Excellence in Research Award. Undergraduates who have successfully completed the requirements for this program are presented with Excellence in Research certificates.

Robert H. Avnet Memorial Scholarship. The Robert H. Avnet Memorial Scholarship has been established to assist a student interested in becoming a physician. The student must be a Biological Sciences major and demonstrate financial need.

Robert Ernst Prize for Excellence in Student Research in Plant Biology. This prize is awarded to a student for meritorious research conducted in plant biology.

Robert Ernst Prize for Excellence in Research in the Biological Sciences. This prize is awarded to a student for meritorious research conducted in the field of biology.

Lisa E. George Memorial Scholarship. The Lisa E. George Memorial Scholarship has been established by Delta Sigma Theta, Inc., and the School of Biological Sciences to assist women Biological Science majors who are from a recognized underrepresented minority group. The recipient must demonstrate academic excellence, leadership, service to the community, financial need, and a commitment to the pursuit of higher education.

Ralph W. Gerard Award. Three students receiving the highest ratings for their papers and oral presentations at the Excellence in Research Program will receive the Ralph W. Gerard Award.

Dr. William F. Holcomb Scholarship. The intent of the Dr. William F. Holcomb Scholarship is to support biomedical or marine biological studies. The Scholarship is to be used to support continuing academic work over a specific period.

Laurence J. Mehlman Prize. The Laurence J. Mehlman Prize is awarded to an undergraduate student in the School of Biological Sciences who has demonstrated outstanding achievement in both scholarship and service to the School.

Edward Mittelman Memorial Fund Scholarship. The Edward Mittelman Memorial Fund Scholarship is presented to an outstanding Biological Sciences student who will pursue a career in the medical field.

Edward A. Steinhilber Memorial Award. The Edward A. Steinhilber Memorial Award is given to an outstanding graduate Teaching Assistant. Three second-place awards also are given.

Joseph H. Stephens Award for Outstanding Research in Ecology and Conservation. This award is granted to an undergraduate student who has demonstrated outstanding research in ecology and conservation.

Joseph H. Stephens Award for Outstanding Research in Biochemistry and Molecular Biology. This award is granted to an undergraduate student who has demonstrated outstanding research in biochemistry and molecular biology.

Jayne Unzelman Scholarship. The Jayne Unzelman Scholarship is presented to an undergraduate student who has shown academic excellence and been of service to the School of Biological Sciences and/or the University, and to the community.

Special Service Awards. These awards are given to students who have demonstrated great service to the School, the University, and/or community.

The preceding Honors, Scholarships, Prizes, and Awards are presented at the annual Biological Sciences Honors Convocation held the first week of June.

Undergraduate Program

ADMISSION TO THE MAJOR IN BIOLOGICAL SCIENCES

In the event that the number of students who elect Biological Sciences as a major exceeds the number of positions available, applicants may be subject to screening beyond minimum University of California admissions requirements. There is a limit on the number of applicants admitted to the major.

Freshmen: Preference will be given to those who rank the highest using the selection criteria as stated in the Undergraduate Admissions section of this *Catalogue*.

Transfer students: Junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites will be given preference for admission. All applicants must complete the following required courses: one year of general chemistry with laboratory and an approved sequence of biological sciences courses.

No student may enter as a double major, but students interested in other areas may apply to become double majors after the first quarter, if the second school or program approves. A strong academic performance in the second area is requisite for acceptance as a double major.

BIOLOGICAL SCIENCES CHANGE OF MAJOR POLICY FOR CONTINUING UCI STUDENTS

Biological Sciences majors have first priority for enrolling in required biology courses. Students who are Undecided/Undeclared, Unaffiliated, or in majors other than the Biological Sciences will be able to attempt to enroll in required biology classes on the second Monday of instruction of each quarter. There is no guarantee that students outside of the Biological Sciences major will be able to enroll in biology courses required for the Biological Sciences degree.

The following criteria must be met to be considered for admission into the School of Biological Sciences as a continuing student. Change of Major applications are accepted and reviewed by the School throughout the year. Students are encouraged to submit their change of major request as soon as they have met the following requirements:

Students Who Entered UCI as Freshmen: (a) completion of Chemistry 1A-B-C and 1LB-LC with an average GPA of 2.0; (b) completion of an additional two required science courses for the major with an average GPA of 2.0 (example: any two of Biological Sciences 94, 96, Mathematics 2A-B-C, 7); (c) an average 2.0 GPA in any required science course sequence completed for the major (i.e., the separate GPAs for biology, general chemistry, organic chemistry, mathematics, and physics must each average a 2.0 GPA or above); (d) a cumulative GPA of 2.0, and less than 120 quarter units completed; (e) completion of the Subject A Requirement; and (f) a quarterly GPA of 2.0 or better in the quarter immediately preceding the change of major.

Students Who Entered UCI as Transfers: (a) completion of at least three quarters of work done at UCI; (b) completion of Chemistry 1A-B-C and 1LB-LC with an average GPA of 2.0 (if this was completed at another institution before transferring to UCI, then at least three required science courses for the major must be completed at UCI with an average GPA of 2.0); (c) an average 2.0 GPA in any required science course sequence completed for the major (i.e., the separate GPAs for biology, general chemistry, organic chemistry, mathematics, and physics must each average a 2.0 GPA or above); (d) a cumulative GPA of 2.0, and less than 150 units completed; and (e) a quarterly GPA of 2.0 or better in the quarter immediately preceding the change of major.

Selection criteria are subject to change. Students should consult the Biological Sciences Student Affairs Office for current information.

REQUIREMENTS FOR THE B.S. DEGREE IN BIOLOGICAL SCIENCES

University Requirements: See pages 54–58.

School Requirements

Biological Sciences Core Curriculum (94, 96, 97, 98, 99, 100L, 108, 109, 110); four satellite courses (see School Residence Requirement below; Chemistry 130A-B-C or 131A-B-C or Physics 147A-B-C can be used to partially satisfy the satellite requirement; Psychology/Biological Sciences double majors can also use Psychology 112A-B-C to satisfy the satellite requirement); three upper-division laboratories selected from Biological Sciences 111L, 112L, 113L, 114L, 115L, 116L, 122L, and 166 (see School Residence Requirement below); Chemistry 1A-B-C, 1LB-LC; Chemistry 51A-B-C, 51LA-LB or 52A-B-C, 52LA-LB; Mathematics 2A-B-C or 2A-B and 7; Physics 3A-B-C, 3LB-LC or 5A-B-C, 5LB-LC; and Humanities 1A-B-C, or its alternative, the lower-division writing requirement of the breadth requirement (Category I) and a three-quarter sequence in either Humanities (with the exception of Art History 40A, B, C) or Literature (Category IV, Humanistic Inquiry).

Prerequisites for all Biological Sciences Core courses are rigorously enforced. Students must have a 2.0 cumulative grade point average in the Biological Sciences Core Curriculum, four satellite courses, and three upper-division laboratories.

School Residence Requirement: All required satellite courses and upper-division laboratories must be successfully completed at UCI. The School of Biological Sciences strictly enforces the UCI residence requirement. Credit for the last 36 units of work immediately preceding graduation must be earned in residence at the UCI campus.

Specializations: Students may select an area of specialization and complete the specified laboratory course and four of the satellite courses in one area.

Cell Biology. Laboratory: Biological Sciences 111L; Satellites: 121, 128, 130A, 130B, 143, 144A, 144B, 144C, 145A.

Developmental Biology. Laboratory: Biological Sciences 111L; Satellites: 136, 137B, 144A, 144B, 145A, 147, 148, 149, 151.

Ecology. Laboratory: Biological Sciences 166; Satellites: 126, 133, 150, 167, 170, 174, 175, 176, 178, 179, 181, 184, 185, 186.

Evolution. Laboratory: Biological Sciences 115L; Satellites: Biological Sciences 168, 172, 173, 174, 176, 184, 185.

Microbiology. Laboratory: Biological Sciences 122L; Satellites: 118, 118L, 122, 124, 125, 126, 127, 137A, 143.

Molecular Biology and Biochemistry. Laboratory: Biological Sciences 114L or 116L; Satellites: 120, 121, 123, 124, 125, 126, 128, 140, 144A, 144B, 144C, 145A, 147, 151.

Neurosciences. Laboratory: Biological Sciences 113L; Satellites: 117, 132, 146, 149, 152, 153, 154, 155, 156, 158, 159, 160, 161, 162, 163, 164, 165, 171, 177, 182.

Physiology. Laboratory: Biological Sciences 112L; Satellites: 126, 132, 134, 138, 157, 183, 188, 189.

Plant Sciences. Laboratory: Biological Sciences 111L; Satellites: 129, 129L, 134, 144C, 147, 172, 185.

UCI Breadth Requirement

Those students majoring in Biological Sciences who have completed the School requirements and who have passed any two quarters of the writing component of the Humanities Core or its alternative with a grade of C or better will have satisfied the UCI breadth requirement, with the exception of: Category III, Social and Behavioral Sciences; Category VI, Language Other Than English; and Category VII, Multicultural Studies and International/Global Issues. Transfer students will also be required to satisfy the upper-division writing requirement.

Specifically, the Humanities Core Course (Humanities 1A-B-C) or its alternative satisfies Category IV, Humanistic Inquiry; it also satisfies the lower-division writing requirement when two quarters of the writing component are passed with a grade of C or better. Biological Sciences 100L with a grade of C or better satisfies the upper-division writing requirement. Chemistry and physics satisfy Category II, Natural Sciences. Category V, Mathematics and Symbolic Systems, is satisfied by completion of the School mathematics requirement.

PLANNING A PROGRAM OF STUDY

Since biological sciences courses are built upon a base of the physical sciences, it is very important for students to take their required physical sciences early, particularly general and organic chemistry. Students who have not completed high school chemistry are well advised to complete a preparatory chemistry course before entering UCI. The academic program shown is only a suggested program. Students should consult the Biological Sciences Student Affairs Office for individual academic planning.

Freshmen will normally take Humanities 1A, Chemistry 1A, and a freshman seminar (Biological Sciences 2A) during the fall quarter. Students will then continue with Biological Sciences 94 and 96 and complete their general chemistry and humanities requirement the remaining winter and spring quarters.

Sophomores begin organic chemistry (Chemistry 51A or 52A), continue the Biological Sciences Core with 97, 98, and 99, and complete the Humanities requirement if they have not taken it during their freshman year. Sophomores often begin taking courses in other disciplines to meet the UCI breadth requirement and fulfill their mathematics requirement if they have not done so as freshmen.

During their junior year, most majors complete the Biological Sciences Core and take physics. Students who intend to double major in Chemistry will be required to take Physics 5A-B-C in place of Physics 3A-B-C. Juniors complete their breadth requirements and usually start their research and their upper-division laboratory and satellite courses. Since research and the content of satellite courses are based upon material contained in the Core, it is usually preferable for students to have completed most of the Core before undertaking certain satellite courses or research projects.

Finally, during their senior year, students continue their research and their optional specializations by completing the remaining required upper-division laboratory and satellite courses.

Students in the Biological Sciences major are required to make progress toward their degree. Students' progress will be monitored. If normal academic progress toward the degree in Biological Sciences is not being met, students will be subject to probation.

Sample Program — Biological Sciences

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Bio. Sci. 94	Bio. Sci. 96
Humanities 1A ¹	Chemistry 1B, LB	Chemistry 1C, LC
Bio. Sci. 2A	Humanities 1B	Humanities 1C
Sophomore		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99
Chemistry 51A, 51LA ²	Chemistry 51B, 51LB	Chemistry 51C
Mathematics 2A	Mathematics 2B	Mathematics 2C or 7
	Bio. Sci. 100L ³	
Junior		
Bio. Sci. Core	Bio. Sci. Core	Bio. Sci. Core
Physics	Physics	Physics
Bio. Sci. Satellite ⁴	Bio. Sci. Satellite	Bio. Sci. Satellite
or upper-division	or upper-division	or upper-division
laboratory	laboratory	laboratory
Elective/Research ⁵	Elective/Research	Elective/Research
Senior		
Bio. Sci. Core	Bio. Sci. Satellite	Bio. Sci. Satellite
Bio. Sci. Satellite	or upper-division	or upper-division
or upper-division	laboratory	laboratory
laboratory	Research	Research
Elective	Electives	Electives

¹ Students may replace Humanities 1A-B-C with its alternative of the lower-division writing requirement of the breadth requirement (Category I) and a three-quarter breadth sequence in either Humanities (with the exception of Art History 40A, B, C) or Literature (Category IV, Humanistic Inquiry). Students must satisfy the Subject A requirement prior to fulfilling the lower-division writing requirement. Students taking Humanities 1A must enroll in the Subject A section of this course if they have not satisfied the Subject A requirement.

² Students may take Chemistry 52A-B-C, 52LA-LB instead of 51A-B-C, 51LA-LB.

³ Prerequisites for Biological Sciences 100L are completion of or concurrent enrollment in Biological Sciences 98 and satisfactory completion of the lower-division writing requirement. Biological Sciences 100L must be completed prior to taking the three upper-division laboratories.

⁴ In addition to the listed Biological Sciences satellite courses, Chemistry 130A-B-C or 131A-B-C, and Psychology 112A-B-C (for Biological Sciences/Psychology double majors) are counted as satellites.

⁵ Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

Special Programs and Courses**Biological Sciences 199**

Every undergraduate student in the School of Biological Sciences has the opportunity to pursue independent experimental laboratory or field research under the direct supervision of a professor in the School of Biological Sciences or in the College of Medicine as an apprentice scientist. Under the guidance of a senior scientist, the student is able to experience the challenge and excitement of the world of science and to develop new scientific skills. This activity may commence as early as the sophomore year or, in the case of exceptional students, earlier.

Interested students should investigate the possibilities for research early in order to obtain a great deal of research experience, if they so desire, before they graduate. Although the School of Biological Sciences does not require training in a foreign language, some areas of research demand that students possess foreign language skills. Students are, therefore, encouraged to discuss foreign language needs with their advisors to see if such training is important for their own careers. Advising for research careers in the biological sciences is best accomplished by students working together with a faculty advisor. Students are permitted to take a maximum of five units per quarter in all independent study courses taken under any school or program.

White Mountain Research Station (WMRS) Supercourse: Environmental Biology

The White Mountain Research Station Supercourse exposes and trains students in diverse approaches to solving problems about plant and animal interactions with each other, and with their environments, both pristine and human-perturbed. In this course, the Owens Valley of eastern California serves as a microcosm of natural resource exploitation, symbolic of many global systems, where a major resource (water in this instance) is collected and exported, potentially to the detriment of the source ecosystems. Students are in residence at the WMRS facility in Bishop, California, for the entire spring quarter. Research studies include both traditional natural history-based field methods, and modern laboratory-based techniques. Students enroll in three concurrent courses, worth 4 units each—Physiological Ecology (Biological Sciences 126), Field Ecology (Biological Sciences 133), and Conservation Biology (Biological Sciences 170). In addition, students enroll for 4 units of independent research and give a poster presentation at the annual Physiological Ecology meeting held at WMRS.

Call the Department of Ecology and Evolutionary Biology at (949) 824-6006 for more information.

Undergraduate Biological Sciences Minority Advanced Research Training

The Undergraduate Biological Sciences Minority Advanced Research Training program was established for underrepresented minorities and women pursuing biological and biomedical research. The program offers research exposure, faculty mentorship, access to a state-of-the-art computer laboratory, summer research internships, academic support, and networking, and provides opportunities to attend scientific conferences at other institutions. Additional information is available from the program office, telephone (949) 824-2589.

Excellence in Research Program

The School of Biological Sciences believes that successful participation in creative research is one of the highest academic goals its undergraduates can attain and accordingly rewards such students with Excellence in Biological Sciences Research certificates. Through undergraduate research and the Excellence in Research Program in Biological Sciences, students have the opportunity of presenting the results of their research endeavors to peers and faculty, and possibly of seeing their research papers published. Selected papers are published in the School's *Journal of Undergraduate Research in the Biological Sciences*.

All Biological Sciences majors doing experimental research under Biological Sciences 199 who have completed a minimum of three quarters on the same project (with at least one quarter taken during the academic year of the symposium) are eligible to participate. They must be in good academic standing, have a grade point average of 2.7 or better, and be making normal progress in Biological Sciences.

Undergraduate Teaching Opportunities

Through the Tutoring Program, students can immediately put to practice skills they have learned in their biology training. This program provides opportunities for students to develop teaching abilities and to perform a worthwhile and necessary service. In the Tutoring Program, UCI students tutor other UCI students in biology, chemistry, mathematics, and physics.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Specifically, Biology majors should consider the EAP programs in the United Kingdom, Canada, Sweden, Australia, Denmark, and Costa Rica. See the Center for International Education section for additional information.

Students may wish to participate in the Education Abroad Program's Tropical Biology Quarter which is for undergraduates with at least one year of introductory biology, one quarter of upper-division biology, and a serious interest in biological studies. The program includes lectures, field laboratories, and independent research, with an emphasis on direct field experience. Students also take a course in Spanish language and Latin American culture.

Master of Science with a Concentration in Biotechnology

The School of Biological Sciences offers a master's program with a concentration in Biotechnology designed to train students to enter the field of biotechnology as skilled laboratory practitioners. The upper-division course requirements for admission into the program are extensive. Students interested in applying for admission to the Biotechnology program should plan to complete the necessary courses during their junior and senior years. See the Graduate Study in Biological Sciences section for more information.

3-2 Program with the Graduate School of Management

Outstanding Biological Sciences majors who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for further information.

Special Research Resources

Special research resources include the Beckman Laser Facility and Medical Clinic, a research, training, and service facility in the area of laser microbeam technology; the School of Biological Sciences Biohazard (P-3) Facility, which provides laboratory facilities for working with biological agents or biological molecules such as recombinant DNA which would be hazardous when used in open laboratories; the Developmental Biology Center, devoted to analyzing the cellular and genetic mechanisms underlying growth, development, and regeneration; the Center for the Neurobiology of Learning and Memory, a research center for studies of the brain mechanisms underlying learning and memory; the UCI Arboretum, a botanical garden facility; the San Joaquin Freshwater Marsh Reserve, which supports controlled marsh biota; the Burns Piñon Ridge Reserve, a high-desert habitat in San Bernardino County; and the UCI Ecological Preserve, which includes coastal hills on the campus, once under heavy grazing, but now returning to a more natural state. It is important to note that the School has access to the College of Medicine, thereby providing an opportunity for the sharing of both teaching and research activities.

Advising: Academic, Career, Health Sciences

Academic Advising

The Biological Sciences Student Affairs Office coordinates the advising program and provides academic counseling as well as special services particularly in the area of preprofessional career counseling. Undergraduate Biological Sciences students should consult the Biological Sciences Student Affairs Office for information on academic requirements for the degree, career opportunities, the Biological Sciences 199 Research Program, available tutoring

for Biological Sciences courses, Biological Sciences student organizations, and scholarship information. Students can also come to the Biological Sciences Student Affairs Office to change their major, apply for graduation, or for any other help they might need related to their academic career at UCI.

All freshmen will enroll in small-group freshman seminars (Biological Sciences 2A) and all other new students will enroll in special sections of Biological Sciences 190. Upper-division peer advisors are actively involved in these seminars.

Peer Academic Advisors. The Peer Academic Advisors are upper-division Biological Sciences majors who bring with them valuable academic and social experiences. Their functions include counseling students in matters of major selection, program planning, petitioning, tutoring, learning skills problems, and participation in cocurricular and extracurricular activities.

The Peer Advisors are located in the Biological Sciences Student Affairs Office. Office hours are posted at the beginning of each quarter.

Career Advising

Information on graduate and professional schools in the health sciences can be obtained from the Biological Sciences Student Affairs Office. The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information. The Student Affairs Office has developed a complete career library and a close relationship with the Center in an effort to provide current, relevant career information for students.

Areas of opportunity open to those with a Bachelor of Science degree include laboratory technology, publishing, technical editing, pharmaceutical sales, and training programs in county, state, and federal agencies. The bachelor's degree is necessary to pursue studies leading to the M.S. and Ph.D. degrees.

The B.S. degree, plus short training periods, may prepare students for employment in education, medical technology (usually one year), physical therapy, and various other areas.

Education (community colleges, state colleges, or private schools), medical illustration, and public health (which includes hospital administration, biostatistics, epidemiology, environmental health sciences, social work, public health education, maternal and child health, and infectious and tropical diseases) are fields in which opportunities are available upon completion of a Master's program.

The Ph.D. degree may lead to research in many areas, among them biochemistry, biometeorology, botany, cytology, ecology, fishery biology, genetics, home economics, microbiology, molecular biology, pathology, physiology, psychobiology, public health, range management, soil conservation, and zoology.

Other areas where advanced degrees are necessary include medicine, dentistry, law, optometry, podiatry, osteopathy, and veterinary medicine.

Health Sciences Advising

Advising for careers in the health sciences is a specialty of the Biological Sciences Student Affairs Office. Students desiring to enter the health sciences should have their programs checked in the Office. They also should check deadlines for taking the Medical College Admission Test (MCAT) or other required tests and application deadlines. The MCAT and the Dental Admission Test, required by most medical and dental schools, are administered in spring and fall each year at UCI. These tests should be taken in the spring, a year and one-half before the student plans to enter medical or dental school.

Leaders in nearly all health professional schools recommend that students preparing to seek admission to their schools plan to obtain a bachelor's degree. Students who plan to enter a school of dentistry, medicine, or other areas of the health sciences may receive the required preprofessional training at UCI. This preprofessional training may be accomplished by (1) completing the major in Biological Sciences or (2) majoring in any school or department and fulfilling concurrently the specific course requirements of the dental, medical, or other professional school the student expects to attend.

Students interested in the health sciences should choose electives in the social sciences, possibly a foreign language, physical chemistry, or other specific courses required or recommended by graduate schools.

The Biological Sciences Student Affairs Office offers specialized services, for a fee, to all students applying to postgraduate professional schools in the health sciences, including a personal file containing the student's letters of recommendation, and a service of sending all recommendations for a student to professional and graduate schools.

Student Participation

AED. Alpha Epsilon Delta (AED) is a national honor society for students preparing for careers in the health professions. AED strives to stimulate an appreciation of health careers through interaction among prehealth students, health educators, and practitioners in a variety of health care fields. Guest speakers from every aspect of the health care field highlight weekly meetings. AED annually sponsors workshops on interview techniques and a series of talks on selecting, applying to, and financing medical school. Blood drives sponsored by AED are offered in conjunction with the American Red Cross and take place twice a year. AED recruits new members early in the fall and spring quarters. Because AED is an honor society, membership is contingent upon class ranking (the top 35 percent), completion of five quarters of academic work, and a brief pledge period, during which commitment to the society is assessed.

All Students for Health. All Students for Health (ASH) assists pre-health students in attaining their career goals through providing opportunities to learn more about health careers via workshops, field trips, and the ASH volunteer program. The organization also provides information about health professional schools and the application process to these schools, and sponsors tours to various campuses. Social interaction and friendships are promoted between students via counseling and social activities.

BSSO. The Black Students Science Organization (BSSO) was established to provide the leadership and academic support necessary for African-American students to successfully complete their undergraduate studies in the biological sciences, physical sciences, and engineering at UCI. The organization has the mission of helping to recruit and to retain African-American students interested in science education, research, and careers in the health field. It holds weekly meetings; sponsors guest speakers; provides academic support in the form of study sessions, examinations, and study aids from previous courses; organizes trips to medical schools, hospitals, and conferences; arranges gatherings with physicians and medical students; hosts fund-raising events; and compiles and disseminates information on careers, conferences, hospital and laboratory positions, and issues affecting the African-American community in particular. BSSO also works in close association with the College of Medicine chapter of the Student National Medical Association.

CCM. Chicanos for Creative Medicine has been established to promote interaction among Biological Sciences and prehealth professional Chicano-Latino students at UCI. The aims of CCM are

(1) to help members attain their career goals, (2) to provide resource information pertinent to the success of Chicano-Latino students at UCI, and (3) to create and maintain a sense of awareness and attitude of being a Chicano-Latino student at UCI. Activities include guest lecturers speaking on their research; Latino professionals, including physicians, dentists, and other health professionals, speaking on their careers; and quarterly fund-raising activities. The group works closely with the Chicano Medical Student Association of the College of Medicine and with the La Raza Medical Association, a Statewide organization.

Dental Club. The Dental Club is designed to promote exposure to dentistry for students interested in a career in the dental profession. The Club provides an opportunity for students to learn about dentistry from guest speakers and by attending workshops. The Dental Club helps students with their dental school applications and offers information on dental schools, field trips to local schools, and counseling. The Club also offers mock Dental Admission Test examinations.

ER Program at UCI. The Emergency Room Program at UCI is a service-oriented program that allows undergraduate students who are certified Emergency Medical Technicians to volunteer in a local emergency room in Orange County. Several EMT courses, tailored to fit UCI students' schedules, are offered throughout the year by the ER Program through Rancho Santiago College. Once EMT certified by the California State Fire Marshal, students are eligible to apply for a position in the program. Program members primarily assist physicians and nurses in performing patient assessments, recording vital signs, and providing critical patient care within their scope of practice. Members must dedicate a minimum of eight hours (two four-hour shifts) per week. Prerequisites for the program are current EMT-1 and CPR "level C" certifications and individual liability insurance to volunteer as an EMT.

Flying Samaritans. The Flying Samaritans of UCI is comprised of student volunteers involved in providing dental and medical care at the El Testerazo Clinic in Baja California. One weekend per month, members staff the clinic in Mexico and assist health professionals. Activities include taking vitals, organizing the extensive pharmacy, and translating. At UCI, activities range from fundraising to collecting clothes, food, and toys for the community of El Testerazo. The Flying Samaritans is dedicated to serving the community of El Testerazo with compassion and a commitment to excellence.

KHA. The Korean Health Association (KHA) was organized for pre-health students to enhance their awareness of the diversity of health education opportunities in the fields of medicine, dentistry, pharmacy, optometry, and more. Although KHA concentrates on participants' academic concerns, it also provides opportunities for them to develop and strengthen friendships. The goals of KHA are (1) to assist students in achieving successful academic endeavors in undergraduate studies, (2) to offer assistance and consultation to students regarding their future health-related career goals, (3) to enable students to meet one another, and (4) to encourage peer counseling and tutoring among students. The KHA also provides academic and career counseling and sponsors workshops which are presented by professionals who represent health-related careers.

M.D. Medici Designati is comprised of a group of dedicated ancillary health care professionals who wish to aid their community and, in doing so, gain valuable clinical experience. Its name stems from Vergil's *Aeneid*, meaning "doctors in training." The organization provides the opportunity to truly experience medicine from a different point of view. The minimum requirements for membership are attendance for at least two quarters at UCI and a minimum GPA of 3.0. Active members are EMTs, CPR instructors, medical assistants, nurses, surgical technicians, and others. The pledge class is given one academic year to become licensed. The club meets once a week, with occasional special meetings.

MHSS. The Medical and Health Sciences Society (MHSS) is an organization dedicated to fostering interest in the fields of medicine, dentistry, pharmacy, optometry, and other health-related professions. It offers assistance to pre-health students in planning their undergraduate years so that they may best prepare and present themselves for future career goals. Meetings are held every other week and provide students with excellent opportunities to learn more about health issues and professional schools from a wide variety of distinguished guest speakers. In addition, MHSS stresses the importance of a supportive and interactive environment for its members through study groups and social activities.

Pharmacy Society. The Pharmacy Society is a club that is designed to inform and educate students about the pharmacy profession, helping students become aware of the vast opportunities available in the field. The club assists its members in the application process to pharmacy schools and distributes literature pertaining to such schools and to the pharmacy profession. Activities include guest speakers discussing various aspects of pharmacy including clinical, retail, research, academia, industry, and specialty fields as found in, for example, pediatrics, geriatrics, cardiology, and psychopharmacy.

PUSO. The Pilipino Pre-health Undergraduate Student Organization (PUSO) was formed to target Pilipino students in the pre-health majors. With an awareness of the need for Pilipino-American health care professionals, PUSO provides service, guidance, and support to members preparing for graduate work in health-related fields. PUSO also seeks to increase the number of culturally sensitive health care professionals in the Pilipino community as well as the community-at-large and produce role models for Pilipino-American youth.

U See Eyes. U See Eyes is dedicated to helping students interested in optometry learn more about the profession through guest speakers such as well-respected optometrists, students in optometry schools, and admissions officers from prestigious colleges of optometry throughout the country. Members have the opportunity to tour optometrists' offices as well as the Southern California College of Optometry. Workshops on the application process, interviewing skills, and preparation for the optometry school entrance examination also are available. The club tries to offer support and guidance to those who may find the application process confusing and intimidating.

Undergraduate Courses in Biological Sciences

FOR NONMAJORS

1A-B Life Sciences (4-4) F, W, S. Lecture, three hours. A two-quarter integrated sequence designed to introduce nonmajors to the basic concepts of modern biology. **1A:** Discussion of evolutionary biology, ecology, molecular biology, and genetics. **1B:** Cell and behavioral biology including plant structure and function, photosynthesis, and animal physiology. Prerequisite for 1B: Biological Sciences 1A. (II)

35 The Brain and Behavior (4). Lecture, three hours; discussion, one hour. Brain mechanisms underlying psychological processes, including consciousness and sleep, sex, food and water intake, perception, learning, memory, and language. Prerequisite: Biological Sciences 1B. (II)

55 Introduction to Ecology (4). Lecture, three hours. Principles of ecology; application to populations, communities, ecosystems, and humans. Prerequisite: Biological Sciences 1B. Same as Environmental Analysis and Design E6. (II)

75 Human Development: Conception to Birth (4). Lecture, three hours. Processes leading to the birth of a healthy child and the avoidance of birth defects. Male and female reproductive systems, hormonal control of egg-sperm formations, sexual intercourse, contraception, venereal diseases, fertilization, cell division, embryonic development, fetal physiology. (II)

FOR BOTH MAJORS AND NONMAJORS

11 Topics in Biological Sciences (2 to 4) F, W, S. Studies in selected areas of biological sciences. May be taken for credit three times as topics vary.

15 Botany (4) F. Lecture, three hours. Structure and function of flowering plants related to their roles in ecology and human needs. Prerequisite: Biological Sciences 1B for nonmajors; none for majors. (II)

20 Western Water Problems (4) W of odd years. Seminar, four hours. Minimum streamflow, anadromous fisheries, riparian habitats, and characteristics of western river systems. Ecological effects of dams and impoundments, western water law, and mitigation strategies. California and the Northwest are emphasized.

25 Biology of Cancer (4) W. Lecture, four hours. Biological, clinical, and psychosocial nature of cancer through the perspectives of medical researchers, biologists, physicians, and health educators. For students of all majors, designed so that each can increase personal awareness of the biology of cancer.

30 Biomedical Ethics (2) S. Seminar, three hours. Ethical issues inherent in modern biological and medical advances. Behavior modification, food and resources distribution, malpractice, and other current ethical issues are covered by scientists and community members. Discussion with the guest speaker. Pass/Not Pass only.

40 Biological Sciences Summer Science Program (4) Summer. Lecture, five hours; laboratory, three hours. Developmental approach to the study of a scientific subject. The cell, plants and animals, diversity of life, and subdivisions in biology using indexes, journals, biological dictionaries, and personal public relations.

45 AIDS Fundamentals (4) F, W. Lecture, three hours. Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, risk reduction, and how the community can respond. Same as Environmental Analysis and Design E45U and Psychology and Human Behavior P45. (II)

46 Discussion and Literature Research in AIDS (2 to 4) F. Discussion, two hours; research, two hours. Students carry out two activities: (1) leading discussions about HIV/AIDS (predominantly regarding sociological and personal reactions) among students taking the AIDS Fundamentals course and (2) literature research about biomedical aspects of AIDS. Prerequisite: Biological Sciences 45 or Psychology and Social Behavior P45 or Environmental Analysis and Design E45U; consent of instructor.

50 The Biology of Heart Disease (4) S. Lecture, four hours. Guest lecturers from the field of cardiovascular medicine discuss current concepts regarding cause, diagnosis, and treatment of heart disease. Topics include surgery, rehabilitation, and congenital defects, with emphasis on prevention.

65 Biological Conservation (4). Lecture, three hours. A biological perspective on the current environmental crisis. The origin, evolution, and value of biological diversity. Extinction and depletion caused by overexploitation, habitat loss, and pollution. Conservation through habitat preservation and restoration, captive breeding, cryopreservation. Prerequisite: for nonmajors, Biological Sciences 1B; none for majors. (II)

78 Health (2) F, S. Lecture, three hours. A practical health education course comprised of lectures by practicing professionals. Health topics covered include stress, physical fitness, cardiovascular disease, cancer, communicable diseases, nutrition, eating disorders, rape prevention, common illness, and trauma and emergency medical care. Pass/Not Pass only.

H90 The Idiom and Practice of Science (4) F, W, S. Lecture, three hours; discussion, three hours. The importance of biological sciences in decision-making for individuals, society, and the environment. Topics may include health and disease, genetics and society, biodiversity and conservation. Encourages students to become actively involved in using science to help confront major issues facing society. Prerequisite: restricted to members of the Campuswide Honors Program. Formerly Biological Sciences H90A. (II)

SEMINARS, SPECIAL COURSES, AND INDEPENDENT STUDY

Seminars

2A Freshman Seminars (1). Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/opportunities. Pass/Not Pass only. Open to freshman Biological Sciences majors only.

2B Freshman Seminars (0). Lecture, one hour. To further facilitate Biological Sciences students' understanding of the structure, function, opportunities, and current issues in the biological sciences through faculty presentations and readings. Pass/Not Pass only. One unit of workload credit only. Open to freshman Biological Sciences majors only. Prerequisite: Biological Sciences 2A.

3A Career Decision Making (0). Lecture, one hour. An introductory course designed to facilitate the career decision-making process. Decision-making processes, values, and standardized tests of aptitudes, interests, and values are utilized with non-test data in appraising biological sciences career options. Pass/Not Pass only. One unit of workload credit only. Open to Biological Sciences majors only.

4 Introduction to Biomedical Research and Careers (0). A seminar series for students interested in careers in the biological sciences and medicine. Presents a broad view of research areas, experimental approaches, clinical and industrial applications, issues of national health policies and economics, career paths in the biomedical sciences. May be repeated for credit as topics vary. One unit of workload credit only.

3B Non-Health Sciences Career Exploration (0). Lecture, one hour. A survey course designed to assist students in exploring non-health science career options. Lectures by professionals in various fields. Students are required to investigate one area of particular interest and do a career observation. Pass/Not Pass only. One unit of workload credit only. Open to sophomore, junior, or senior Biological Sciences majors only.

190 Transfer Student Seminars (1). Lecture, one hour; seminar, one hour. Weekly meetings consisting of presentations by faculty, professional staff, and New Student Peer Academic Advisors provide information about the School of Biological Sciences, campus resources, and special programs/-opportunities. Pass/Not Pass only. Open to new transfer students only.

Special Courses

92 Special Group Activities F, W, S. Formerly Biological Sciences 98.

Sec. 1A Health Sciences Experience, Medicine, and Allied Health (0). Opportunities to observe or participate in various health fields. Specific number of hours per quarter of volunteer work with approved health professionals. Passing contingent on completion of minimum specified hours with satisfactory evaluation. Fields include veterinary and human medicine, and allied health. Pass/Not Pass only. Prerequisites: consent of instructor and minimum third-quarter freshman standing. May be repeated.

Sec. 1B Health Sciences Experience, Dentistry (0). Description same as Sec. 1A. Pass/Not Pass only. Prerequisites: consent of instructor and minimum third-quarter freshman standing. May be repeated.

Sec. 1C Health Sciences Experience, Optometry (0). Description same as Sec. 1A. Pass/Not Pass only. Prerequisites: consent of instructor and minimum third-quarter freshman standing. May be repeated.

Sec. 2 Tutoring in Biological Sciences (2 to 4). Students may enroll in this course to earn credit for tutoring in Biological Sciences Core courses. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass only.

Sec. 3 Reading, Writing, and Reasoning for Biological Science Majors (0) F, W, S. Strategies and practice to strengthen reading, writing, and reasoning skills in preparation for graduate study in biological sciences and advanced degrees in areas such as education, business, law, dentistry, optometry, medicine, and public health. Pass/Not Pass only. Open to upper-division Biological Sciences majors only.

Sec. 5 Curriculum (2). Initiation, planning, and coordination of student-run courses. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass only.

191A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 191A-B, grade for sequence given upon completion of 191C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Earth System Science 190A-B and Social Ecology 186A-B.

191C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper.

Prepare/write research paper under the direction of a faculty member. Prerequisites: Biological Sciences 191A-B and satisfaction of the lower-division writing requirement. Same as Earth System Science 190C and Social Ecology 186C.

192 Excellence in Research in the Biological Sciences (2). Adjunct to the third quarter of Biological Sciences 199 for students participating in the School of Biological Sciences' Excellence in Research program. Corequisite: Biological Sciences 199. Prerequisites: two quarters of Biological Sciences 199; 2.7 minimum grade point average. Pass/Not Pass only. May be repeated for credit as topics vary. Biological Sciences 192 and 192X may not both be taken for credit.

192X Excellence in Research/Writing (2). Adjunct to the third quarter of Biological Sciences 199 for students participating in the School of Biological Sciences' Excellence in Research program who wish to receive credit for the upper-division writing requirement. Corequisite: Biological Sciences 199. Prerequisites: two quarters of Biological Sciences 199; 2.7 minimum grade point average; satisfactory completion of the lower-division writing requirement. Biological Sciences 192 and 192X may not both be taken for credit.

193 Research Writing for Biological Science Majors (4). Under the guidance of selected faculty in the School of Biological Sciences and a writing professional, students learn to conduct library research in the field of biology and to write scientific review papers. Prerequisite: upper-division Biological Sciences major.

194 Current Topics in Biology (1) F, W, S. A seminar designed to discuss recent research findings and experimental issues in biology. Meets once each week for one hour. Corequisite: Biological Sciences 199.

194S Safety and Ethics for Independent Research (1) F, W, S. Introduces students engaged in independent research to the concepts, techniques, and ethics involved in biomedical research. Corequisite: Biological Sciences 199. Pass/Not Pass only.

195 Communication in the Biological Sciences (4). Lecture, three hours. An examination of rhetorical strategies of both written and oral forms of communications used in the Biological Sciences. Students have extensive opportunity to practice making both written and oral presentations. The final project is a research paper based on work in independent study (Biological Sciences 199). Prerequisites: Biological Sciences 199A and concurrent enrollment in 199B with the intention of participation in Excellence in Research during spring quarter.

196 Writing for Biology Research (4) S. Lecture, two hours; laboratory, two hours. A science writing and critical reasoning course to be taken the quarter prior to participation in the Excellence in Research Program. Students work in a computer laboratory with full access to writing, library, and network resources and prepare and review a formal scientific paper. Prerequisites: two quarters of Biological Sciences 199; satisfaction of the lower-division writing requirement. Enrollment preference given to students who have taken two or more quarters of Biological Sciences 197.

198 Teaching Methods/Practicum for Undergraduates (4) F, W, S. Undergraduates interested in biology teaching experience serve as apprentice instructors in sections of the Experimental Biology Laboratory (100L). Students attend a weekly seminar on teaching methods and a weekly session to prepare for the week's laboratory/discussion topics. Pass/Not Pass only. Prerequisites: Biological Sciences 94, 96, 97, 98, 99, 100L and upper division standing. May be taken for credit three times.

NOTE: Information about the White Mountain Research Station Supercourse is available on page 119.

Independent Study

Independent-study credit for undergraduates is limited to five units per quarter.

197A-B-C Special Study in Biological Sciences (1 to 4 per quarter) F, W, S. Tutorial, one to four hours. Library research, tutorial, and other independent projects under individual professors. Individualized instruction dealing with conceptual or theoretical problems in the biological sciences, rather than technical problems. Regularly scheduled meetings between student and faculty member and successful completion of a written report. Prerequisite: consent of instructor. An abstract form must be filed in the Biological Sciences Student Affairs Office. May be graded "IP." May be repeated for credit.

199A-B-C Independent Study in Biological Sciences Research (1 to 5 per quarter) F, W, S. Individual experimental laboratory or field research under a professor's direction. Required for participation in the Excellence in Research

Program. Further information and a booklet describing many prospective projects are available in the Biological Sciences Student Affairs Office. Prerequisite: consent of instructor. An abstract form must be filed in the Biological Sciences Student Affairs Office. May be graded "IP." May be repeated for credit.

CORE CURRICULUM

Biological Sciences courses numbered 94, 96, 97, 98, 99, 100L, 108, 109, and 110 are required of all Biological Sciences majors. Prerequisites listed for Core courses are rigorously enforced. (Transfer students who have successfully completed one or more years of college biology should consult with the Biological Sciences Student Affairs Office for possible exemption from portions of the Core.)

94 Diversity of Life (4) W. Lecture, three hours. Types of living organisms with an introduction to systematics and classification. Evolutionary aspects are stressed. Prerequisite: concurrent enrollment in or completion of Chemistry 1A.

96 Ecology (4) S. Lecture. Ecological principles and their relevance at several levels of organization. Individuals, populations, communities, and ecosystems, and interactions of these levels with physical and biotic environments. Prerequisite: Biological Sciences 94.

97 General and Evolutionary Genetics (4) F. Lecture. Introduction to genetics and the genetics of populations. Basic features of the replication and expression of DNA; cell division; and gene transmission. Recombination and mutation in diploid organisms. Concepts of genetic variability and natural selection in populations. Prerequisite: Biological Sciences 96.

98 Biochemistry (4) W. Lecture. Structure and properties of proteins; major biochemical pathways and mechanisms for their control. Prerequisites: completion of Biological Sciences 97 and completion of or concurrent enrollment in Chemistry 51B or 52B.

99 Molecular Biology (4) S. Lecture. Biochemistry and replication of nucleic acids; molecular genetics; protein biosynthesis; genetic code; regulation of expression of genetic information; biochemical evolution. Prerequisite: Biological Sciences 98.

100L Experimental Biology Laboratory (4) W, S. Basic experimental design, laboratory techniques, data gathering skills, and analysis and preservation of data for a variety of areas of inquiry in the biological sciences. Prerequisites: current enrollment in or completion of Biological Sciences 98; satisfactory completion of the lower-division writing requirement.

108 Developmental and Cell Biology (4) F, W. Lecture. Basic concepts of cell and developmental biology. Emphasis on structure of the cell and its components, and development of structure during embryology of plants and animals. Prerequisite: Biological Sciences 99.

109 Physiology (5) F, W. Lecture. Major functional features of plants and animals relevant to their survival. Focus on the whole organism and its constituent organs and organ systems; functional attributes of cells introduced as required. Discussion of neurophysiology and behavior deferred to Biological Sciences 110. Prerequisite: Biological Sciences 99.

110 Psychobiology (4) S. Lecture. Evolution of behavior, including ethological and psychological aspects and analysis of neuroanatomical, neurochemical, neurophysiological, and neuroendocrine systems underlying basic behavioral processes. Prerequisites: Biological Sciences 99 and completion of or concurrent enrollment in Physics 3B or 5C.

UPPER-DIVISION LABORATORIES

Upon completion of Biological Sciences 100L, Biological Sciences majors are required to take three of the following upper-division laboratories. Students who choose to complete a specialization must take the core laboratory indicated in the list which appears in the degree requirements section.

111L Developmental and Cell Biology Laboratory (3) F, W, S. Laboratory, four hours. Prerequisite: Biological Sciences 100L and concurrent enrollment in or completion of Biological Sciences 108.

112L Physiology Laboratory (3) F, W, S. Laboratory, four hours. Prerequisites: completion of Biological Sciences 100L and 109.

113L Psychobiology Laboratory (3) F, S. Laboratory, four hours. Prerequisite: Biological Sciences 100L and concurrent enrollment in or completion of Biological Sciences 110.

114L Biochemistry Laboratory (4) F, W, S. Laboratory, four hours. Properties of enzymes and the culture and isolation of mutants of microorganisms. Prerequisite: completion of Biological Sciences 99 and 100L.

115L Evolution Laboratory (4) S. Laboratory, seven hours. Students perform experiments which illustrate important concepts in evolutionary biology such as natural selection, random genetic drift, inbreeding, age-specific selection, sexual selection, and phylogenetic reconstruction. Prerequisites: Biological Sciences 97 and 100L.

116L Molecular Biology Laboratory (4) F, W, S. Laboratory, four hours. Students perform experiments which illustrate the chemical and biological properties of nucleic acids. Emphasis is placed on recent techniques in recombinant DNA technology including gene isolation and characterization. Prerequisites: Biological Sciences 99 and 100L.

122L General Microbiology Laboratory (4) F, W, S, Summer. Laboratory, nine hours. Selective isolation of wide variety of microbial types. Characterization and identification by morphological and comparative nutritional and biochemical approaches. Industrial, medical, and biological research applications. Prerequisites: Biological Sciences 100L and concurrent enrollment in Biological Sciences 122 and consent of instructor.

166 Field Method in Ecology (6) F. Lecture, three hours; laboratory, five hours; required field trips. Field studies of major concepts in plant and animal ecology, with emphasis on experimental design, field sampling methods, statistical analysis, and scientific writing. An independent project and two weekend camping trips are required. Satisfies the upper-division writing requirement with a grade of C or better. Prerequisites: Biological Sciences 96 and 100L; consent of instructor; satisfactory completion of the lower-division writing requirement and upper-division standing.

SATELLITE COURSES

117 Behavioral Neuroscience Theory (4) W. Lecture, three hours. Study of the nervous system and how behavior is mediated. Investigation of the neural mechanisms underlying both simple and complex aspects of behavior.

118 Microbial Ecology of Natural and Polluted Waters (4) S. Lecture, three hours. Examines microorganisms and their functions in the aquatic environment, specifically microorganisms' role in the biogeochemical cycles of nitrogen, sulfur, and mercury; how our activities are affecting these cycles. How and why indicator organisms are used in the determination of water quality for public health. Prerequisites: a general course in the Biological Sciences Core curriculum. Same as Environmental Analysis and Design E160.

118L Microbial Ecology of Natural and Polluted Waters Laboratory (4) S. Laboratory, three hours. Enumeration and identification of microorganisms from various aquatic environments. Examines microbial mediation of the sulfur, nitrogen, and mercury cycles and public health aspects of water quality. Prerequisites: a general course in the Biological Sciences Core curriculum and completion of or concurrent enrollment in Biological Sciences 118. Same as Environmental Analysis and Design E160L.

119 The Chemical Components of Water Quality (4) F. Lecture, three hours. A survey of the chemical properties of water used for drinking, agriculture, and industry. Covers basic chemical analyses of water and the significance of these tests in determining water quality. Prerequisites: Chemistry 1A and Environmental Analysis and Design E5 and E8 or a general course in the Biological Sciences Core Curriculum. Same as Environmental Analysis and Design E162.

120 Neurobiology of Alcohol (4) F. Lecture, two hours; discussion, one hour. Alcohol (ethanol) metabolism, CNS depression, nature and developing brain, neuropharmacology, drug interactions, immune system, alcohol-related birth defects, neuroteratogen, role in AIDS/pediatric AIDS; gender, ethnic, and special population differences. Discussion on biological socio/psychological aspects. Prerequisite: Biological Sciences 98.

121 Immunology with Hematology (4) W, S. Lecture, three hours; discussion, two hours. Antibodies, antigens, antigen-antibody reactions, cells and tissues of lymphoreticular and hematopoietic systems, and individual and collective components of cell-mediated and humoral immune response. Prerequisite: Biological Sciences 98 or consent of instructor.

122 General Microbiology (4) S, Summer. Lecture, three hours; discussion, one hour. Comparative metabolism of small molecules and cell structure and relationship to microbial classification. Macromolecule synthesis and regulation, sporulation, cell division, growth, and effect of antibiotics. Prerequisite: Biological Sciences 98.

123 Computer Applications in Molecular Biology (3) S. Laboratory, three hours. The use of computer programs in molecular biology. Beginning from DNA sequence data, students will enter and construct a data base, analyze the sequence data, and predict some of the structural features of proteins. A familiarity with personal computers is desirable but not required. Prerequisites: Biological Sciences 99 and consent of instructor.

123X Writing/Computer Applications in Molecular Biology (2) S. Adjunct to Biological Sciences 123. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 123. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 123. Prerequisites: Biological Sciences 99 and consent of instructor; satisfactory completion of the lower-division writing requirement.

124 Virology (6) F. Lecture, five hours. Infective cycle, growth, reproduction, and host interrelationships of animal viruses. Molecular effects of virus infection in cells and animals and the relation between virus infection and cancer. Prerequisite: Biological Sciences 98.

125 Molecular Biology of Transformed Animal Cells (4) S. Lecture, three hours. Molecular mechanisms of carcinogenesis. Consideration of transformation by DNA tumor viruses, RNA tumor viruses, and chemical carcinogens. Prerequisite: concurrent enrollment in Biological Sciences 99 or consent of instructor.

126 Physiological Ecology (4) S. An examination of the functional means by which animals and plants cope with their environments, the physiological limits that determine the boundary conditions of various ecological niches. Unifying principles that describe the regulatory features of all animals or plants emphasized. May be taken only as part of the White Mountain Research Supercourse. Corequisites: Biological Sciences 133, 170, 199. Prerequisite: consent of instructor.

128 Genetic Engineering (4) S. Lecture, three hours. Basic biochemical and molecular biology of restriction endonucleases. Vectors for recombinant DNA. Cloning of genes. Sequence analysis of genes. Prerequisite: Biological Sciences 98; Biological Sciences 99 recommended.

129 Biotechnology and Plant Breeding (4) F, Summer. Lecture, three hours. Synopsis of conventional plant breeding techniques, their limitations, and supplementations through modern biotechnology. These new biotechnological methods include steps such as cloning, cell transformation (genetic engineering), and cell fusion. Focuses on crop improvement, the state of the art in animal and human systems, and the impact of gene technology on society. Prerequisite: Biological Sciences 91, 94, or consent of instructor.

129L Plant Cell Culture Laboratory (4) W of odd years. Laboratory, 60 hours per quarter, run on two, full three-day weekend sessions which normally will not conflict with other classes. Isolation and culture of plant cells and tissues, i.e., protoplasts, pollen, meristem. Genetics and structural manipulation of cultured cells, i.e., fusion, laser microsurgery, mutation. Regeneration of plants from cultured cells and tissues. Greenhouse experience (propagation, fertilization, grafting). Prerequisite: Biological Sciences 129 or consent of instructor.

130A Photomedicine I: Basic Mechanisms (4) F. Lecture, three hours; discussion, one hour. First of a two-course sequence. Teaches basic physical and optical principles of light interacting with biological systems. Topic sections are: fundamentals of light interaction with matter; various interactions of light with biological materials; optical diagnostics. Prerequisites: Biological Sciences 108 and Physics 3A-B-C or equivalent. Formerly Biological Sciences 130.

130B Photomedicine II: Biological and Medical (4) W. Introduces the use of optical systems (laser-based) for diagnosis and treatment of diseases and the study and manipulation of cells. Different physical and optical mechanisms studied in Biological Sciences 130A are explored with respect to molecular, cellular, organ, and organismic applications. Prerequisite: Biological Sciences 130A or consent of instructor.

131 Topics in Molecular Biology and Biochemistry (2 to 4) F, W, S. Studies in selected areas of molecular biology and biochemistry. Prerequisite: Biological Sciences 98 or consent of instructor. May be taken for credit three times as topics vary.

132 Muscles and Movement (4) W. Lecture, three hours. Structure and function of muscle, from molecular mechanisms of movement through mechanical power output, efficiency, and the effects of training on muscle size and performance. Prerequisite: concurrent enrollment in or completion of Biological Sciences 109.

133 Field Ecology (4) S. Designed to instruct and demonstrate to students the value and approaches of experimental field research using the hypothetico-deductive experimental approach. May be taken only as part of the White Mountain Research Supercourse. Corequisites: Biological Sciences 126, 170, 199. Prerequisite: consent of instructor.

134 Plant Physiology (4) S. Lecture, three hours. Plant hormones, growth and development, metabolism, mineral nutrition, and photosynthesis. Prerequisite: Biological Sciences 15 or consent of instructor.

134X Writing/Plant Physiology (2) S. Adjunct to Biological Sciences 134. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 134. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 134. Prerequisites: Biological Sciences 108, consent of instructor, and satisfactory completion of the lower-division writing requirement.

136 Developmental Biology (4) W. Lecture, three hours. Development of animal and plant cells, tissues, and organisms. Reproduction, growth, aging, differentiation, and pattern formation. Prerequisite: Biological Sciences 108. Biological Sciences 136 and 148 may not both be taken for credit.

137 Genetics

137A Microbial Genetics (4) W. Lecture, four hours. Prerequisites: Biological Sciences 97 and 98. Recommended: concurrent enrollment in Biological Sciences 99.

137B Eukaryotic and Human Genetics (4) F. Lecture, four hours. Structure and function of genes in eukaryotes with emphasis on special problems of genetic studies in humans. Molecular methods of genetic analysis and gene transfer are discussed. Practical applications and ethical and social issues raised by genetic studies are addressed. Prerequisite: Biological Sciences 97. Recommended: Biological Sciences 99.

138 Comparative Animal Physiology (4) S of odd years. Lecture, three hours. Maintenance aspects of physiology: water balance; feeding and digestion; metabolism; respiration and circulation. Prerequisite: Biological Sciences 109.

138X Writing/Comparative Animal Physiology (2) S. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 138. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 138. Prerequisites: Biological Sciences 109 and consent of instructor; satisfactory completion of the lower-division writing requirement.

139 Topics in Developmental and Cell Biology (2 to 4) F, W, S. Studies in selected areas of developmental and cell biology. Prerequisites: Biological Sciences 108; limited to School of Biological Sciences majors with upper-division standing. May be taken for credit three times as topics vary.

140 Macromolecular Structure, Function, and Interaction (4) F. Lecture, three hours; discussion, one hour. Chemistry of macromolecules; emphasis on proteins. Physical and chemical properties of proteins, forces that maintain protein structure, relationship between structure and function, interactions of proteins with ligands and other macromolecules, and experimental methods to study structure, function, and interactions. Corequisite: Chemistry 130A or 131A. Prerequisites: Biological Sciences 98 and 99. Concurrent with Molecular Biology 240.

141 Cell Signaling in Development (4) S. Introduction to the general principles of cell signaling, with emphasis on its role in animal development. Topics include: hormone receptor interactions, G-protein linked signaling, enzyme linked cell surface receptors, growth factor signaling in invertebrate and vertebrate systems. Prerequisite: Biological Sciences 108.

141X Writing/Cell Signaling in Development (2) S. Adjunct to Biological Sciences 141. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 141. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 141. Prerequisites: Biological Sciences 97, 99, and 108; consent of instructor; satisfactory completion of the lower-division writing requirement.

142 Writing/Philosophy of Biology (4) W. Lecture, three hours. Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Coursework includes one 4,000-word and four 1,000-word papers. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor; Philosophy 40 recommended as background. Same as Philosophy 142.

143 Human Parasitology (4) S. Lecture, three hours. Introduction to human-animal parasitic diseases including worm and protozoan infections. Prerequisite: Biological Sciences 98 or consent of instructor.

143X Writing/Human Parasitology (2) S. Adjunct to Biological Sciences 143. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 143. Satisfies the upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 143. Prerequisites: Biological Sciences 109 and consent of instructor; satisfactory completion of the lower-division writing requirement.

144 Cell Biology. Taught jointly by faculty from the Departments of Developmental and Cell Biology and Molecular Biology and Biochemistry. Designed to present fundamental as well as advanced concepts in modern molecular cell biology.

144A Cell Organelles and Membranes (4) F. Lecture, three hours. Structure, function, and biogenesis of biological membranes and membrane-bound organelles; protein trafficking and transmembrane signalling. Prerequisite: Biological Sciences 108.

144B Cell Biology (4) W. Lecture, four hours. Plasma membrane and cytoskeletal-mediated events. Topics include: endocytosis, receptor-ligand interactions, the biochemical basis of growth control, cell structure and motility, and cell-cell, cell matrix interactions. The biochemistry and molecular aspects of these topics are emphasized. Prerequisite: Biological Sciences 108.

144C Plant Cell Biology (4) S. The biology of plant cells at a molecular level. Topics include molecular biology of plant organelles (chloroplasts, mitochondria, peroxisomes, vacuoles); metabolism (photosynthesis, photorespiration); transposable elements; transformation and molecular responses to stress. Prerequisites: Biological Sciences 108 and 109.

144X Writing/Plant Molecular Biology (2) S. Adjunct to Biological Sciences 144C. Individual instruction in writing about topics drawn from material covered in Biological Sciences 144C. Satisfies upper-division writing requirement with a grade of C or better. Corequisite: Biological Sciences 144C. Prerequisite: Biological Sciences 108 and consent of instructor; satisfactory completion of the lower-division writing requirement.

145A Gene Expression and Its Regulation in Eukaryotic Cells (4) W of every odd year. Lecture, three hours. Molecular organization of eukaryotic genes and the molecular mechanisms which regulate their expression. Topics include developmentally regulated genes, tissue-specific gene expression, multigene families, oncogenes, gene transposition, and recombinant gene cloning. Prerequisite: Biological Sciences 99.

146 Neural Mechanisms of Arousal and Attention (4) W. Lecture, three hours. A focus on brain mechanisms within thalamic and neocortical circuits that underlie changes in arousal and attention. Examines the integrated actions of cellular, synaptic, and other neural mechanisms identified in preparations ranging from isolated single neurons to behaving animals. Prerequisite: Biological Sciences 110.

147 Plant Molecular Biology (4) W. Lecture, three hours. Presents the molecular mechanisms of plant growth and development. Topics considered include: the identification of genes regulating cell division, growth, and morphogenesis; control of gene expression by external and internal factors; plant transformation mechanisms. Prerequisite: Biological Sciences 108.

148 Developmental Biology of Vertebrates (4) S. Lecture, three hours; optional discussion, one hour. Introduction to animal developmental biology, with an emphasis on vertebrates. Topics include reproduction, early development, pattern formation, organogenesis, regeneration. Prerequisite: Biological Sciences 108. Biological Sciences 136 and 148 may not both be taken for credit.

148X Writing/Vertebrate Embryology (2) S. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 148. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 148. Prerequisites: Biological Sciences 108, consent of instructor, and satisfactory completion of the lower-division writing requirement.

149 Development of the Nervous System (4) F. Lecture, three hours. Neurogenesis, cell migration, and environmental interactions from embryogenesis to late maturation with emphasis on vertebrates. Prerequisite: Biological Sciences 110.

150 Conservation Biology (3) S of odd years. Lecture, three hours. Considers conservation of animal and plant endangered species. Examines current trends in deforestation, environmental degradation, natural and induced extinctions, principles of preserve design and management, legislation, conservation genetics and ex situ methods of conservation. Prerequisite: Biological Sciences 97.

151 Structure and Function of Eukaryotic Chromosomes (4) S. Lecture, three hours. Molecular organization of chromosomes, comparisons of active vs. inactive chromatin structure, current research in chromosome function and its regulation, with emphasis on techniques utilized to probe these problems. Prerequisite: Biological Sciences 99.

151X Writing/Structure and Function of Eukaryotic Chromosomes (2). Adjunct to Biological Sciences 151. Individual instruction in writing about topics drawn from the material covered in Biological Sciences 151. Satisfies the upper-division writing breadth requirement with a grade of C or better. Corequisite: Biological Sciences 151. Prerequisites: Biological Sciences 99, consent of instructor, and satisfactory completion of the lower-division writing requirement.

152 Topics in Psychobiology (4) F, W, S. Lecture, three hours. Studies in selected areas of psychobiology. Prerequisite: Biological Sciences 98 or consent of instructor. May be taken for credit three times as topics vary.

153 Chemistry and Pharmacology of Synaptic Transmission (4) S of even years. Lecture and discussion, three hours. Introduction to chemistry and pharmacology of neural tissue with emphasis on the regulation of neurotransmitter synthesis. Prerequisite: Biological Sciences 110 or consent of instructor.

154 Introduction to Molecular Neurobiology (4) S of even years. Seminar, three hours. Introduction to current research developments in molecular biology of the receptor, including receptor biosynthesis, gene cloning, and neural control of gene expression. Prerequisites: Biological Sciences 99 and consent of instructor.

155 Seminar in Psychobiology (4) F. Seminar, three hours. Selected current research problems concerning neurobiology and behavior. Students prepare and present papers. Prerequisites: Biological Sciences 80–81 or 110 and consent of instructor.

156 Neural Systems (4) W of even years. Lecture, three hours. How modern neuroscience integrates several types of disciplines such as anatomy, physiology, developmental biology, and behavioral biology to develop hypotheses about the operation of particular brain regions. Most useful to students who have had satellite courses or research experience in neurophysiology or neurochemistry. Prerequisite: Biological Sciences 110.

157 Comparative Vertebrate Anatomy (6) W. Lecture, three hours; laboratory, six hours. Structure and evolution of the major organ systems in vertebrates, from fish to mammals. Laboratory work includes detailed dissection of a shark and cat. Prerequisite: Biological Sciences 108 or 109.

158 Neurobiology of Learning and Memory (4). Lecture and discussion, three hours. Basic issues concerning the nature of behavioral plasticity and information storage and their neural substrates. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Psychology 145B.

159 Animal Behavior (4) S. Lecture, three hours. A survey of the proximate and ultimate causations of species-typical behavior. The role of neural and endocrine control of behaviors is stressed. Prerequisite: Biological Sciences 110 or consent of instructor.

160 Language and the Brain (4). Lecture, three hours. Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasia; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Psychology 156B and Linguistics 158.

161 Cellular Neurobiology (4) S of even years. Lecture and discussion, three hours. Introduction to biophysics and biochemistry of nerve cells emphasizing membrane potentials, conduction and transmission, synaptic chemistry, and information processing. Prerequisite: Biological Sciences 110.

162 Neurogenetics (4). Lecture, three hours. Genetic basis of neurological development and disorders. Focuses on the methods used to identify novel, neurologically relevant genes and their analysis on a molecular level. Attention to understanding how genetic changes alter normal cellular functions and the subsequent impairment and clinical consequences. Prerequisite: Biological Sciences 110.

163 Psychoneuroendocrinology (4) F of even years. Lecture and discussion, three hours. Introduction to materials showing that hormones are involved in neural development and mature function and behavior and that behavior is involved in the control of hormonal secretions. Prerequisite: Biological Sciences 110.

164 Neuroanatomy (4) S of odd years. Lecture and discussion, three hours. Introduction to comparative neuroanatomy, emphasizing mammalian central nervous system. Prerequisite: Biological Sciences 110.

165 Theoretical Psychobiology (4) S of even years. Lecture, three hours. The origin, development, and current status of major ideas and theories concerning the neurobiological bases of behavioral adaptation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110.

167 Plant Population Biology (4) F of odd years. Lecture, three hours. Current topics in plant population biology are reviewed in an ecological and evolutionary context. Topics include aspects of population genetics, population ecology, evolutionary ecology, and applications to conservation biology. Discussions of current literature. Prerequisites: Biological Sciences 97 and at least one satellite course in the Ecology, Evolution, or Plant Sciences specialization.

168 Advanced Evolutionary Biology (4) F. Lecture, three hours. An examination of the major mechanisms of evolution. Topics include population and quantitative genetics theory, genetic basis of adaptation, the neutral theory of evolution, the evolution of sex, life-history evolution, coevolution, speciation, and mass extinctions. Prerequisite: Biological Sciences 97.

169 Topics in Ecology and Evolutionary Biology (2 to 4) F, W, S. Studies in selected areas of Ecology and Evolutionary Biology. Prerequisite: Biological Sciences 97 or consent of instructor. May be taken for credit three times as topics vary.

170 Applied Conservation Biology (4) S. Designed to introduce students to the complexities and realities of natural resource exploitation and preservation, emphasizing the trade-offs between economic benefits and ecosystem stability and sustainability. May be taken only as part of the White Mountain Research Supercourse. Corequisites: Biological Sciences 126, 133, 199. Prerequisite: consent of instructor.

171 Neurobiology of Transmitter Receptors (4) W. Lecture and seminar, three hours. Introduction to the use of frog oocytes as a model system for studies in neurobiology. Transplantation of neurotransmitter receptors and voltage-operated ion channels from the brain into oocytes. Prerequisites: Biological Sciences 99 or 110 and consent of instructor.

172 Systematics and Evolution of Flowering Plants (5) S of even years. Lecture, four hours; laboratory, three hours; two required weekend field trips. Basic systematic concepts including computer analysis of phylogenies, introduction to major groups of flowering plants, analysis of evolutionary significance of characters used in systematic studies. Prerequisites: Biological Sciences 94, 96, 97.

173 Comparative Biochemistry (4) W of even years. Lecture, three hours. Subcellular mechanisms of adaptation to extreme environments: temperature, pressure, osmotic stress, hypoxia. Protein structure and function differences, membrane properties, cellular homeostasis. Evolution of metabolic responses to environmental stress. Prerequisite: Biological Sciences 109.

174 Behavioral Ecology (4) W. Lecture, three hours; discussion, two hours. Animal behavior as an evolutionary solution to problems encountered during an animal's life cycle. Includes a broad comparative approach to communication, social behavior, habitat selection, and food finding. Prerequisite: Biological Sciences 96 or consent of instructor.

175 Restoration Ecology (4) F. Lecture, two hours; field, two hours. Theoretical and practical aspects of habitat restoration and mitigation. Design, implementation, and monitoring of restoration projects in local habitats. Collection of seed and cuttings, planting and maintenance presented. Control of exotics in natural areas discussed. Environmental ethics of restoration emphasized. Prerequisite: Biological Sciences 96. Same as Environmental Analysis and Design E174.

176 Coevolution of Hosts and Parasites (4) S of odd years. Lecture, three hours; discussion, one hour. Ecology and evolution of host-parasite relationships. Ecological factors that influence the spread of disease, genetics of resistance and virulence, and significance of cellular parasites in genomic evolution. Emphasis on conceptual issues with examples from many different organisms. Prerequisites: Biological Sciences 96 and 97.

177 Topics in Cortical Plasticity (4) S. Focuses on neural mechanisms that underlie cortical plasticity. These include neurophysiological, pharmacological, anatomical, and developmental mechanisms that act at the synaptic, cellular, and system (population of neurons) levels. Prerequisite: Biological Sciences 110.

178 Ocean Ecology (4) W of even years. Examines the relationships between physical processes in the ocean, biological productivity, and the exploitation of ocean resources by high-trophic-level predators, including humans. Discusses open ocean ecosystems, intertidal and benthic regions of the world ocean. Prerequisite: Biological Sciences 96.

179 Limnology and Freshwater Biology (4) F of odd years. Lecture, three hours; discussion, one hour. Biology of freshwater environments: lakes, ponds, rivers, their biota, and the factors which influence distribution of organisms. Prerequisite: Biological Sciences 96 or consent of instructor. Same as Environmental Analysis and Design E173.

179L Limnology and Freshwater Biology Laboratory (4) W. Analytical techniques for common water-quality variables of lakes, streams, rivers. Benthic fauna, vertebrates and invertebrates, algae, and aquatic plants. Emphasis on field methods with an experimental approach; laboratory exercises. Weekend field trips to estuaries, marshes, lakes, and streams. Prerequisite: concurrent or previous enrollment in Biological Sciences 179. Same as Environmental Analysis and Design E173L.

180 Fractal Geometry in Biology (4) F. Lecture, two hours; discussion, one hour. Fractal geometry explored with tools and interests of the biologist. Provides a general background of fractal geometry and investigates the types of biological processes that generate fractals. Prerequisites: completion of the Biological Sciences Core, Physics 3A, and Mathematics 2B.

181 Conservation in the American West (4) W of odd years. Critical examination of contemporary conservation issues in the American west, with particular attention to water in California, grazing on public lands, and species decline and extinctions. Prerequisite: Biological Sciences 96.

182 Vision (4) W. Visual perception and the anatomy and physiology of the visual system. Topics include: the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system. Prerequisite: Psychology 9A-B-C or consent of instructor. Same as Psychology 131A. Psychology 130A may not be taken for credit if taken after Biological Sciences 182.

183 The Comparative Physiology of Exercise (4) F of even years. Lecture, three hours. Focus upon critical topics in the area of exercise biology using the comparative physiological approach. Specifically examine the physiological factors that limit the capacity of an organism to sustain high levels of aerobic metabolism. Prerequisites: Biological Sciences 98, 108, 109.

184 Entomology (4) F of even years. Lecture, two hours; laboratory, four hours. Central features of the Insecta are reviewed in an evolutionary and ecological context. Topics include external and internal morphology, systematic relationships among the insect orders, insects in ecological communities, and the impact of agricultural and medical pests. Field trips. Prerequisite: Biological Sciences 96.

185 Plant-Animal Interactions (4) W of even years. Lecture, two hours; laboratory, four hours. Ecology and evolution of mutualistic and antagonistic interactions between plants and animals. Topics include pollinator behavior, plant reproductive systems, plant defense mechanisms, and herbivore diet choice. Field-oriented laboratory. Prerequisites: Biological Sciences 96, 97.

186 Population and Community Ecology (4) W. Lecture, three hours. Population structure, function, development, and evolution. Topics include population structure, population growth and regulation, population dispersion patterns, life history strategies, predation, competition, mutualism, species diversity, succession, island biogeography, and co-evolution. Prerequisite: Biological Sciences 96.

187 Advanced Developmental Genetics (4) W of odd years. Lecture, three hours. Advanced course on the use of genetic analysis to identify the genes that control cell behavior and development. Instructor-led discussion of genetics and the relationship between genotype and phenotype followed by student-led discussion based on assigned readings. Prerequisite: Biological Sciences 137B.

188 Introduction to Insect Physiology (4) W of even years. Lecture, three hours. Physiology of insects. Insect respiration, digestion, excretion, and neurobiology, including sensory systems and effectors. Prerequisites: Biological Sciences 108 and 109.

189 Fish Physiology (4) S of odd years. Lecture, three hours. Functional and evolutionary physiology of fishes. Locomotion, respiration, circulation, osmoregulation, thermal biology, sensory biology. Emphasis on environmental factors affecting physiological processes. Prerequisite: Biological Sciences 109.

GRADUATE STUDY IN BIOLOGICAL SCIENCES

The School of Biological Sciences offers graduate study in a wide variety of fields ranging across the spectrum of the biological sciences. The four Departments of the School of Biological Sciences (Developmental and Cell Biology, Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, and Psychobiology) and four basic science Departments of the College of Medicine (Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, and Physiology and Biophysics), representing respective concentrations of study under the Ph.D. degree in Biological Sciences, cooperate in the conduct of graduate education administered by the School of Biological Sciences. Although these programs admit students for study leading to the Doctor of Philosophy (Ph.D.) degree, the Master of Science (M.S.) degree may be earned in pursuit of the Ph.D. Additionally, a master's program in Biotechnology, leading to the M.S. degree in Biological Sciences, is offered. Each department has a graduate advisor whom students may consult in regard to the technical details of the individual programs.

Applications for admission to graduate study are evaluated by the department or program to which the student has applied on the basis of letters of recommendation, Graduate Record Examination scores, grades, and other relevant qualifications of the applicant. Candidates for graduate admission are urged to consult the particular department or program whose faculty and expertise best fit their interests and background.

MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY IN THE BIOLOGICAL SCIENCES

While both the Master of Science and Doctor of Philosophy programs are offered, emphasis at the graduate level is on the Ph.D. programs, with the exception of the master's program in Biotechnology. Most training takes place within one of the departments, although full facilities and curricular offerings are available to all graduate students in all departments of the Biological Sciences. Interdisciplinary study and research are encouraged.

Students are expected to maintain a B average at all times, attain the Master's degree in two years, and attain the Ph.D. in four or five years, depending on departmental affiliation. A Master's degree, however, is not a prerequisite for the Ph.D. degree.

During the first part of the initial year of graduate work, the student plans an academic program in consultation with the graduate advisor or a small committee. Faculty advisors are changed if the specific interests of the student change. In addition, it is possible for students to transfer to another program in the School, subject to the approval of the Dean of Graduate Studies, provided they are accepted into that program. Students are encouraged to consult with other faculty members with regard to their research and academic interests.

During their graduate training all students will serve some time as teacher apprentices under the direction of advanced teaching assistants and faculty. Advanced graduate students may work closely with faculty in the planning and execution of the teaching program. The amount and exact nature of the teaching experience varies with the department.

Master of Science

Depending upon the program, there are two plans by which a Master of Science degree may be obtained.

Plan I: Thesis Plan. The student completes seven upper-division and graduate courses including a minimum of five nonresearch courses. The student then presents a thesis based upon research done while in the School.

Plan II: Comprehensive Examination Plan. The student completes a minimum of nine upper-division and graduate courses. At least six must be graduate courses (numbered 200-299) in the student's field specialization. This program is terminated with a comprehensive final examination.

Doctor of Philosophy

First Level of Competence. The student attains this level by completing oral or written examinations at the discretion of the department.

Second Level of Competence. This level is attained by passing an examination dealing with the student's particular interests. A committee for the purpose of administering this examination is appointed by the School, on behalf of the Dean of Graduate Studies and the Graduate Council.

Once this examination is completed, the student is advanced to candidacy for the degree and is considered to have formally begun dissertation research. The student submits a dissertation on this research and defends it at an oral examination during the final year of graduate study.

Graduate student status or consent of instructor is a prerequisite for all 200-299 courses.

Master of Science with a Concentration in Biotechnology

The field of biotechnology has developed explosively since the discovery of gene cloning and sequencing methods in the mid-1970s. The field is now embodied by many successful companies and an intense demand has developed for well-trained people with up-to-date familiarity with research techniques in the manipulation of nucleic acids, proteins, immunological reagents, and pathogenic organisms. The program in Biotechnology, leading to an M.S. degree in Biological Sciences, provides extensive training in actual research settings (individual faculty laboratories) in techniques relevant to industry, and seminar exposure to the nature of industry. It is designed to train students to enter the field of biotechnology as skilled laboratory practitioners. Emphasis is placed on learning state-of-the-art technology in protein isolation and characterization, animal and microbial cell culture, and recombinant DNA methodology. Students are trained in experimental rationales for solving actual research problems and are encouraged to take summer internships in industry during the course of their studies.

The Department of Molecular Biology and Biochemistry evaluates applicants to the program on the basis of grades, letters of recommendation, GRE scores, and other relevant qualifications. Applicants should have successfully completed courses in calculus, physics, organic chemistry, genetics, biochemistry, molecular biology, microbiology, immunology, and virology, as well as laboratory courses in biochemistry, molecular biology, microbiology, and either animal virology or immunology. However, it is possible to

defer up to two of the required laboratory courses to be taken during the first year of graduate study.

The program emphasizes immediate participation in research. First-year students take core technical laboratories in protein isolation and characterization, animal and microbial cell culture, and recombinant DNA methodology and participate in research projects in faculty laboratories. Research training is supported by formal course work in nucleic acids, proteins, genetic engineering, and molecular/cellular biology. A seminar course devoted to product development and marketing also is required. In addition, students are trained rigorously in data recording and presentation and are required to maintain a laboratory notebook for faculty review. Emphasis during the second year is devoted almost solely to participation in research projects in faculty laboratories with one formal required course in molecular biology/cell biology. The program is terminated at the end of the second year by a comprehensive examination.

While the Biotechnology program is designed to produce skilled laboratory practitioners for industrial positions, some students may wish to continue in a program leading to the Ph.D. degree. The Department of Molecular Biology and Biochemistry is a member of the interdisciplinary graduate program in Molecular Biology, Genetics, and Biochemistry, a program which leads to the Ph.D. degree in Biological Sciences. Biotechnology program students who wish to enter the interdisciplinary graduate program upon completion of the M.S. degree should apply for admission during their second year.

INTERDISCIPLINARY GRADUATE PROGRAMS

The School is structured in a manner that encourages an interdisciplinary approach to scientific problems. Interaction and cooperative efforts across traditional institutional boundaries are especially evident in the School's participation in various organized research units (described in the previous Research and Graduate Studies section) and in two interdepartmental/interschool graduate programs described below.

Graduate Program in Molecular Biology, Genetics, and Biochemistry

145 Biological Sciences Administration; (949) 824-8145
E-mail: gp-mbgb@uci.edu
World Wide Web: <http://www.bio.uci.edu/>
R. Michael Mulligan, **Director**

The graduate program in Molecular Biology, Genetics, and Biochemistry (MBGB) brings about 100 faculty from the Departments of Anatomy and Neurobiology, Biological Chemistry, Developmental and Cell Biology, Microbiology and Molecular Genetics, Molecular Biology and Biochemistry, and Physiology and Biophysics. Each faculty member's area of research is listed at the beginning of the departmental sections on the following pages. The departments administer a graduate concentration in association with the MBGB program, which leads to the Ph.D. degree in Biological Sciences. The MBGB program is designed to offer students a unified curriculum, broad training, and a wide range of research opportunities in the following areas: cancer biology, cell biology, developmental biology, genetics, immunology and pathogenesis, mechanisms of gene expression, molecular neurobiology, molecular physiology and biophysics, structural biology/protein engineering, and virology. The goal of the combined program is to produce creative and productive scientists who have an in-depth comprehension in a given subspecialty.

During the five years established as the normative time for completing the Ph.D. degree, students complete the MBGB program

requirements during their first two years, and in the remaining three years, complete the requirements of one of the five affiliated concentrations. In the first year of study, emphasis is placed on immediate research participation supported by formal course work in protein and nucleic acid biochemistry, cell biology, and gene expression, and one genetics course. At the end of the first year, student competence and critical thinking in the molecular aspects of biological sciences are tested through a comprehensive preliminary examination and overall evaluation. Selection of an advisor usually occurs prior to the preliminary examination. Regular teaching of undergraduates is part of graduate student training in the second year of study. At this time, students also begin to lay the experimental foundation for their dissertation project proposal. During the second year and beyond, students participate in the departmental journal club and seminar series of the department in which they have elected to carry out their dissertation work, as specified by the concentration requirements. In years three and beyond, students fulfill requirements of a departmental Ph.D. concentration. Further information is available in the *Catalogue* sections of the participating departments and through the MBGB program office.

Applicants should have significant laboratory experience and be well-prepared in calculus, physics, organic chemistry, and biochemistry.

Graduate Program in Protein Engineering

145 Biological Sciences Administration; (949) 824-6686
E-mail: protengr@uci.edu
World Wide Web: <http://www.bio.uci.edu/>
Larry E. Vickery, **Director**

Faculty

Dana W. Aswad: Regulation of protein function by covalent modification
Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing
Barbara K. Burgess: Structure and function of protein-bound [FeS] and [MoFeS] clusters
Richard Chamberlin: Site-directed mutagenesis with non-natural amino acids
Nancy A. DaSilva: Improvement of cell and enzyme-mediated processes via molecular genetics
Charles G. Glabe: Amyloid A β peptide in Alzheimer's pathogenesis; gamete recognition
Agnes H. Henschen-Edman: Protein structure, function, post-translational modification; fibrinogen
Janos K. Lanyi: Structure and function in bacterial rhodopsins
James S. Nowick: Study of protein structure in synthetic chemical model systems
Thomas L. Poulos: Protein engineering and crystallography
Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium
Donald F. Senechal: Interactions of proteins and DNA in transcriptional regulation
Athan J. Shaka: New techniques in high-resolution multi-dimensional NMR
Larry E. Vickery: Metalloproteins; steroid hormone biosynthesis and receptors; molecular chaperones
Stephen H. White: Protein folding in membranes
Thomas K. Wood: Expression of oxygenases in foreign hosts for bio-remediation

The new discipline of protein engineering has emerged, combining biochemistry, physical and organic chemistry, recombinant DNA technology, structural biology, and biochemical engineering. This has provided new approaches to the basic study of protein structure and function, as well as the opportunity to design and produce proteins with a broad spectrum of industrial and health-related applications. The School of Biological Sciences, in conjunction with the Department of Chemistry in the School of Physical Sciences and the Department of Chemical and Biochemical Engineering and Materials Science in the School of Engineering, offer an interdisciplinary graduate program leading to the Ph.D. in Biological Sciences,

Chemistry, or Engineering with a concentration in Protein Engineering Science. The program brings together faculty with research interests in: structure/function of enzymes, metalloproteins, receptors, and growth factors; protein folding and design; bioremediation; protein modification with non-natural amino acids; NMR spectroscopy; and X-ray crystallography.

Upon entrance to the program, students choose a Protein Engineering curriculum leading to one of the three degrees. First-year students take courses in molecular biology and protein chemistry, structure, and engineering, and complete three laboratory rotations of their choice. Additional elective courses, current literature seminars, and research presentations are used to broaden training in subsequent years. A qualifying examination is administered at the end of the first year for students in the Schools of Biological Sciences and Engineering. For students in Chemistry, a written examination is administered early in the second year. Students are then expected to select a laboratory and begin work toward completion of a Ph.D. dissertation based upon their own original research. Students advance to candidacy for the Ph.D. by presenting their dissertation proposal to an examining committee which also guides and advises the students and monitors research progress throughout their graduate training. The normal time for completion of the Ph.D. is five years.

DEPARTMENT OF DEVELOPMENTAL AND CELL BIOLOGY

5207 Biological Sciences II; (949) 824-6681

J. Lawrence Marsh, **Department Chair**

Faculty

Joseph Arditti: Developmental physiology of orchids

Kavita Arora: *Drosophila* development; TGF- β signal transduction; cell signaling

Michael W. Berns: Laser microsurgery of cells, embryos, and tissues

Hans R. Bode: Pattern formation and stem cell differentiation

Peter J. Bryant: Tumor-suppressor genes of *Drosophila* and humans

Susan V. Bryant: Molecular basis of limb development and regeneration

Richard D. Campbell: Morphogenesis; biology of *Hydra*; fractal geometry of biological forms

Ken W.-Y. Cho: Molecular mechanisms of axis specification in *Xenopus*

Donald E. Fosket: Regulation of cytoskeleton formation and function

Patrick L. Healey: Plant cellular differentiation and morphogenesis; ultrastructure and histochemistry of secretory systems; early reproductive development

Franz Hoffmann: Regeneration of cultured plant cells; somatic cell genetics

Daniel J. Knauer: Human antithrombins and related serine protease inhibitors

Stuart M. Krassner: Developmental transitions of hemoflagellates

Arthur D. Lander: Molecular mechanisms of cell and axon guidance; proteoglycans

Howard M. Lenhoff: Biology of *Hydra*; immobilized enzymes; history of experimental biology

Shin Lin: The combined use of biochemistry, cell biology, molecular biology, and molecular biophysics to study the structure and function of proteins involved in cytoskeletal/contractile functions and signal transduction in muscle and nonmuscle cells

J. Lawrence Marsh: Molecular genetics of development in *Drosophila* and humans

Ronald L. Meyer: Development of nerve connections, nerve injury and regeneration

R. Michael Mulligan: RNA editing in plant mitochondria and chloroplasts

Diane K. O'Dowd: Electrical excitability and synaptic connectivity during development

Research programs of the Department of Developmental and Cell Biology focus on molecular aspects of the development of eukaryotic organisms, on the molecular interaction of cells in tissue differentiation, and expression and function of genes related to the biogenesis of organelles and cellular constituents. The main emphasis of research training is in the molecular aspects of cells and development and the utilization of biotechnology. The Department

maintains facilities for research that include genetic, molecular, and biochemical techniques and also has facilities in advanced electron optics, microsurgery, microinjection, and neurophysiology.

The Department offers graduate study in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students participate in the Developmental or Cell Biology Journal Club and the departmental seminar series which meet weekly during the academic year. In the fall of their third year, students take the advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. Students are expected to graduate within five years of residency in the program.

Courses in Developmental and Cell Biology

200A-B-C Research in Developmental and Cell Biology (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor.

201A-B-C Advanced Topics in Developmental Biology (2-2-2) F, W, S. Seminar, two hours. Advanced study in various fields of organismic biology. Prerequisite: consent of instructor. May be repeated for credit.

203A-B-C Graduate Tutorial in Developmental and Cell Biology (4-4-4) F, W, S. Advanced study in areas not represented by formal courses. May involve individual or small group study through discussion, reading, and composition. Time and subject matter arranged individually.

204 Advanced Topics in Developmental Neurobiology (2) F, W, S. Seminar, two hours. Discussion of recent papers in the area of molecular aspects of cellular and developmental neurobiology. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory only.

206A-B-C Advanced Topics in Cell Biology (2-2-2) F, W, S. Seminar, two hours. Advanced study of various topics in cell biology. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory only.

209 Molecular Genetics Journal Club (2) F, W, S. Seminar, one and one-half hours. Advanced topics of current interest in molecular and developmental genetics. May be repeated for credit. Satisfactory/Unsatisfactory only.

210 Advanced Development Genetics (4) W of odd years. Lecture, three hours. Advanced course on the use of genetic analysis to identify the genes that control cell behavior and development. Formal discussion, by instructor, of genetics and the relationship between genotype and phenotype, followed by student-led discussion based on assigned readings.

211 Faculty Research Colloquium (2) F. Research interests of faculty participating in the graduate program in Molecular Biology, Genetics, and Biochemistry are presented in weekly meetings. Corequisite: enrollment in the graduate program in Molecular Biology, Genetics, and Biochemistry.

231B Cell Biology (4) W. Lecture, three hours. A biochemical, biophysical, and molecular view of cell biology. Topics include the biochemistry and biophysical properties of membranes, membrane proteins, and associated molecules, the extracellular matrix, biological signal transduction, and intracellular second messenger generation. Lectures are from current research literature. Prerequisite: consent of instructor.

231C Pattern Formation and Embryogenesis (4) W. Lecture, three hours. Development of animal eggs from fertilization until morphological specialization. Emphasis on two processes: pattern formation and morphogenesis. Patterning is studied genetically, experimentally through regeneration, and theoretically. Morphogenesis is analyzed in terms of cell behavior. Attention to the role of extracellular matrices in both processes. Prerequisite: consent of instructor.

231D Developmental Neurobiology (4) S. Lecture, three hours. The cell cycle, growth control and cancer, cell lineages and differentiation, cellular analysis of the immune system, and the cell biology of the nervous system. Prerequisite: consent of instructor.

231E Plant Cell and Development (4) S. Lecture, three hours. Organization: cell wall; cytoplasm; organelles. Differentiation: meristem; specialized cells. Development: cell division; fertilization; embryogenesis; cell culture. Transport and communication: xylem and phloem; plasmodesma; hormones. Interactions with other organisms: galls and crown gall; symbiosis; pathogens; genetic engineering. Prerequisite: consent of instructor.

254 Practical Electron Microscopy (5) W. Laboratory, four hours. Methods of electron microscopy including sample preparation, fixation, embedding, sectioning, staining, EM examination, EM photography, developing, printing, and data analysis. In addition, participants learn to use more than one type of EM including alignment, perform routine EM procedures, and use specialized EM accessory equipment such as an ultramicrotome, vacuum evaporator, and critical point dryer. Prerequisite: consent of instructor.

255 Plant Morphogenesis (4) W of even years. Lecture, three hours. Examination of current problems in plant differentiation and its control, primarily at the tissue and whole plant level. A single major topic will be selected each year and will include such subjects as control of morphogenesis in shoot and root apices, flowering, control of cambial growth, pattern formation, plant embryology, and control of the formation of plant organs in culture. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

265 Parasitology (4) F, W, S. Seminar, one hour. Topics vary from year to year. Prerequisite: consent of instructor.

285 Advanced Topics in Cell Biology (2) F, W, S. Lecture, two hours. Seminars, lectures, and informal discussions by invited speakers, graduate students, and faculty. Topics vary from quarter to quarter, but major emphasis is in the areas of plant physiology, development, and biochemistry. Prerequisite: consent of instructor.

290A-B-C Colloquium in Developmental and Cell Biology (2-2-2) F, W, S. Colloquium, one and one-half hours. Contemporary research problems. Research students, faculty, and other invited speakers introduce research and review topics. Satisfactory/Unsatisfactory only.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants. Satisfactory/Unsatisfactory only.

DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

321 Steinhaus Hall; (949) 824-6006
Timothy J. Bradley, Department Chair

Faculty

Francisco J. Ayala: Population and evolutionary genetics
Albert F. Bennett: Environmental physiology; physiological ecology
Rudi C. Berkelhamer: Director of Instructional Laboratories
Peter A. Bowler: Habitat restoration; wetland ecology
Timothy J. Bradley: Comparative physiology of ion transport epithelia
Nancy Burley: Behavioral ecology, sexual selection, social organization and communication
Diane R. Campbell: Plant population biology; pollination ecology
F. Lynn Carpenter: Community ecology; behavioral ecology
Walter M. Fitch: Molecular and genetic evolution
Steven A. Frank: Social behavior and evolutionary genetics
Branden S. Gaut: Plant molecular evolution
Alan G. Gibbs: Comparative physiology and biochemistry; arthropod cuticle lipids and cell membranes
Bradford A. Hawkins: Insect population and community ecology
James W. Hicks: Comparative physiology of circulation and gas exchange
George L. Hunt, Jr.: Behavioral ecology, marine ornithology
Robert K. Josephson: Comparative neurophysiology; muscle physiology
Harold Koopowitz: Comparative neurophysiology; conservation of endangered plant species
George V. Lauder, Jr.: Functional vertebrate morphology
Anthony D. Long: Quantitative genetics
Laurence D. Mueller: Theoretical and empirical studies of density-dependent natural selection
Michael R. Rose: Evolution of life histories and genetic systems
Ann K. Sakai: Plant population biology
Richard Symanski: Conservation biology
Arthur E. Weis: Evolutionary ecology of plant-insect interactions; plant population biology
Stephen G. Weller: Plant reproductive ecology; plant population ecology

Ecology and evolutionary biology deals with the establishment of adaptations over evolutionary time and with the organismal function in ecological time. Faculty in the Department of Ecology and Evolutionary Biology study questions pertinent at a variety of levels of biological organization, from molecular aspects of evolution, to organismal structure and performance, to the ecology of ocean ecosystems. Research is conducted in both the laboratory and field and includes work on a variety of organisms from phage and bacteria, to higher plants and animals. Primary attention is given to evolutionary, ecological, and functional questions rather than to particular habitats or taxa. Faculty and graduate student research is often collaborative and interdisciplinary in approach. Departmental research activities include physiological ecology energetics, plant-herbivore and plant-pollinator interactions, microbial ecology and coevolution, quantitative genetics, life history evolution, population and reproductive ecology, and community ecology. These research endeavors provide a balance between empirical and theoretical approaches to evolutionary, organismal, and ecological problems.

Primary emphasis in the graduate program is placed on training leading to the Ph.D. in Biological Sciences; under exceptional circumstances, a student may be admitted initially to the M.S. program. A basic course sequence consisting of Ecology and Evolutionary Biology 205, 206, 207, and 208 is recommended for most entering students during their first year. At the end of the first year, students complete an oral examination based upon three of these courses (205, 206, and 208) and other materials the Department might require. Satisfactory performance on this examination is required for continuation in the graduate program.

Each entering graduate student chooses a faculty advisor and a three-person advisory committee for guidance, with whom the student meets at least twice each year. All students are encouraged to submit a research proposal to their advisory committee during their first year of residency. A comprehensive proposal is required before the end of the second year. The progress of each student is reviewed by the departmental faculty once each academic year.

Normally, all requirements for the Ph.D. should be completed within five years. No more than six years will be allowed for completion of the program. Advancement to doctoral candidacy by a comprehensive oral examination will be expected during the third year for students entering with a B.A. or B.S. or during the second year for those entering with an M.A. or M.S. Applicants for this program should have a solid undergraduate program in biology and ecology, emphasizing both research and field work. In addition, course work in statistics, mathematics, and physical and chemical sciences is expected. All applicants are required to submit aptitude and advanced biology GRE scores. The deadline for application is January 15.

Courses in Ecology and Evolutionary Biology

200A-B-C Research in Ecology and Evolutionary Biology (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor.

201 Seminar in Ecology and Evolutionary Biology (2-2-2) F, W, S. One and one-half hours. Invited speakers, graduate students, and faculty present current research in ecology and evolutionary biology. Prerequisite: graduate standing. May be repeated for credit. Satisfactory/Unsatisfactory only.

203A-B-C Graduate Tutorial in Ecology and Evolutionary Biology (2 to 12 per quarter) F, W, S. Advanced study in areas not represented by formal courses. May involve individual or small group study through reading, discussion, and composition. Prerequisite: consent of instructor.

205 Special Topics in Ecology (4) F. Lecture, four hours. Survey of special topics in ecology. Restriction: graduate students only.

206 Special Topics in Evolution (4) S. Lecture, four hours. Extensive introduction to the primary literature of evolutionary biology. Topics include population genetics, quantitative genetics, neutralism, molecular evolution, evolution of genetic systems, genetic architecture of fitness, speciation, and macroevolution. Restriction: graduate students only.

207 Quantitative Methods in Ecology and Evolutionary Biology (4) W. Lecture, four hours. Statistics for ecologists and evolutionary biologists. Emphasis on specific applications and underlying assumptions rather than on methods of calculation. Topics include experimental design, parametric and nonparametric methods, analysis of variance and covariance, and multiple regression. Prerequisite: at least one quarter of statistics, including regression and analysis of variance. Open to graduate students only.

208 Special Topics in Organismal Biology and Physiology (4) F. Seminar, two hours. A summary of information in organismal biology, comparative and ecological physiology, and the biophysical basis of organismal function. Prerequisite: graduate standing or consent of instructor.

NOTE: Enrollment in the following courses may be approved for undergraduate students with advanced standing.

210A-B-C Foundations of Physiology (4-4-4) F, W, S. Lecture and discussion, four to eight hours. Physical and functional principles common to many living forms. Course forms a basis for subsequent specialization in any of the subdisciplines of physiology. May be repeated for credit. Satisfactory/Unsatisfactory only.

218 Advanced Topics in Evolutionary Biology (4) F, S. Seminar, three hours. Content and instructor will vary from quarter to quarter. Possible topics include quantitative genetics, experimental methods of evolutionary studies, mathematical modeling in evolutionary studies, and the evolution of genetic systems. Prerequisite: consent of instructor.

219 Advanced Topics in Ecological Genetics (4) W. Seminar, three hours. Content and instructor will vary from year to year. Possible topics include coevolution, sex-ratio evolution, evolution senescence, plant population biology, and density-dependent selection. Prerequisite: consent of instructor.

221 Topics in Plant Ecology (2 to 4) F, W, S. Weekly discussion of current topics in plant population biology and ecology. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

227 Seminar in Population/Community Ecology (2) F, W, S. Seminar, two hours. Selected topics in population or community ecology (such as island biogeography, evolution of sex ratios, reproductive biology of marine birds) through discussion of current literature and preparation of papers. Prerequisite: consent of instructor. May be repeated for credit.

228 Seminar in Conservation Biology (2) F, W. Devoted to the application of basic ecological principles to the understanding and resolution of environmental problems of both local and global natures. Current problems approached through a combination of readings, group discussions, and visiting speakers. Prerequisite: graduate standing or consent of instructor.

240 Mathematical Population Biology (2 to 4) S of even years. Seminar, three hours. Mathematical modeling of ecological and evolutionary processes is developed with a view toward teaching methods of theoretical research in ecology and evolutionary biology. Prerequisite: consent of instructor.

251 Molecular Evolutionary Methods (4) S of even years. Emphasizes the understanding of basic algorithms used to analyze nucleotide and amino acid sequences, including methods of alignment, phylogeny reconstruction, and the examination of molecular clocks, codon bias, and compositional equilibrium. Includes simple computer problems. Prerequisite: consent of instructor.

274 Behavioral Ecology (4) W. Seminar, three hours. Selected topics in behavioral ecology through discussion of current literature and preparation of papers. Prerequisite: consent of instructor.

398 Teaching Assistant Seminar (2) W. Seminar, two hours. Readings, lectures, workshops, and student presentations designed to help develop teaching skills of graduate students teaching university-level biology classes. Topics vary and may include: course organization, presentation styles, exam design, grading, motivating students, and commonly encountered problems. May be repeated for credit as topics vary.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY

3205 Biological Sciences II; (949) 824-6034

Jerry E. Manning, **Department Chair**

Faculty

Dana W. Aswad: Regulation of protein function by covalent modification
Barbara K. Burgess: Structure and function of protein-bound [FeS] and [MoFeS] clusters

Michael G. Cumsy: Mitochondrial protein import; regulation of gene expression in yeast

Rowland H. Davis: Regulation of polyamine metabolism in *Neurospora crassa*

Hung Fan: Molecular biology and pathogenesis of mouse and human retroviruses

Charles G. Glabe: Amyloid A β peptide in Alzheimer's pathogenesis; gamete recognition

Gale A. Granger: Immunology and pathogenesis: Cell-mediated immunity; tumor immunology; cytokine action

Barbara A. Hamkalo: Molecular basis of differential chromatin condensation
Agnes Henschen-Edman: Protein structure, function, post-translational modification; fibrinogen

Christopher C.W. Hughes: Endothelial cells as initiators and targets of immune responses

Anthony A. James: Malaria parasite development; genetic manipulation of insect vectors

Hartmut Luecke: Structure-function studies of membrane-associated proteins

Jerry E. Manning: Major surface proteins and their genes in *Trypanosoma cruzi*

Alexander McPherson: X-ray and atomic force microscopy analysis of protein, nucleic acid, and virus crystals; structural immunology, structural virology; microgravity research on macromolecular crystal growth

Ricardo Miledi: Neurotransmitter receptors and synaptic functions

Timothy F. Osborne: Transcriptional regulation of cholesterol biosynthesis

Thomas L. Poulos: Protein engineering and crystallography

Donald F. Senear: Interactions of proteins and DNA in transcriptional regulation

Andrea J. Tenner: Molecular basis of the enrichment of human leukocyte function

Krishna K. Tewari: Chloroplast DNA: replication and transcription

Sujata Tewari: Neuromolecular mechanisms of alcohol/drug action on the CNS

Luis P. Villarreal: Tissue-specific viral and cellular gene expression; viral vectors

Edward K. Wagner: Herpes simplex virus gene expression during productive and latent infection

Robert C. Warner: Molecular biology of nucleic acids; physical chemistry of macromolecules; mechanisms of genetic recombination

Clifford A. Woolfolk: General microbiology; enzymology

The research interests of faculty in the Department of Molecular Biology and Biochemistry include structure and synthesis of nucleic acids and proteins, regulation, virology, biochemical genetics, gene organization, nucleic acids and proteins, cell and developmental biology, molecular genetics, biomedical genetics, and immunology.

The Department offers graduate study in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Participation in an advanced topics seminar series and completion of at least one course per year for three years are expected of all students.

Several faculty in the Department also are members of the graduate program in Protein Engineering, which is described in a previous section.

Courses in Molecular Biology and Biochemistry

200A-B-C Research in Molecular Biology and Biochemistry (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. See areas of interest listed under Faculty. Prerequisite: consent of instructor.

201A-B-C Seminars in Molecular Biology and Biochemistry (2-2-2) F, W, S. Seminar, two hours. Presentation of research from department laboratories or, when pertinent, of other recent developments. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

202A-B-C Tutorial in Molecular Biology and Biochemistry (2-2-2) F, W, S. Tutorials in the area of research of a particular professor which relate current research to the literature. May be conducted as journal clubs. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

203 Structure and Biosynthesis of Nucleic Acids (4) F. Lecture, three hours. The structure and properties of nucleic acids. The fundamentals of nucleic acid hybridization and recombinant DNA methodology. Replication and rearrangement of DNA. Prerequisites: Biological Sciences 106 and 107 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinators, B. Hamkalo and D. Senear)

204 Structure and Biosynthesis of Proteins (4) F. Lecture, three hours. The structure and properties of proteins. Enzymes and their kinetic properties. Mechanisms of the biosynthesis of proteins. Prerequisites: Biological Sciences 98 and 99 or the equivalent and Chemistry 51A-B-C or the equivalent. (Coordinators, R. Bradshaw and L. Vickery)

205 Topics in Viral Gene Expression (4) W. Lecture, three hours. Primary research data on the major DNA and RNA viruses emphasizing strategies of regulation of gene expression. Utilization of viruses as molecular biological tools. Graduate-level knowledge of the biochemistry and molecular biology of macromolecules is required. Prerequisites: Molecular Biology 203 and 204 or the equivalent. (Coordinators, E. Wagner and B. Semler)

206 Regulation of Gene Expression (4) W. Lecture, three hours. Aspects of gene expression including the organization of the eukaryotic nucleus in terms of protein-nucleic acid interaction (i.e., chromatin and chromosome structure); comparisons between prokaryotic and eukaryotic gene expression, the enzymology and regulation of RNA transcription in *E. coli* and other prokaryotes. Enzymology of transcription in eukaryotes. Prerequisites: Molecular Biology 203, 204, and 205. (Coordinators, R. Sandri-Goldin and C. Greer)

207 Molecular Genetics (4) S. Lecture, three hours. Recombination, genome organization, and gene expression at the molecular level, with emphasis on genetic analysis. Prerequisites: Molecular Biology 203, 204, 205, and 206. (Coordinator, R. Davis)

209 Literature in Protein Engineering (1) F, W, S. Seminar, one hour, discussion, half-hour. Students review current papers in the field of protein engineering and present the ideas contained therein to other students and faculty. May be repeated for credit. Same as Physiology 209 and Engineering CBE209.

210A-B Basic Medical Biochemistry (10-10) F, W. Lecture, ten hours. Classical and molecular biochemistry, including structure, function, and biosynthesis of macromolecules; metabolic interrelations and control mechanisms; and biochemical genetics. Application of recent advances in knowledge of molecular bases for cellular function to disease states (diagnosis, prevention, and treatment). Prerequisite: consent of instructor.

212 (4) Chromosome Dynamics in Eukaryotes (4) S every other year. Focuses on experimental approaches currently in use to investigate mechanisms by which eukaryotes carry out essential chromosomal functions. A combination of lectures and student presentations focus on these problems from the fields of genetics, cell biology, biochemistry, and molecular biology. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

214 Biosynthesis of Nucleic Acids (4) F every third year beginning 1985. Lecture, three hours. Structure, function, and replication of DNA and RNA in prokaryotes and eukaryotes; emphasis on current research. Prerequisite: consent of instructor. (Coordinator, S. Tewari)

217A Principles of Cancer Biology I (4) S every other year. Lecture, three hours. Oncogenes and tumor suppressor genes are studied from molecular viewpoints. Also studies their role in cancer; viral carcinogenesis. Designed for graduate students interested in cancer research. Format includes lectures and student-led discussions. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

217B Principles of Cancer Biology II (4) S every other year. Lecture, three hours. Topics include cancer cell growth and metastasis, chemical carcinogenesis, and cancer genetics and epidemiology. Designed for graduate students interested in cancer research. Format includes lectures and student-led discussions. Prerequisites: Molecular Biology and Biochemistry 203 and 204.

218 Clinical Cancer (3) F of even years. Lecture, two hours. Designed to acquaint students in basic life science with clinical cancer. Restricted to graduate and postdoctoral students. May be repeated for credit. (Coordinator, H. Fan)

219 Responsible Conduct of Research (2). Each session includes a formal presentation by faculty/invited speaker followed by a discussion of case studies related to the topic under consideration. Satisfactory/Unsatisfactory only.

220 Structure and Synthesis of Biological Macromolecules Journal Club (2). Seminar, one hour. Advanced topics in macromolecular structure and synthesis as related to biological problems. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

221 Advanced Immunology (4) S every third year beginning 1983. Lecture, three hours; discussion, one hour. History, techniques, and concepts of humoral antibody formation and cellular immune patterns. Advanced topics in transplantation and tumor immunobiology. Prerequisite: Biological Sciences 121 or consent of instructor. (Coordinator, G. Granger)

223 Computational Molecular Biology (4) W. Lecture, one hour; laboratory, two hours. The use of computer networks, data bases, and programs in molecular biology. Students choose a protein sequence from DNA sequence data. This sequence is entered, edited, and analyzed following simulated genetic engineering. Prerequisite: consent of instructor. (Coordinator, L. Villarreal)

224 Mechanisms of Viral Transformation (4) F every third year beginning 1989. Lecture, three hours. The molecular mechanisms by which RNA and DNA tumor viruses transform cells. Emphasis on current research papers. Prerequisite: Molecular Biology and Biochemistry 205.

227 Immunology Journal Club (2) F, W, S. Seminar and discussion, one hour. Advanced topics in immunology as related to an understanding of human disease. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

229 Research-in-Progress Seminars (1) F, W, S. Seminar and discussion, one hour. Two half-hour presentations by graduate students and postdoctorals to the department on their current research projects. Satisfactory/Unsatisfactory only. May be taken for credit 15 times.

240 Macromolecular Structure, Function, and Interaction (4) F. Lecture, three hours; discussion, one hour. Chemistry of macromolecules; emphasis on proteins. Physical and chemical properties of proteins, forces that maintain protein structure, relationship between structure and function, interactions of proteins with ligands and other macromolecules, and experimental methods to study structure, function, and interactions. Prerequisites: Molecular Biology 203 and 204. Concurrent with Biological Sciences 140. (Coordinators: D. Senear and T. Poulos)

280 Advanced Topics in Biochemistry and Molecular Biology (3) F. Lecture, five hours. Selected topics in specified areas of concentration, e.g., nucleic acids, protein biochemistry, genetic expression, biochemical genetics. Specific topics announced in advance. Prerequisites: Biological Sciences 106 and 107 and consent of instructor. Normally taken with Molecular Biology and Biochemistry 205A. Open to advanced undergraduates.

290A-B-C Colloquium in Molecular Biology and Biochemistry (2-2-2) F, W, S. Colloquium, one and one-half hours. Contemporary research problems in molecular biology and biochemistry. Invited speakers present research and/or review topics. Satisfactory/Unsatisfactory only. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF PSYCHOBIOLOGY

2205 Biological Sciences II; (949) 824-6025
Herbert Killackey, **Department Chair**

Faculty

Dana Aswad: Neurochemistry and molecular neurobiology
Lawrence F. Cahill: Brain mechanisms of emotion and memory
Carl Cotman: Brain aging, Alzheimer's, cell biology, biochemistry
Ron D. Frostig: Functional organization of cortex
Christine M. Gall: Regulation of neuronal gene expression
Robert K. Josephson: Design of skeletal muscle
Herbert P. Killackey: Developmental neuroanatomy
Frank LaFerla: Alzheimer's, neural apoptosis, transgenic animal modeling
Michael Leon: Brain development
Gary S. Lynch: Brain plasticity and behavior
John Marshall: Neuropharmacological approaches to behavioral analysis
James L. McGaugh: Neurobiology of learning and memory
Raju Metherate: Synaptic physiology and plasticity in sensory neuroprocesses
Ricardo Miledi: Molecular neurobiology and physiology of ion channels and receptors
Ian Parker: Intracellular calcium and cell signaling
George Sperling: Cognition, vision, and visual perception
Arnold Starr: Clinical neurology
Georg Striedter: Neuroethology, behavioral neuroscience, evolutionary neurobiology
Katumi Sumikawa: Molecular neurobiology of synapses
Norman M. Weinberger: Neural bases of attention and learning
John H. Weiss: Excitatory amino acids in neural signaling and neurodegeneration
Pauline I. Yahr: Behavioral neuroendocrinology

Psychobiology is concerned with the biology of the nervous system and behavior. The Department of Psychobiology emphasizes the adaptive aspects of neural and behavioral plasticity. The faculty's research interests include the biochemical, endocrinological, genetic, and experiential determinants of nervous system function and behavior. Focal topics include synaptic processes, neurophysiology, neuroendocrinology, neuroanatomy, molecular neurobiology, neuropharmacology, theoretical neurobiology, arousal and attention, learning and memory, reproductive behavior, and communication. The importance of developmental and comparative approaches to these problems is stressed.

The Department of Psychobiology offers graduate training leading to the Ph.D. in Biological Sciences. Graduate students must complete a sequence of core courses (lectures and laboratories) during their first year, and maintain an overall GPA of 3.3 or better. They also must take a minimum of four advanced courses before graduation and must participate in directed research and teaching each year. During their second year, students prepare a Master's thesis, which must be defended by the end of that year. All students meeting minimal requirements will receive an M.S. degree, but only those students judged well qualified will be recommended for continuation in the Ph.D. program. To advance to candidacy for the Ph.D., students must further prepare a research proposal and must pass an oral examination by the end of the third year. Graduation depends on successful preparation and oral defense of a dissertation based on the student's research. Students are expected to complete this program in six years of study.

Ideally, applicants for this program should have taken undergraduate courses in biology (one introductory year plus some advanced work), psychology (experimental, physiological, and learning), chemistry through biochemistry, introductory physics, calculus, and statistics. They also must submit GRE Aptitude test scores. Because graduate training emphasizes research, preference is given to applicants having laboratory research experience as undergraduates. Although students are examined for an M.S. degree as an intercalated part of the Ph.D. program, the Department accepts only those students seeking a doctorate. Applicants with substantial

outside commitments that would curtail laboratory research or prolong the time to degree are not accepted. Students are encouraged to take the GRE no later than October. The deadline for application is January 7.

Courses in Psychobiology

200A-B-C Research in Psychobiology (2 to 12 per quarter) F, W, S. Individual research supervised by a specific professor. Prerequisite: consent of instructor.

201A-B-C Research in Psychobiology (2 to 12 per quarter) F, W, S. For first-year graduate students, individual research supervised by a specific professor. Prerequisite: consent of instructor.

210 Learning and Memory (1 to 4). Lecture, four and one-half hours. A survey of the biological basis for learning and memory. Prerequisite: Psychobiology graduate student or consent of instructor. May be repeated for credit.

221A-B Systems Neurobiology (6-2) F, W. Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice for a total of 16 units. Same as Anatomy and Neurobiology 221A-B.

222 Neurophysiology (4) F. Lecture, three hours. Biophysical mechanisms of membrane potentials, voltage- and ligand-gated ion channels, action potential propagation, synaptic transmission, and intracellular second messenger systems. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 222.

222L Neurophysiology Laboratory (2) W. Use of contemporary techniques for studying membrane channels and receptors. Methods include extracellular and intracellular recording, patch clamp, quantal analysis of synaptic transmission, heterologous expression of genes encoding channels and receptors, and fluorescence calcium monitoring. Satisfactory/Unsatisfactory only. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 222L.

223 Synaptic, Cellular, and Molecular Neurobiology (4) W. Lecture, three hours. Chemical basis of molecular and cellular events in neurobiology, including neurotransmitter biosynthesis and release, structure and function of ion channels, second messenger pathways, gene regulation, and synaptic plasticity. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 223.

224 Developmental Neurobiology (4) S. Lecture, three hours. Developmental mechanisms involved in formation of the nervous system in both invertebrates and vertebrates. Analysis of cellular mechanisms involved in differentiation, morphogenesis, synaptic connectivity, and electrical activity. Sexual differentiation. Prerequisite: Psychobiology or Anatomy and Neurobiology graduate student or consent of instructor. May be taken for credit twice. Same as Anatomy and Neurobiology 224.

240 Advanced Analysis of Learning and Memory (4) F of odd years. Lecture and seminar, three hours. Advanced analysis of contemporary research concerning the nature and neurobiological bases of learning and memory. Special emphasis is given to time-dependent processes involved in memory storage.

241 Advanced Analysis of Hormones and Behavior (4). Lecture and seminar, three hours. Relationships that exist among endocrine secretions, the brain, and behavior. The biology of reproduction is covered in detail as are the roles of hormones in development stress and social behavior.

242 Development of Synaptic Functions (4) S. Lecture and seminar, three hours. Analysis of the ontogenetic development of synaptic functions in the brain and peripheral nervous system. Emphasis at the molecular and cellular levels. Prerequisite: graduate status in Psychobiology or consent of instructor.

243 Advanced Analysis of Comparative and Developmental Neurobiology (4) S of even years. Lecture and seminar, three hours. The vertebrate nervous system approached from both its phylogenetic and ontogenetic history. Emphasis is given to contemporary experimental approaches to selected neuronal systems.

244 Advanced Neurochemistry (4) W of even years. Lecture and seminar, three hours. Integrated survey of the chemical and physiological mechanisms of synaptic transmission. Selected topics include growth and modification of synaptic connections from a chemical viewpoint.

245 Advanced Topics in the Neurobiology of Aging (4) S. Covers the major topics and rapidly advancing areas in the molecular and cellular events leading to brain aging and dementia. Lectures are presented by investigators active in the fields of aging and neurodegeneration.

246 Advanced Analysis of Attention and Learning (4) S of odd years. Lecture and seminar, three hours. Consideration of behavioral and neural aspects of attention. Examination of the concept of "attention" from a behavioral point of view, and classical and current approaches to brain mechanisms which form the substrates of behavioral attention.

247 Advanced Integrative Neurobiology (4). Lecture and seminar, three hours. Consideration of selected topics in neurobiology in which multidisciplinary approaches have been used to analyze function.

249 Electronics for Biologists (4) W. Lecture, three hours; laboratory, four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Physiology and Biophysics 205.

250 Basal Ganglia and Movement Disorders (4). Principles underlying the organization and functions of the basal ganglia and amygdala are considered. The circuitry, neurotransmitters, and influences on cortex and brainstem motor regions are discussed. Clinical disorders of the basal ganglia, including parkinsonism and ballism, are included.

251 Clinical Neurology for Neuroscientists (4) S of odd years. Presentation of problems of clinical neurology through patient presentation, examination, and discussion. Patients with lesions or defects at various levels of the nervous system are examined.

252 Advanced Analysis of Animal Behavior (4) W of odd years. Lecture and seminar, three hours. Consideration of the adaptive functions of species-typical behavior patterns, as well as their physiological control and ontogeny.

254 Molecular Neurobiology (4) S. Lecture, three hours. The application of genetic and recombinant DNA technology to neurobiology. Topics include the study of neuronal proteins which play important roles in the formation of synapses and synaptic transmission.

257 Advanced Topics in Dementia (4) S. Seminar, three hours. Understanding of dementia becomes increasingly important as individuals live longer and the elderly account for a larger percentage of the population. Topics focus on Alzheimer's disease and related disorders to examine pathology, diagnosis, treatment, and basic research. Lectures are presented by investigators active in dementia. May be taken for credit two times as topics vary.

258 Advanced Analysis of Neurogenetics (4) S. Seminar, three hours; discussion, one hour. Analysis of the genetic basis of neurological development and disorders. Emphasis on the approaches used to identify novel, neurologically relevant genes and analysis on the molecular level. Focuses on understanding how genetic changes alter cellular functions and the clinical consequences that ensue.

259 Cortical Plasticity (4) S. Lecture, two hours; discussion, one hour. Consideration of contemporary research on anatomical, physiological, and behavioral aspects of plasticity in the cerebral cortex during development, recovery of function and learning, emphasizing visual, somatosensory, and auditory cortices. Prerequisite: consent of instructor.

NOTE: Consent of instructor required for seminar courses numbered 260–279. In order to earn four units of credit, three quarters must be taken. Partial credit may be earned for individual segments.

260 Seminar in Learning and Memory (1.3) F, W, S. Open only to Psychobiology graduate students.

261 Seminar in Systems Dynamics (1.3) F, W, S. Open only to Psychobiology graduate students.

262 Seminar in Molecular Neurobiology (1.3) F, W, S. Open only to Psychobiology graduate students.

263 Seminar in Comparative and Developmental Neurology (1.3) F, W, S. Open only to Psychobiology graduate students.

264 Seminar in Neurochemistry (1.3) F, W, S. Open only to Psychobiology graduate students.

265 Reproductive Physiology and Behavior (1.3) F, W, S. Open only to Psychobiology graduate students.

266 Seminar in Attention and Learning (1.3) F, W, S. Open only to Psychobiology graduate students.

267 Seminar in Neural Systems (1.3) F, W, S. Role of calcium and other second messengers in intracellular cell signaling mechanisms. Open only to Psychobiology graduate students.

268 Calcium and Cell Signaling (1.3) F, W, S. Open only to Psychobiology graduate students.

269 Seminar in Neural Injury (1.3) F, W, S. Open only to Psychobiology graduate students.

270 Seminar in Neuromechanisms (1.3) F, W, S. Open only to Psychobiology graduate students.

271 Seminar in Auditory Neurophysiology (1.3) F, W, S. Open only to Psychobiology graduate students.

272 Seminar in Neurophysiology of Behavior (1.3) F, W, S. Open only to Psychobiology graduate students.

273 Seminar in Comparative Behavior (1.3) F, W, S. Open only to Psychobiology graduate students.

274 Seminar in Central Trophic Factors and Plasticity (1.3) F, W, S. Open only to Psychobiology graduate students.

275 Seminar in Cellular and Molecular Neurobiology (1.3) F, W, S. Open only to Psychobiology graduate students.

276 Seminar in Molecular Neuroscience (1.3) F, W, S. Open only to Psychobiology graduate students.

277 Seminar in Neurobiology (1.3) F, W, S. Open only to Psychobiology graduate students.

278 Seminar in Molecular Neuropathology (1.3) F, W, S. Open only to Psychobiology graduate students. May be repeated for credit.

279 Seminar in Synaptic Function in Neocortex (1.3) F, W, S. Open only to Psychobiology graduate students. May be repeated for credit.

280 History of Neuroscience (4). An overview of the conceptual and technical foundations of contemporary neuroscience from ancient times to the present. The subjects include synapses, neurons, brain organization, sensory, motor and regulatory systems, learning and memory, human brain function and dysfunction.

281 Seminar in Vision and Attention (1.3) F, W, S. Topics typically include: mechanisms of motion and depth perception; pattern recognition; system analyses of perceptual functions; and attention processes in visual motion, search, and short-term visual memory. Emphasis is placed on comparisons between neural mechanisms, psychophysical models, and computer algorithms. May be repeated for credit as topics vary.

290 Colloquium in Psychobiology (1.3) F, W, S. Lecture, three-fourths hour; discussion, three-fourths hour. Presentation of contemporary research problems in psychobiology and related areas by invited speakers. Satisfactory/Unsatisfactory only. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF ANATOMY AND NEUROBIOLOGY

364 Medical Surge II; (949) 824-6050

E-mail: anatomy@uci.edu

World Wide Web: <http://www.com.uci.edu/~anatomy/>

Richard T. Robertson, **Department Chair**

Faculty

Tallie Z. Baram: Developmental neurobiology of seizures; CNS mechanisms of stress response

Robert H. Blanks: Vestibular physiology and anatomy

Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing

Anne L. Calof: Developmental neurobiology; molecular mechanisms of neurogenesis and programmed cell death

James H. Fallon: Neuronal growth factors and neurotransmitter interactions

Christine M. Gall, *Department Vice Chair*: Regulation of neuronal gene expression; neurotropic factors

Roland A. Giolli: Experimental neuroanatomy; visual system

Edward G. Jones: Sensory-motor anatomy and physiology

Glenn H. Kageyama: Development of oxidative metabolism in the brain

Herbert P. Killackey: Developmental neuroanatomy; somatosensory system

Leonard M. Kitzes: Auditory system physiology and development

Frances M. Leslie: Effects of drugs of abuse on central nervous system development

W. Ian Lipkin: Molecular/cellular biology of neurotropic viruses; Borna disease virus; animal models for neuropsychiatric diseases; viral vectors for targeted CNS delivery

Diane K. O'Dowd: Regulation of neuronal excitability; development of functional synaptic connections

Charles E. Ribak: Neurocytology; neurotransmitters; neuronal circuitry

Richard T. Robertson: Developmental neurobiology; forebrain development

Martin A. Smith: Cellular and molecular mechanisms of synapse formation

Ivan Soltesz: Molecular and cellular neurobiology

John E. Swett (Emeritus): Peripheral nervous system, spinal cord, pain mechanisms

John H. Weiss: Mechanisms of neural degeneration

Research programs in the Department of Anatomy and Neurobiology focus on the neurosciences. Faculty interests range across the broad field of neuroscience research, including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, and response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of study using interdisciplinary techniques.

The Department offers graduate training in neuroscience under the auspices of the School of Biological Sciences in conjunction with the combined program in Molecular Biology, Genetics, and Biochemistry (MBGB), which is described in a previous section. The program leads to the Ph.D. degree in Biological Sciences. In concert with several other departments, a combined neuroscience core curriculum has been developed which includes course offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology. These are recognized courses that may be taken as complete or partial fulfillment of the elective requirements of the MBGB program. Students wishing to enter the Department's graduate program are encouraged to include some or all of these courses during their first and second years in the combined program.

Students admitted into the MBGB program who subsequently select a focus in the Neurobiology track and a research advisor in the Department, begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students are required to attend departmental seminars and participate in the Department's Journal Club. The dissertation research topic is chosen by the student in consultation with the research advisor. The majority

of the third and fourth years are devoted to research. By the end of the third year, students take their advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. Students are expected to graduate within five years of entering the program.

Courses in Anatomy and Neurobiology

200 Research in Anatomy (2 to 12) F, W, S, Summer. Individual research supervised by a particular faculty member. Prerequisite: consent of instructor. May be repeated for credit.

201 Human Gross Anatomy (8) F. Lecture, three hours; laboratory, nine hours. Study and dissection of the human body, including muscular, skeletal, nervous, and cardiovascular systems. Emphasis on both normal and abnormal structure and function. Prerequisites: graduate standing, consent of instructor.

202A Cellular and Molecular Neuroscience (3) W. Lecture, three hours; discussion, one hour. Function of the nervous system at molecular and cellular levels including the anatomy and physiology of neurons, muscles, and receptors. Corequisite: Anatomy 203A. Prerequisite: consent of Department. Same as Physiology 202A.

202B Human Neuroscience (4) S. Lecture, three hours; discussion, one hour; laboratory, one hour. Study of the human nervous system at the systems level including the physiology and anatomy of sensory, motor, and integrative functions. Prerequisite: Anatomy 202A and consent of Department.

203A-B Human Microscopic Anatomy (3-3) W, S. Lecture, two hours; laboratory, three hours. Lecture and laboratory course on human microscopic anatomy. Emphasis is on functional implications of structure of cells and tissues. Prerequisites: graduate standing, consent of instructor. Formerly Anatomy 203.

206 Tutorial in Anatomy. Tutorial, three hours. Series of tutorials on advanced topics in anatomy. Each may be repeated for credit.

206A Surgical Anatomy (3) F. Exploration of topics in gross anatomy. Dissection/library work required. Prerequisites: Anatomy 201A-B.

206B Neuroanatomy (3) W. Exploration of special topics in neuroanatomy. Primarily library work, but study of prepared slides also included. Prerequisite: Anatomy 202.

206C Microanatomy (3) S. Special topics in microanatomy. Primarily library work, but study of prepared histological slides and photographs included. Prerequisites: Anatomy 203A-B.

208 Neural and Cellular Anatomy. Seminar, three hours. Seminars covering cellular aspects of anatomy.

208A Neurocytology (3) W of even years. Ultrastructure of the nervous system is studied so that an understanding of neuronal function may be gained. Topics include cell body, dendrites, axons, synapses, myelin, glia, blood-brain barrier, meninges, analysis of neuropil, and experimental techniques. Prerequisite: consent of instructor.

221A-B Systems Neurobiology (6-2) F, W. Study of the mammalian nervous system at the systems level. Anatomy and physiology of sensory, motor, and integrative functions. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice for a total of 16 units. Same as Psychobiology 221A-B.

222 Neurophysiology (4) F. Lecture, three hours. Biophysical mechanisms of membrane potentials, voltage- and ligand-gated ion channels, action potential propagation, synaptic transmission, and intracellular second messenger systems. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 222.

222L Neurophysiology Laboratory (2) W. Use of contemporary techniques for studying membrane channels and receptors. Methods include extracellular and intracellular recording, patch clamp, quantal analysis of synaptic transmission, heterologous expression of genes encoding channels and receptors, and fluorescence calcium monitoring. Satisfactory/Unsatisfactory only. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 222L.

223 Synaptic, Cellular, and Molecular Neurobiology (4) W. Lecture, three hours. Chemical basis of molecular and cellular events in neurobiology, including neurotransmitter biosynthesis and release, structure and function of ion channels, second messenger pathways, gene regulation, and synaptic plasticity. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 223.

224 Developmental Neurobiology (4) S. Lecture, three hours. Developmental mechanisms involved in formation of the nervous system in both invertebrates and vertebrates. Analysis of cellular mechanisms involved in differentiation, morphogenesis, synaptic connectivity, and electrical activity. Sexual differentiation. Prerequisite: Anatomy and Neurobiology or Psychobiology graduate student or consent of instructor. May be taken for credit twice. Same as Psychobiology 224.

DEPARTMENT OF BIOLOGICAL CHEMISTRY

Building D, Room 240, Medical Sciences I; (949) 824-6051
Suzanne B. Sandmeyer, **Department Chair**

Faculty

Stuart M. Arfin: Protein processing and turnover; functions of ubiquitin
Deborah L. Grady: Mapping and sequence analysis of the human genome
Chris L. Greer: RNA processing and nuclear export; tRNA gene expression
Murray Korc: Alterations in signal transduction pathways in human disease
Haoping Liu: Signal transduction, cell cycle regulation, hypha development in yeast
Calvin S. McLaughlin: Macromolecule biosynthesis; control of cell division
Frank Meyskens: Biology of melanoma
Masayasu Nomura: RNA polymerase I; nucleolus and ribosome synthesis; nuclear transport and function
Robert K. Moyzis: Chromosome structure and gene expression
Suzanne B. Sandmeyer: Retrovirus-like elements in yeast
Robert E. Steele: Molecular biology of *Hydra* development
Leslie M. Thompson: Molecular/biochemical analysis of skeletal dysplasias and Huntington's Disease
Kyoko Yokomori: Gene expression and chromatin structure

Faculty research interests in the Department of Biological Chemistry focus on the structure and function of chromosomes, signal transduction and its role in cell growth control, regulation of gene expression (transcription, RNA splicing, protein synthesis, and protein localization), and the molecular basis of development. Genome sequencing projects are making it possible for faculty to exploit information learned about gene function in model organisms for understanding human disease processes. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering and gene mapping.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students are required to attend and participate in the departmental research seminar and are required to attend departmental seminars. In addition, students are required to complete two advanced-level graduate courses subsequent to entering the Department's Ph.D. concentration. In the third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Several faculty in the Department also are members of the graduate program in Protein Engineering, which is described in a previous section.

Courses in Biological Chemistry

200A, B, C Research in Biological Chemistry (2 to 12) F, W, S. Individual research under the supervision of a professor. Satisfactory/Unsatisfactory only. May be repeated for credit.

202A, B, C Laboratory Seminar Series (1, 1, 1) F, W, S. Study within a laboratory group including research and journal presentations. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

210A Biochemistry and Cell Biology (12) F. Lectures and seminars. Biological chemistry and cell biology for first-year medical and graduate students. Presents the metabolism and molecular biology relevant to human health and disease that form the foundation of medical science for the next century. Prerequisite: consent of instructor.

285 Redox Transcriptional Factors in Health and Disease (2). Transcription factors such as NF κ B and AP families are in part controlled by cellular redox status. Such signals affect viral, inflammatory, immunological, and malignant responses. Consists of a few background lectures followed by student presentations. Prerequisite: consent of instructor.

291 Topics in Gene Regulation (2) F, W, S. Seminar, two hours.

Additional courses are taught by and with faculty from the Department of Molecular Biology and Biochemistry. Topics in advanced graduate courses offered by the Department include human genetics, growth factors and oncogenes, yeast molecular genetics, and protein/nucleic acid interactions.

DEPARTMENT OF MICROBIOLOGY AND MOLECULAR GENETICS

Building B, Room 240, Medical Sciences I; (949) 824-5261
Bert L. Semler, **Department Chair**

Faculty

Alan G. Barbour: Microbial pathogenesis
Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells
Alan L. Goldin: Molecular analysis of ion channel function
Sidney H. Golub: Cellular immunity and tumor biology
George A. Gutman: Potassium channel and immunoglobulin super-family genes
G. Wesley Hatfield: Effects of DNA topology on transcription
W. Ian Lipkin: Molecular/cellular biology of neurotropic viruses; Borna disease virus; animal models for neuropsychiatric diseases; viral vectors for targeted CNS delivery
W. Edward Robinson: Molecular pathogenesis of lentivirus infection and drug discovery against HIV
Suzanne B. Sandmeyer: Molecular genetics of a position-specific yeast retrovirus-like element
Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein
Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium
Bert L. Semler: Replication of picornavirus RNAs; RNA-protein and protein-protein interactions
Eric J. Stanbridge: Tumor suppressor genes and oncogenes in human cancer
Marian L. Waterman: Regulation of transcription in human T lymphocytes

The Department of Microbiology and Molecular Genetics provides advanced training to individuals interested in the regulation of gene expression and the structural and functional properties of proteins encoded by these genes. The research interests of the Department focus on the molecular biology and genetics of viruses, bacteria, and yeast; the fundamentals of the immune response; the molecular biology of cultured animal cells; the genetic basis of cancer; and the genetics and physiology of infectious agents.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department

begin following the departmental requirements for the Ph.D. at the beginning of their third year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Courses in Microbiology and Molecular Genetics

200A-B-C Research in Microbiology and Molecular Genetics (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor. May be repeated for credit.

201A-B-C Research Topics in Microbiology and Molecular Genetics (1-1-1) F, W, S. Lecture and seminar. Seminars presented by graduate students and faculty of the Department which explore research topics in specialized areas of microbiology and molecular genetics. Opportunity for students to gain experience in the organization, critical evaluation, and oral presentation of current research developments. Prerequisite: consent of instructor. May be repeated for credit. Satisfactory/Unsatisfactory only.

203A-B-C Advanced Studies in Microbiology and Molecular Genetics (1-1-1) F, W, S. Organized within each laboratory group, one to four hours. Advanced study in areas related to faculty research interests. Involves small group study based on readings, discussions, and guest speakers. May be conducted as journal clubs. Satisfactory/Unsatisfactory only. May be repeated for credit.

210A-B Medical Microbiology (4-6) W, S. Lecture, five hours; laboratory, three hours. Advanced course for medical students in the College of Medicine. Biochemical and genetic properties of infectious agents, identification and behavior of pathogens, activities of toxins, chemotherapy, biochemical genetics of drug resistance, humoral and cell-mediated immunity, introduction to diagnosis, treatment, and epidemiology of infectious diseases. Prerequisites: prior course work in microbiology and biochemistry and consent of instructor.

213 Advanced Prokaryotic Molecular Genetics (4) W. Lecture. Molecular models for biological systems draw heavily on prokaryotic organisms and their viruses. Topics: bacterial and phage genetics, regulation of transcription and translation in prokaryotes. Applies knowledge of these processes to understanding of metabolism and development at the organismic level.

215 Molecular Immunology (4) S. Lecture/seminar, three hours. Discussion and student presentation with the aim of achieving a basic understanding of the haematopoietic system, and the cellular and molecular basis of adaptive immunity. Prerequisite: consent of instructor.

216 Pathogenic Microbiology (4) S. Lecture, four hours. Biochemical and genetic properties of infectious agents; identification and behavior of pathogens; activities of toxins; the chemotherapy, biochemistry, and genetics of drug resistance; and epidemiology of infectious diseases. Prerequisite: consent of instructor.

219 Medical Virology (4) S. Lecture, four hours. Animal viruses as disease causing agents, including mechanisms of infection at both the cellular and organismic levels. Topics include comparative studies of different groups of viruses, viral transformation, and mechanisms of viral gene expression. Prerequisite: consent of instructor.

221 Immunopathogenic Mechanisms of Disease (3) S. The immune system plays a prominent role in disease. Course utilizes lectures and student presentations to teach concepts of autoimmunity and immune system interactions with bacteria, parasites, and in cancer. Prerequisite: Microbiology and Molecular Genetics 215.

222 Molecular Pathogenesis of Viral Infections (4) S. Features lectures by faculty on the molecular aspects of viral pathogenesis, highlighting both viral and cellular functions. Students give oral presentations and write a research proposal on a selected topic. Prerequisite: Microbiology and Molecular Genetics 205.

240 M.D./Ph.D. Tutorial (1) F, W, S. Explores a variety of topics that impact careers of medical scientists (M.D./Ph.D. students). Topics range from scientific, such as recent advances in particular research areas, to ethical problems brought on by increased technology and intervention in the disease process. May be repeated for credit.

280A-B-C Tutorial in Microbiology and Molecular Genetics (2-2-2) F, W, S. Tutorial, two hours. Presented by various members of the faculty; relates current laboratory research to the literature.

DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS

Building D, Room 340, Medical Sciences I; (949) 824-5863
Janos K. Lanyi, **Department Chair**

Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases
Kenneth M. Baldwin: Developmental, hormonal, and exercise factors regulating striated muscle gene expression
Michael E. Barish: Astroglial modulation of the differentiation of voltage-gated potassium currents; mechanisms of intracellular Ca²⁺ release
Ralph A. Bradshaw: Structure and function of polypeptide growth factors and their receptors; mechanisms of protein turnover
Michael D. Cahalan: Ion channels and Ca²⁺ signaling in the immune system
Vincent J. Caiozzo: Cellular and molecular mechanisms regulating the mechanical properties of skeletal muscle
K. George Chandry: Molecular biology of ion channels and their role in immune cells
Jill Cupp-Vickery: X-ray crystallographic studies on enzymes involved in antibiotic biosynthesis
J. Jay Gargus: Molecular analysis of membrane signaling proteins
Alan L. Goldin: Molecular biology of neural channels and receptors
George A. Gutman: Molecular and evolutionary studies of immunoglobulin and ion channel genes
Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes
James E. Hall: Biophysics of membrane channels, gap junctions and water channels
Frances A. Jurnak: Macromolecular crystallography; biochemical and structural studies of a model G protein; EF-Tu; structure/function of plant virulence factors
Janos K. Lanyi: Transport and energy coupling in the membrane of *Halobacterium salinarum*
Shin Lin: Cellular and molecular biophysics of proteins involved in membrane-associated cytoskeletal functions and signal transduction
Kenneth J. Longmuir: Intracellular metabolism, sorting, and transport of lipid in mammalian cells; membrane fusion
Hartmut Luecke: Protein crystallography; structure and function of membrane-associated proteins
Alexander McPherson: X-ray diffraction analyses of enzymes, viruses; antibodies and protein-nucleic acid complexes; crystallization methods; microgravity crystallization
Paul A. Negulescu: Physical requirements for T-cell activation; G-protein coupled receptor activation linked to B-lactamase expression
Thomas L. Poulos: Protein crystallography; protein engineering; heme enzyme structure and function
Hamid M. Said: Cellular and molecular mechanisms and regulation of intestinal and renal vitamin transporters
Ivan Soltesz: Plasticity and modulation of inhibitory synaptic neurotransmission
Bruce J. Tromberg: Optical spectroscopy of tissues and cells
Larry E. Vickery: Molecular chaperones and protein folding; protein engineering
Stephen H. White: Protein folding in membranes; peptide-bilayer interactions; membrane structure

The Department of Physiology and Biophysics offers research opportunities in the molecular biophysics of membranes and proteins, ion channels and signal transduction, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students participate in a literature review course designed to strengthen research techniques and presentation skills and attend the weekly Department colloquium. During the third year, each student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee examines the student's qualifications for the successful conduct of doctoral dissertation research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination. Interdisciplinary dissertation research involving more than one faculty member is encouraged. Students who have met all necessary prerequisites should be able to complete the Ph.D. in five years.

Several faculty in the Department are also members of the graduate program in Protein Engineering, which is described in a previous section.

Courses in Physiology and Biophysics

200 Research in Physiology and Biophysics (2 to 12 per quarter) F, W, S. Individual research directed toward doctoral dissertation and supervised by a particular professor. Prerequisite: consent of instructor. May be repeated for credit.

201 Introduction to Physiology Research (1 to 4 per quarter) F, W, S. Introduction to research in physiology and related sciences. Students concentrate on techniques emphasized in the various laboratories of the Department. Prerequisite: consent of instructor. May be repeated for credit.

202 Cellular and Molecular Neuroscience (3) W. Function of the nervous system at molecular and cellular levels including the anatomy and physiology of neurons, muscles, and receptors. Prerequisite: consent of department. Same as Anatomy 202A.

203 Review of the Literature of Physiology and Biophysics (2) F, W, S. Students review papers in the current literature and present ideas contained therein to other students and faculty. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

204 Concepts of Biophysics (3) S. Lecture, two hours; laboratory, one hour. Principles of crystallography; introduction to time-resolved absorption and fluorescence spectroscopy; the concepts of kinetic order and kinetic rate theory. Prerequisites: graduate standing in Biological Sciences and consent of instructor. Formerly Physiology 204B. *Offered only if sufficient demand exists.*

205 Electronics for Biologists (4) W. Lecture, three hours; laboratory four hours. Basic principles of electricity; properties and use of discrete components and integrated circuits; circuit analysis and design. Intended for advanced students in the life sciences. Same as Psychobiology 249.

206A-B Introduction to Medical Physiology (5-6) W, S. Lecture, six hours; discussion, two hours; other, two hours. Vertebrate physiology with emphasis on humans and on the relationship between the function of normal tissues and the processes of disease. Fundamental principles of physiology and the interrelationships which control organ function. Prerequisite: Physiology 202 and consent of Department.

209 Literature in Protein Engineering (1) F, W, S. Seminar, one hour, discussion, half-hour. Students review current papers in the field of protein engineering and present the ideas contained therein to other students and faculty. May be repeated for credit. Same as Molecular Biology 209 and Engineering CBE209.

210 Molecular Pathophysiology (3) S. Guided seminar format. Topics selected illustrate investigations into range of disease phenotypes from the organ, cell, and molecular level. Students present and guide discussion based upon assigned papers, additional research, and faculty discussions. Goal is to formulate plan of investigation. Prerequisite: consent of instructor.

220 Physiology of Muscular Activity (3) W. Lecture, one hour; discussion, three hours. Lectures, tutorials, and readings on hormonal, neural, and activity-related factors regulating phenotypic expression in skeletal and cardiac muscle. Topics include organelle components regulating the contractile process; energy metabolism; protein synthesis and degradation; hormones; neural and mechanical factors. Prerequisite: consent of instructor.

232 Physiology of Ion Channels (3) F. Lecture, two hours; discussion, two hours. An introductory course on the roles ion channels play in important cellular processes such as nerve conduction, synaptic transmission, cell signaling, gene regulation, and cell-cell communication. Demonstrations include patch clamp recording, reconstitution of channels in lipid bilayers, and analysis of single channel properties. Intended for students interested in cell biology, protein structure, and neurophysiology. Prerequisite: consent of instructor. *Offered only if sufficient demand exists.*

242 Protein Engineering (3) W of even years. The design of novel proteins and their production by genetic manipulation. Principles of protein structure and function and techniques of molecular biology relevant to protein engineering. Applications of protein technology. Prerequisites: Molecular Biology and Biochemistry 203 and 204. Same as Biochemical Engineering CBE242.

261 Protein Stability and Structure (3) S of even years. Lecture, discussions, demonstrations; three hours. Fundamental biophysical principles of the folding and structure of proteins in aqueous and membrane environments. Analysis of key papers concerned with general structural features of proteins, protein folding, and protein structure prediction. Prerequisites: physical chemistry, graduate course in biochemistry; consent of instructor.

281 Signal Transduction (3) S. Lecture, one hour; discussion, three hours. Students read and discuss manuscripts that describe mechanisms by which extracellular signals are transduced across plasma membranes and mechanisms by which cellular response machinery (e.g., ion channels, phospholipases, protein kinases, and the mitogenic pathway) is activated. Prerequisite: consent of instructor.

290 Colloquium in Physiology (1-1-1) F, W, S. Seminar, one and one-half hours. Contemporary research problems in physiology. Research students, faculty, and other invited speakers introduce research and review topics. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only. May be repeated for credit.

299 Dissertation in Physiology and Biophysics (2 to 12 per quarter) F, W, S, Summer. Preparation and completion of the dissertation required for the Ph.D. or Master of Science degree. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF EDUCATION

Louis F. Mirón, **Chair**

2001 Berkeley Place

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Faculty

Kenneth Bailey, Ph.D. University of California, Los Angeles, *Senior Lecturer Emeritus*

Henry J. Becker, Ph.D. The Johns Hopkins University, *Professor of Education* (instructional use of computers, survey and evaluation research)

Joan S. Bissell, Ed.D. Harvard University, *Director, Ed.D. Program, and Senior Lecturer* (learning theory, research and evaluation, educational policy)

Kimberly Burge, M.A. University of California, Los Angeles, *Lecturer* (applied technology, art education)

Stephen R. Campbell, B.A. University of Calgary (Canada), *Acting Assistant Professor of Education* (mathematics education)

Suzanne Charlton, Ph.D. Claremont Graduate School, *Academic Coordinator* (multicultural education, CLAD/BCLAD)

Linda Clinard, Ph.D. University of Michigan, *Lecturer* (reading education, curriculum and instruction)

Dennis Evans, Ed.D. University of Southern California, *Director, Credential Programs of the Department of Education, and Academic Coordinator* (educational administration, secondary education)

Gilbert Gonzalez, Ph.D. University of California, Los Angeles, *Professor of Social Sciences and Education*

Alan R. Hoffer, Ph.D. University of Michigan, *Professor of Education* (mathematics and computer education)

Michael E. Martinez, Ph.D. Stanford University, *Associate Professor of Education* (psychology of learning, intelligence, assessment)

Jack McCullough, Ph.D. United States International University, *Lecturer Emeritus*

Susan M. Meyers, M.S. University of Wisconsin, *Supervisor of Teacher Education* (intern program)

Louis F. Mirón, Ph.D. Tulane University, *Chair of the Department of Education, Associate Professor of Education and Social Sciences, and Director, Center for Collaborative Research in Education (CCRE)* (social theory, postmodernism, urban education)

Carol Booth Olson, Ph.D. University of California, Los Angeles, *Senior Lecturer and Academic Coordinator* (UCI Writing Project, language arts education)

Rita W. Peterson, Ph.D. University of California, Berkeley, *Senior Lecturer* (science education, special-needs education)

Mary W. Roosevelt, National Froebel Foundation Teaching Degree, University of London, *Supervisor of Teacher Education* (elementary education)

Timothy M. Tift, M.A. Pepperdine University, *Lecturer* (health, physical education)

Rodolfo D. Torres, Ph.D. Claremont Graduate School, *Visiting Professor of Education* (educational policy)

Lecturers

Bruce Baron, M.S. Pepperdine University, *Lecturer* (social science education)

Julia Hume, Ed.D. University of La Verne, *Lecturer* (professional administration, social science)

Thomas W. Jacobson, Ed.D. University of Southern California, *Lecturer* (professional administration, school finance)

Jon Johnson, B.A. Pepperdine University, *Lecturer* (science education)

Karen Nakai, Ed.D. Pepperdine University, *Lecturer* (social science and secondary education)

Linda Orozco, Ph.D. University of Minnesota, *Lecturer* (educational administration)

Jeanne Stone, M.A. California State University, Long Beach, *Lecturer* (language arts and mathematics education)

Carol Tipper, B.A. University of California, Irvine, *Lecturer* (mathematics education)

Maria da Penha Trés-Brevig, Ph.D. University of Illinois, Urbana-Champaign, *Lecturer* (research and evaluation)

Ronald Wenkart, J.D. University of La Verne, *Lecturer* (school law, labor relations)

The Department of Education is dedicated to academic scholarship and the application of research to educational practice. The Department offers programs leading to credentials required for teaching or administration in the public schools of California, a minor in Educational Studies, and an Ed.D. degree in Educational Administration.

Faculty associated with the Department of Education include researchers and scholars of national and international reputation. Many faculty have taught or served as administrators in public schools, and all are committed to the continued improvement of education through conducting research and the development of more effective approaches to teaching.

Teaching and Service Credential Programs

The Department of Education offers professional education programs which lead to California teaching and service credentials as established by the Teacher Preparation and Licensing Law of 1970, known generally as the Ryan Act.

The Department of Education offers full-time programs leading to California's two basic teaching credentials—the Single Subject Credential and the Multiple Subject Credential. There are two paths available to obtain the teaching credential: the Intern Teaching Credential Program and the Student Teaching Credential Program. Additionally, the Department offers Administrative Services Credential programs.

Preliminary and Professional Clear Teaching Credentials

The Preliminary Credential is awarded by the State upon completion of a baccalaureate degree, the professional education course sequence, a course in the teaching of reading, student teaching, a college-level course or examination covering the U.S. Constitution, the passage of the California Basic Education Skills Test, (CBEST), and verification of subject matter competence, e.g., Praxis II, Single Subject Assessment for Teaching (SSAT), or an approved subject-matter program. (See Verification of Subject Matter Competence).

It is anticipated that candidates who apply for a Multiple Subject Credential after October 1, 1998, will also be required to pass the Reading Instruction Competence Assessment (RICA). This test may be taken during or immediately following completion of the professional education program.

The Professional Clear Credential is awarded by the State upon completion of the fifth year of study, which is defined as 45 quarter units of upper-division or graduate-level postbaccalaureate courses. State-approved courses in computer education (Education 301A, 301LA or 302A, 302LA), special education (Education 162), and health education (Education 380) are required for the Professional Clear Credential. In addition, postbaccalaureate courses taken as part of the professional education program can be used to satisfy fifth-year requirements.

Intern Teaching Credential Program

Through the intern program, a student may earn a stipend for one year of teaching while completing either the Multiple or Single Subject Credential requirements. The stipend is paid by the school district. To serve as an intern, the student must be admitted to the Department of Education Intern Program and be eligible for an Intern Credential. Eligibility includes a Certificate of Clearance, passage of the CBEST, verification of subject-matter competence, and a course or college-level examination on the U.S. Constitution. Intern teachers are selected by participating school districts and UCI based on the background and experience of the candidate, the needs of the particular school district, and the candidate's eligibility for UCI's Education program.

Interns are required to take the following courses. *Multiple Subject Interns:* Education 106A, 111A, B, C, D, 162†, 173*, 183, 184A, 301A, 301LA, 310A-I, and 380†. *Single Subject Interns:* Education 101 102A-G (students enroll in the section of their proposed credential authorization), 106A, 162†, 173*, 180, 184A, 302A, 302LA, 330A-I, and 380†. For further information see the intern program coordinator in the Department of Education.

† Ed. 162 and 380 are required for the Professional Clear Credential and must be taken within five years of issuance of the Preliminary Credential. With approval, students may enroll in these courses during the preliminary program.

* Ed. 173 is a prerequisite and must be successfully completed prior to beginning the credential program. Ed. 176 may substitute for Ed. 173.

Student Teaching Credential Program

The Student Teaching Credential Program is characterized by a full year of involvement in the public schools beginning with school observations in the fall quarter and culminating in student teaching during the winter and spring quarters. (Students are required to begin the school observations when the public schools open in September. Student teaching concludes as the public schools complete the school year in June.)

Intensive course work in the fall quarter prepares students for full-time student teaching experiences which begin in the winter and continue through the spring quarter. Course work related to student teaching continues at a reduced level during the winter and spring quarters. The student teaching experiences are supervised by school-site teachers trained as University Associates.

SINGLE SUBJECT CREDENTIAL

A Single Subject Credential authorizes teaching in a specific subject area, as is commonly practiced in California high schools and middle/intermediate schools. UCI offers Single Subject Teaching Credentials in art, English, languages other than English, mathematics, music, sciences, and social science.

Candidates who enroll in the Single Subject Credential program at UCI generally are required to take the following courses: Education 101, 102A-G (students enroll in the section of their proposed credential authorization), 102H, 105B, 162††, 173**, 174, 302A, 302LA, 320A-B-C-D-E, and 380††.

Sample Fifth-Year Program — Single Subject Credential

FALL	WINTER	SPRING
Ed 101	Ed 102H	Ed 102H
Ed 102‡	Ed 302A, LA	Ed 320C, D, E
Ed 105B	Ed 320A, B	
Ed 174		

‡ Section is dependent upon content area.

MULTIPLE SUBJECT CREDENTIAL

A Multiple Subject Credential authorizes teaching multiple subjects as commonly practiced in California elementary schools.

Candidates who enroll in the Multiple Subject Credential program at UCI generally are required to take the following courses: Education 104A, 105A, 110A, B, C, D, 162††, 173**, 174, 300A-B-C-D-E, 301A, 301LA, and 380††.

†† Ed. 162 and 380 are required for the Professional Clear Credential and must be taken within five years of issuance of the Preliminary Credential. With approval, students may enroll in these courses during the program.

**Ed. 173 is a prerequisite and must be successfully completed prior to beginning the program. Ed. 176 may substitute for Ed. 173. NOTE: In addition to Ed. 173, Ed. 124 is a prerequisite for students pursuing the CLAD/BCLAD emphasis. (Ed. 160 may be substituted for Ed. 124. Interns are not eligible for the CLAD/BCLAD emphasis.)

Sample Fifth-Year Program — Multiple Subject Credential

FALL	WINTER	SPRING
Ed 105A	Ed 104A	Ed 105A
Ed 110A, B, C, D	Ed 105A	Ed 110A, B, C, D
Ed 174	Ed 110A, B, C, D	Ed. 300C, D, E
Ed 301A, LA	Ed 300A, B	

The Student Teaching Experience

Student teaching for Single Subject candidates (grades 7–12) is defined as a full-day, five-day-per-week assignment, for one full public school semester in an appropriate classroom setting.

Student teaching for Multiple Subject candidates (grades K–6) is defined as a full-day, four-day per week assignment during the first quarter of student teaching and a full-day, five-day per week assignment during the second quarter. The assignment will include two levels within the K–6 range.

Clearances for student teaching are processed by the Department of Education and are contingent upon the Certificate of Clearance, a current tuberculin test clearance, academic preparation clearances including CBEST, and verification of subject matter competence.

A grade of B or better is required in all courses and student teaching for successful completion of the program. If competence has been demonstrated by the conclusion of the student teaching program and all other requirements are met, the student is eligible for a credential recommendation by UCI.

Administrative Services Credential

Services Credentials are issued by the State in pupil personnel services, administrative services, health services, library services, and clinical-rehabilitative services. UCI offers programs leading to the Administrative Services Credential generally required for school administrators.

The Administrative Services Credential is a two-stage credential. In the first stage, a candidate obtains the Preliminary Administrative Services Credential by completing the approved program and by securing an administrative position in public education. The Preliminary program requires the completion of 36 quarter units and a comprehensive examination. The credential requires a valid basic teaching credential, three years of full-time teaching experience, and passage of the CBEST. When an administrative position is obtained, the individual begins pursuing the Professional Clear Administrative Services Credential (stage two).

The Professional Clear program requires the completion of an additional 38 quarter units (120 hours of non-University work or other structured programs may substitute for 12 of these units) and two years of successful full-time school administrative experience

in a position which requires the Preliminary Administrative Services Credential. Some courses in the Professional Clear Administrative Services program are applicable to the Ed.D. degree in Educational Administration at UCI.

Students interested in this credential should make an appointment with a counselor in the Department of Education.

Preparation for Applying to the Credential Programs

Eligibility for admission is supported by passing the CBEST, providing evidence of possession/application for a Certificate of Clearance, and successfully completing the appropriate subject area examinations or an approved subject matter program.

Registration for examinations must be made well in advance of test dates. Students are urged to contact the Department of Education for information about the tests and test dates at least one year before application deadline.

The Department of Education requires appropriate field experiences prior to entering the program. Course credit for field experience is available through Education 100 and Education 160, as well as through other University programs. Field experience can also be earned by other appropriate activities, e.g., tutoring, assisting in public school classrooms, and active participation in the Teachers of Tomorrow Club.

An application is enhanced if prerequisite courses (Education 173 for *all* teaching credential programs and Education 124 for the CLAD/BCLAD emphasis) have been completed. Education 176 may be substituted for Education 173, and Education 160 may be substituted for Education 124.

ADMISSION TO THE CREDENTIAL PROGRAMS

Information and applications are available from the Department of Education, 2001 Berkeley Place. Admission is based on a broad index, including but not limited to the following:

Academic Achievement. Completion of a baccalaureate degree from an accredited institution and a minimum grade point average of 3.0 will support consideration of admission to the Department of Education. Undergraduates who enroll in courses leading to a credential are not guaranteed admission to the program; admission through the regular graduate admissions process is required.

Written Recommendations. Three letters of recommendation are required for admission. These letters should relate to the student's potential for success in teaching or administration and should indicate the student's ability to perform academic work. For applicants to the teaching credential programs, at least one letter should focus on experiences related to teaching.

CBEST. Evidence of having passed the California Basic Educational Skills Test must accompany the application for admission.

Absence of Criminal Conviction that Would Preclude the Issuance of a Credential. All students are required by law to obtain a Certificate of Clearance from the California Commission on Teacher Credentialing (CCTC). Applicants must provide evidence of filing for this Certificate along with their application for admission to the Department of Education. Contact a counselor in the Department of Education for advice on how to handle this process.

Verification of Subject Matter Competence

Single Subject Credential. California requires all credential candidates to demonstrate subject matter competence prior to student teaching. This can be achieved by passing the appropriate Praxis II subject assessments and the SSAT specialty area tests or by completing a CCTC-approved subject matter program in the teaching

area. (Students pursuing a subject matter program may student teach with a minimum of four-fifths of the subject matter program completed. However, the entire subject matter program must be completed for the credential.) Students should consult a counselor in the Department of Education for detailed information.

Subject Matter Programs. UCI offers CCTC-approved subject matter programs in English and social science. Consult a counselor in the Department of Education for information.

Multiple Subject Credential. The Praxis II: Multiple Subject Assessment for Teachers (MSAT) or CCTC-approved subject matter program is a requirement for the Multiple Subject Credential. (UCI does not have a subject matter program for multiple subjects but will honor approved programs from other universities.) The MSAT consists of two sections: Content Knowledge and Content Area Exercises. It includes the following areas: English, mathematics, science, social science, physical education, human development, and visual and performing arts. All students must pass the MSAT prior to beginning student teaching or must complete at least four-fifths of an approved subject matter program. Completion of the entire subject matter program or the passage of the MSAT is required for the credential.

Supplementary and Additional Teaching Authorizations

After acquiring a basic credential, it is possible to add further teaching authorizations. Students wishing to be authorized in more than one subject area may qualify in either of two ways:

1. Students may complete 30 quarter units (15 units if they are upper-division) in specific college-level course work to develop a supplementary authorization to teach in areas other than the major teaching area. Consult a counselor in the Department of Education for details.
2. Students may pass the appropriate examinations in any area of their choice and thus qualify for the additional teaching authorization in that subject.

CLAD/BCLAD EMPHASIS PROGRAM

The California Commission on Teacher Credentialing has adopted new credential regulations to authorize both Single Subject and Multiple Subject teachers to serve the State's growing number of English Language Development (ELD) students. In accordance with these new regulations, UCI offers the Crosscultural Language and Academic Development (CLAD) emphasis and the Bilingual Crosscultural Language and Academic Development (BCLAD) emphasis in Spanish. (The CLAD/BCLAD emphasis is not available through the intern program.)

After meeting prerequisites Education 173 and 124, and verification of experience related to a second language, and immediately *before* the teacher preparation year, CLAD/BCLAD candidates attend a summer seminar and practicum (Education 165, 166, and 167). Additionally, BCLAD candidates must demonstrate advanced language proficiency in Spanish and meet all bilingual teaching course requirements.

Upon successful completion of the CLAD/BCLAD summer program and the academic year teacher education program, students are eligible for a preliminary teaching credential with a CLAD/BCLAD emphasis.

Undergraduate Minor in Educational Studies

The undergraduate minor in Educational Studies is designed to allow students to explore a broad range of issues in the field of education as well as to provide a foundation for becoming a teacher in grades K-12. The program consists of a coordinated set of courses which includes an introductory level course and several advanced courses in the field of education. A number of the minor's elective courses are offered by other academic units.

The minor provides students who have a strong interest in education as a career with the opportunity to pursue that interest in addition to their major field of study and receive University credit. Students who plan to apply for admission to a credential program in the UCI Department of Education (or at other institutions) will enhance their admissibility through taking the minor's coordinated set of courses and will acquire a strong basic foundation for their advanced work. Students who do not eventually choose education as a career path will have gained a valuable knowledge base applicable to many other occupations and to roles as citizens, parents, and volunteers.

An application for admission to the minor must be filed with the Department of Education and approved by the Faculty Advisor for the minor. Applications are available in the Department office, 2001 Berkeley Place.

Requirements

The minor requires completion of a minimum of seven courses (at least five of which must be upper-division) totaling 28 units drawn from the four required areas of study shown below and from the approved electives:

1. *Educational systems, issues and reforms area*: Education 50 (Origins, Purposes, and Central Issues in K-12 Education).
2. *Learning and the learning process area*: either Education 173 (Learning Theories and Classroom Practices) or 176 (Psychology of Learning, Abilities, and Intelligence). Each of those courses also fulfills the prerequisite requirement for the Department's fifth-year teacher education credential programs.
3. *Educational contexts and influences area*: has two dimensions—subject area and field experience. The latter requires students to be involved in direct observation and/or service in the schools. Students may select from Education 100 (Educational Strategies for Tutoring and Teacher Aiding), 160 (Practicum in After-School Learning and Inquiry), or other approved courses which include involvement with K-12 schools.
4. *Subject matter content and pedagogy area*: requires completion of one course focusing on an academic discipline of the student's choice which has direct applicability to K-12 instruction.

NOTE: In addition to the courses shown above, a variety of others may be applied toward areas 3 and 4. Detailed information is available from the Faculty Advisor for the minor and from the Department's counselors.

Electives. The remaining courses to complete the seven-course program requirement may be selected from any of the courses noted above that have not been used to meet an area requirement, from a list of approved electives available from the Department, or from other courses deemed appropriate by the Chair or Faculty Advisor.

Residence Requirement for the Minor: At least four upper-division courses must be successfully completed at UCI.

Graduate Degree Programs

MASTER OF SCIENCE IN CHEMISTRY OR MATHEMATICS WITH A TEACHING CREDENTIAL

In cooperation with the Departments of Chemistry and Mathematics, the Department of Education sponsors coordinated programs leading to the California Single Subject Teaching Credential and a Master of Science degree in Chemistry or Mathematics. Additional information is available from the Department of Education counseling office and the graduate affairs office in the Departments of Chemistry and Mathematics.

DOCTORAL DEGREE IN EDUCATIONAL ADMINISTRATION

The Department of Education, in cooperation with the Graduate School of Education and Information Studies at the University of California, Los Angeles, offers a program of part-time study leading to the Ed.D. degree in Educational Administration. The Ed.D. program aims to prepare outstanding educational leaders who are able to articulate and accomplish important improvements in educational practice while attending to the complex demographic, social, and economic challenges faced by K-12 education. The program emphasizes a range of social and behavioral science frameworks and research methodologies relevant to scholarship about schooling and thus provides a broad base of knowledge applicable to K-12 school leadership. Emphasis also is placed on using theory and research to select, orchestrate, and implement useful and effective educational practices.

Admission Requirements

Applicants submit transcripts, three letters of recommendation, and scores from the General Test of the Graduate Record Examination. Other requirements include samples of written work and demonstrated evidence of potential for leadership in school administration, educational policy, or other fields pertinent to school practice and educational scholarship.

Program of Study

The program is designed for full-time employed professionals. Course work is covered in three academic years and four summers of study prior to the dissertation. Eighty-eight quarter units are required. Students enroll for no more than eight units per quarter during the academic year. All courses are required, except that a student may petition to take a substitute course at UCLA. Students admitted to the program are expected to take all courses on schedule.

First-Year Requirements

First-year required courses. During the first year, the following courses covering fundamental issues in the study of educational leadership and school reform are required: First-Year Seminar (Education 259A); Issues in Educational Policy and Reform (Education 251); Organizational Theory, Planning, and Application (Education 271); Philosophy and Ethics of Educational Leadership (Education 272); Studies of Professional and Staff Development (Education 274B); Studies of School Finance and Political Economy (Education 276B); Studies of Diversity and Inequality in Education (Education 278B); Evaluation of Educational Programs (Education 281); Applications to Education of Social and Psychological Theories and Research Methods (Education 285B).

First-year comprehensive examination. At the end of the first year, a comprehensive examination evaluates student progress in acquiring the substantive knowledge and analytical skills which the program strives to impart. Students who do not pass the examination the first time are given one opportunity to retake it.

Second-Year Requirements

Second-year required courses. Second-year study, which begins in the second summer, involves four courses that round out the study of fundamental issues in leadership and reform: History of School Reform and Central Themes of the Current School Reform Movements (Education 250); Information and Communication Technologies for Administrators (Education 270); School Restructuring and Resource Allocation (Education 277B); Student Assessment (Education 273A).

In the second summer, students begin UCLA course work and take a UCLA course in each of the subsequent summers.

The balance of second-year course work focuses on (a) understanding fundamental perspectives on knowledge and theory, and (b) developing competency in the use of research and evaluation tools. These courses include: Functional, Interpretive, and Critical Analyses of Schooling (Education 260) and Research Applied to Administrative Practice (Education 279).

In addition, students take a three-quarter directed field research experience: Seminar in Field Research in Education (Education 290A-B-C) and Directed Field Research (Education 291A-B-C). A substantial research paper based on the field research is required at the end of the second year.

Third-Year Requirements

In the third year, students complete their study of research and evaluation tools with two courses: Applications to Education of Social and Psychological Theories and Research Methods (Education 285A) and Data Analysis in Education Research and Evaluation (Education 287). Students also spend the third year developing their dissertation proposals: Third-Year Seminar (Education 259B-C).

Oral Qualifying Examination. In the third year, students take an oral qualifying examination administered by a five-person Candidacy Committee. The examination consists of a review by the committee of the student's dissertation proposal and examination of the student's competence in areas specified in the proposal. Students who do not pass in the first attempt have one opportunity to retake the examination within three months.

Advancement to Candidacy

After the completion of all required courses, and passing the first-year written comprehensive examination and the oral qualifying examination, students will advance to candidacy.

Dissertation

Research and writing of the dissertation are undertaken in the fourth (and fifth, if necessary) year of the program. Students enroll in Dissertation Research (Education 299) once they begin their dissertation research. At the completion of the dissertation work, the doctoral committee conducts a final oral examination during which the candidate defends the dissertation.

Time Limits

The required program of study is designed to be completed on a part-time basis in four to five years. A leave of absence or other exception to the program of study will only be considered under special circumstances.

Courses in Education

50 Origins, Purposes, and Central Issues in K–12 Education (4) F. An introduction to the role of education in U.S. society and to central issues in K–12 education. Education is studied from four different perspectives: social, historical, philosophical, and political.

100 Educational Strategies for Tutoring and Teacher Aiding (4-4-4) F, W, S. Placement in a public elementary or secondary school to gain experience as a tutor or teacher aide. Emphasis on cognitive learning and the development of instructional strategies and resources which can be used in effective cross-age and cross-cultural experiences. Pass/Not Pass only. Formerly Education 100A-B-C.

101 Secondary School Curriculum (4) F. An introduction to the historical, philosophical, and legal antecedents of secondary school education. Emphasis on the contextual nature of schooling and how various influences and issues impact the school curriculum. National, state, and local standards regarding specific curricular areas are examined.

102A Methods of Teaching Languages other than English in the Secondary Schools (4) F. Prepares future teachers of foreign language or primary/home language. Emphasizes hands-on, practical strategies for communication-based instruction and authentic assessment, in reading, writing, listening, speaking, and culture.

102B Methods of Teaching Social Science in Secondary School (4) F. Theories, strategies, and methodologies related to the teaching of history and social science in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the History-Social Science Framework for California.

102C Methods of Teaching English in the Secondary School (4) F. Introduction to teaching reading, writing, and speaking skills in the secondary school. Emphasis upon an integrative approach to the teaching of literature, composition, and grammar consistent with the California State Framework. Practice in the design of lesson plans that are both integrated and cumulative.

102E Methods of Teaching Art in the Secondary Schools (4) F. Teaching strategies in the high school arts and crafts programs: skills appropriate to the high school student.

102F Methods of Teaching Mathematics in Secondary School (4) F. Theories, strategies, and methodologies related to the teaching of mathematics in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the Mathematics Framework for California and the recommendations of professional organizations.

102G Methods of Teaching Science in Secondary School (4) F. Theories, strategies, and methodologies related to the teaching of science in the secondary school. Emphasis on the planning, delivery, and assessment of lessons reflecting an understanding of the Science Framework for California and the recommendations of professional organizations.

102H Applied Instructional Strategies in Secondary Schools (1-1) W, S. Application of pedagogy and research to practice teaching experiences in the secondary schools. A continuation of the Education 102 series with an emphasis on the needs of students with culturally diverse backgrounds. In Progress grading. Pass/Not Pass only. Corequisites: Education 320A, B, C, D, and E.

103 Advanced Tutoring (4) S. Lectures/discussions and 40 hours public school experience provide advanced strategies for tutoring under-achieving pupils; guidance using case studies to examine a range of factors that contribute to public school failure among elementary, middle, and secondary pupils. Prerequisite: Education 100 or consent of instructor.

104A Teaching the Visual and Performing Arts and Physical Education in Elementary School (2) W. Issues and practice in integrating California curriculum frameworks topics in elementary visual and performing arts and physical education with an emphasis on multicultural and computer-based resources and teaching strategies in the elementary school.

104E Multimedia and the Arts in the Multicultural Classroom (4) S. Multiculturalism and underrepresented U.S. minorities and the visual and performing arts: perspectives in artistic perception, creative expression, historical and cultural context, and aesthetic valuing, and media literacy in the interpretation and production of multimedia arts products and applications for K–12 classrooms. Same as Studio Art 149. (VII-A)

105A Curriculum and Methods for Elementary School Reading (2-1-1) F, W, S. Teaching an integrated reading/language arts program in the elementary classroom. Implementing theories, principles, and methods which are research and reality-based. Creating a child-centered, language-rich program to meet needs of children in multicultural/multilingual settings. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

105B Reading and Writing in the Middle School and High School Classrooms (4) F. Emphasis is placed upon understanding the literacy processes (listening, speaking, thinking, reading, and writing) as they relate to all Single Subject areas. Teachers are guided to integrate literacy-related strategies with curriculum-based goals supported in the California State Frameworks.

106A Curriculum and Methods for Elementary School Reading for Intern Program (4) S, Summer. Teaching an integrated reading/language arts program in the elementary classroom. Implementing theories, principles, and methods which are research and reality-based. Creating a child-centered, language-rich program to meet needs of children in multicultural-multilingual settings. For students accepted into the Intern Program.

110A Curriculum and Methods for Elementary School Social Studies (1-1-1) F, W, S. Description, scope, sequence, and methods of teaching social studies and inquiry in grades K–8. Includes utilization of California State Framework for Teaching History/Social Science and addresses current aspects and trends in multicultural education. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

110B Curriculum and Methods for Elementary School Mathematics (1-1-1) F, W, S. Scope, sequence, and methods of teaching mathematics at all levels of elementary school. Presented through lectures, discussions, demonstrations, and exploration of a variety of materials. Covers how to plan lessons, motivate students, diagnose difficulties, and evaluate learning in mathematics. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

110C Curriculum and Methods for Elementary School Science (1-1-1) F, W, S. Prospective elementary teachers learn how to teach science in grades K–8. Covers State science requirements, a variety of teaching methods, criteria for selecting science curricular materials, and how to plan science lessons, units, experiments, projects, and demonstrations. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

110D Curriculum and Methods for Elementary School Language Arts (1-1-1) F, W, S. An integrated approach to language arts instruction at the K–8 level emphasizing tenets of California State English/Language Arts Framework. Focus on the concept of writing as a process and the role of the reading/writing connection in fostering critical thinking. Begins fall quarter and continues through winter and spring quarters with in-progress grading.

111A Curriculum and Methods for Elementary School Social Studies for Intern Program (3) S, Summer. Description, scope, sequence, and methods of teaching social studies and inquiry in grades K–8. Includes utilization of California State Framework for Teaching History/Social Science and addresses current aspects and trends in multicultural education. For students accepted into the Intern Program.

111B Curriculum and Methods for Elementary School Mathematics for Intern Program (3) S, Summer. Scope, sequence, and methods of teaching mathematics at all levels of elementary school. Presented through lectures, discussions, demonstrations, and exploration of a variety of materials. Covers how to plan lessons, motivate students, diagnose difficulties, and evaluate learning in mathematics. For students accepted into the Intern Program.

111C Curriculum and Methods for Elementary School Science for Intern Program (3) S, Summer. Prospective elementary teachers learn how to teach science in grades K–8. Covers State science requirements, a variety of teaching methods, criteria for selecting science curricular materials, and how to plan science lessons, units, experiments, projects, and demonstrations. For students accepted into the Intern Program.

111D Curriculum and Methods for Elementary School Language Arts for Intern Program (3) S, Summer. An integrated approach to language arts instruction at the K–8 level emphasizing tenets of California State English/Language Arts Framework. Focus on the concept of writing as a process and the role of the reading/writing connection in fostering critical thinking. For students accepted into the Intern Program.

114 Science Education Teacher Apprentice Field Experience (4-4). Students assist public school classroom teachers in laboratory demonstrations and experiments, tutoring individuals or small groups. Same as Chemistry 114.

124 Perspectives on Multicultural Education (4). Analysis of educational experiences of American minority groups (Hispanic, African-American, Asian/Pacific Islander, Native American) and women, and related social, cultural, language, and economic issues. Examination of ideas and realities of equity in view of theoretical, historical, and demographic considerations. NOTE: This course is a prerequisite for the CLAD/BCLAD emphasis. (VII-A)

140A Methods for Elementary Bilingual Teachers (4). Direct observation of bilingual classrooms in local elementary schools, classroom lectures, discussions, and presentations on the culture and language of the bilingual student. Prerequisite: Spanish 10B or equivalent. Same as Spanish 106A.

140B Methods for Secondary Teachers of Spanish (4). Communicative approaches to teaching Spanish at the secondary school level. Theory and practice of oral proficiency acquisition techniques. Requires field work. Emphasis placed on training differences for native versus nonnative Spanish speakers. Prerequisite: Spanish 10B or equivalent. Same as Spanish 106B.

150 Changing the High School Experience (4) S. Analysis of problems in high school education (e.g., student disengagement and underachievement of disadvantaged) and proposals for changing curriculum, instruction, and school organization. Students suggest own reforms and conduct research (including school observations and interviews) to inform their proposals.

152F Teaching Mathematics with Technology (4) W. A survey of the capabilities of mathematics software. Instructional design using technology in demonstration stations, lab explorations, workstations, and group work. Implications of the use of software to change the dynamics of teaching and learning of mathematics. Prerequisites: Mathematics 2A-B-C and Education 102F, or consent of instructor.

160 Practicum in After-School Learning and Inquiry (4) F, W, S. Prepares students to work with children in after-school, technology-based learning programs at community centers. This experiential learning with children then informs student inquiries on issues of multiculturalism, schooling, and literacy development as reported in weekly field notes. Corequisite: Education 160L. May be taken for credit three times. NOTE: This course can be substituted for Education 124 as a prerequisite for the CLAD/BCLAD emphasis. (with successful completion of Education 160L: VII-A)

160L Community Field Work (2) F, W, S. Community-based practicum. UCI students work with under-served children (ages 6–12) in after-school venues, assist with their literacy development through technology-based play and story-telling activities, and develop field notes including data from interviews with the children. Corequisite: Education 160. May be taken for credit three times.

162 Mainstreaming Special and General Education (4) F, W, S, Summer. Analysis of legal requirements and educational issues surrounding the integration of special and general education; framework and strategies for establishing mainstreaming teams of regular teachers, special education teachers, and school administrators; methods for teaching mainstreamed students in regular classrooms.

165 Theories and Research on First- and Second-Language Acquisition in School Contexts (4) Summer. Part of the CLAD Summer Seminar and Practicum. Provides BCLAD credential-emphasis candidates with a thorough grounding in theories and research on first- and second-language acquisition as they address issues of teaching and learning in school contexts. Corequisites: Education 166 and 167. Prerequisites: Education 124 and 173. Limited to students accepted into the Teacher Credential Program.

166 Methodology of Bilingual, English Language Development (ELD), and Specially Designed Academic Instruction in English (SDAIE) (4) Summer. Part of the CLAD Summer Seminar and Practicum. Focuses on methods, implementation issues, and program models for bilingual or primary language instruction, English language development (ELD) and ESL, LEP assessment, and Specially Designed Academic Instruction in English (SDAIE). Corequisites: Education 165 and 167. Prerequisites: Education 124 and 173. Limited to students accepted into the Teacher Credential Program.

167 Practicum in Cultural Studies and Field Experiences in Diverse School and Community Settings (4) Summer. The Practicum of the CLAD Summer Seminar. Presents BCLAD candidates with hands-on applications for research, cross-cultural inquiry, and service, through community experiences that should increase their understanding of the cultural factors that affect students' school success and learning. Corequisites: Education 165 and 166. Prerequisites: Education 124 and 173. Limited to students accepted into the Teacher Credential Program.

172F Learning Mathematics: Theory and Practice (4) S. Application of cognitive theories to issues in mathematics learning and instruction. Attention given to representation of mathematical knowledge, skill acquisition, and approaches to problem solving.

173 Learning Theory and Classroom Practices (4) F, W, S, Summer. Theories of development, learning, personality, and motivation are applied to understanding children and adolescents of all cultural, linguistic, and socioeconomic backgrounds; formulation of teaching and learning strategies, including those using the Internet and World Wide Web; performance-based assessment; classroom management. Note: Prerequisite for teacher credential program and for CLAD/BCLAD emphasis.

174 Observation and Literacy Assessment in Diverse Schools (3) F. Future teachers engage in independent inquiry, research, observation, and personal interactions as they collaborate on field assessment projects with community organizations representing diverse cultural, linguistic, ethnic, and racial groups.

175 Foundations of Education (4). Foundational questions of education are viewed from newly emerging developmental perspectives which treat cognition as embodied action and learning as cultural recapitulation. Historical, sociological, psychological, and philosophical implications of these views toward various aspects of teaching, learning, curriculum, and pedagogy are considered.

176 Psychology of Learning, Abilities, and Intelligence (4) S. Overview of classic positions on the mind, human abilities, and intelligence, especially as related to academic achievement. Contrasting views: psychometric versus information processing; experimental versus correlational research. Prerequisite: introductory course in psychology, or consent of instructor. This course may substitute for Education 173 as a prerequisite for the teacher credential program.

179 Advanced Composition for Teachers (4). Principles of formal composition and problems of teaching. Selecting handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. Same as English and Comparative Literature WR179.

180 Preparation for Intern Teaching in the Secondary Schools (4) S. Secondary curriculum and methodology, including instructional planning, teaching strategies, classroom management, evaluation, cultural and linguistic considerations and interpersonal skills. Application of these to fieldwork experience for intern candidates in preparation for responsibilities assumed during internship year.

183 Preparation for Intern Teaching in the Elementary Schools (4) S. Elementary curriculum and methodology, including instructional planning, teaching strategies, classroom management, evaluation, cultural and linguistic considerations, and interpersonal skills. Application of these to field work experience for intern candidates in preparation for responsibilities assumed during internship year.

184A Directed Field Experiences (4) S. Required for admission to the Teacher Intern Program. Assignment in public schools, working with children of varied ethnic and racial backgrounds, noting education as a bridge between cultures.

199 Individual Study (1 to 4 per quarter) F, W, S, Summer. Intensified advanced study in areas in which a student has considerable background, under the direction of a faculty member who will guide and evaluate the study.

250 History of School Innovations and Current School Reform Movements (4). Offers an analysis of major school reform movements, both ongoing and those from the past century. Study of the underlying dynamics affecting the interrelationship between schools and society and the implications of these relationships. Limited to doctoral and/or Professional Administrative Services Credential students.

251 Issues in Educational Policy and Reform (4). An in-depth study of topics relevant to educational reform and policy-making. Topics include: the policy-making process, the role of values and interest groups, policy analysis, equality of educational opportunity, systemic reform, implementation, and politics at the school site. Open to doctoral students only.

259A First-Year Seminar (2 to 4). Graduate seminar for entering Ed.D. students. Employment of skills such as conducting literature reviews, types and styles of writing, use of the Internet. Also examines different issues related to educational research and methodologies. Open to doctoral students only.

259B-C Third-Year Seminar (2-2). Graduate seminar for third-year Ed.D. students; focus on designing and defending dissertation proposals. Includes faculty colloquia on various topics related to advanced research design and data analysis, educational theory, practice, and policy. Open to doctoral students only.

260 Functional, Interpretive, and Critical Analyses of Schooling (4). Understanding the processes of schooling from functional, interpretive, and critical perspectives. Study of paradigms in educational administration research and practice. Review of conceptual orientation to the study of educational administration. History of the knowledge base of educational administration. Open to doctoral students only.

270 Information and Communication Technologies for Administrators (4) S. Provides practical and intellectual expertise about instructional software, video and multimedia technologies, computer literacy education, electronic communication networks, and technology for school and district administration. Limited to doctoral and/or Preliminary Administrative Services Credential students.

271 Organizational Theory, Planning, and Application (4) F. Basic theories, attributes, and functions of human organizations. Understanding and managing the dynamics of group behavior and human relations. Structuring and leading groups in a variety of organizational settings. Application of organizational theories to central issues in K-12 education. Limited to doctoral and/or Professional Administrative Services Credential students.

272 Philosophy and Ethics of Educational Leadership (4). Philosophy, ethics, and moral values of educational leadership for school administrators. Theory and philosophy of educational change. Research about ethical and moral leadership in schools. Limited to doctoral and/or Professional Administrative Services Credential students.

273A Student Assessment (2). Purposes for conducting educational assessment. Overview of new assessments, including complex constructed responses, portfolios, other "authentic" measurements. How assessment can help to monitor and strengthen educational programs and inform educational policy. Limited to doctoral and/or Professional Administrative Services Credential students.

274A Professional and Staff Development (2) F. Strategies for developing staff development programs. Application of knowledge, management skills, and instructional strategies associated with adult learners. Means of integrating organizational goals and programs for adult learning performance. Alternative approaches to enhance professional and staff development; time constraints and financing staff development programs. Limited to doctoral and/or Professional Administrative Services Credential students.

274B Studies of Professional and Staff Development (4). Research and theory of effective strategies for professional and staff development. Topics include: adult learning as related to professional growth of teachers, staff development as vehicle for systemic reform, reforms to enhance teacher professionalization and empowerment. Limited to doctoral and/or Professional Administrative Services Credential students.

275A School Law and Political Relations (2) W. Legal framework of schools and public education. Political jurisdictions affecting educational policy and control. Political and sociological forces directly and indirectly affecting school practices. Theory of individual and group dynamics in achieving compromise, consensus, and coalitions to achieve educational goals. Limited to doctoral and/or Preliminary Administrative Services Credential students.

276A Fiscal Management at the Site and District Level (2) F. Organizations and management of financial and business operations. Funding sources and problems affecting financing at State and local levels. Business office operations, utilizations of personnel, budget preparation, financial management strategies and control, analysis of financial effects of contractual obligations. Identification of appropriate computer technology. Limited to doctoral and/or Preliminary Administrative Services Credential students.

276B Studies of School Finance and Political Economy (2 to 4). Fundamental fiscal concepts applied to schooling. Topics include equity and inequalities in resource allocation, public school revenue sources and expenditure patterns, the politics of school finance, public versus private-sector supply of schooling, and the supply and demand for teachers. Doctoral students only.

277A Management of Human and Material Resources (2). Concepts, theories, and application for the development and management of human resources. Effective staff utilization patterns in consideration of personnel competencies, organizational constraints, and available resources. Emerging considerations in developing and implementing effective personnel policies. Short- and long-term planning for filling personnel needs. Limited to doctoral and/or Preliminary Administrative Services Credential students.

277B School Restructuring and Resource Allocation (2 to 4). Concepts and research on school change at the site level. Topics include: structure and use of physical environment, organization of school day and use of time, use of teachers and other staff, changes in governance and school-community relations. Doctoral students only.

278A Cultural and Socioeconomic Diversity (2). Contemporary issues of cultural and socioeconomic diversity in public education. Ethnic, racial, and religious composition of the State and local community. Concepts of cultural values and language diversity. Programs and procedures for meeting instructional needs of limited English proficient pupils. Principles and procedures for involving the family in school activities. Limited to doctoral and/or Preliminary Administrative Services Credential students.

278B Studies of Diversity and Inequality in Education (2 to 4). Study of relationships between individual diversity, social inequality, and education. How differences in socioeconomic status, race, culture, and gender translate in the educational process and affect educational outcomes. Addresses issues such as educational access, social mobility, and social reproduction. Limited to doctoral and/or Professional Administrative Services Credential students.

279 Research Applied to Administrative Practice (4). Examination of research strategies pertinent to administrative decision-making in education. Includes attention to quantitative and qualitative research methods, experimental design, sampling techniques, questionnaire and interview construction, observation methods, data analysis and interpretation. Special attention to nonexperimental and quasi-experimental research designs. Doctoral students only.

280 Special Topics in Education (4). Provides practitioners at the advanced degree level with insight and leadership skills for working with increasingly diverse school populations. Content varies with interest of the students and instructors. May focus on specific populations or broader content area such as education reform in California. Doctoral students only. May be taken for credit three times as topics vary.

281 Evaluation of Educational Programs (4). Alternative approaches to formative and summative evaluation of educational programs. Standards for effective evaluations. Epistemological, political, and practical issues in designing and conducting evaluations. Students critique specific studies relevant to educational administration and policy-making and design an evaluation. Corequisite: Education 279. Doctoral students only.

285A-B Applications to Education of Social and Psychological Theories and Research Methods (4-4). Sociological and psychological theories and research applicable to issues facing school administrators. Theories of learning and of individual, social, and organizational behavior. Research about social context of schools, human development, cognition, motivation. Studies of student behavior, classroom practices, school organization. Prerequisite: Education 279 and 281. Doctoral students only.

287 Data Analysis in Education Research and Evaluation (4). Instruction and practice in statistical aspects of survey-based evaluations and quantitative research in education. Includes sampling, coding open-ended information, data management, scale construction, statistical analysis, and presentation of findings. Students analyze two data sets—a district-based evaluation and a national survey—using SPSS. Prerequisites: Education 279 and 281. Doctoral students only.

290A-B-C Seminar in Field Research in Education (1-1-1). Addresses conceptual frameworks and literature relevant to effective school leadership and management. Focus on identifying, carrying out, analyzing and interpreting field research in education toward the purpose of improving school practice. Prerequisite: concurrent enrollment in 291A-B-C. Doctoral students only.

291A-B-C Directed Field Research in Educational Administration (3-3-3). Research in settings such as school sites, districts, county departments of education, and other K-12 educational agencies. Integration of educational administration knowledge with a range of analytic tools in designing and conducting a significant field research project. Corequisite: concurrent enrollment in Education 290A-B-C. Doctoral students only.

298 Individual Study (2 to 8). Individual research on topics related to educational leadership and practice. Taken in addition to regular Ed.D. course of study. Does not fulfill degree requirements. May be repeated for credit for a total of 24 units.

299 Dissertation Research (4 to 8) F, W, S. Specifically designed for students researching and writing their dissertations. Doctoral students only. Satisfactory/Unsatisfactory only. May be taken for credit three times.

300A-B-C-D-E Student Teaching in the Elementary School (4-4-4-4-4) W, S. Student teaching experiences including orientation, seminars, and preparation for and assumption of classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with second semester of public school calendar. Education 300A-B is for 10 weeks, four days a week; Education 300C-D-E is for 10 weeks, five days a week until the end of the public school year.

300F Elementary Student Teaching: Special Assignment (4). Student teaching assignment by special arrangement with program coordinator and the director.

301A Instructional Technology: Resources for the Multiple Subject Classroom (2). Issues and techniques in uses of computer-based and media technologies in the multiple subject classroom: social implications and professional responsibilities, productivity tools to enhance student thinking skills, and strategies for instruction and management. Corequisite: Education 301LA.

301LA Multiple Subject Technology Resources Laboratory (1). Instruction and practice in operations, terminology, and capabilities of computer, audio, video, and instructional television hardware, software, and system components and other media for multiple subject classroom applications. Corequisite: Education 301A.

301B Instructional Technology: Applications in the Multiple Subject Classroom (1). Advanced methods and teaching strategies, focusing on the integration of computer-based applications in multiple subject classroom. Corequisite: Education 301LB. Prerequisites: Education 301A and 301LA.

301LB Multiple Subject Technology Applications Laboratory (1). Advanced instruction and practice in methods and teaching strategies for the integration of computer-based applications in the multiple subject classroom. Corequisite: Education 301B. Prerequisites: Education 301A and 301LA.

301C Instruction in Computer-Based Technology and Classroom Usage (5). Classroom uses of computer-based technologies. Includes study of hardware and software systems and components. Emphasizes computer-based technologies as tools to enhance student thinking skills, for instruction in subject areas at proper grade levels, and in management programs.

302A Instructional Technology: Resources for the Single Subject Classroom (2). Issues and techniques in uses of computer-based and media technologies in the single subject classroom: social implications and professional responsibilities, productivity tools to enhance student thinking skills, and strategies for instruction and management. Corequisite: Education 302LA.

302LA Single Subject Technology Resources Laboratory (1). Instruction and practice in operations, terminology, and capabilities of computer, audio, video, and instructional television hardware, software, and system components and other media for single subject classroom applications. Corequisite: Education 302A.

302B Instructional Technology: Applications in the Single Subject Classroom (1). Advanced methods and teaching strategies, focusing on the integration of computer-based applications in single subject classroom. Corequisite: Education 302LB. Prerequisites: Education 302A and 302LA.

302LB Single Subject Technology Applications Laboratory (1). Advanced instruction and practice in methods and teaching strategies for the integration of computer-based applications in the single subject classroom. Corequisite: Education 302B. Prerequisites: Education 302A and 302LA.

310A-B-C-D-E-F-G-H-I Intern Teaching in the Elementary School: Multiple Subject Instruction (4-4-4-4-4-4-4-4-4) F, W, S. Must be admitted to the UCI Department of Education and offered an intern teacher contract from a cooperating school district. Prerequisite: Professional Program in Education.

320A-B-C-D-E Student Teaching in Intermediate/Secondary School (4-4-4-4) W, S. Student teaching experience to include orientation, seminars, and preparation for and assumption of secondary school classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Education 320A-E is five days a week for a full second semester of the public school year.

320F Secondary Student Teaching: Special Assignment (4). Student teaching experience by special arrangement with the program coordinator and the director.

330A-B-C-D-E-F-G-H-I Intern Teaching in the Secondary School: Single Subject Instruction (4-4-4-4-4-4-4-4-4) F, W, S. Must be admitted to the UCI Department of Education and offered an intern teacher contract from a cooperating school district. Prerequisite: Professional Program in Education.

354 Governance, Organization, and Administration of Public Schools (4). Political, social, and economic forces affecting public school systems. Concepts of authority, power, and influence. Federal, State, and County mandates and policies, funding requirements, court decisions and other influences including school boards, administrators, unions, professional organizations, and pressure groups. Open to Preliminary Administrative Services Credential students only.

355 School Management in a Community Setting (4). School management, problem solving, decision making. Role of staff, community (including minorities) in assessing needs, establishing/implementing action plans. Management of support systems, internal/external communications, application of information technology. Conflict resolution, stress management, school site councils, community relations, parent involvement. Open to Preliminary Administrative Services Credential students only.

370A-B-C Supervised Teaching in Bilingual Education, Elementary (4-4-4) F, W, S. Student teaching experiences in bilingual public school classrooms to include orientation, regular seminars, and preparation for bilingual classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Prerequisites: Education 165, 166, and 167; open only to teacher credential students.

370D-E-F Supervised Teaching in Bilingual Education, Secondary (4-4-4) F, W, S. Student teaching experiences in bilingual public school classrooms to include orientation, regular seminars, and preparation for bilingual classroom instructional responsibilities in accordance with State credentialing requirements and in conjunction with the public school calendar. Prerequisites: Education 165, 166, and 167; open only to teacher credential students.

380 Health Education for Teachers (4). Fulfills State requirements for teachers in the area of health education. Includes an introduction to the health status of the elementary and secondary child, school health services, special health concerns, CPR training, and health resources.

390 Curriculum Design and Management in Public Schools (4). Historical and contemporary principles of curriculum development. Basis for curriculum decisions: theories and techniques of curriculum planning. Development of educational programs: multicultural and socioeconomic considerations, evaluation, and staff development. Principles of curricular alignment including delivery, materials, and assessment. Open to Preliminary Administrative Services Credential students only.

391 Educational Leadership (4). Theories of leadership, organizational behavior, judgment, and decision making. Comparison of management and leadership perspectives. Role of the leader in various contexts. Analysis of approaches to issues such as decentralization, the change process, and student rights. Open to Preliminary Administrative Services Credential students only.

397A-B Supervised and Administrative Field Work (4-4). A field experience in administration or supervision in the public school. The school district, student, and UCI jointly plan the work experience, its supervision, and accompanying academic work. Open to Preliminary Administrative Credential students only.

397D-E-F Professional Field Experience (4-4-4) Theory and practice in a school setting under the supervision of a practicing school administrator. Opportunity to apply and refine knowledge and skills in areas of primary interest or need in the educational domains specified for this credential. Open to Professional Administrative Credential students only.

398 Special Topics (1 to 4). Meets the induction and program planning requirements for students enrolled in the Professional Administrative Services Credential. Also serves as the final course in the program, wherein the candidate, the University instructor, and a representative of the involved school district assess and evaluate candidate competency. Open to Professional Administrative Services Credential candidates only. May be taken for credit twice.

399 University Teaching (1 to 4) F, W, S, Summer. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

SCHOOL OF ENGINEERING

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- James C. Earthman, Ph.D. Stanford University, *Associate Professor of Chemical and Biochemical Engineering and Orthopaedic Surgery*
- Donald K. Edwards, Ph.D. University of California, Berkeley, *Professor Emeritus of Mechanical and Aerospace Engineering, Registered Professional Engineer*
- Said E. Elghobashi, Ph.D. Imperial College, University of London, *Department Chair and Professor of Mechanical and Aerospace Engineering*
- Maria Q. Feng, Ph.D. University of Tokyo, *Associate Professor of Civil Engineering*
- Leonard Ferrari, Ph.D. University of California, Irvine, *Professor Emeritus of Electrical and Computer Engineering*
- Carl A. Friehe, Ph.D. Stanford University, *Professor of Mechanical and Aerospace Engineering and of Earth System Science*
- Daniel D. Gajski, Ph.D. University of Pennsylvania, *Professor of Information and Computer Science and of Electrical and Computer Engineering*
- Hideya Gamo, D.Sc. University of Tokyo, *Professor Emeritus of Electrical and Computer Engineering*
- Julius M. Gardin, M.D. University of Michigan, Ann Arbor, *Chief of Cardiology and Professor of Medicine (Cardiology) and of Electrical and Computer Engineering*
- Steven C. George, Ph.D. University of Missouri, Ph.D. University of Washington, *Assistant Professor of Chemical and Biochemical Engineering*
- Stanley B. Grant, Ph.D. California Institute of Technology, *Associate Professor of Environmental Engineering*
- Michael M. Green, Ph.D. University of California, Los Angeles, *Associate Professor of Electrical and Computer Engineering*
- Gary L. Guymon, Ph.D. University of California, Davis, *Professor Emeritus of Civil Engineering, Registered Professional Engineer*
- Medhat A. Haroun, Ph.D. California Institute of Technology, *Professor of Civil Engineering, Registered Professional Engineer*
- G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology and Molecular Genetics, Biological Sciences, and Biochemical Engineering*
- Glenn E. Healey, Ph.D. Stanford University, *Associate Professor of Electrical and Computer Engineering*
- Daniel Hirschberg, Ph.D. Princeton University, *Professor of Information and Computer Science and of Electrical and Computer Engineering*
- Juan Hong, Ph.D. Purdue University, *Professor of Chemical and Biochemical Engineering and of Microbiology and Molecular Genetics*
- Faryar Jabbari, Ph.D. University of California, Los Angeles, *Associate Professor of Mechanical and Aerospace Engineering*
- R. (Jay) Jayakrishnan, Ph.D. University of Texas at Austin, *Associate Professor of Civil Engineering*
- K. H. (Kane) Kim, Ph.D. University of California, Berkeley, *Professor of Electrical and Computer Engineering and of Information and Computer Science*
- Fadi Kurdahi, Ph.D. University of Southern California, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science*
- Tomas Lang, Ph.D. Stanford University, *Professor of Electrical and Computer Engineering and of Information and Computer Science*
- John C. LaRue, Ph.D. University of California, San Diego, *Associate Dean for Student Affairs of the School of Engineering and Associate Professor of Mechanical and Aerospace Engineering*
- Enrique J. Lavernia, Ph.D. Massachusetts Institute of Technology, *Department Chair and Professor of Chemical and Biochemical Engineering and Materials Science and Professor of Mechanical and Aerospace Engineering*
- Chin C. Lee, Ph.D. Carnegie-Mellon University, *Professor of Electrical and Computer Engineering*
- Henry P. Lee, Ph.D. University of California, Berkeley, *Associate Professor of Electrical and Computer Engineering*
- Guann Pyng Li, Ph.D. University of California, Los Angeles, *Professor of Electrical and Computer Engineering*
- Henry C. Lim, Ph.D. Northwestern University, *Professor of Chemical and Biochemical Engineering and of Microbiology and Molecular Genetics*
- Kwei-Jay Lin, Ph.D. University of Maryland, *Professor of Electrical and Computer Engineering and of Information and Computer Science*
- Feng Liu, Ph.D. Princeton University, *Associate Professor of Mechanical and Aerospace Engineering*
- J. Michael McCarthy, Ph.D. Stanford University, *Professor of Mechanical and Aerospace Engineering*
- Michael G. McNally, Ph.D. University of California, Irvine, *Associate Professor of Civil and Environmental Engineering*
- Kenneth D. Mease, Ph.D. University of Southern California, *Associate Professor of Mechanical and Aerospace Engineering*
- Martha L. McCartney, Ph.D. Stanford University, *Associate Professor of Materials Science and Engineering*
- Farghalli A. Mohamed, Ph.D. University of California, Berkeley, *Professor of Materials Science Engineering*
- Orhan Nalcioğlu, Ph.D. University of Oregon, *Professor of Radiological Sciences, Medicine, Electrical and Computer Engineering, and Physics*
- Richard D. Nelson, Ph.D. Michigan State University, *Adjunct Professor of Electrical and Computer Engineering*
- Alexandru Nicolau, Ph.D. Yale University, *Professor of Information and Computer Science and of Electrical and Computer Engineering*
- Terese M. Olson, Ph.D. California Institute of Technology, *Associate Professor of Civil and Environmental Engineering*
- Melissa E. Orme, Ph.D. University of Southern California, *Associate Professor of Mechanical and Aerospace Engineering*
- Dimitri Papamoschou, Ph.D. California Institute of Technology, *Associate Professor of Mechanical and Aerospace Engineering*
- Gerard C. Pardo, Ph.D. Stanford University, *Professor of Civil Engineering, Registered Professional Engineer*

Roger H. Rangel, Ph.D. University of California, Berkeley, *Professor of Mechanical and Aerospace Engineering, and of Chemical and Biochemical Engineering and Materials Science*

Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil Engineering and Director, Institute of Transportation Studies*

Amelia C. Regan, Ph.D. University of Texas, Austin, *Assistant Professor of Civil Engineering*

Stephen G. Ritchie, Ph.D. Cornell University, *Department Chair and Professor of Civil Engineering*

G. Scott Samuelsen, Ph.D. University of California, Berkeley, *Professor of Mechanical, Aerospace, and Environmental Engineering, Registered Professional Engineer*

Brett F. Sanders, Ph.D. University of Michigan, Ann Arbor, *Assistant Professor of Civil and Environmental Engineering*

Jan Scherfig, Ph.D. University of California, Berkeley, *Professor Emeritus of Civil Engineering, Registered Professional Engineer*

Isaac Scherson, Ph.D. Weizman Institute of Science, *Professor of Information and Computer Science and Electrical and Computer Engineering*

Roland Schinzinger, Ph.D. University of California, Berkeley, *Professor Emeritus of Electrical and Computer Engineering, Registered Professional Engineer*

William E. Schmitendorf, Ph.D. Purdue University, *Associate Dean for Academic Affairs of the School of Engineering and Professor of Mechanical and Aerospace Engineering*

Robin Shepherd, Ph.D. University of Canterbury; D.Sc. University of Leeds, *Professor Emeritus of Civil Engineering, Registered Professional Engineer*

Phillip C.-Y. Sheu, Ph.D. University of California, Berkeley, *Professor of Electrical and Computer Engineering and of Information and Computer Science*

Frank G. Shi, Ph.D. California Institute of Technology, *Assistant Professor of Chemical and Biochemical Engineering and Materials Science*

Athanasios Sideris, Ph.D. University of Southern California, *Associate Professor of Mechanical and Aerospace Engineering*

William A. Sirignano, Ph.D. Princeton University, *Professor of Mechanical and Aerospace Engineering, and of Chemical and Biochemical Engineering and Materials Science*

Harry Skinner, M.D. University of South Carolina, Ph.D. University of California, Berkeley, *Department Chair and Professor of Orthopaedic Surgery, and Professor of Mechanical and Aerospace Engineering*

Jack Sklansky, D.Sc. Columbia University, *Professor Emeritus of Electrical and Computer Engineering, Registered Professional Engineer*

Keyue M. Smedley, Ph.D. California Institute of Technology, *Assistant Professor of Electrical and Computer Engineering*

Gregory J. Sonek, Ph.D. Cornell University, *Associate Professor of Electrical and Computer Engineering*

Allen R. Stubberud, Ph.D. University of California, Los Angeles, *Department Chair and Professor of Electrical and Computer Engineering, Registered Professional Engineer*

Tatsuya Suda, Ph.D. Kyoto University, *Professor of Information and Computer Science and of Electrical and Computer Engineering*

Harry H. Tan, Ph.D. University of California, Los Angeles, *Associate Professor of Electrical and Computer Engineering*

Edriss S. Titi, Ph.D. Indiana University, *Professor of Mathematics and of Mechanical and Aerospace Engineering*

Chen S. Tsai, Ph.D. Stanford University, *Professor of Electrical and Computer Engineering*

Wei Kang (Kevin) Tsai, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Electrical and Computer Engineering*

Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Professor of Civil Engineering, Registered Professional Engineer*

Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Vice Chancellor for Research and Dean of Graduate Studies, and Professor of Mathematics and Mechanical and Aerospace Engineering*

Thomas K. Wood, Ph.D. North Carolina State University, *Assistant Professor of Biochemical and Environmental Engineering*

Jann N. Yang, D.Sc. Columbia University, *Professor of Civil Engineering, Registered Professional Engineer*

Lecturers

Syed Ahmed, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*

Shawn R. Akins, B.S. University of California, Irvine, *Lecturer in Civil Engineering, Registered Professional Engineer*

Donald J. Barrus, B.S. Tulane University, *Lecturer in Mechanical and Aerospace Engineering, Registered Professional Engineer*

Harut Barsamian, M.S. Polytechnique Institute (Armenia), *Lecturer in Electrical and Computer Engineering*

Dirk Bondy, M.S. University of California, Berkeley, *Lecturer in Civil Engineering*

Robert C. Carden, IV, Ph.D. University of California, San Diego, *Lecturer in Electrical and Computer Engineering*

Maqsood Chaudhry, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*

Gerard Coutu, Ph.D. University of Connecticut, *Lecturer in Electrical and Computer Engineering*

Jean Pierre Delplanque, *Lecturer in Mechanical and Aerospace Engineering*

David J. Dimas, Ph.D. University of California, Irvine, *Lecturer in Mechanical and Aerospace Engineering*

Eugene J. Evancoe, M.S. University of California, Berkeley, *Lecturer in Mechanical and Aerospace Engineering*

L. James Ewing, Jr., M.S. University of California, Irvine, *Lecturer in Civil and Environmental Engineering, Registered Professional Engineer*

Joseph W. Foraker, M.S. University of Kansas, *Lecturer in Engineering*

Alireza Kavianpour, Ph.D. University of Southern California, *Lecturer in Electrical and Computer Engineering*

Max D. Lechtman, Ph.D. University of Southern California, *Lecturer in Civil Engineering*

Jeffrey S. Munic, M.S. University of Southern California, *Lecturer in Civil Engineering*

Scott Napp, Ph.D. University of California, Irvine, *Lecturer in Chemical and Biochemical Engineering*

Hai N. Phan, M.S. California State University, Fullerton, *Lecturer in Mechanical and Aerospace Engineering*

Ayman E. Salama, Ph.D. University of California, Irvine, *Lecturer in Civil Engineering*

Mohammed S. Santana, Ph.D. University of California, Irvine, *Lecturer in Electrical and Computer Engineering*

W. H. Scholz, Ph.D. University of Oklahoma, *Lecturer in Civil Engineering*

Michael Schroter, Ph.D., *Lecturer in Electrical and Computer Engineering*

John G. Stupar, E.M.B.A. Claremont Graduate School, *Lecturer in Engineering*

Overview

The School of Engineering provides a stimulating academic environment for individuals interested in the application of science and the development of new technology for the benefit of society. Academic study combined with individual and group research projects prepare students for the professional practice of engineering. Programs of study at all levels emphasize fundamental principles in order to provide the basis for lifelong professional development as technology continues to evolve.

The School offers undergraduate majors in Aerospace Engineering (AE), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Electrical Engineering (EE), Engineering (a general program, GE), Environmental Engineering (EnE), and Mechanical Engineering (ME). The majors in Aerospace, Chemical, Civil, Computer, Electrical, and Mechanical Engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

Aerospace Engineering considers the flight characteristics, performance, and design of aircraft and spacecraft. An upper-division series of courses in aerodynamics, propulsion, structures, and control follows a common core with Mechanical Engineering. The skills acquired in those courses are integrated in the capstone aerospace design course. The intent of the program is to produce highly proficient engineers who can tackle the aerospace engineering challenges of the future. See pages 180–185.

Chemical Engineering applies the knowledge of chemistry, mathematics, physics, biology, and humanities to solve societal problems in areas such as energy, health, the environment, food, textiles, shelter, and materials. Employment opportunities exist in various industries such as chemical, petroleum, polymer, pharmaceutical, food, textile, fuel, consumer products, and materials. See pages 160–163.

Civil Engineering addresses the challenges of large-scale engineering projects of importance to society as a whole, such as water distribution, transportation, and building design. Specializations are provided in Structural, Transportation, and Water Resources and Environmental Engineering. See pages 165–169.

Computer Engineering addresses the design and analysis of digital computers, including both software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, design automation, system software, and data structures and algorithms. Courses include programming in high-level languages such as Pascal, C, FORTRAN; use of software packages for analysis and design; design of system software such as editors, compilers, debuggers, and operating systems; application of computers in solving engineering problems, and laboratories in both hardware and software experiences. See pages 172–178.

Electrical Engineering is one of the major contributors to the modernization of our society. Many of the most basic and pervasive products and services are either based on or related to the scientific and engineering principles taught at the Department of Electrical and Computer Engineering. Students can specialize in three general areas of studies—Electro-optics and Solid-State Devices, Power Systems, and Systems and Signal Processing—all at the forefront of technological advancement. See pages 172–178.

The major in **Engineering** is a special program of study for upper-division students who wish to combine the study of engineering principles with other areas such as the physical and biological sciences, social and behavioral science, humanities, and arts. Students may construct their own specialization. See pages 155–157.

Environmental Engineering concerns the development of strategies to control and minimize pollutant emissions, to treat waste, and to remediate polluted natural systems. Emphasis areas include air quality and combustion, water quality, and water resources engineering. See pages 165–169.

Mechanical Engineering considers the design, control, and motive power of machinery ranging from household appliances to spacecraft. Specializations allow students to focus their technical electives in the areas of Aerospace Engineering, Combustion/ Propulsion, Heat Transfer/Fluid Mechanics, Materials Science and Engineering, and Mechanical Systems. See pages 180–185.

Graduate study is offered leading to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering; Civil Engineering; Electrical and Computer Engineering, with concentrations in Electrical Engineering, Computer Networks and Distributed Computing, and Computer Systems and Software; Engineering, with concentrations in Environmental Engineering, Materials Science and Engineering, and Protein Engineering Science; and Mechanical and Aerospace Engineering. Specialized research opportunities are available within each of these programs. Bioreaction and bioreactor engineering, recombinant cell technology, and bioseparation processes are research areas in Biochemical Engineering. In Civil Engineering, research opportunities are provided in structural/ earthquake engineering, reliability engineering, transportation systems engineering, environmental engineering, and water resources. Research opportunities in Electrical and Computer Engineering are available in the areas of parallel and distributed computer systems, VLSI design, computer architecture, image and signal processing, communications, control systems, and optical and solid-state devices. Research in combustion and propulsion sciences, laser diagnostics, supersonic flow, direct numerical simulation, computer-aided design, robotics, control theory, parameter identification, material processing, electron microscopy, and ceramic engineering are all available in Mechanical and Aerospace Engineering.

Additional publications describing undergraduate and graduate academic study and research opportunities are available through the School of Engineering, and the Departments of Chemical and

Biochemical Engineering and Materials Science, Civil and Environmental Engineering, Electrical and Computer Engineering, Mechanical and Aerospace Engineering, and the graduate program in Protein Engineering.

DEGREES

Aerospace Engineering	B.S.
Chemical and Biochemical Engineering	M.S., Ph.D.
Chemical Engineering	B.S.
Civil Engineering	B.S., M.S., Ph.D.
Computer Engineering	B.S.
Electrical and Computer Engineering	M.S., Ph.D.
Electrical Engineering	B.S.
Engineering	B.S., M.S., Ph.D.
Environmental Engineering	B.S.
Mechanical and Aerospace Engineering	M.S., Ph.D.
Mechanical Engineering	B.S.

UNDERGRADUATE STUDY

Undergraduate Student Affairs Office
101 Engineering and Computing Trailer; (949) 824-4334
John LaRue, Associate Dean

PLANNING A PROGRAM OF STUDY

Advising

Academic advising is available from academic counselors and peer advisors in the School's Undergraduate Student Affairs Office, 101 Engineering and Computing Trailer, and from faculty advisors. *Students must realize, however, that ultimately they alone are responsible for the planning of their own program and for satisfactory completion of the graduation requirements.* Students are encouraged to consult with the academic counselors in the Engineering Undergraduate Student Affairs Office whenever they desire to change their program of study. All Engineering majors are required to meet with their faculty advisor at least once each year.

It is not uncommon for engineering students to need *more than four years* to obtain their B.S. degree, particularly if part-time employment or extracurricular activities make heavy demands on their time. Occasionally students can stay on track by enrolling in summer sessions at UCI or at other institutions when a petition has been approved in advance.

High-achieving students may declare a double major. Early consultation with the School is advisable.

Required courses may be replaced by other courses if the student substantiates the merits of the program of study and obtains prior approval from faculty in the School.

Students should be aware that most Engineering courses require the completion of prerequisites. The sample programs shown in each departmental description constitute preferred sequences which take into account all prerequisites. Students must complete all of the required lower-division courses in the freshman and sophomore years in order to enroll in any upper-division Engineering course.

School of Engineering policy does not permit the addition of Engineering courses after the third week or deletion of Engineering courses after the sixth week of the quarter. Individual instructors may have more stringent add/drop policies; students should request a statement of the instructor's policy at the beginning of each quarter's class.

Qualified undergraduate students who have high academic standing, who have completed the necessary prerequisites, and who have obtained permission from the School's Undergraduate Studies Committee may take certain graduate-level courses.

Students are required to complete UCI's lower-division writing requirement (see the Requirements for a Bachelor's Degree section) during the first two years. Thereafter, proficiency in writing and computing (using a higher-level language such as BASIC, FORTRAN, C, C++, and/or Pascal) is expected in all Engineering courses.

Students in the School of Engineering, in accordance with general campus policy, are permitted to take courses in certain areas on a Pass/Not Pass basis. With respect to programs in Engineering, such areas are courses which do not fulfill the major requirements and the breadth courses (*except* for courses taken in fulfillment of the UCI Subject A and upper-division writing requirements).

Admissions

The sequential nature of the Engineering program and the fact that many courses are offered only once a year make it beneficial for students to begin their studies in the fall quarter. Applicants wishing to be admitted for the fall quarter, 1999 must have submitted their completed application forms during the priority filing period (November 1–30, 1998).

High school students wishing to enter the UCI Engineering program must have completed four years of mathematics and are advised to have completed one year each of physics and chemistry. That preparation, along with honors courses and advanced placement courses, is fundamental to success in the Engineering program and is vital to receiving first consideration for admittance to an Engineering major during periods of restricted enrollments. Special attention will also be given to applicants who have submitted their SAT I and three SAT II examination scores by mid-January, 1999. Applicants must apply for admission to a specific Engineering major.

If enrollment limitations make it necessary, unaccommodated Engineering applicants may be offered alternative majors at UCI.

Transfer students may be admitted to a program in the School of Engineering either from another major at UCI or from another college or university, including a community college. A student seeking admission to the School of Engineering from colleges and schools other than UCI must satisfy the University requirements for admission with advanced standing and should have completed the appropriate prerequisites for the major they wish to enter. It is to the student's advantage to complete as much of the UCI breadth and lower-division requirements as possible prior to transferring to UCI. Since the requirements vary from major to major, those contemplating admission with advanced standing to the School should consult each Department's *Catalogue* section and the Office of Undergraduate Student Affairs, 101 Engineering and Computing Trailer, (949) 824-4334, for the specific requirements of each program. All transfer students should arrange for early consultation with the Office so that a smooth transition can be planned.

Proficiency Examinations

A student may take a course by examination with the approval of the faculty member in charge of the course and the Dean of the School. Normally, ability will be demonstrated by a written or oral examination; if a portion of the capability involves laboratory exercises, the student may be required to perform experiments as well. The proficiency examination is not available for any course a student has completed at UCI.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

All students in the School of Engineering must fulfill the following requirements.

University Requirements: See pages 54–58.

School Requirements

The minimum subject-matter requirements for graduation are: 24 units of mathematics; 28 units of basic science; and 61 units of basic Engineering, departmental core, and technical electives, depending on the major.

Design Units: All undergraduate Engineering courses have both a total and a design unit value. Design unit values are indicated at the end of the course description. Each student is responsible for the inclusion of courses whose design units total that required by the program of study.

Duplication of Subject Material: Students who take courses which involve considerable duplication of subject material may not receive full graduation credit for all units thus completed.

Residence Requirement: In addition to the University residence requirement, at least 36 upper-division engineering units specified by each major must be completed successfully at the University of California.

Variations: Variations from the general School degree requirements may be made subject to the approval of the faculty of the School. Students wishing to obtain variances should submit petitions to the School's Undergraduate Student Affairs Office.

Undergraduate Programs

Specific information about courses fulfilling School and major requirements can be found on the following pages. Note that some majors require more units than the School requirements.

Aerospace Engineering	p. 181
Chemical Engineering	p. 160
Civil Engineering	p. 165
Computer Engineering	p. 173
Electrical Engineering	p. 174
Engineering	p. 156
Environmental Engineering	p. 166
Mechanical Engineering	p. 182

CAREER ADVISING

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information. In addition, special career planning events are held throughout the year including an annual Career Fair. Individual career counseling is available, and students have access to the Career Library which contains information on graduate and professional schools in engineering, as well as general career information.

HONORS

Graduation with Honors. Undergraduate honors at graduation in the School of Engineering are computed by using 50 percent of the overall UCI GPA and 50 percent of the upper-division Engineering GPA. (Engineering E190 is not used in the calculation of the upper-division GPA.) A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Approximately 1 percent of the graduating class shall be awarded *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*, with no more than 12 percent being awarded honors. Other important factors are considered (see page 51).

Dean's Honor List. The quarterly Dean's Honor List is composed of students who have received a 3.5 GPA while carrying a minimum of 12 graded units.

Excellence in Engineering Research Award. Undergraduates who have successfully completed the requirements for this program are presented with Excellence in Engineering Research certificates.

Engineering Alumni Society Outstanding Engineering Student Scholarship. Awarded each year to a junior engineering student, this scholarship is based on academic excellence, extracurricular activities, work experience and community service, and communication skills. Two second-place awards are also given.

Gregory Bogaczyk Memorial Scholarship. This scholarship was established in memory of Gregory Bogaczyk, a former UCI Mechanical Engineering student, and is contributed by the Bogaczyk family and friends. An award is given each year to a junior or senior Mechanical Engineering student.

Gable Memorial Scholarship. This scholarship was established in memory of Theodore Gable, a former Civil Engineering student, and is awarded each year to a junior Civil Engineering student based on academic achievement, intent to finish a B.S. degree in Civil Engineering at UCI, and potential for success as an engineer.

Hembd Memorial Scholarship. Established in memory of Scott Hembd, a former Electrical Engineering student, this scholarship is awarded each year to a continuing UCI junior Electrical Engineering student based on academic achievement. The recipient must demonstrate a commitment to complete the academic preparation necessary to pursue a career as an engineer.

Deborah and Peter Pardo Memorial Scholarship. This scholarship is awarded each year to a graduating senior Mechanical Engineering student and is based on outstanding service to the School and community.

Additional awards in other categories are made throughout the academic year.

SPECIAL PROGRAMS AND COURSES

Campuswide Honors Program

The Campuswide Honors Program is available to selected high-achieving students from all academic majors from their freshman through senior years. Call (949) 824-5461 for additional information.

Engineering 199

Every undergraduate student in the School of Engineering has the opportunity to pursue independent research under the direct supervision of a professor in the School of Engineering. Interested students should consult with a faculty member to discuss the proposed research project. If the project is agreed upon, the student must fill out a 199 Proposal Form and submit it to the Engineering Undergraduate Student Affairs Office.

Excellence in Engineering Research Program

The School of Engineering believes that successful participation in creative research is one of the highest academic goals its undergraduates can attain and accordingly recognizes these students as having achieved Excellence in Engineering Research. All Engineering majors doing research under Engineering E199 and Engineering E196 or Engineering EH199 and Engineering EH196 (for Campuswide Honors Program students) are eligible to apply to the program.

Students apply for this recognition by submitting a paper that represents a minimum of four units of effort (E199 and E196 or EH199 and EH196) to the Engineering Undergraduate Student Affairs Office. The candidate must be in good academic standing, have a grade point average of at least 3.0, and be making normal progress in Engineering. The successful candidates will present their work at a special symposium and have their paper published in the *School of Engineering Journal of Undergraduate Research*.

Center for Opportunities and Diversity in Engineering

The Center for Opportunities and Diversity in Engineering (CODE) houses a comprehensive recruitment, retention, and placement program in the School of Engineering which attempts to provide academic support and professional development to students from backgrounds which have traditionally had limited access to the engineering profession. Services provided include: advisement, tutoring, study rooms, notification of research opportunities, fellowships, guest speakers, and employment opportunities. At the core of its activity is the focus on community building, and students are encouraged to bond around their common interests and goals. They take classes together, study together, and have fun together. Call (949) 824-2077 for additional information.

NASA Undergraduate Scholars Awards for Research

The NASA Undergraduate Scholars Awards for Research (NASA-USAR) is designed to increase the presence of socially and economically disadvantaged students and individuals with disabilities, with special emphasis on those students historically underrepresented, in NASA programs (Disadvantaged Students). Each award—\$12,000 per year per student—is issued as a grant to UCI in the name of the USAR student to cover educational, research, and academic support expenses. In addition, NASA provides students with a summer research opportunity at one of the eight NASA installations or the Jet Propulsion Laboratory. Call (949) 824-4189 for additional information.

Undergraduate Research Opportunities Program

The Undergraduate Research Opportunities Program (UROP) encourages and facilitates research and creative activities by undergraduates. Research opportunities are available not only from every discipline, interdisciplinary program, and school, but also from many outside agencies, including national laboratories, industrial partners, and other universities. UROP offers assistance to students and faculty through all phases of the research activity: proposal writing, developing research plans, resource support, conducting the research and analyzing data, and presenting results of the research at the annual spring Campuswide Undergraduate Research Symposium. Calls for proposals are issued in the fall and spring quarters. Projects supported by UROP may be done at any time during the academic year and/or summer, and the research performed must meet established academic standards and emphasize interaction between the student and the faculty supervisor. In addition, all students participating in faculty-guided research activities are welcome to submit their research papers for faculty review and possible publication in the annual *UCI Undergraduate Research Journal*. For more information, contact the UROP Office, 1100 Student Services II; telephone (949) 824-4189; e-mail: urop@uci.edu; World Wide Web: <http://www.urop.uci.edu/~urop>.

Accelerated M.S. and M.S./Ph.D. Program in the School of Engineering

Exceptionally promising UCI undergraduate Engineering students with a minimum cumulative 3.5 GPA may, during their junior or senior year, apply for streamlined admission into an M.S. program within the School of Engineering. Streamlined admission would allow a student to petition for exemption from UCI's GRE requirement for graduate school admission. (The exemption applies only to current UCI students applying for admission to one of the M.S. programs in the UCI School of Engineering; other graduate schools may still require the GRE.)

The student would request GRE exemption at the time of applying. Streamlined admission applicants would otherwise and in all other ways be evaluated in the same manner as other applicants to the School's graduate programs. Occasionally, a candidate for streamlined admission may be required by the faculty to submit GRE scores in support of the graduate application. In such cases the

student will be informed in writing within two weeks following receipt of the application package.

Students offered admission under the streamlined procedures may, upon completion of the undergraduate degree program and following matriculation as a graduate student, petition to credit toward M.S. degree requirements up to 18 units of graduate-level course work completed in excess of requirements for the UCI bachelor's degree.

Students who wish to apply for early admission to the M.S./Ph.D. program may do so in their senior year but must take the GRE prior to admission.

Undergraduate streamlined admission students admitted to an M.S. or M.S./Ph.D. program within the School of Engineering may also petition their department to use up to eight units of 199 Individual Study to meet undergraduate degree requirements, either as design units or as preliminary preparation for their master's thesis work.

Education Abroad Program

Upper-division and graduate Engineering students may participate in a number of programs which offer unique opportunities for education and training abroad. The University's Education Abroad Program (EAP) offers engineering course work for UCI academic credit at a number of universities. Some of the EAP-affiliated engineering schools require proficiency in the host country's language, while others are English speaking. Study abroad may postpone the student's graduation for one or two quarters, depending primarily on the student's language preparation (which can begin in the freshman year), but the added experience can add to the student's maturity and professional competence. EAP students pay regular UCI fees and keep any scholarships they may have. Additional information is available in the Education Abroad Program section.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet. See the Interdisciplinary Studies section of this *Catalogue* for more information.

STUDENT PARTICIPATION AND ORGANIZATIONS

Faculty and committee meetings (except those involving personnel considerations) are open meetings; in addition to designated student representatives, all students are encouraged and expected to participate in the development of School policy. Student evaluation of the quality of instruction for each course is requested each quarter.

Engineering students may join any of a number of student organizations. Most of these organizations are professionally oriented and in many instances are local chapters of national engineering societies. A primary function of these groups is to provide regular technical and social meetings for students with common interests. Most of the groups also participate in the annual Engineering Week activities and in other School functions.

Associated General Contractors (AGC). A student chapter of the national organization, AGC at UCI is an academic engineering club for students interested in the construction field.

American Institute of Aeronautics and Astronautics (AIAA). The AIAA is a technical society of 40,000 professional and student members devoted to science and engineering in the field of aerospace. The local chapter's primary activities include seminars, tours of industries, and mentoring for students by professional members.

American Institute of Chemical Engineers (AIChE). AIChE, a student chapter of the national organization, provides Chemical Engineering majors with the opportunity to interact with faculty and professionals in the field.

American Society for Civil Engineers (ASCE). One of the larger engineering clubs, ASCE at UCI is a student chapter of the national organization. The ASCE focuses its efforts on interactions with professional engineers, sponsorship of Engineering Week activities, and participation in the annual ASCE Southwest Conference.

American Society of Mechanical Engineers (ASME). The student chapter of ASME at UCI provides the opportunity for Mechanical Engineering majors to meet with professors, organize social events, and participate in events and competitions supported by the ASME national organization.

Chi Epsilon. This organization is a national engineering honor society which is dedicated to the purpose of promoting and maintaining the status of civil engineering as an ideal profession. Chi Epsilon was organized to recognize the characteristics of the individual that are fundamental to the successful pursuit of an engineering career.

Electric Vehicle Association/UCI (EVA/UCI). EVA/UCI gives students an opportunity for hands-on work on electric car conversions coupled with design experience.

Engineering Student Council (ESC). The ESC is the umbrella organization that provides a voice for all Engineering student chapters. A significant activity of the Council is organizing UCI's annual Engineering Week celebration.

Eta Kappa Nu. A student chapter of the National Electrical Engineering Honor Society, Eta Kappa Nu's purpose is to promote creative interaction between electrical engineers and give them the opportunity to express themselves uniquely and innovatively to project the profession in the best possible manner.

Institute of Electrical and Electronic Engineers (IEEE). A student chapter of a multinational organization, IEEE at UCI encompasses academic, professional, and social activities.

Institute of Transportation Engineers (ITE). ITE is a student chapter of a national group of transportation engineering professionals. Offering opportunities to meet both professionals and other students, ITE focuses its activities on an annual project with practical applications.

Mexican-American Engineering Society (MAES). Open to all students, MAES is a student and professional organization with the purpose of aiding students in their academic, professional, and social endeavors.

National Society of Black Engineers (NSBE). The NSBE, with almost 6,000 members, is one of the largest student-managed organizations in the country. The Society is dedicated to the realization of a better tomorrow through the development of intensive programs to increase the recruitment, retention, and successful graduation of underrepresented students in engineering and other technical majors.

Omega Chi Epsilon. The student chapter of the National Chemical Engineering Honor Society aims to recognize and promote high scholarship, original investigation, and professional service in chemical engineering.

Pi Tau Sigma. The mechanical engineering honor society, Pi Tau Sigma is committed to recognizing those of high achievement. The aim of the organization is to develop the complete engineering student through academic and social activities.

Society of Automotive Engineers (SAE). Members of the SAE chapter at UCI participate in technical expositions, mini-Baja buggy races, student competitions, and social activities.

Society of Women Engineers (SWE). SWE is a national service organization dedicated to the advancement of women in engineering. UCI's student chapter encourages academic and social support, and membership is open to both men and women in technical

majors interested in promoting camaraderie and in helping to make engineering study a positive experience.

Structural Engineers Association of Southern California (SEAOSC). The UCI student chapter of SEAOSC introduces students to the field of structural engineering through tours, speakers, and SEAOSC dinners with professional members of the organization.

Tau Beta Pi. The national Engineering honor society, Tau Beta Pi acknowledges academic excellence in the wide variety of engineering disciplines. Tau Beta Pi at UCI sponsors community service activities, social events, and technical and nontechnical seminars.

GRADUATE STUDY

Graduate Student Affairs Office
114 Rockwell Engineering Center; (949) 824-6475
John LaRue, Associate Dean

ADMISSIONS

For information on requirements for admission to graduate study at UCI, contact the appropriate Engineering department or the Graduate Affairs Office in the School of Engineering. Additional information is available in the *Catalogue* section entitled Research and Graduate Studies. Admission to graduate standing in the School of Engineering is generally accorded those possessing a B.S. degree in engineering or an allied field obtained with an acceptable level of scholarship from an institution of recognized standing. Those seeking admission without the prerequisite scholarship record may, in some rare cases, undertake remedial work; if completed at the stipulated academic level, they will be admitted to full graduate standing. Those admitted from an allied field may be required to take supplementary upper-division courses in basic engineering subjects. The Graduate Record Examination General Test is required of all applicants.

FINANCIAL SUPPORT

Teaching assistantships and fellowships are available to qualified applicants (who should contact the Department to which they are applying for information). Research assistantships are available through individual faculty members. It is beneficial for applicants to contact the faculty member directly to establish the potential for research support. Early applications have a superior chance for financial support.

PART-TIME STUDY

Those students who are employed may pursue the M.S. degree on a part-time basis, carrying fewer units per quarter. Since University residence requirements necessitate the successful completion of a minimum number of units in graduate or upper-division work in each of at least three regular University quarters, part-time students should seek the advice of the graduate counselor in the School of Engineering and the approval of the chair of their program. M.S. programs must be completed in four calendar years from the date of admission. Students taking courses in University Extension should consult the section on Transfer of Courses below.

TRANSFER OF COURSES

Upon petition, a limited number of *graduate-level courses* taken through University Extension, on another campus of the University, or in another accredited university may be credited toward the M.S. degree after admission. With the exception of work undertaken in another graduate division of the University of California, transfer credit will not be applied to the minimum required units in 200-series courses.

Graduate Programs

Specific information about program requirements can be found on the following pages.

Chemical and Biochemical Engineering	p. 161
Civil Engineering	p. 167
Electrical and Computer Engineering	pp. 175-176
Concentration in Computer Networks and	
Distributed Computing	p. 175
Concentration in Computer Systems and Software	p. 175
Concentration in Electrical Engineering	p. 176
Engineering	pp. 157-160
Concentration in Environmental Engineering	pp. 157-158
Concentration in Materials Science and Engineering	p. 159
Concentration in Protein Engineering	p. 160
Mechanical and Aerospace Engineering	p. 183

UNDERGRADUATE MAJOR IN ENGINEERING

Engineering and Computing Trailer; (949) 824-4334

The School of Engineering offers a general undergraduate major in Engineering to upper-division students who wish to pursue broad multidisciplinary programs of study or who wish to focus on a special area not offered in the four departments. Examples of other areas that may be of interest are: biochemical engineering, electromechanical engineering, project management, or hydrology. The program of study in any area, aside from the established specializations, is determined in consultation with a faculty advisor.

Faculty in the Departments of Chemical and Biochemical Engineering and Materials Science, Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering also teach courses in the major in Engineering program.

Descriptions and requirements for the undergraduate majors in Aerospace Engineering (AE), Chemical Engineering (ChE), Civil Engineering (CE), Computer Engineering (CpE), Electrical Engineering (EE), Engineering (a general program, GE), Environmental Engineering (EnE), and Mechanical Engineering (ME) may be found in each department's section.

ADMISSIONS

The general major in Engineering is only open to junior-standing students who have completed the required lower-division courses with a high level of achievement. Freshmen are not eligible to apply for this major. The sequential nature of the Engineering program and the fact that many courses are offered only once a year make it beneficial for students to begin their studies in the fall quarter.

Transfer students. The general Engineering major is a specialized program for students who are seeking careers in areas other than traditional engineering disciplines and is open to upper-division students only. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), and one course in computational methods (FORTRAN, Pascal, C, or C++). Courses in linear algebra, differential equations, second-year engineering physics (with laboratory) are required for junior academic standing, and it is recommended that these courses be completed prior to transferring to UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools, to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ENGINEERING

Credit for at least 193 units including:

University Requirements: See pages 54–58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 5A-B-C-D-E and 5LB-LC-LD-LE (at least 38 units).

Basic Engineering Courses: Engineering E10 or CEE10 or ECE11 or MAE10, E54, CEE30 or MAE30, E80 or CEE80 or MAE80, ECE70A or ECE72 (18–19 units).

Engineering Core Courses: Engineering ChE60 or MAE91 or E101, MAE150 or ChE150 or both CEE150 and CEE150L, CEE170A or MAE130A (11–14 units).

Technical Electives: 57 units; all technical electives must be determined in consultation with a faculty advisor.

Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements.

PROGRAM OF STUDY

Students should keep in mind that the program for the major in Engineering is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students must have their programs approved by an academic counselor in Engineering. A sample program of study is available in the Undergraduate Student Affairs Office.

Courses in Engineering

LOWER-DIVISION

NOTE: With the exception of E5 and E54, the courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

E2 Energy Sources, Energy Uses (4) F. Technical aspects of energy extraction, transport, use, and environmental effects. Devices for energy conversion. (Design units: 0)

E5 Exploring the Engineering Mind: Building Bicycles (4) S. Structured to introduce students to the engineering mind—how engineers analyze problems and design solutions. Topics include how materials work, how nature designs materials (such as seashells and eggshells), and how engineers design using the example of the bicycle. May not be taken by Engineering students to fulfill major requirements.

E10 Computational Methods in Engineering (4) F, Summer. Procedures and procedure followers, algorithms and flow charts, computer languages, subprograms. Computer macro- and microelements, number systems. Methods of differentiation, integration, curve fitting, list processing. Error analysis. Must qualify in BASIC and FORTRAN at end of course through computer use. Corequisite or prerequisite: Mathematics 2A. Only one course from Engineering E10, Engineering CEE10, and Engineering MAE10 may be taken for credit. (Design units: 0)

E20 Energy and Society (4) F. The social, economic, and political aspects of how we obtain energy, get it to where we need it, use it, dispose of the wastes, and pay for these activities. Examination of alternatives. (Design units: 0)

E54 Principles of Materials Science and Engineering (4) W. Materials—topics range from superconductors to biodegradable polymers. Structure and properties of materials, including metal, ceramics, polymers, semiconductors, composites, traditional materials. Atomic structure, bonding, defects, phase equilibria, mechanical properties, electrical, optical, and magnetic properties. Brief introduction to materials processing and synthesis. Prerequisites: Physics 3A-B or Physics 5A-B; Chemistry 1A. Engineering E54 and Engineering CEE54 may not both be taken for credit. (Design units: 0)

E69 Energy Facilities Inspection (0) F, W, S. Inspection of power-generating stations of various types, oil and gas processing facilities, and end-use facilities. One unit of workload credit. Prerequisites: E2, consent of instructor. May be repeated for credit as topics vary. (Design units: 0)

E80 Dynamics (3) S. Rigid body dynamics, momentum, and energy principles; modeling and analysis of mechanical systems. Prerequisites: Physics 5A, Mathematics 2D. Only one course from Engineering E80, Engineering MAE80, and Engineering CEE80 may be taken for credit. (Design units: 0)

E92 Engineering and Computer Science Laboratory (ECSEL) (0) F. Comprehensive academic support designed primarily for underrepresented or underprepared students in Engineering, ICS, or selected areas of the physical sciences. Typical program activities: tutoring, study skills, career planning, self-esteem enhancement, library research techniques, graduate study planning, and independent studies. Pass/Not Pass only. Students may receive a maximum of 12 units of workload credit only. Same as Information and Computer Science 92. (Design units: 0)

EH96 Freshman Honors Seminar (1). Issues and conflicts from the philosophy and history of engineering and science, ethical responsibilities of engineers and scientists, the influence of diverse backgrounds, and the breadth of activities within the engineering and science disciplines. Various faculty participate each week. Pass/Not Pass only. Open only to Engineering freshmen students in Campuswide Honors program. Same as Physical Sciences H96 and Information and Computer Science H96. (Design units: 0)

E98 Group Study (1-4). Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

UPPER-DIVISION

E101 Introduction to Engineering Thermophysics (3) F. Fundamentals and applications of engineering thermodynamics to engineering systems. First law (energy conservation), second law (entropy constraints), equations of state and property relations (e.g., the Clausius-Clapeyron relation). Conduction, convection, and radiation including applications to fins and heat exchange. Prerequisites: Physics 5B, Mathematics 3D. Only one course from Engineering E101, Engineering ChE60, and Engineering MAE91 may be taken for credit. (Design units: 0)

E169 Energy Systems Field Trip (3) Summer. A ten-day to two-week inspection trip to energy extraction facilities, large-scale energy users, research laboratories, and design offices. Prerequisites: E2 and E20 or consent of instructor. (Design units: 0)

E190 Communications in the Professional World (4) F, W, S, Summer. Workshop in technical and scientific writing. Oral presentation with video monitoring. Communication with various publics. Real-world professionalism. Students must be of junior or senior standing in Engineering and have completed the lower-division writing requirement. (Design units: 0)

E192 Ethical Issues in Engineering (4) S. Application of ethical theory to moral problems confronted by engineers, scientists, and managers, e.g., conscience and free expression within corporations; professional obligations to the public; the role of values in safety decisions; ethics codes; whistle-blowing. Examination of case studies. Prerequisite: completion of lower-division writing requirement. Same as Philosophy 131D. (Design units: 0)

E196 Engineering Thesis (4) F, W, S. Preparation of final presentation and paper describing individual research in Engineering completed in one or more quarters of individual study (i.e., E199). Prerequisites: completion of lower-division writing requirement, consent of E199 instructor, and completion of at least four units of Individual Research in Engineering. (Design units: varies)

EH196 Honors Thesis (4) F, W, S. Preparation of final presentation and paper describing individual research in Engineering. For participants in the Campuswide Honors Program. Prerequisites: EH199 and consent of instructor. (Design units: varies)

E199 Individual Study (1 to 4) F, W, S. Supervised independent reading, research, or design for undergraduate Engineering majors. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

EH199 Individual Study for Honors Students (4) F, W, S. Supervised research in Engineering for participants in the Campuswide Honors Program. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisites: consent of instructor; open only to members of Campuswide Honors Program. May be repeated for credit. (Design units: varies)

GRADUATE STUDY IN ENVIRONMENTAL ENGINEERING

114D Rockwell Engineering Center; (949) 824-7188

Terese M. Olson, **Director**

Faculty

Constantinos V. Chrysikopoulos: Subsurface solute transport, nonaqueous phase liquid dissolution in porous media, mathematical modeling
Donald Dabub: Mathematical modeling of air pollution dynamics, parallel computing applied to environmental problems
Nancy A. DaSilva: Bioremediation, genetic engineering
Derek Dunn-Rankin: Combustion pollutants, incineration, aerosol inhalation and deposition
Carl A. Friehe: Boundary-layer meteorology, atmospheric turbulence, air-sea energy exchange
Stanley B. Grant: Environmental microbiology, biocolloid stability and transport, molecular biotechnology
Gary L. Guymon: Water resources, mathematical modeling, geohydrology
Juan Hong: Separation processes, bioremediation, bioreactor analysis
Henry C. Lim: Bioreactor control optimization, genetic engineering, bioremediation
Terese M. Olson: Environmental aquatic chemistry, colloid chemistry, chemical kinetics, water treatment
Scott Samuels: Combustion, pollutant formation, energy efficiency and utilization, air quality, environmental ethics
Brett F. Sanders: Environmental and computational fluid dynamics, water resources engineering
Jan Scherfig: Biological treatment, water reclamation and reuse, waste treatment
Roland Schinzinger: Electric energy systems
William A. Sirignano: Combustion, pollutant formation, fire spread, noise suppression
Thomas K. Wood: Bioremediation of chlorinated aliphatics and aromatics using both natural and genetically engineered microorganisms, biological reactors for site remediation

Environmental Engineering addresses the development of strategies to control anthropogenic emissions of pollutants to the atmosphere, waterways, and terrestrial environment; the remediation of polluted natural systems; the design of technologies to treat waste; fire safety; noise suppression; energy efficiency; and the evaluation of contaminant fate in urban environments. Environmental engineering issues are now an important component in the development of many engineering technologies and consequently are an important aspect of an engineering education. The discipline itself is interdisciplinary and requires a curriculum that provides students with an understanding of fundamentals in air- and water-quality sciences, contaminant fate and transport, and design concepts for pollutant emission control and treatment. To avoid the development of environmental engineering solutions which only transform one form of pollution to another, modern engineering education programs must require exposure and familiarity with a greater number of subjects than ever before.

Environmental engineers with an interdisciplinary background are particularly sought to address the complex infrastructure needs of today's society, where they must be able to communicate with teams of scientists and engineers from different disciplines. Environmental engineering graduates who meet this description can

expect to remain in strong demand in the private and public employment sectors, and their range of career opportunities is highly diverse. Examples of career fields and activities include the development of new technologies to genetically engineer microorganisms for waste treatment, design of combustion and control processes that minimize pollutant emissions and maximize energy efficiency, resolution of complex pollutant transport processes in naturally heterogeneous systems, development of new physical-chemical treatment approaches, and characterization of pollutant transformation mechanisms in natural systems.

Curricular and research subjects of interest in Environmental Engineering include environmental air and water chemistry, environmental microbiology, combustion technologies, aerosol science, transport phenomena, reactor theory, unit operations and systems design, mathematical modeling, energy systems, soil physics, fluid mechanics, hydrology, and meteorology. Interdisciplinary research endeavors commonly bridge many of these different subjects and a current focus is maintained on new and emerging technologies. Curriculum objectives have also been set to maintain a balance between the depth and breadth of program scope for each student.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

Required Background

The interdisciplinary nature of the program allows students with a variety of backgrounds to undertake studies in this field. Students with a background in engineering—particularly chemical, civil, environmental, and mechanical engineering—as well as scientists from biology, chemistry, environmental science, and physics, are encouraged to participate.

Students admitted to the program are expected to have had rigorous undergraduate exposure to a number of relevant subject areas including air quality, environmental chemistry, fluid mechanics, microbial processes, and reactor theory and design. The degree to which each student meets the program's background requirement is determined by participating faculty at the time of admission. Students with an insufficient background who are offered admission will be required to take a set of appropriate prerequisite courses. Prerequisite work typically involves at least two and frequently as many as five or six upper-division, undergraduate courses each of which must be completed with a final grade of B or better. Occasionally, lower-division work in chemistry, mathematics, or physics is required. The student's specific prerequisite course work requirement, if any, is stated in the letter of admission.

The background requirement establishes a common foundation for graduate study in the program. Not all students are required to take prerequisite course work; those who are may do so following matriculation in the graduate program. In addition, M.S. students may use a limited amount of upper-division course work taken to meet the background requirement in partial fulfillment of graduate degree requirements.

Although this list is not exhaustive, commonly required prerequisite courses within each of the required background areas are as follows:

Air Quality: Engineering MAE110, MAE162, or MAE164
Environmental Chemistry: Engineering CEE164 and 164L
Environmental Microbiology: Engineering CEE166 or ChE165
Fluid Mechanics: Engineering CEE170A, ChE120A, or MAE130A
Reactor Theory and Design: Engineering ChE160

Core Requirement

Students must complete an advanced mathematics course, either Engineering CBE220 (Applied Chemical Engineering Mathematics), CEE283 (Mathematical Methods in Engineering Analysis), or MAE200B (Engineering Analysis II).

Areas of Emphasis

Each student selects a primary area of emphasis within Environmental Engineering: Water Quality, Water Resources, or Air Quality and Combustion. To achieve the interdisciplinary objectives of the program, students are required to take at least two electives outside their primary area, one each in two different areas. These outside electives may also be taken from approved courses in other academic units, including the Schools of Social Ecology and Physical Science, and the College of Medicine. Electives within each of the emphasis areas in Engineering are listed below.

Water Quality: Engineering CBE230 (Transport Phenomena), CBE240 (Bioengineering with Recombinant Organisms), CBE260 (Reaction Engineering), CBE262 (Bioreactor Engineering), CBE270 (Bioremediation), CEE261 (Environmental Microbiology), CEE262A, B (Colloid Transport Phenomena I, II), CEE263 (Water and Waste Treatment Technology), CEE264 (Chemical Equilibria in Natural Waters), CEE265 (Chemical Dynamics in Natural Waters), CEE266 (Aqueous Geochemistry), CEE267 (Advanced Treatment Models), CEE269 (Hazardous Waste Remediation).

Water Resources: Engineering CEE271 (Unsaturated Flow in Soils), CEE272 (Groundwater Hydrology), CEE274 (Transport Phenomena in Porous Media), CEE275 (Numerical Methods in Subsurface Hydrology), CEE276 (Stochastic Geohydrology), CEE278 (Flow in Open Channels), CEE279 (Surface Water Hydrology).

Air Quality and Combustion: Engineering MAE210 (Advanced Fundamentals of Combustion), MAE215 (Advanced Combustion Technology), MAE233A, B (Numerical Methods in Heat, Mass, and Momentum Transport), MAE230A (Advanced Incompressible Fluid Dynamics I), MAE231 (Fundamentals of Turbulence), MAE232 (Atmospheric Turbulence), MAE260 (Issues Related to Atmospheric Processes), MAE261 (Air Pollution Modeling), MAE264 (Combustion Particulates and Aerosols), MAE280 (Digital Data Acquisition and Analysis).

MASTER OF SCIENCE DEGREE

Two options are available for M.S. degree students: a thesis option and a comprehensive examination option. Both options require the completion of 36 units of study. Study plans for both options must also include two graduate courses from outside the student's primary area of emphasis.

Plan I. Thesis Option

A thesis option is available to students who prefer to conduct a focused research project. Students selecting this option must complete an original research investigation and a thesis, and obtain approval of the thesis by a thesis committee. Of the 36 required units, at least 20 must be graduate courses (numbered 200-289), including either Engineering CBE220, MAE200B, or CEE283. A maximum of eight M.S. research units and up to eight units of upper-division undergraduate elective courses may be applied to the degree with the approval of a faculty advisor.

Plan II. Comprehensive Examination Option

Alternatively, students may select a comprehensive examination option in which they must successfully complete 36 units of study and pass a comprehensive examination. At least 24 units must be graduate courses (numbered 200-289), including either Engineering CBE220, MAE200B, or CEE283. Up to 12 units may be taken as upper-division undergraduate elective courses.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. concentration in Environmental Engineering requires the achievement of original and significant research that advances the discipline. Doctoral students are selected on the basis of an outstanding record of scholarship and potential for research excellence.

The doctoral study program is tailored to the individual student in consultation with a faculty advisory committee. There are no specific course requirements, however, additional mathematics courses beyond those required for a M.S. degree are generally required, reflecting the student's specific research interests. Within this flexible framework, the School maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Environmental Engineering program guidelines for details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty, passage within the first year of a preliminary examination or similar assessment of the student's background and potential for success, research preparation, formal advancement to candidacy by passing a qualifying examination, completion of a significant research investigation, and the submission and oral defense of an acceptable dissertation.

Committees for preliminary and Ph.D. qualifying examinations and the doctoral committee must have at least one Environmental Engineering faculty member from outside the student's area of emphasis. The student's dissertation topic must be approved by the student's doctoral committee. The degree is granted upon the recommendation of the doctoral committee and the Dean of Graduate Studies. Doctoral programs must be completed within seven calendar years of the date of admission.

GRADUATE STUDY IN MATERIALS SCIENCE AND ENGINEERING

114D Rockwell Engineering Center; (949) 824-5807

Farghalli A. Mohamed, **Director**

Faculty

James C. Earthman: Fatigue behavior and cyclic damage, automated materials testing, defect monitoring techniques, image analysis
 Hideya Gamo: Quantum electronics, electromagnetics
 Enrique J. Lavernia: Solidification processing of metals, intermetallics and refractory materials
 Chin C. Lee: Electronic packaging, thermal management, integrated optics
 Henry P. Lee: Optoelectronic materials, growth, and devices
 Guann Pyng Li: Optoelectronic devices, integrated circuit fabrication and testing, high-speed semiconductor technology
 Martha L. McCartney: Microstructure of materials, interfacial engineering, sol-gel processing, ferroelectric thin films, electron microscopy
 Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between property and microstructure
 Frank G. Shi: Phase transformations, metastable materials
 Gregory J. Sonek: Devices, electrooptics and fiber optics, biomedical applications
 Chen S. Tsai: Integrated optic devices, circuits, materials; acoustic microscopy with applications to materials, device characterization

Materials Science and Engineering is concerned with the generation and application of knowledge relating the composition, structure, and processing of materials to their properties and applications. During the past two decades, the field has become an important component of modern engineering education, partly because of the increased level of sophistication required of engineering materials in a rapidly changing technological society, and partly because the selection of materials has increasingly become an integral part of almost every modern engineering design. In fact, further improvements in design are now viewed more and more as primarily a materials issue. Both the development of new materials and the understanding of present-day materials demand a thorough knowledge of basic engineering and scientific principles including, for example, crystal structure, mechanics, mechanical behavior, electronic, optical and magnetic behavior, thermodynamics, phase equilibria, heat transfer, diffusion, and the physics and chemistry of solids.

The field of Materials Science and Engineering ranks high on the list of top careers for scientists and engineers. The services of these

engineers and scientists are required in a variety of engineering operations dealing, for example, with design of semiconductors and optoelectronic devices, development of new technologies based on composites and high-temperature superconductivity, biomedical products, performance (quality, reliability, safety, energy efficiency) in automobile and aircraft components, improvement in nondestructive testing techniques, corrosion behavior in refineries, radiation damage in nuclear power plants, and fabrication of steels.

Subjects of interest in the field cover a wide spectrum, ranging from metals and optical and electronic materials to superconductive materials, ceramics, advanced composites, and biomaterials. In addition, the emerging new research and technological areas in materials are in many cases interdisciplinary. Accordingly, the principal objective of the graduate curriculum is to integrate a student's area of emphasis—whether it be structural materials, chemical processing, mechanics of solids, or electronic devices—into the whole of material science and engineering. Such integration will breed familiarity with other disciplines and provide the students with the breadth they need to face the challenges of current and future technology.

Programs of study leading to the M.S. and Ph.D. degrees in Engineering are offered.

Recommended Background

Given the nature of Materials Science and Engineering as a cross-disciplinary program, students having a background and suitable training in either Materials, Engineering (Mechanical, Electrical, Civil, Chemical), or the Physical Sciences (Physics, Chemistry, Geology) are encouraged to participate. Recommended background courses include an introduction to materials, thermodynamics, mechanical behavior, and electrical/optical/magnetic behavior. A student with an insufficient background may be required to take remedial undergraduate courses.

Core Requirement

Because of the interdepartmental nature of the concentration, it is important to establish a common foundation in Materials Science and Engineering for students from various backgrounds. This foundation is limited to comprehensive materials science topics and is covered in the three core courses: MSE200, MSE205, and MSE210.

Areas of Emphasis

Each student selects an area of emphasis within Materials Science and Engineering: Electronic and Photonic Materials, Structural Materials, Mechanics of Solids, or Chemical Processing of Materials. Students select specific course requirements within the areas of emphasis in consultation with the program director and their faculty advisor. Typical examples follow.

Chemical Processing: Engineering CBE210 (Chemical Engineering Thermodynamics), CBE230 (Transport Phenomena), CBE260 (Reaction Engineering), CBE280 (Fundamentals of Phase Transformations).

Electronic and Photonic Materials: Engineering ECE217A (Advanced Semiconductor Devices I), ECE217B (Advanced Semiconductor Devices II), ECE275A (Electrooptical Devices).

Mechanics of Solids: Engineering CEE242 (Continuum Mechanics), CEE243 (Mechanics of Composite Material), CEE281 (Finite Element Method in Continuum Mechanics).

Structural Materials: Engineering MAE200A or 200B (Engineering Analysis), MSE251A (Dislocation Theory), MSE252A (Diffusion Theory), MSE253 (Kinetic Phenomena in Materials), MSE254A (Mechanical Behavior of Engineering Materials), MSE255 (Ceramic Materials), MSE256A (Fracture of Engineering

Materials), MSE259A (Electron Microscopy), MSE261 (High-Temperature Deformation of Engineering Materials).

MASTER OF SCIENCE DEGREE

A minimum of 36 approved units is required for the M.S. degree. Two options are available, a thesis option and a courses only option. The thesis option requires a research study of greater depth and originality than the courses option. For the thesis option, students are required to develop and obtain approval for a complete program of study. A committee of three full-time faculty members is appointed to guide development of the thesis. At least 21 units must be from courses numbered 200–289, among which nine units are from MSE core courses and 12 units are in an area of emphasis approved by the faculty advisor and the graduate advisor. Up to eight units of Engineering MAE296 or ECE296 and up to eight units of undergraduate elective courses can be applied toward the 36-unit requirement. For the courses only option, at least 24 units must be from courses numbered 200–289, among which nine units are from MSE core courses and 15 units are in an area of emphasis approved by the faculty advisor and the graduate advisor. Up to eight units of undergraduate elective courses can be applied toward the 36-unit requirement.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. concentration in Materials Science and Engineering requires a commitment on the part of the student to dedicated study and collaboration with the faculty. Ph.D. students are selected on the basis of outstanding demonstrated potential and scholarship. Applicants must hold the appropriate prerequisite degrees from recognized institutions of high standing. After substantial preparation, Ph.D. candidates work under the supervision of faculty advisors. The process involves extended immersion in a research atmosphere and culminates in the production of original research results presented in a dissertation.

Milestones to be passed in the Ph.D. program include the following: acceptance into a research group by the faculty advisor during the student's first year of study; successful completion of the Ph.D. preliminary examination; preparation for doing research, completion of the School of Engineering teaching requirements, and the development of a research proposal; passing the qualifying examination which assesses the candidate's preparation for research and evaluates the proposed research; successful completion of the research; development and approval of the dissertation; presentation of the dissertation and a final examination on its contents. There is no foreign language requirement.

The preliminary examination, to be taken in the fall of the second year of the Ph.D. program, is based on the MSE core courses and courses taken in the area of emphasis. The examination committee is appointed by the program director with subsequent approval by the Chair of the appropriate department of the area of emphasis. The degree is granted upon the recommendation of the doctoral committee and the Dean of Graduate Studies. The program must be completed within seven calendar years of the date of admission.

COURSES IN MATERIALS SCIENCE AND ENGINEERING

MSE200 Advanced Concepts in Materials (3) F. Principles and concepts underlying the study of advanced materials including alloys, composites, ceramics, semiconductors, polymers, ferroelectrics, and magnetics. Crystal structure and defects, surface and interface properties, thermodynamics and kinetics of phase transformations, and material processing, related to fundamental material properties. Prerequisites: Chemistry 1A-B-C, Physics 5A-B-C.

MSE205 Physical and Electronic Properties of Engineering Materials (3) W. Covers the electronic, optical, and dielectric properties of crystalline materials to provide a foundation of the underlying physical principles governing the properties of existing and emerging electronic and photonic materials. Prerequisite: introductory course in electromagnetics and modern physics.

MSE210 Materials Characterization Techniques and Analysis (3) S. Introduction to microcharacterization techniques, and their application to the study of bulk and thin-film materials; methods of analysis, including electron beam-induced excitations (SEM, SAM, EDX, STEM), x-ray and photon-induced interactions (PEX, ESCA), ion processes (RSB, SIMS, PIXE), sub-micron optical techniques, and electromagnetic field-induced methods (STM, AFS). Prerequisites: Chemistry 1A-B-C, Physics 5A-B-C.

GRADUATE STUDY IN PROTEIN ENGINEERING

145 Biological Sciences Administration; (949) 824-6686

Participating School of Engineering Faculty

Nancy A. DaSilva: Improvement of cell and enzyme-mediated processes via molecular genetics

Thomas K. Wood: Expression of oxygenases in foreign hosts for bioremediation

The School of Engineering, in conjunction with the School of Biological Sciences and the Department of Chemistry in the School of Physical Sciences, participates in the joint graduate program in Protein Engineering. This interdisciplinary graduate program offers students the opportunity to work with the approximately 20 faculty in any of the participating academic units; take course work in the areas of protein structure, function, and molecular biology; and earn the Ph.D. in Engineering, Biological Sciences, or Chemistry with a concentration in Protein Engineering Science. Additional information is available in the School of Biological Sciences section of the *Catalogue* and through the Graduate Program in Protein Engineering office in the Biological Sciences Administration Building.

DEPARTMENT OF CHEMICAL AND BIOCHEMICAL ENGINEERING AND MATERIALS SCIENCE

916F Engineering Tower; (949) 824-3426
Enrique J. Lavernia, **Department Chair**

Faculty

Nancy A. DaSilva: Recombinant cell technology

James C. Earthman: Fatigue behavior and cyclic damage, high-temperature fracture, automated material testing, biomaterials

Steven C. George: Physiological systems modeling, respiratory heat and mass transport, kinetics, computer simulation, tissue engineering

G. Wesley Hatfield: Molecular mechanisms of biological control systems

Juan Hong: Biochemical and separation processes, environmental engineering

Enrique J. Lavernia: Solidification processing of metals, powder metallurgy, intermetallics, and refractory materials

Henry C. Lim: Bioreaction and bioreactor engineering

Martha L. Mecartney: Sol-gel processing, oxide thin films for microelectronic applications

Farghalli A. Mohamed: Mechanical properties, creep, superplasticity, correlations between property and microstructure

Roger H. Rangel: Fluid mechanics, heat transfer of multiphase systems including spray combustion, atomization, and metal spray solidification; applied mathematics

Frank G. Shi: Microelectronics processing and modeling

William A. Sirignano: Combustion theory and computational methods, multiphase flows, turbulent reacting flows

Thomas K. Wood: Bioremediation, metabolic engineering, environmental engineering

The Department of Chemical and Biochemical Engineering and Materials Science offers a program of study leading to the B.S. degree in Chemical Engineering and to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering.

Undergraduate Major in Chemical Engineering

Chemical Engineering uses knowledge of chemistry, mathematics, physics, biology, and humanities to solve societal problems in areas such as energy, health, the environment, food, clothing, shelter, and materials and serves a variety of processing industries whose vast array of products include chemicals, petroleum products, plastics, pharmaceuticals, foods, textiles, fuels, consumer products, and electronic and cryogenic materials. Chemical engineers also serve society in improving the environment by reducing and eliminating pollution.

The undergraduate curriculum in Chemical Engineering builds on basic courses in chemical engineering, other branches of engineering, and electives which provide a strong background in humanities and human behavior. Elective programs developed by the student with a faculty advisor may include such areas as applied chemistry, biochemical engineering, chemical reaction engineering, chemical processing, environmental engineering, materials science, process control, and systems engineering.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), and one course in computational methods (FORTRAN, Pascal, C, or C++). Courses in linear algebra, differential equations, organic chemistry, thermodynamics, and chemical engineering calculations are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN CHEMICAL ENGINEERING

Credit for at least 196 units including:

University Requirements: See pages 54-58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B-C, 1LA-LB; 51A-B-C, 51LA-LB or 52A-B-C, 52LA-LB; 130A-B-C or 131A-B-C; and Physics 5A-B-C and 5LB-LC (at least 59 units).

Basic Engineering Courses: Engineering E10 and E54 (8 units).

Chemical Engineering Core Courses: Engineering ChE40, ChE60, ChE120A-B, ChE120LA-LB, ChE122, ChE160, ChE162, ChE163 (43 units).

Technical Electives: 17 units (which must include 9 units of Engineering topics); all technical electives must be approved by the faculty advisor.

Specialization in Biochemical Engineering: requires ChE165 and a minimum of 9 units selected from ChE172, ChE180, ChE199 or ChEH199 (up to 4 units), CEE166, Biological Sciences 98, Biological Sciences 99, or Biological Sciences 128.

Specialization in Environmental Engineering: requires a minimum of 12 units selected from ChE170, ChE172, ChE199 or ChEH199 (up to 4 units), CEE164, 164L, CEE165, CEE166, CEE170B, CEE175, MAE110, MAE115, MAE164. At least one course from ChE170, ChE172, ChE199 or ChEH199 must be taken.

Specialization in Materials Science: requires a minimum of 12 units selected from: MSE149, MSE150 (requires MAE30, not counted toward total), MSE153, MSE155A, MSE156, ChE199 or ChEH199 (up to 4 units).

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Chemical Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their faculty advisor. Chemical Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

Sample Program of Study — Chemical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Chemistry 1C
E10	Physics 5A	Physics 5B, 5LB
Breadth	Breadth	Breadth
Sophomore		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Chemistry 51A, 51LA	Chemistry 51B, 51LB	Chemistry 51C
or 52A, 52LA	or 52B, 52LB	or 52C
ChE40	ChE60	Breadth
		Breadth
Junior		
Chemistry 130A	Chemistry 130B	Chemistry 130C or
or 131A	or 131B	or 131C
Physics 5C, 5LC	E54	ChE120A
ChE160	ChE122	Technical Elective
Breadth	Breadth	Breadth
Senior		
ChE120B	ChE120LA	ChE120LB
Technical Elective	ChE163	ChE162
Technical Elective	Technical Elective	Technical Elective
Breadth	Breadth	Breadth

Graduate Study in Chemical and Biochemical Engineering

Chemical engineering uses the knowledge of chemistry, mathematics, physics, biology, and social sciences to solve societal problems such as energy, health, environment, food, clothing, shelter, and materials. It serves a variety of processing industries whose vast array of products include chemicals, petroleum products, plastics, pharmaceuticals, foods, textiles, fuels, consumer products, and electronic and cryogenic materials. It also serves society to improve the environment by reducing and eliminating pollution. Chemical engineering is an engineering discipline that has its strongest ties with the molecular sciences. This is an important

asset since sciences such as chemistry, molecular biology, biomedicine, and solid-state physics are providing the seeds for future technologies. Chemical engineering has a bright future as the discipline which will bridge science with engineering in multidisciplinary environments.

Biochemical Engineering is concerned with the processing of biological materials and processes that use biological agents such as living cells, enzymes, or antibodies. Biochemical Engineering, with integrated knowledge of the principles of biology and chemical engineering, plays a major engineering role in the rapidly developing area of biotechnology. Career opportunities in Biochemical Engineering are available in a variety of industries such as biotechnology, chemical, environmental, food, petrochemical, and pharmaceutical industries.

The principle objectives of the graduate curriculum in Chemical and Biochemical Engineering are to develop and expand students' abilities to solve new and more challenging engineering problems and to promote their skills in independent thinking and learning in preparation for careers in manufacturing, research, or teaching. These objectives are reached through a program of course work and research designed by each student with the assistance, advice, and approval of a primary faculty advisor and a faculty advisory committee. Programs of study leading to the M.S. and Ph.D. degrees in Chemical and Biochemical Engineering are offered.

Graduate study and research in materials includes investigations of electronic materials and processing, polymers, composite materials, creep, fracture and fatigue, ceramics, and superplasticity.

Several faculty in the Department are also members of the graduate program in Protein Engineering, which is described in the School of Biological Sciences section of the *Catalogue*.

MASTER OF SCIENCE DEGREE

Two plans are available for the M.S. degree: a thesis option and a course work option. Opportunities are available for part-time study toward the M.S. degree.

Students who enter the program with a B.S. degree in chemical engineering must take at least six graduate-level courses (22 units), while students who enter without undergraduate preparation in chemical engineering are required to take three to five additional prerequisite courses (Mathematics 105A-B-C and Engineering ChE60, ChE120A, ChE160, and ChE165.) A detailed program of study for each entering student is formulated in consultation with a faculty advisor.

Plan I: Thesis Option

The thesis option requires completion of 38 units of study (eight of which can be taken for study in conjunction with the thesis research topic); the completion of an original research project; the writing of the thesis describing it; and successful defense of the thesis.

Plan II: Course Work Option

The course work option requires the completion of 36–37 units of study, of which 28–29 must be nonresearch, graduate-level courses.

DOCTOR OF PHILOSOPHY DEGREE

The doctoral program is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with an advisory committee which takes into consideration the objectives and preparation of the candidate. The program of study must be approved by the faculty of the School.

There are no specific course requirements, but there are several milestones to be passed: three courses (9 to 12 units) beyond those required for the M.S. program, acceptance into a research group by

the faculty advisor, successful completion of the Ph.D. preliminary examination, formal advancement to candidacy by passing the qualifying examination which assesses the candidate's preparation for research and evaluates the proposed original research, successful completion of the research, and presentation and successful defense of the dissertation. There is no foreign language requirement. Ph.D. students have to meet departmental research requirements as a research assistant or equivalent, with or without salary. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. For at least the final two years of the doctoral program it is expected that the student will be a full-time resident in the School. Doctoral programs must be completed in seven calendar years from the date of admission.

Courses in Chemical and Biochemical Engineering and Materials Science

UNDERGRADUATE

NOTE: The undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

CHEMICAL ENGINEERING

ChE40 Chemical Engineering Calculations (5) F. Quantitative calculations and applications to process industries using mass and energy balances. Stoichiometric equations, multiple bypasses and recycle streams in process industries, and introduction to the first law of thermodynamics. Prerequisites: Engineering E10, Mathematics 2B, Chemistry 1C, and Physics 5A. (Design units: 1)

ChE60 Chemical Engineering Thermodynamics (5) W. Basic concepts and use of the thermodynamic functions of free energy, enthalpy, and entropy; properties of pure and mixtures; application of dynamic process and efficiencies. Solution thermodynamics and applications to oxidation reactions. Equilibrium phase diagrams and liquid to solid phase transformations. Prerequisites: ChE40, Engineering E10, Mathematics 2C, or equivalent. Only one course from Engineering ChE60, Engineering E101, and Engineering MAE91 may be taken for credit. (Design units: 1)

ChE120A Momentum Transfer (4) S. Macroscopic and differential mass balances; macroscopic and differential linear and angular momentum balances, mechanical energy balances; Ideal fluids, Newtonian and non-Newtonian fluids and turbulence. Applications to chemical processes. Prerequisites: ChE40, Mathematics 3D. (Design units: 1)

ChE120LA Chemical Engineering Laboratory I (4) W. Experimental study of thermodynamics, fluid mechanics, and heat and mass transfer. Operation and evaluation of process equipment, data analysis. Prerequisites: ChE60, ChE120B, and ChE160. (Design units: 1)

ChE120B Heat and Mass Transfer (4) F. Macroscopic and differential energy balances. Heat transfer coefficients, convective and radiative heat transfer, applications to equipment design, macroscopic and differential species balances, mass transfer with and without chemical reactions, mass transfer equipment design. Prerequisite: ChE120A. (Design units: 1)

ChE120LB Chemical Engineering Laboratory II (4) S. Continuation of Engineering ChE120LA covering mass transfer operations such as distillation, absorption, extraction, and the like. Rate and equilibria studies in simple chemical systems with and without reaction. Study of chemical process. Prerequisites: ChE120LA, ChE122, ChE163. (Design units: 3)

ChE122 Separation Processes (4) W. Application of equilibria and mass and energy balances for design of separation processes. Use of equilibrium laws for design of distillation, absorption, stripping, and extraction equipment. Design of multicomponent separators. Prerequisite: ChE60. (Design units: 3)

ChE160 Reaction Kinetics and Reactor Design (4) F. Introduction to quantitative analysis of chemical reactions and chemical reactor design. Reactor operations including batch, continuous stirred tank, and tubular reactor. Homogeneous and heterogeneous reactions. Prerequisites: Mathematics 3D, Chemistry 1C, Engineering ChE60. (Design units: 2)

ChE162 Chemical Engineering Design (5) S. Application of chemical engineering science techniques to design of chemical processes. Introduction to the systematic design of separations and the integration of energy requirement. Integration of process economics and optimization. Consideration of retrofit design, design of nontraditional chemical processes, process safety. Prerequisites: ChE120B, ChE122, ChE160. (Design units: 5)

ChE163 Chemical Process Control (4) W. Dynamic responses and control of chemical process equipment, dynamic modeling of chemical processes, linear systems analysis, analyses and design of feedback loops and advanced control systems. Prerequisites: ChE120B, ChE160. (Design units: 1)

ChE165 Introduction to Biochemical Engineering (3). Application of engineering principles to biochemical processes. Topics include: microbial pathways, energetics and control systems, enzyme and microbial kinetics, and the design and analysis of biological reactors. Prerequisites: Chemistry 1C, Mathematics 3D, and Engineering ChE160 or consent of instructor. (Design units: 1)

ChE170 Pollution Control (3). Application of basic pollution control principles to the chemical industry. Selection of environmentally compatible materials, prioritization of pollutants, analysis of material life cycles, design of unit operations to minimize waste, and economics of pollution control. Prerequisite: ChE40 or consent of instructor. (Design units: 1)

ChE172 Introduction to Bioremediation (3) W. Introduction to the application of engineering and biological principles toward the remediation of hazardous wastes. Emphasis on genetically-engineered bacteria and biological reactors for degrading recalcitrant compounds. Prerequisite: ChE160. (Design units: 0)

ChE175 Introduction to Catalysis (3). Solution catalysis, enzyme catalysis, catalysis by polymers and zeolites, and catalysis on inorganic surfaces. Prerequisites: Chemistry 51A or 52A; Engineering ChE60 or Chemistry 130A or Chemistry 131A. (Design units: 0)

ChE180 Transport Phenomena in Living Systems (3). An introduction to transport phenomena in cellular and whole organ systems. Application of transport theory including advection and diffusion to the movement of molecules in biological systems, including the cardiovascular system (heart and microcirculation), and the lung. Prerequisite: ChE120A or consent of instructor. (Design units: 0)

ChE189 Microelectronics Processing (3). Presents a broad introduction to the applications of the fundamental chemical engineering principles (of chemical kinetics, reactor design, heat transfer, fluid mechanics, mass transfer, thermodynamics, and polymers) to the design, analysis, and modification of microelectronic fabrication processes. Prerequisites: ChE120A, ChE120B, ChE120LB, ChE160. (Design units: 0)

ChE198 Group Study (1 to 4) F, W, S, Summer. Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. (Design units: varies)

ChE199 Individual Study (1 to 4) F, W, S, Summer. For undergraduate Engineering majors in supervised but independent readings, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

ChEH199 Individual Study for Honors Students (1 to 5) F, W, S. Supervised research in Chemical Engineering for participants in the Campuswide Honors Program. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. Open only to members of Campuswide Honors Program who are Chemical Engineering majors. May be repeated for credit as topics vary. (Design units: varies)

MATERIALS SCIENCE

MSE149 Ceramic Materials (4) W. A technical elective for students interested in the materials area. Topics covered include structure and properties of ceramics and design with ceramics. The laboratory component offers hands-on experience. Prerequisite: Engineering E54. Formerly Engineering ChE149. (Design units: 1)

MSE150 Mechanics of Materials (4) W. Concepts of stress and strain. Analysis of deformable solids under axial, torsional, shearing, and bending loads. Two-dimensional analysis of stress and strain. Residual stresses, indeterminate beam analysis methods, buckling, impact loading, design of fundamental structure components. Corequisite or prerequisite: E54. Prerequisite: MAE30. Same as MAE150. MSE150 and CEE150 cannot both be taken for credit. Formerly Engineering ChE150. (Design units: 1)

MSE153 Design Failure Investigation (4). Survey of the mechanisms by which mechanical devices may fail, including overload, fatigue, corrosion, and wear. Use of fractography and other evidence to interpret failure modes and specify design/manufacturing changes. Students redesign failed parts or structures based on actual parts and/or case histories. Prerequisite: MAE156. Formerly Engineering ChE153. (Design units: 2)

MSE154 Advanced Materials: Polymeric Materials (3). Covers the processing and design of polymeric materials, beginning with the synthesis of polymers. Mechanical behavior of polymers and polymeric composites emphasized. Design aspect using polymeric materials composites significant portion, utilizing case studies and student projects. Field trips to local polymeric industries required. Prerequisite: consent of instructor. Formerly Engineering ChE154. (Design units: 1)

MSE155A Composite Materials Design (4). Introduction to fiber-reinforced composites for mechanical applications. Properties of reinforcing fibers. Manufacture of fibers and composites. Micromechanics of fiber composites. Strength criteria and failure modes. Macromechanics in design of laminated composite structures. Prerequisites: Engineering E54; Engineering MSE150 or Engineering MAE150. Formerly Engineering ChE155A. (Design units: 3)

MSE155B Advanced Composites Design (4). Stress analysis and design limit of laminated composite structures. Thermal stresses, fatigue behavior, elastic instability. Manufacturing considerations and design of fittings and joints. Design cases include pressure vessels, shafts, struts, as well as components of an all-composite airplane. Prerequisite: MSE155A. Formerly Engineering ChE155B. (Design units: 2)

MSE156 Mechanical Behavior and Design Principles (4) S. Elastic and plastic deformation (three-dimensional analysis). Stress-strain relationships. Yielding criteria. Necking. Buckling. Fracture. Fatigue. Impact. Design parameters and criteria. Use of library is stressed. Prerequisites: E54, MSE150 or MAE150. Same as MAE156. Formerly Engineering ChE156. (Design units: 2)

GRADUATE**CHEMICAL AND BIOCHEMICAL ENGINEERING**

CBE209 Literature in Protein Engineering (1) F, W, S. Students review current papers in the field of protein engineering and present the ideas contained therein to other students and faculty. May be repeated for credit. Same as Molecular Biology 209, Physiology 209. Formerly Engineering BE209.

CBE210 Chemical Engineering Thermodynamics (4) F. Advanced application of the general thermodynamic methods to chemical engineering problems. First- and second-law consequences, estimation and correlation of thermodynamic properties; phase and chemical equilibria. Prerequisite: ChE60 or consent of instructor. Formerly Engineering BE210.

CBE220 Applied Chemical Engineering Mathematics (4) F. Mathematical and numerical techniques applied chemical engineering problems in transport phenomena, chemical process dynamics and control, chemical reactor design and stability, thermodynamics, and staged operations. Prerequisites: ChE120A, ChE120B, and ChE160 or consent of instructor. Formerly Engineering BE220.

CBE222 Bioseparation Processes (3). Recovery and purification of biologically produced proteins and chemicals. Basic principles and engineering design of various separation processes including chromatography, electrophoresis, extraction, crystallization, and membrane separation. Prerequisite: ChE165 or consent of instructor. Formerly Engineering BE222.

CBE230 Transport Phenomena (4) S. Heat, mass, and momentum transfer theory from the viewpoint of the basic transport equations. Steady and unsteady state; laminar and turbulent flow; boundary layer theory, mechanics of turbulent transport with specific application to complex chemical engineering situations. Prerequisites: ChE120A, ChE120B, or consent of instructor. Formerly Engineering BE230.

CBE240 Bioengineering with Recombinant Microorganisms (3) W, S. Engineering and biological principles important in recombinant cell technology. Host/vector selection, plasmid propagation, optimization of cloned gene expression, metabolic engineering, protein secretion, experimental techniques, modeling or recombinant cell systems. Prerequisites: ChE160, ChE165, or consent of instructor. Formerly Engineering BE240.

CBE242 Protein Engineering (3). The design of novel proteins and their production by genetic manipulation. Principles of protein structure and function and techniques of molecular biology relevant to protein engineering. Applications of protein technology. Prerequisite: ChE165, Molecular Biology and Biochemistry 203 and 204, or consent of instructor. Same as Physiology 242. Formerly Engineering BE242.

CBE250 Advanced Biochemical Engineering (3) F. Engineering studies of biological processes including enzyme reactions and fermentation processes with genetically engineered microorganisms and animal and plant cells. Development of production and recovery processes for biochemicals. Prerequisites: ChE160, ChE165, or consent of instructor. Formerly Engineering BE250.

CBE260 Reaction Engineering (4) W. Advanced topics in reaction engineering, reactor stability analysis, diffusional effect in heterogeneous catalysis, energy balance, optimization of reactor operation, dispersed phase reactors. Prerequisite: ChE160. Formerly Engineering BE260.

CBE262 Bioreactor Engineering (3). Modeling, optimization, and control of biological reactors. Statics and dynamics of bioreactors containing recombinant cells and multiple species. Prerequisite: consent of instructor. Formerly Engineering BE262.

CBE270 Bioremediation (3). Application of engineering and biological principles toward remediation of hazardous wastes. Degradation of toxic chemicals using genetically engineered microorganisms emphasized. Biological contacting devices for waste remediation also studied. Prerequisites: ChE160 and ChE165 or consent of instructor. Formerly Engineering BE270.

CBE280 Fundamentals of Phase Transformations (3). Principles of phase transformations applicable to many different materials and states of materials are emphasized. Applications in devices processing and materials development are discussed. Prerequisite: consent of instructor. Formerly Engineering BE280.

CBE285 Modeling Biomedical Systems (3) W. Theoretical model building and testing. Emphasis on biomedical systems including, but not limited to, transport phenomena in physiological systems, biomedical systems, and bioelectronic systems; statistical methods for parameter specification; sensitivity analysis. Prerequisite: consent of instructor.

CBE295 Seminars in Engineering (1 to 4). Seminars scheduled each year by individual faculty in major field of interest. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

CBE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation for the thesis required for the M.S. degree in Chemical and Biochemical Engineering. May be repeated for credit. Formerly Engineering BE296.

CBE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. in Chemical and Biochemical Engineering. May be repeated for credit. Formerly Engineering BE297.

CBE298 Seminars in Biochemical Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in biochemical engineering. Required of all graduate students in Chemical and Biochemical Engineering. Satisfactory/Unsatisfactory Grading only. May be repeated for credit. Formerly Engineering BE298.

CBE299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering BE299.

MATERIALS SCIENCE

MSE251 Dislocation Theory (3) F. Theory of elasticity and symmetry of crystals, plasticity and slip systems, stress field of dislocation, dislocation reaction, theories of yielding and strengthening, application of reaction-rate kinetics to thermally activated dislocation motion. Prerequisite: E54 or consent of instructor. Formerly Engineering CBE251.

MSE252A Theory of Diffusion (3) W. Solid-state diffusion, analysis of diffusion in solids, thermodynamics of diffusion, application of diffusion theory to phase transformation and deformation problems. Prerequisite: E54 or consent of instructor. Formerly Engineering CBE252A.

MSE252B Phase Transformations (3). Kinetics of nucleation, nucleation theory, isothermal transformation, martensitic transformation. Prerequisite: MSE252A. Formerly Engineering CBE252B.

MSE253 Kinetic Phenomena in Materials (3). Kinetic phenomena materials from a phenomenological viewpoint. Diffusion, chemical kinetics, particle-fluid interactions, adsorption, evaporation, statistical thermodynamics, kinetics of phase transformations, and spinodal decomposition. Formerly Engineering CBE253.

MSE254A Mechanical Behavior of Engineering Materials (3). Principles governing structure and mechanical behavior of materials, relationship relating microstructure and mechanical response with application to elasticity, plasticity, creep, and fatigue, study of rate-controlling mechanisms and failure modes, fracture of materials. Prerequisite: E54. Formerly Engineering CBE254A.

MSE254B Plasticity and Metal Forming (3). Stress and strain analysis, plasticity equations, yielding, integration of plasticity equations, plastic instability, application of plasticity theory to some forming processes. Prerequisite: E54, MAE30, or consent of instructor. Formerly Engineering CBE254B.

MSE255A Design with Ceramic Materials (3). Dependence of ceramic properties on bonding, crystal structure, defects, and microstructure. Ceramic manufacturing technology. Survey of physical properties. Strength, deformation, and fracture of ceramics. Mechanical design with brittle, environment-sensitive materials exhibiting time-dependent strengths. Prerequisite: E54. Formerly Engineering CBE255A.

MSE255B Science of Composite Materials (3). Properties of intentionally inhomogeneous materials, especially composites manufactured for extreme environments, elevated temperatures, wear resistance. Chemical compatibility of constituents, microstructural stability, environmental effects. Micromechanics of particulate and fiber-reinforced composites. Strength criteria, toughness, and failure mechanisms. Thermomechanical effects. Prerequisites: Engineering E54; MAE150 or MSE150; or consent of instructor. Formerly Engineering CBE255B.

MSE256A Fracture of Engineering Materials (3). Fracture mechanics and its application to engineering materials. Elastic properties of cracks, the stress intensity factor, the crack tip plastic zone, the J Integral approach, fracture toughness testing, the crack tip opening displacement, fracture at high temperatures, fatigue crack growth. Prerequisite: MAE156 or MSE156; or MSE254A or consent of instructor. Formerly Engineering CBE256A.

MSE256B Fatigue of Engineering Materials (3). Fatigue deformation and damage in engineering materials. Phenomenological descriptions, the Bauschinger Effect, persistent slip bands, extrusions and intrusions, crack nucleation, stage I and II crack growth, threshold effects, crack growth laws, materials selection. Prerequisite: MSE256A; or MAE156 or MSE156; or equivalent. Formerly Engineering CBE256B.

MSE257A Rapid Solidification (3). Principles and applications of rapid solidification, processing, heat flow, microstructures, and properties. Metastable phase formation, fine-grained structures, and extended solid solubility of alloying elements. Formerly Engineering CBE257A.

MSE257B Solidification Processing (3). Principles of control of structure, properties, and shape in processes involving liquid-solid and vapor-solid transformations. Heat flow, solute redistribution, nucleation and growth kinetics; resultant structure and properties. Examples drawn from metal casting and rapid solidification. Formerly Engineering CBE257B.

MSE257C Recent Developments in Advanced Materials (3). Concepts underlying the evolution of the microstructure and the mechanical behavior of advanced metallic systems during processing; correlation between microstructures and mechanical behavior. Emphasis on current research areas in materials. Formerly Engineering CBE257C.

MSE258 Computer Techniques in Experimental Materials Research (3). Principles and practical guidelines of automated materials testing. Computer fundamentals, programming languages, data acquisition and control hardware, interfacing techniques, programming strategies, data analysis, data storage, safeguard procedures. Prerequisite: E54 or consent of instructor. Formerly Engineering CBE258.

MSE259A Theory of Electron Microscopy (3). Imaging and diffraction theory relevant to transmission electron microscopy. The interpretation of images and diffraction information for microstructural analysis and the acquisition of microanalytical/chemical information. Appropriate for graduate students of all disciplines dealing with materials (i.e., engineering, physics, chemistry, and geosciences). Formerly Engineering CBE259A.

MSE259B Applied Analytical Transmission Electron Microscopy (3). Lectures on advanced topics in analytical transmission electron microscopy (TEM) along with a weekly laboratory. Students develop skill with the operation of the TEM and learn advanced research techniques. Prerequisite: MSE259A. Formerly Engineering CBE259B.

MSE260 Structure and Characterization of Materials (3). Structure of materials, atomic bonding, crystallography, crystal defects. Basic physical principles and applications of analytical techniques for characterizing materials, including x-ray diffraction, electron diffraction, scanning and transmission electron microscopy, scanning tunneling and atomic force microscopy, x-ray photoluminescence spectroscopy. Formerly Engineering CBE260.

MSE261 High-Temperature Deformation of Engineering Materials (3). Theoretical and practical aspects of creep and superplasticity in metallic and non-metallic systems are presented. Topics include: creep testing methods, diffusional creep, deformation mechanism maps, and superplasticity in non-metallics. Prerequisites: Engineering E54; MAE156 or MSE156; or consent of instructor. Formerly Engineering CBE261.

MSE295 Seminar in Engineering (1 to 4) F, W, S, Summer. Seminars by individual faculty in major fields of interest. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

MSE296 Master of Science Thesis Research (4 to 12) F, W, S, Summer. Individual research or investigation conducted in preparation for a thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MSE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S, Summer. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

MSE298 Seminars in Materials Science Engineering (1) F, W, S, Summer. Presentation of advanced topics and reports of current research efforts in Materials Science Engineering. Required of all graduate students in Materials Science Engineering. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

MSE299 Individual Research (4 to 12) F, W, S, Summer. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit.

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

E4150 Engineering Gateway; (949) 824-5333

Stephen G. Ritchie, **Department Chair**

Faculty

Alfredo H.-S. Ang: Structural and earthquake engineering, risk and reliability engineering

Constantinos V. Chrysikopoulos: Subsurface solute transport, nonaqueous phase liquid dissolution in porous media, mathematical modeling

Maria Q. Feng: Structural engineering and intelligent control of structural systems

Stanley B. Grant: Environmental engineering, coagulation and filtration of colloidal contaminants, environmental microbiology

Gary L. Guymon: Water resources, groundwater, modeling uncertainty

Medhat A. Haroun: Numerical and experimental modeling of the seismic behavior of structural systems for the design and retrofit of liquid storage tanks, bridge-supporting elements, and buildings

R. (Jay) Jayakrishnan: Transportation systems analysis

Michael G. McNally: Travel behavior, transportation systems analysis

Terese M. Olson: Environmental engineering, aquatic chemistry, colloidal processes

Gerard C. Perdoen: Structural analysis, experimental structural dynamics

Amelia C. Regan: Logistics, freight and fleet management, intermodal transportation systems

Wilfred W. Recker: Transportation systems modeling, traffic control, and urban systems analysis

Stephen G. Ritchie: Transportation engineering advanced traffic management and control systems, development and application of emerging technologies in transportation

Brett F. Sanders: Environmental and computational fluid dynamics, water resources engineering

Jan Scherfig: Water reclamation, waste treatment processes, environmental engineering

Robin Shepherd: Structural dynamics, earthquake-resistant design

Roberto Villaverde: Structural dynamics and earthquake engineering

Jann N. Yang: Structural control, earthquake engineering, structural dynamics, fatigue, reliability and maintainability

Lecturers

Shawn R. Akins: Computer-aided geometric design

Dirk Bondy: Structural engineering

L. James Ewing, Jr.: Water and wastewater systems, reclamation and reuse

Max D. Lechtman: Environmental microbiology

Jeffrey S. Munic: Hazardous waste management

Ayman E. Salama: Reinforced concrete behavior and design

W. H. Scholz: Construction and project management

Civil Engineering has been described as the art of harnessing the great powers of nature for the use and convenience of human beings. The success of this endeavor is evident all around us. The inhospitable arid plain which greeted the early settlers in Southern California has been transformed into a thriving metropolis largely by the application of civil engineering.

The goal of the Civil Engineering curriculum is to prepare graduates for a career in practice, research, or teaching. At the undergraduate level a common core of fundamental subjects is provided, and students are required to specialize in their senior year. Specializations are offered in Structural, Transportation, and Water Resources and Environmental Engineering. Graduate opportunities are in three major thrust areas: structural analysis, design, and reliability; transportation systems engineering; and water resources and environmental engineering.

The career opportunities in civil engineering are varied as in any other discipline. Graduates may look forward to long-term careers in major corporations, public bodies, the military, private consulting firms, or to being self-employed in private practice. History has shown a civil engineering education to be a good ground for many administrative and managerial positions.

Environmental Engineering involves designing environmental protection or remediation strategies for multiple resources—water, air, and soil, often with combinations of physical, chemical, and biological treatment methods in the context of a complex regulatory framework.

The goal of the Environmental Engineering curriculum is to prepare graduates with a strong basic science background, particularly in chemistry and biology, and to provide students with a broad exposure to several environmental engineering science disciplines. Courses relating to transport processes, water quality control, air quality control, and process design are included in the core.

Career opportunities in environmental engineering are diverse. Graduates generally find careers related to pollution control and the remediation of air, water, and soil environments.

Undergraduate Major in Civil Engineering

The program objective is to prepare civil engineering graduates for a career in the profession or for entry into graduate school. The curriculum provides the opportunity to obtain a firm foundation in engineering science and to develop the techniques of analysis and design, which are basic for the successful practitioner. Emphasis is placed on developing problem-solving skills.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), two quarters of general chemistry (with laboratory), and one course in computational methods (FORTRAN, Pascal, or C). Courses in linear algebra, differential equations, dynamics, thermodynamics, statics, and materials science are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Dynamics, materials science, statics, and thermodynamics may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN CIVIL ENGINEERING

Credit for at least 188 units including:

University Requirements: See pages 54–58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 5A-B-C and 5LB-LC, and one course selected from Chemistry 1C, Physics 5D, 5E, or Biological Sciences 94 (at least 30 units).

Basic Engineering Courses: Engineering CEE1, CEE2, CEE5, CEE10, CEE15, CEE30, CEE80, and one course selected from Engineering E54, ECE72, MAE91, E101 (27–28 units).

Civil Engineering Core Courses: Engineering CEE105, CEE115, CEE125, CEE127, CEE131, CEE131L, CEE132, CEE150, CEE150L, CEE151A, CEE151B, CEE154, CEE170A, CEE170B, CEE171 (55 units).

Technical Electives: 8 units in one of the three specializations.

Specialization in Structural Engineering: Requires Engineering CEE155 and the capstone design course CEE156.

Specialization in Transportation Engineering: Requires Engineering CEE126 and the capstone design course CEE129.

Specialization in Water Resources and Environmental Engineering: Requires Engineering CEE173 and the capstone design course CEE175.

In addition, students must aggregate a minimum of 24 design units. Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

Sample Program of Study — Civil Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Physics 5B, 5LB
CEE2	Physics 5A	CEE1
CEE10		Breadth
Sophomore		
Mathematics 2D	Mathematics 3A	Mathematics 3D
Physics 5C, 5LC	Engineering Science	Science Elective
CEE5	CEE15	CEE80
Breadth	CEE30	Breadth
Junior		
CEE105	CEE127	CEE131, CEE131L
CEE125	CEE151A	CEE151B
CEE150, CEE150L	CEE170A	CEE170B
Breadth	Breadth	
Senior		
CEE154	CEE115	Specialization Capstone
CEE171	CEE132	Breadth
Breadth	Specialization Technical	Breadth
Breadth	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

The sample program of study chart shown is typical for the accredited major in Civil Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. (Students who select the Environmental Engineering specialization within the Civil Engineering major should follow the Civil Engineering sample program.) Students must have their programs approved by their faculty advisor. Civil Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

Undergraduate Major in Environmental Engineering

The program objective is to prepare Environmental Engineering graduates for careers in the profession or for entry into graduate school. The curriculum includes a core of mathematics, physics, biology, and chemistry, as well as fundamental engineering science courses. Environmental Engineering courses in water and air quality, water resources management, water and air pollution control, and hazardous waste management fill much of the remaining curriculum. Design experiences in these courses are structured to give

students the necessary background to design solutions to environmental problems that satisfy environmental, economic, safety, and and sociopolitical constraints.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), and one course in computational methods (FORTRAN, Pascal, or C). Courses in linear algebra, differential equations, thermodynamics, dynamics, and statics are required for junior academic standing, and it is recommended that these courses be completed prior to transferring to UCI. Courses in thermodynamics, dynamics, and statics may be offered during summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ENVIRONMENTAL ENGINEERING

Credit for at least 195 units including:

University Requirements: See pages 54-58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A-B-C and 1LA-LB, Chemistry 51A, 51LA, Physics 5A-B-C and 5LB-LC, and Biological Sciences 94 (at least 40 units).

Basic Engineering Courses: Engineering CEE1, CEE3, CEE10, CEE15, CEE30, CEE69, CEE80, and ChE60 (29 units).

Civil Engineering Core Courses: Engineering CEE105, CEE131, CEE131L, CEE150, CEE150L, CEE164, CEE164L, CEE165, CEE166, CEE170A, CEE170B, CEE171, CEE172, CEE173, CEE175, and two air quality electives from Engineering MAE110, MAE162, or MAE164 (57-58 units).

In addition, students must aggregate a minimum of 24 design units. Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements.

At most an aggregate total of 6 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Environmental Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Environmental Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

Sample Program of Study — Environmental Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Chemistry 1C
CEE10	Physics 5A	Physics 5B, LB
	Breadth	CEE3
Sophomore		
Mathematics 2D	CEE15	Mathematics 3D
Mathematics 3A	CEE30	CEE1
Physics 5C, 5LC	ChE60	CEE69
Breadth	Breadth	CEE80
Junior		
CEE105	Chemistry 51A, 51LA	CEE131, CEE131L
CEE150, 150L	Biological Sciences 94	CEE170B
CEE164, 164L	CEE170A	Breadth
Breadth	Breadth	Breadth
Senior		
CEE171	CEE165	CEE175
CEE172	CEE166	Air Quality Elective
Air Quality Elective	CEE173	Breadth
Breadth	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

Graduate Study in Civil Engineering

Civil Engineering addresses the technology of constructed environments and, as such, embraces a wide range of intellectual endeavors. The Department of Civil and Environmental Engineering focuses its graduate study and research program on three areas: structural engineering, including aspects of structural dynamics, earthquake engineering, and reliability and risk assessment; transportation systems engineering, including traffic operations and management, expert systems applications, travel behavior, and transportation systems analysis; and water resources and environmental engineering, including water resources, contamination management, and pollution control technologies.

Programs of study leading to the M.S. and Ph.D. degrees in Civil Engineering are offered.

MASTER OF SCIENCE DEGREE

The M.S. degree reflects achievement of an advanced level of competence for the professional practice of civil engineering. Two plans are available to those working toward the M.S. degree: a thesis option and a course work option. Opportunities are available for part-time study toward the M.S. degree.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study (eight of which can be taken for study in conjunction with the thesis research topic); the completion of an original research project; the writing of the thesis describing it; and presentation of the thesis research findings in a public seminar. Of the 36 units, a minimum of 20 units must be in nonresearch, graduate-level courses.

Plan II: Course Work Option

The course work option requires the completion of 36 units of study, at least 30 of which must be in nonresearch graduate-level courses. The remaining six units may be earned as graduate-level course work, individual research, or upper-division undergraduate units.

DOCTOR OF PHILOSOPHY DEGREE

The Ph.D. degree indicates attainment of an original and significant research contribution to the state-of-the-art in the candidate's field, and an ability to communicate advanced engineering concepts. The

doctoral program is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with a faculty advisor who takes into consideration the objectives and preparation of the candidate. The program of study must be approved by the faculty advisor and the Graduate Advisor of the Department.

There are no specific course requirements. Within this flexible framework, the School maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Civil Engineering program's guidelines for details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; early assessment of the student's research potential (this includes a preliminary examination), research preparation, formal advancement to candidacy by passing the qualifying examination, completion of a significant research investigation, and the submission and oral defense of an acceptable dissertation. There is no foreign language requirement. Ph.D. students have to meet departmental research requirements as a research assistant or equivalent, with or without salary. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. For at least the final two years of the doctoral program it is expected that the student will be a full-time resident in the School. Doctoral programs must be completed in seven calendar years from the date of admission.

THE INSTITUTE OF TRANSPORTATION STUDIES

The Institute of Transportation Studies at Irvine (ITS) is part of a multicampus research unit of the University of California. Several faculty studying transportation systems engineering in the Department of Civil and Environmental Engineering participate in the Institute. Students choosing to focus their studies in transportation will find strong interdisciplinary opportunities between the Department and ITS. See the Research and Graduate Studies section of the *Catalogue* for additional information.

Courses in Civil and Environmental Engineering**LOWER-DIVISION**

NOTE: The undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

CEE1 Graphics Communication and Computer-Aided Design (4) W.

Methods for communicating design concepts and engineering data using two-dimensional and three-dimensional graphics. Fundamentals of computer-aided drafting using ACAD. Construction of three-dimensional models of structures. Introduction to design. Design project. Prerequisite: CEE10. Formerly Engineering CE1. (Design units: 1)

CEE2 Introduction to Civil Engineering (1) F. Introduction to the field of Civil Engineering from the ancient civilizations to modern practice. Ethics and professional responsibility. The role of science, mathematics, and computers in civil engineering practice. Formerly Engineering CE2. (Design units: 0)

CEE3 Introduction to Environmental Science and Engineering (2) S. Introduction to the sources of environmental problems, scientific and engineering principles affecting the fate of pollutants in the environment, and technology for pollution control and remediation. Corequisite or prerequisites: Mathematics 2C, Physics 5B. Prerequisite: CEE10. Formerly Engineering CE3. (Design units: 0.5)

CEE5 Land Measurements and Analysis (4) S. Introduction to surveying and land measurement. Use of the level and transit equipment, legal descriptions, subdivisions, topographic surveys, mapping vertical and horizontal curves. Analysis of surveying field data using manual methods, computer programs, and the COGO software system. Prerequisite: CEE10. Formerly Engineering CE5. (Design units: 0)

CEE10 Methods I: Problem Solving and Computation (4) F. Introduction to engineering analysis and design from a problem solving perspective. Fundamentals of computers and structured programming. Models, algorithms, and flowcharts. Application of C or FORTRAN to civil and environmental engineering problems. Corequisite or prerequisite: Mathematics 2A. Only one course from Engineering CEE10, Engineering E10, and Engineering MAE10 may be taken for credit. (Design units: 1)

CEE15 Methods II: Systems Analysis and Decision-Making (4) W. Use of systems analysis for decision-making in addressing fundamental issues of infrastructure and design of civil engineering systems. Emphasis on the development of methods of analysis for resource allocation and capital investment involving planning, design, and management. Prerequisites: Mathematics 2C and Engineering CEE10. (Design units: 1)

CEE30 Statics (4) W. Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or Prerequisite: Mathematics 2D. Prerequisite: Physics 5A. CEE30 and MAE30 may not both be taken for credit. Formerly Engineering CE30. (Design units: 0)

CEE54 Civil Engineering Materials (4) W. Study of strength, stiffness, and other properties required of materials for engineering uses. Qualitative and quantitative characteristics of typical materials including Portland cement and bituminous cement concretes, steel, timber, glass-reinforced plastics, and other composites. Micro- and macro-material structure and behavior. Engineering CEE54 and E54 may not both be taken for credit. Formerly Engineering CE54. (Design units: 0)

CEE69 Hazardous Waste Management (3) S. Introduction to the field of hazardous waste management, including regulatory issues, characterization and remediation of hazardous waste sites. Corequisite or Prerequisites: Chemistry 1C, Mathematics 3D. Prerequisites: Engineering CEE10, CEE15, and Physics 5B. Formerly Engineering CE69. (Design units: 2)

CEE80 Dynamics (3) S. Rigid body dynamics, momentum, and energy principles; modeling and analysis of mechanical systems. Prerequisites: Mathematics 2D, Physics 5A. Only one course from CEE80, E80, MAE80 may be taken for credit. Formerly Engineering CE80. (Design units: 0)

UPPER-DIVISION

CEE105 Methods III: Analysis of Uncertainty (4) F. Modeling and analysis of engineering problems under uncertainty. Engineering application of probability and statistical concepts and methods. Prerequisite: Mathematics 3A. Formerly Engineering CE105. (Design units: 0)

CEE112 Construction Management and Control (4) W. Project definition, scheduling and control; material, labor, and equipment allocation; cost analysis; project organization, documentation, and reporting. Formerly Engineering CE112. (Design units: 1)

CEE115 Methods IV: Systems Model and Project Management (4) W. Analysis, modeling and management of civil engineering systems. Topics include: statistics and studies of performance, probabilistic models and simulation, project elements and organization, managerial concepts allocation. Relies on several real-world examples. Prerequisites: CEE15, CEE105. (Design units: 1)

CEE125 Transportation Engineering (4) F. Introduction to analysis and design of fundamental transportation system components, such as highways and traffic systems, individual vehicle motion, basic elements of geometric design, vehicle flow and elementary traffic flow relations, capacity analysis, pavements and pavement management systems. Formerly Engineering CE125. (Design units: 2)

CEE126 Transportation Systems Analysis and Design (4) W. Theoretical foundations of transportation planning, design, and analysis methods. Theory and application of aggregate and disaggregate models for land use development, trip generation, and destination, mode, and route choice. Transportation network analysis. Planning, design, and evaluation of system alternatives. Prerequisite: CEE105. Formerly Engineering CE126. (Design units: 2)

CEE127 Traffic Engineering (4) W. Introduction to fundamentals of urban traffic engineering, including data collection, analysis, and design. Traffic engineering studies, traffic flow theory, traffic control devices, traffic signals, capacity and level of service analysis of freeways and urban streets. Prerequisites: CEE105, CEE125. Formerly Engineering CE127. (Design units: 2)

CEE128 Computer-Aided Geometric Design for Civil Engineers (4) S. Introduction to the use of computer-aided design techniques. Focus on the design of efficient roadway alignments, gradients, and other features to accommodate the safe movement of traffic. Instruction based on the DCA computer design system. Prerequisites: CEE1, CEE10, CEE125. Formerly Engineering CE128. (Design units: 4)

CEE129 Transportation Design Laboratory (4) S. Design and evaluation of alternative transportation networks for traffic impact studies. Focus on circulation improvements including site access, lane configuration, intersection geometry, and traffic control system designs. Evaluation of alternate designs for current and projected traffic control systems designs. Prerequisites: CEE126 and CEE127. (Design units: 4)

CEE130 Geology for Engineers and Scientists (5) W. Principles of geology for engineers and applied earth scientists. Rock characteristics and formation, geologic structure, erosion, and groundwater. Interpretation of geological maps and geophysical data. Applications to geologic hazards such as earthquakes, slope stability, and tunneling problems. Prerequisites: Chemistry 1B, Physics 5B; upper-division standing. Formerly Engineering CE130. (Design units: 0)

CEE131 Soil Mechanics (3) S. Mechanics of soils, composition and classification of soils, compaction, compressibility and consolidation, shear strength, seepage, bearing capacity, lateral earth pressure, retaining walls, piles. Corequisite: CEE131L. Prerequisites: CEE150, CEE170A. Formerly Engineering CE131. (Design units: 0)

CEE131L Soil Mechanics Laboratory (2) S. Laboratory procedures of soil testing for engineering problems. Corequisites: CEE131. Formerly Engineering CE131L. (Design units: 0)

CEE132 Foundation Design (4) W. Applications of soil mechanics principles to the analysis and design of shallow foundations, retaining walls, pile foundations, and braced cuts. Design criteria: bearing capacity, working loads and tolerable settlements, structural integrity of the foundation element. Damage from construction operations. Prerequisites: CEE131, CEE154. Formerly Engineering CE132. (Design units: 3)

CEE150 Mechanics of Materials (4) F. Stresses and strains, strain-stress diagrams, axial deformations, torsion, bending and shear stresses in beams, shear force and bending moment diagrams, combined stresses, principal stresses, Mohr's circle, deflection of beams, columns. Corequisite: CEE150L. Prerequisite: CEE30. Only one course from CEE150, MAE150 and MSE150 may be taken for credit. Formerly Engineering CE150. (Design units: 0)

CEE150L Mechanics of Materials Laboratory (1) F. Experimental methods and fundamentals for mechanics of materials analysis. Corequisites: CEE150. Prerequisite: CEE30. Formerly Engineering CE150L. (Design units: 0)

CEE151A Structural Analysis and Design (5) W. Concepts of structural design, strain energy and virtual work, influence lines, deflections, fundamentals of indeterminate analysis. Prerequisite: CEE150. Formerly Engineering CE151A. (Design units: 2)

CEE151B Statically Indeterminate Structures (4) S. Fundamentals of statically indeterminate structures; strain energy and virtual work; energy theorems; deflections, moment-area methods, conjugate beam, method of virtual work, Castigliano theorem; method of consistent deformations; slope-deflection method; approximate methods; influence lines for indeterminate structures. Prerequisite: CEE151A. Formerly Engineering CE151B. (Design units: 0)

CEE152 Computer Methods of Structural Analysis (4) S. Matrix techniques for indeterminate framed structures: flexibility and stiffness method. Computer techniques using the stiffness method. Structural dynamics of single, multi, and infinite degree of freedom systems. Computer techniques for frequencies and modes. Prerequisite: CEE151A. Formerly Engineering CE152. (Design units: 0)

CEE154 Reinforced Concrete Design (4) F. Ultimate strength design of systems of reinforced concrete beams, slabs, columns, and footings. Prerequisite: CEE151A. Formerly Engineering CE154. (Design units: 3)

CEE155 Structural Steel Design (4) W. Design in steel of tension members, beams, columns, welded and bolted connections; eccentrically loaded and moment resistant joints; plate girders. Plastic design; load and resistance factor design. Composite construction; introduction to computer-aided design. Prerequisite: CEE151A. Formerly Engineering CE155. (Design units: 4)

CEE156 Structural Design (4) S. Design project which includes site planning, footing, framing, and roof design. Prerequisite: CEE154. Formerly Engineering CE156. (Design units: 4)

CEE157 Lightweight Structures (4) S. Fundamentals of torsion and bending. Analysis and design of thin-wall and composite beams. Applications of energy methods and matrix methods. Stress analysis of aircraft components. Stiffness, strength, and buckling. Prerequisite: CEE150 or Engineering MAE150. Same as Engineering MAE157. Formerly Engineering CE157. (Design units: 2)

CEE164 Chemistry for Environmental Engineering (3) F. Basic concepts from general, physical, organic, and analytical chemistry as they relate to environmental engineering. Particular emphasis on the fundamentals of equilibrium and kinetics applied to acid-base chemistry, mineral and gas solubility, coordination, redox reactions, and adsorption. Corequisites: CEE164L. Prerequisites: Chemistry 1C; Engineering ChE60, E101, or MAE91. Same as Environmental Analysis and Design E161. Formerly Engineering CE164. (Design units: 0)

CEE164L Chemistry Laboratory for Environmental Engineering (1) F. Experimental methods and fundamentals for environmental chemical analysis. Corequisites: CEE164. Prerequisites: Chemistry 1C; Engineering ChE60, E101, or MAE91. Same as Environmental Analysis and Design E161L. Formerly Engineering CE164L. (Design units: 0)

CEE165 Physical-Chemical Processes (4) W. Fundamentals and design of physical and chemical treatment processes for water and wastewater. Unit operations, such as coagulation, filtration, adsorption, ion exchange, membrane, gas-transfer, chemical oxidation, and disinfection processes. Applications to physical-chemical processes in natural waters. Design project included. Prerequisites: CEE164, CEE170B. Formerly Engineering CE165. (Design units: 2)

CEE166 Microbial Processes (4) W. Fundamentals and design of microbial systems for solving environmental engineering problems. Topics include microbial diversity, growth energetics and kinetics, gene manipulation and genetic engineering, microbial ecology, aerobic and anaerobic treatment processes, and biodegradation of environmental contaminants. Prerequisite: CEE164 or consent of instructor. Formerly Engineering CE166. (Design units: 2)

CEE170A Introduction to Fluid Mechanics (4) W. Hydrostatics; control volume analysis; the basic flow equations of conservation of mass, momentum, and energy; dimensional analysis; effects of viscosity; mathematical analysis of ideal fluid flow. Prerequisites: Physics 5A and Mathematics 2D; Engineering CEE80 or E80 or MAE80. Engineering CEE170A and Engineering MAE130A may not both be taken for credit. Formerly Engineering CE170A. (Design units: 0)

CEE170B Hydraulic Systems (4) S. With laboratory. Gradually varied flow, controls, and hydraulic jump. Orifices, weirs, and venturi meters. Turbomachines. Pipe flow, pipe networks, and water hammer. Water supply and storm drainage. Prerequisite: CEE170A. Formerly Engineering CE170B. (Design units: 2)

CEE171 Introduction to Hydrology (4) F. Analysis of hydrologic systems. Hydrological cycle, climate and meteorology, natural streams, rainfall-runoff relationships, flood hydrology, frequency/risk analysis, stream routing, groundwater hydrology, water supply and use. Mini-design projects and computer applications included. Prerequisites: CEE170A, CEE170B; CEE130 recommended. Formerly Engineering CE171. (Design units: 2)

CEE172 Groundwater Hydrology (4) W. Introduction to analysis and design for groundwater problems. Topics include hydrological cycle, occurrence and distribution, Darcy's law, mass balance, aquifers, flow nets, resource testing and evaluation, geotechnical applications, groundwater contamination. Mini-design projects and computer applications included. Prerequisites: CEE170A, CEE170B; CEE130 recommended. Formerly Engineering CE172. (Design units: 2)

CEE173 Water Resources and Water Quality (4) F. Water systems in western U.S., water quality parameters, water use, reclamation, and reuse. Modeling and design of treatment systems. Comprehensive design project. Prerequisite: CEE170B. Formerly Engineering CE173. (Design units: 3)

CEE174 Contaminant Transport in Environmental Systems (4) S. Basic principles governing transport of chemical constituents in surface and groundwater, including advection, dispersion, sorption, interphase mass transfer. Introduction to micrometeorology and atmospheric diffusion theories. Prerequisite: CEE170A. Formerly Engineering CE174. (Design units: 2)

CEE175 Design of Water and Waste Treatment Systems (4) S. Design of unit processes for the treatment of water and wastewater. Concurrent introduction to materials and selection, design layout, mass balances, control systems, and plans and specifications. Field trip and projects included. Prerequisites: CEE170B, CEE173. Formerly Engineering CE175. (Design units: 4)

CEE185 Numerical Methods and Mathematica (4) W. Numerical solution of problems occurring in engineering practice. Computational errors, direct and iterative methods for linear systems of equations, interpolation, differentiation, quadrature, nonlinear equations, least squares, differential equations. Introduction to and use of Mathematica to develop and use numerical methods. Prerequisites: Mathematics 3D, Engineering CEE10. Only one course from Engineering CEE185, Engineering MAE185, and Mathematics 105A may be taken for credit. Formerly Engineering CE185. (Design units: 0)

CEE198 Group Study (1 to 4) F, W, S. Group study of selected topics in Civil and Environmental Engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. Formerly Engineering CE198. (Design units: varies)

CEE199 Individual Study (1 to 4 per quarter) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. Formerly Engineering CE199. (Design units: varies)

CEEH199 Individual Study for Honors Students (1 to 5) F, W, S. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Civil Engineering. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Open only to members of the Campuswide Honors Program who are Civil or Environmental Engineering students. May be repeated for credit as topics vary. Formerly Engineering CEH199. (Design units: varies)

GRADUATE

CEE220A Travel Demand Analysis I (3) W. Fundamentals of transportation systems analysis. Theoretical aspects of travel demand. Travel behavior. Modeling of performance characteristics and costs of transportation modes. In-depth presentation of travel demand modeling techniques. Development of travel choice models including mode, route, and destination choice. Equilibrium. Prerequisite: knowledge of probability and statistics. Formerly Engineering CE220A.

CEE220B Travel Demand Analysis II (3) S. Methods of discrete choice analysis and their applications in the modeling of transportation systems. Emphasis on the development of a sound understanding of theoretical aspects of discrete choice modeling that are useful in many applications in travel demand analysis. Prerequisite: CEE220A. Formerly Engineering CE220B.

CEE221A Transportation Systems Analysis I (3) F. Introduction to mathematical methods and models to address logistics and urban transportation problems. Techniques include stochastic models, queueing theory, linear programming, and introductory non-linear optimization. Prerequisite: basic knowledge of probability theory. Formerly Engineering CE221A.

CEE221B Transportation Systems Analysis II (3) S. Advanced mathematical methods and models to address logistics and urban transportation problems. Topics include network flows, advanced optimization techniques, dynamic network models, and geometric models. Prerequisites: CEE221A; graduate standing or consent of instructor. Formerly Engineering CE221B.

CEE222 Transit Systems Planning (3) F. Planning methods for public transportation in urban areas. Technological and operating characteristics of vehicles, facilities, and systems. Short-range planning techniques: data collection and analysis, demand analysis, mode choice, operational strategies, financial analysis. Design of systems to improve performance. Formerly Engineering CE222.

CEE223A Artificial Intelligence Techniques in Transportation I (3) F. Introduction to basic concepts and characteristics of knowledge-based expert systems in civil engineering. Scope of expert systems, difference from conventional computer programs, architecture, knowledge representation, knowledge engineering, building and expert system, development tools. Prerequisite: graduate standing or consent of instructor. Formerly Engineering CE223A.

CEE223B Artificial Intelligence Techniques in Transportation II (3) W. In-depth study of selected topics in the application of artificial intelligence techniques in transportation engineering, particularly artificial neural networks or knowledge-based expert systems. Prerequisites: graduate standing and CEE223A, or consent of instructor. Formerly Engineering CE223B.

CEE224A Transportation Data Analysis I (3) F. Statistical analysis of transportation data sources. Analysis of categorical and ordinal data. Regression and advanced multivariate analysis methods such as discriminant analysis, canonical correlation, and factor analysis. Sampling techniques, sample error and bias, survey instrument design. Prerequisites: knowledge of probability and statistics; graduate standing or consent of instructor. Formerly Engineering CE224A.

CEE224B Transportation Data Analysis II (3) W. Advanced methods of statistical analysis of transportation data sources; causal modeling and structural equation models. Analysis of covariance structures involving discrete choice and ordinal scale variables. Prerequisite: CEE224A or equivalent. Formerly Engineering CE224B.

CEE225A Transportation Planning Models I (3) S. Analytical techniques for the study of interactions between transportation systems design and the spatial distribution of urban activities. Development of models of demographic and economic activity, land use, and facility location. Forecasting exogenous inputs to existing transportation models. Prerequisite: knowledge of introductory systems analysis. Formerly Engineering CE225A.

CEE225B Transportation Planning Models II (3) S. Design and application of comprehensive transportation models. Network development, demand modeling, and equilibrium assignment. Model calibration, validation, prediction, and evaluation. Regional modeling, site impact analysis, and circulation studies. Design of transportation alternatives. Prerequisites: CEE126 or the equivalent; graduate standing or consent of instructor. Formerly Engineering CE225B.

CEE226A Traffic Flow Theory I (3) F. Traffic measurement and fundamental speed-density-flow relationships. Kinematic models. Shock waves. Statistical-kinetic theory of traffic. Introductory car-following principles and stability. Gap acceptance. Platoon dispersion. Two-fluid model. Queueing processes. Multi-regime and catastrophe models. Higher-order continuum models. Microscopic and macroscopic simulation. Prerequisites: knowledge of basic probability and statistics; graduate standing or consent of instructor. Formerly Engineering CE226A.

CEE226B Traffic Flow Theory II (3) S. Advanced mathematical analysis of vehicular flow. Detailed treatise on car-following models. Fourier and Laplace analysis of stability problems. Perturbation analysis. Derivation of macroscopic traffic flow relationships from microscopic considerations. Advanced hydrodynamic theory. Prerequisites: CEE226A; graduate standing or consent of instructor. Formerly Engineering CE226B.

CEE227A Transportation Logistics I (3) W. Optimization applied to freight network modeling. Freight and fleet management including: inventory modeling and planning, and vehicle routing and scheduling under deterministic and stochastic demand. Prerequisite: CEE221A.

CEE227B Transportation Logistics II (3) S. Facility location and routing. Optimization in location analysis, distribution system design, siting for emergency and non-emergency services, location routing with uncertainty, hazardous materials logistics. Prerequisite: CEE221A.

CEE228 Urban Transportation Networks (3) S. Analytical approaches and algorithms to the formulation and solution of the equilibrium assignment problem for transportation networks. Emphasis on user equilibrium (UE), comparison with system optimal, mathematical programming formulation, supply functions, estimation. Estimating origin-destination matrices, network design problems. Prerequisite: CEE220A or equivalent. Formerly Engineering CE228.

CEE229A Traffic Systems Operations and Control I (3) W. Introduction to operation, control, and analysis of arterial and freeway traffic systems. Control concepts, detectors, local controllers, system master, incident-detection techniques, advanced traffic measurement technologies, intelligent vehicle-highway systems, advanced transportation management systems, advanced traveler information systems. Prerequisite: CEE226A or CEE127. Formerly Engineering CE229A.

CEE229B Traffic Systems Operations and Control II (3) S. Introduction to control theory. Control formulations for corridor and network systems with freeways and arterials. Real-time control and demand management. Development and application of microscopic and macroscopic simulation models for integrated traffic systems. Dynamic models of Intelligent Vehicle-Highway

Systems. Prerequisites: CEE229A; graduate standing or consent of instructor. Formerly Engineering CE229B.

CEE231 Foundation Engineering (3) W. Essentials for design and analysis of structural members that transmit superstructure loads to the ground. Topics include subsurface investigations, excavation, dewatering, bracing, footings, mat foundations, piles and pile foundations, caissons and cofferdams, other special foundations. Prerequisite: CEE131 or equivalent. Formerly Engineering CE231.

CEE232 Soil Dynamics (3) S. Wave propagation. Soil properties for dynamic loads. Effects of earthquakes on retaining walls, dams, and embankments. Dynamic behavior of footings and pile foundations. Liquefaction of soils. Machine foundations. Prerequisites: CEE131, CEE247. Formerly Engineering CE232.

CEE241 Control of Structures (3) S. Concept of linear system theory, classical approach to control of linear structures, modern approach to control of linear structures, control of nonlinear structures, optimal control. Prerequisites: CEE247. Formerly Engineering CE241.

CEE242 Advanced Strength of Materials (3) W. Beams on elastic foundations. Combined axial and lateral loads. Curved beams. Unsymmetric bending. Shear center. Stresses and strains. Basic equations for theory of elasticity. Energy principles. Theory of torsion. Combined bending and torsion. Formerly Engineering CE242.

CEE243 Mechanics of Composite Materials (3) S. Stress-strain relationship for orthotropic materials; invariant properties of an orthotropic lamina; biaxial strength theory for an orthotropic lamina; mechanics of materials approach to stiffness; elasticity approach to stiffness; classical lamination theory; strength of laminates; statistical theory of fatigue damage. Prerequisite: consent of instructor. Formerly Engineering CE243.

CEE245 Experimental Modal Analysis (3) S. A thorough coverage of modal analysis techniques including digital signal processing concepts, structural dynamics theory, modal parameter estimation techniques, and application of modal measurement methods suitable for practical vibration analysis problems. Prerequisite: CEE247 or equivalent. Formerly Engineering CE245.

CEE246 Structural Performance and Failure (3) F. Case histories from the field of structural engineering failures are used to illustrate fundamental theoretical principles as well as many interrelated contributing causes including, but not limited to, design error, construction deficiencies, materials problems, and operational or maintenance faults. Prerequisite: consent of instructor. Formerly Engineering CE246.

CEE247 Structural Dynamics (3) F. Vibration of discrete and continuous mass elastic systems. Isolation and transmissibility. Dynamic recording instruments. Introduction to nonlinear theory of vibration. Response of structures to earthquake, traffic, and wind loads. Response spectra concepts. Normal mode analysis. Numerical integration techniques. Prerequisite: CEE80 or consent of instructor. Formerly Engineering CE247.

CEE248 Wind Engineering (3) S. Essentials for the determination of extreme wind loads on structures. Topics include basic characteristics of wind, engineering aspects of wind, wind loads on structures, wind hazard probabilities, and dynamic effects of wind. Prerequisites: CEE105 or equivalent, CEE247 or equivalent. Formerly Engineering CE248.

CEE249 Earthquake Engineering (3) W. Earthquake magnitude, intensity, and frequency. Seismic damage to structures. Earthquake load prediction including response spectra, normal mode, and direct integration techniques. The basis of building code earthquake load requirements for buildings. Seismic response of special structures. Lifeline engineering. Prerequisite: consent of instructor. Formerly Engineering CE249.

CEE250 Finite Element Method in Structural Engineering (3) S. Finite element concepts in structural engineering including variational formulations, shape functions, elements assembly, convergence, and computer programming. Stiffness of truss, beam, and frame members; two- and three-dimensional solids; plate and shell elements. Static, vibration, stability, and inelastic analyses. Prerequisite: consent of instructor. Formerly Engineering CE250.

CEE251 Dynamics of Fluid/Structures Systems (3). Fundamentals of structural dynamics (time and frequency domains), fluid mechanics (potential flow and hydrodynamic forces), and numerical methods (finite elements and boundary solutions). Formulation of the general interaction problem with applications to ground-based and elevated tanks, dams, and off-shore structures. Prerequisite: consent of instructor. Formerly Engineering CE251.

CEE253 Plates and Shells (3) S. Plates and shells as structural members, using classical differential equations and modern computer techniques. Topics include bending of circular and rectangular plates, shells of revolution, and cylindrical shells. Finite element computer practice. Prerequisite: consent of instructor. Formerly Engineering CE253.

CEE254 Advanced Reinforced Concrete Behavior and Design (3) F. Flexural strength of reinforced concrete elements. Flexural ductility of unconfined and confined members with axial loads. Shear and torsional behaviors. Strength of reinforced concrete ductile frames and shear walls. Reinforced concrete detailing. Prerequisite: consent of instructor. Formerly Engineering CE254.

CEE255 Advanced Behavior and Design of Steel Structures (3) F. Advanced principles of structural steel design. Analysis and design of beam-column members, braced and unbraced frames for buildings, and plate girders. Review of seismic design provisions. Design of connections. Prerequisite: consent of instructor. Formerly Engineering CE255.

CEE257 Advanced Structural Analysis (3) W. Flexibility and stiffness methods in the analysis of indeterminate structures. Computer-based techniques. Modeling of structural elements to simulate inelastic behavior. Static and dynamic analyses for lateral loading conditions. Prerequisite: consent of instructor. Formerly Engineering CE257.

CEE258 Earthquake-Resistant Structural Design (3) S. Objectives of seismic design. Cyclic load-distortion characteristics of typical structural elements. Desirable structural form. Ductility and methods of achieving it. Use of energy dissipators. Project involving design of multistory, multibay rigid-jointed plane frame. Prerequisite: consent of instructor. Formerly Engineering CE258.

CEE259 Structural Stability (3) S. Introduction to structural stability emphasizing behavior of simple structural components that illustrate various modes of instability: Euler columns, beam columns, beam torsional and lateral instability, circular ring buckling. Elementary matrix methods compatible with the finite element models now used in industry for complex structures. Prerequisite: consent of instructor. Formerly Engineering CE259.

CEE261 Environmental Microbiology (3) F. Introduction to microbial diversity, and the ecology of microorganisms in natural environments and waste treatment systems. Specific topics include the phylogenetic analysis of microbial communities using 16S rRNA sequence data; and the biochemical bases of autotrophy, phototrophy, chemoorganotrophy, and chemolithotrophy. Prerequisite: consent of instructor. Formerly Engineering CE261.

CEE262A Colloid Transport Phenomena I (3) S. Physicochemical and biological factors governing the distribution, nature, and fate of colloidal particles in natural environments and water or wastewater treatment systems. Conservation equations and constitutive relations for colloidal suspensions. Applications to treatment systems and pollutant transport in the environment. Prerequisite: consent of instructor. Formerly Engineering CE262A.

CEE262B Colloid Transport Phenomena II (3) F. Specialized topics in colloidal phenomena, including the self-similar or fractal nature of particle aggregates, and the effect of aggregate structure on coagulation kinetics and settling velocities. Modern scaling theories for coagulation kinetics are presented and applied to environmental systems. Prerequisite: consent of instructor. Formerly Engineering CE262B.

CEE263 Water and Waste Treatment (3) S. Water and waste pollution control. Physical, chemical, and biological treatment. Reuse of wastes and ultimate disposal of nonreusable wastes. Prerequisite: CEE173. Formerly Engineering CE263.

CEE264 Chemical Equilibria in Natural Waters (3) W. Fundamentals of chemical equilibria applied to aqueous systems. Numerical and computer equilibrium models for acid-base reactions, metal complexation, multi-phase systems, and redox reactions. Other topics include carbonate equilibria, alkalinity, sediment environments, eutrophication, and acid precipitation. Prerequisite: CEE164 or consent of instructor. Formerly Engineering CE264.

CEE265 Chemical Dynamics in Natural Waters (3) S. An introduction to chemical kinetics with applications to natural water systems. Rate expressions and reaction mechanisms in homogeneous and heterogeneous systems. Other topics include catalysis, reaction time scales in natural systems, and rapid kinetic analytical techniques. Prerequisite: CEE164 or consent of instructor. Formerly Engineering CE265.

CEE266 Aqueous Geochemistry (3) S. Principles of mineral surface chemistry in aqueous systems. Topics include adsorption, surface charge theories, colloid stability, and computer equilibrium models. Soil mineralogy

fundamentals. Geochemical processes, including mineral weathering, elemental cycles, salinization, and groundwater contaminant transport factors. Prerequisite: CEE264 or consent of instructor. Formerly Engineering CE266.

CEE267 Advanced Treatment Models (3) F. Analysis and modeling of advanced water and waste treatment methods. Fixed film and suspended growth biological nutrient removal. Fluidized bed reactors. Analysis of non-ideal reactors. Simulation using FORTRAN/Pascal, spreadsheets, and Mathematica. Prerequisites: CEE185, CEE263. Formerly Engineering CE267.

CEE269 Hazardous Waste Remediation (3) W. Emphasis on the theory and design of hazardous waste treatment systems. Overview of applicable environmental regulations and site characterization procedures. Use of case studies in selecting treatment technologies. Prerequisite: consent of instructor. Formerly Engineering CE269.

CEE271 Unsaturated Flow in Soils (3) W. Theory and application of flow of fluid in the unsaturated zone (zone of aeration). Topics in soil-water physics, analysis of flows in regional groundwater basins, miscible displacement, mathematical modeling techniques. Prerequisite: consent of instructor. Formerly Engineering CE271.

CEE272 Groundwater Hydrology (3) F. Theory and application of dynamics of flow in porous media. Groundwater resources, evaluation, and management. Well design and analysis. Dispersion of pollutants. Mathematical models. Prerequisite: CEE170B or consent of instructor. Formerly Engineering CE272.

CEE274 Transport Phenomena in Porous Media (3) W. Fundamentals of solute and particle transport in saturated porous media. Development of macroscopic transport equations. Mathematics of diffusion. Effective macroscopic coefficients. Dissolution of nonaqueous phase liquids. Analytical techniques, including Laplace and Fourier transforms, self similar and small perturbation solutions. Prerequisite: CEE283 and consent of instructor. Formerly Engineering CE274.

CEE275 Numerical Methods in Subsurface Hydrology (3) S. Numerical solutions of subsurface hydrologic phenomena. Finite difference, finite element, and other techniques are applied to mathematical models of fluid flow, mass transport, and energy transport in unsaturated and saturated porous media. Prerequisite: CEE271, CEE272, or CEE274. Formerly Engineering CE275.

CEE276 Stochastic Geohydrology (3) S. Uncertainty and spatial variability in groundwater systems. Techniques for quantifying and reducing effects of uncertainty. Review of the theory of stationary processes. Kriging as best linear unbiased estimator, perturbation, and moment methods. Effects of heterogeneity on groundwater flow and transport. Prerequisites: CEE274, CEE283, consent of instructor. Formerly Engineering CE276.

CEE278 Flow in Open Channels (3) F. Mechanics of fluid motion in open channels, uniform and nonuniform flow, unsteady flow, flood routing, flow over movable beds, sediment and mass transport. Numerical methods. Prerequisite: CEE170B or consent of instructor. Formerly Engineering CE278.

CEE279 Surface Water Hydrology (3) F. Advanced principles of surface water hydrologic modeling. Topics include: rainfall-runoff simulation, precipitation, loss rate functions, rational methods, hydrograph methods, model calibration, complex watershed modeling, model uncertainty, local agency criteria. Prerequisite: CEE171 or consent of instructor. Formerly Engineering CE279.

CEE280 Computational Methods and Software (3) F. Numerical methods and software for engineering and science. Emphasis on problem solving. Use of libraries and high-quality software. FORTRAN used extensively. Errors, linear systems of equations, interpolation, quadrature, nonlinear equations, ODEs, simulation. Prerequisite: consent of instructor. Formerly Engineering CE280.

CEE281 Finite Element Method in Continuum Mechanics (3) W. Strong, weak, and Galerkin formulations of one-, two-, and three-dimensional problems in continuum mechanics. Convergence and accuracy of finite element analyses. Shape functions, transformation, natural coordinates, and numerical integration. Concepts of computer implementation. Introduction to transient and nonlinear problems. Prerequisite: CEE280, CEE283, or consent of instructor. Formerly Engineering CE281.

CEE283 Mathematical Methods in Engineering Analysis (3) F. Tensors and matrices; eigenvalue problems; partial differential equations; boundary value problems; special functions; introduction to complex variables; calculus of variations and its applications. Formerly Engineering CE283.

CEE284 Engineering Decision and Risk Analysis (3) F. Develops applications of statistical decision theory in engineering. Presents the fundamental tools used in engineering decision making and analysis of risk under conditions of uncertainty. All concepts are presented and illustrated thoroughly with engineering problems. Prerequisite: CEE105 or consent of instructor. Formerly Engineering CE284.

CEE285 Reliability of Engineering Systems I (3) W. Develops the basic concepts for the definition and assessment of safety and reliability of engineering systems. Includes probabilistic modeling of engineering problems, assessment of component reliability, systems reliability, and introduction to probability-based design. Prerequisite: CEE105 or consent of instructor. Formerly Engineering CE285.

CEE286 Reliability of Engineering Systems II (3) S. Develops the basic concepts for the definition and assessment of safety and reliability of multiple failure mode systems. Includes probabilistic modeling of redundant and nonredundant systems, reliability assessment of brittle and ductile systems, and accident sequence analysis. Prerequisite: CEE285 or consent of instructor. Formerly Engineering CE286.

CEE287 Random Vibrations (3) W. Stochastic response of linear, single, and multidegree of freedom systems. Probabilistic approach to dynamic response of structures to random loading such as earthquake and wind gusting. Prerequisite: consent of instructor. Formerly Engineering CE287.

CEE288 Advanced Random Vibrations (3) S. Response of linear and nonlinear structures to random dynamic loadings. Applications to wind and earthquake engineering including seismic performance and damage analysis of structures. Prerequisite: CEE287 or consent of instructor. Formerly Engineering CE288.

CEE295 Seminars in Engineering (1 to 12) F, W, S. Seminars scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering CE295.

CEE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation of the thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering CE296.

CEE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in preparation for the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering CE297.

CEE298 Special Topics in Civil Engineering (1 to 4) F, W, S. Presentation of advanced topics and special research areas in civil engineering. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary. Formerly Engineering CE298.

CEE299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering CE299.

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

305 Engineering Tower; (949) 824-4821
Allen R. Stubberud, **Department Chair**

Faculty

Nicolaos Alexopoulos: High-frequency integrated circuit antennas, wireless communication, materials
Nader Bagherzadeh: Parallel processing, computer architecture
Casper W. Barnes, Jr.: Digital signal processing
Neil J. Bershad: Communication and information theory, signal processing
Lubomir Bic: Parallel processing, dataflow systems, database machines
Douglas M. Blough: Parallel processing, fault-tolerant computing
Rui J. P. de Figueiredo: Machine intelligence and neural and soft computing; signal and image processing; applied mathematics
Nikil D. Dutt: VLSI design automation tools, design methodologies, design languages, high-level synthesis
Leonard Ferrari: Machine vision, signal processing, computer graphics
Daniel D. Gajski: Parallel algorithms and architectures, design methodology, design science, CAD algorithms and tools, software/hardware co-design
Hideya Gamo: Quantum electronics, electromagnetics
Julius M. Gardin: Cardiology, echocardiography, image process and pattern recognition computer-aided diagnoses

Michael M. Green: Analog IC design, circuit simulation, theory of nonlinear circuits

Glenn E. Healey: Machine vision, computer engineering, image processing, computer graphics, intelligent machines

K. H. (Kane) Kim: Ultra-reliable distributed and parallel computing, real-time object-based system engineering

Fadi J. Kurdahi: VLSI system design, design automation of digital systems
Tomas Lang: Numerical processors and multiprocessors, parallel computer systems

Chin C. Lee: Electronic packaging, thermal management, integrated optics

Henry P. Lee: Optoelectronics semiconductor materials and devices

Guann Pyng Li: High-speed semiconductor technology, optoelectronic devices, integrated circuit fabrication and testing

Kwei-Jay Lin: Real-time systems, distributed systems

Orhan Nalcioğlu: Nuclear magnetic resonance imaging and spectroscopy, digital radiography, computed tomography, medical imaging

Richard D. Nelson: Sensors, microelectronics, photonics, medical imaging

Alexandru Nicolau: Architecture, parallel computation, programming languages and compilers

Issac Scherson: Parallel computing architectures, massively parallel systems, parallel algorithms, interconnection networks, performance evaluation

Phillip C-Y. Sheu: Database systems, interactive multimedia systems

Roland Schinzinger: Electromagnetics, power systems, operations research

Jack Sklansky: Pattern recognition, machine vision, medical imaging, neural learning, computer engineering

Keyue M. Smedley: Power electronics

Gregory J. Sonek: Devices, electrooptics and fiber optics, biomedical applications, optoelectronic

Allen R. Stubberud: Control systems, digital signal processing, estimation and optimization

Tatsuya Suda: Computer networks, distributed systems, performance evaluation

Harry H. Tan: Communication and information theory, stochastic processes

Chen S. Tsai: Integrated and fiber optics, devices, and materials, acoustooptics, magneto-optics, acoustic microscopy

Wei Kang (Kevin) Tsai: Data communication networks, neural networks, parallel algorithms and architectures, CAD for VLSI systems engineering

Lecturers

Syed Ahmed: Electric power systems

Harut Barsamian: Computer systems, architectural technology

Robert C. Carden, IV: C/C++, real-time system program

Maqsood Chaudhry: Field theory, numerical analysis, analog circuits

Gerard Coutu: Adaptive pattern recognition and signal processing

Alireza Kavianpour: Multi-processor systems

Mohammed S. Santina: Control systems

Michael Schroter: Bipolar semiconductor devices for integrated circuits

Electrical and Computer Engineering is a broad field encompassing such diverse subject areas as computers, control, electronics, digital systems, communications, signal processing, electromagnetics, and physics of electronic devices. Knowledge of the mathematical and natural sciences is applied to the theory, design, and implementation of devices and systems for the benefit of society.

Some electrical engineers focus on the study of behavior of electronic devices and circuits that are the basic building blocks of complex electronic systems. Others study the generation, transmission, and utilization of electrical energy. A large group of electrical engineers studies the application of these complex systems to other areas, including medicine, biology, geology, and ecology. Still another group studies the behavior of complex electronic systems such as computers, automatic controls, telecommunications, and signal processing. Of this latter group, those engaged in designing a variety of electronic computers and computer-based application systems are often called computer engineers.

The undergraduate curriculum in Electrical Engineering provides a solid foundation for future career growth, enabling graduates' careers to grow technically, administratively, or both. Many electrical engineers will begin work in a large organizational environment as members of an engineering team, obtaining career satisfaction from solving meaningful problems that contribute to the success of the organization's overall goal. As their careers mature,

technical growth most naturally results from the acquisition of an advanced degree and further development of the basic thought processes instilled in the undergraduate years. Administrative growth can result from the development of management skills on the job and/or through advanced degree programs in management.

The undergraduate curriculum in Computer Engineering addresses the design and analysis of digital computers, including both software and hardware. Computer design includes topics such as computer architecture, VLSI circuits, design automation, system software, and data structures and algorithms. Computer Engineering courses include programming in high-level languages such as Pascal, C, FORTRAN; use of software packages for analysis and design; design of system software such as editors, compilers, debuggers, and operating systems; and application of computers in solving engineering problems. Laboratories in both hardware and software experiences are integrated within the curriculum.

Graduates of Computer Engineering will find a variety of career opportunities. The information technology areas include computer hardware and software design, design of computer-based control systems, application software, artificial intelligence, data storage and retrieval, graphics, pattern recognition, computer modeling, parallel computing, and operating systems.

Undergraduate Major in Computer Engineering

The undergraduate Computer Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas fill in much of the remaining curriculum.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one course in general chemistry, one year of engineering physics (with laboratory), and one course in computational methods (C or C++). Courses in linear algebra, differential equations, discrete mathematics, second-year engineering physics (with laboratory), digital systems, and systems programming are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Digital systems and network analysis may be offered during summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE IN COMPUTER ENGINEERING

Credit for at least 191.5 units including:

University Requirements: See pages 54–58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C, 3A, 3D, and 6A (24 units).

Basic Science Courses: Chemistry 1A, Physics 5A-B-C-D and 5LB-LC-LD, and either Physics 5E or Biological Sciences 94 (at least 28.5 units).

Basic Engineering Courses: ECE11, ECE20, ECE31, ECE31LB, ECE40, ECE70A, ECE70B, ECE70LB (27 units).

Computer Engineering Core Courses: Information and Computer Science (ICS) 23, ICS161; Engineering ECE113A, ECE113LA, ECE113B, ECE113LB, ECE120A, ECE120B, ECE132, ECE132L, ECE142, ECE145, ECE151, ECE180 or Mathematics 114A, and ECE186 (52 units).

Technical Electives: 15 units; at least three courses should be selected from the following list: ECE104, ECE137, ECE143, ECE146, ECE161, and Information and Computer Science 142. Others may be chosen from the following list: ECE115A, ECE128, ECE135A, ECE135B, ECE136, ECE199 or ECEH199 (up to 3 units). All technical electives must be approved by the faculty advisor.

No more than 6 units of ECE199 OR ECEH199 can be applied to the major in Computer Engineering.

PLANNING A PROGRAM OF STUDY

The sample program of study chart shown is typical for the major in Computer Engineering. Students should keep in mind that this program is based upon a sequence of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their program approved by their advisor. Computer Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisor.

Sample Program of Study — Computer Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A	Physics 5A	Physics 5B, 5LB
Breadth	ECE11	ECE20
	Breadth	Breadth
Sophomore		
Mathematics 3A	Mathematics 3D	ECE40
Mathematics 6A	Physics 5D, 5LD	ECE70B, 70LB
Physics 5C, 5LC	ECE31LB	Science Elective
ECE31	ECE70A	Breadth
Junior		
ECE113A, 113LA	ECE113B, 113LB	ECE120B
ECE180 or	ECE120A	ECE132L
Mathematics 114A	ECE132	ICS161
ICS23	Breadth	Breadth
Breadth		
Senior		
ECE142	ECE145	ECE186
ECE151	Technical Elective	Technical Elective
Breadth	Breadth	Technical Elective
Technical Elective	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

Undergraduate Major in Electrical Engineering

The undergraduate Electrical Engineering curriculum is built around a basic core of humanities, mathematics, and natural and engineering science courses. It is arranged to provide the fundamentals of synthesis and design that will enable graduates to begin careers in industry or to go on to graduate study. UCI Electrical Engineering students take courses in network analysis, electronic system design, signal processing, control systems, electromagnetics, and computer engineering. They learn to design circuits and systems to meet specific needs and to use modern computers in problem analysis and solution.

Electrical engineering majors have the opportunity to select a specialization in Electro-optics and Solid-State Devices; Power Systems; and Systems and Signal Processing. In addition to the courses offered by the Department, the major program includes selected courses from the Department of Information and Computer Science.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one course in general chemistry (with laboratory), one year of engineering physics (with laboratory), and one course in computational methods (C or C++). Courses in linear algebra, differential equations, second-year engineering physics (with laboratory), digital systems, dynamics, and network analysis are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Courses in digital systems, dynamics, and network analysis may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING

Credit for at least 186 units including:

University Requirements: See pages 54–58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 3D (24 units).

Basic Science Courses: Chemistry 1A and 1LA, Physics 5A-B-C-D-E and 5LB-LC-LD-LE (at least 32 units).

Basic Engineering Courses: Engineering E80, E101, ECE11, ECE31, ECE31LA, ECE70A, ECE70B, and ECE70LB (23 units).

Electrical Engineering Core Courses: Engineering ECE113A, ECE113LA, ECE113B, ECE113LB, ECE113C, ECE113LC, ECE115A or ECE151, ECE120A, ECE120B, ECE140A, ECE140LA, ECE170, ECE180 or Mathematics 114A, and ECE186 (43 units).

Technical Electives: 19 units; students may select, with the approval of their faculty advisor, an area of specialization and complete the associated requirements, as shown below.

The technical electives requirement also may be fulfilled by completing courses from other science and engineering fields, with written approval of the faculty advisor.

Specialization in Electro-optics and Solid-State Devices: 11 units selected from Engineering ECE114A, ECE114B, ECE115A (if not used to satisfy major requirements), ECE176, ECE176L, ECE177, ECE177L, ECE178, ECE178L, ECE198 (Special Topics in Electro-optics or Solid State Materials/Devices), ECE199 or ECEH199 (up to 3 units).

Specialization in Power Systems: 12 units selected from Engineering ECE140B, ECE160, ECE160L, ECE163, ECE163L, ECE199 or ECEH199 (up to 3 units).

Specialization in Systems and Signal Processing: 12 units selected from Engineering ECE128, ECE135A, ECE135B, ECE136, ECE140B, ECE163, ECE163L, ECE198 (Special Topics in Computer Graphics or Digital Signal Processing Laboratory), or ECE199 or ECEH199 (up to 3 units).

Students should select their electives so that they aggregate a minimum of 26 design units. At least one of the Engineering courses taken to satisfy the graduation requirement should have more than 50 percent design content. Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements.

No more than 6 units of ECE199 or ECEH199 can be applied to the major in Electrical Engineering.

PROGRAM OF STUDY

Students must complete all required freshman and sophomore courses before they enroll in any junior or senior ECE courses.

The sample program of study chart shown is typical for the accredited major in Electrical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their advisor. Electrical Engineering majors must consult with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors at least once a year.

Sample Program of Study — Electrical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Physics 5A	Physics 5B, 5LB
Breadth	ECE11	Breadth
	Breadth	Breadth
Sophomore		
Mathematics 3A	Mathematics 2D	E80
Physics 5C, 5LC	Mathematics 3D	Physics 5E, 5LE
Breadth	Physics 5D, 5LD	ECE70B, 70LB
ECE31, 31LA	ECE70A	Breadth
Junior		
ECE170	E101	ECE186
ECE113A, 113LA	ECE113B, 113LB	ECE113C, 113LC
ECE180 or	ECE120A	ECE120B
Mathematics 114A	Breadth	Breadth
Breadth		
Senior		
ECE115A	Technical Elective	Technical Elective
ECE140A, 140LA	Technical Elective	Technical Elective
Technical Elective	Breadth	Breadth

Students must obtain approval for their program of study and must see their faculty advisor at least once each year.

Graduate Study in Electrical and Computer Engineering

The Department offers M.S. and Ph.D. degrees in Electrical and Computer Engineering with concentrations in Computer Networks and Distributed Computing, Computer Systems and Software, and Electrical Engineering. The Computer Networks and Distributed Computing concentration covers design and evaluation of computer networks and distributed computer systems, and their integration into a comprehensive computing system. The Computer Systems and Software concentration covers all aspects of computer systems design, from digital VLSI to system software. The Electrical Engineering concentration includes optical and solid-state devices, and systems engineering and signals processing.

Because most graduate courses are not repeated every quarter, students should make every effort to begin their graduate program in the fall.

MASTER OF SCIENCE DEGREE GENERAL REQUIREMENTS

Two plans are offered for the M.S. degree: a thesis option and a comprehensive examination option. For both options, students are required to develop and obtain approval by the Department's graduate advisor of a complete program of study. Opportunities are available for part-time study toward the M.S. degree. The program of study must be completed within four calendar years from the date of admission.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study; the completion of an original research investigation; the writing of the thesis describing it; and approval of the thesis by a thesis committee. Required undergraduate courses and seminar courses such as ECE294 and ECE295 may not be counted toward the 36 units. No more than four units of ECE299 and three units of undergraduate electives may be counted.

The thesis option is available for those graduate students who might best benefit from concentration on a specific problem. A committee of three full-time faculty members is appointed to guide development of the thesis and, to approve it.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 units. Students must take four courses among the concentration core courses (see listings under Computer Networks and Distributed Computing, Computer Systems and Software, and Electrical Engineering concentrations) and a coherent set of courses in a specialization approved by their faculty advisor. In addition to the University's grade-point-average requirements, each of the core courses taken must be completed with a grade of B or better. Required undergraduate courses and seminar courses such as ECE294 and ECE295 may not be counted toward the 36 units. No more than three units of ECE299 and six units of undergraduate electives may be counted.

All M.S. students with the comprehensive examination option are required to enroll in ECE294 for at least two quarters.

DOCTOR OF PHILOSOPHY DEGREE GENERAL REQUIREMENTS

The doctoral program in Electrical and Computer Engineering is tailored to the individual needs and background of the student. There are several milestones to pass: admission to the Ph.D. program by the faculty; within one year of arrival on the campus, passage of a preliminary examination on the student's background and potential for success in the doctoral program; meeting departmental teaching requirements which can be satisfied through service as a teaching assistant or equivalent; research preparation; development of a research proposal; formal advancement to candidacy through qualifying examination conducted on behalf of the Irvine division of the Academic Senate; completion of a significant research investigation, and completion and approval of a dissertation. Four quarters of ECE294 must be completed. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. Part-time study toward the Ph.D. degree is not permitted. Doctoral programs must be completed in seven calendar years from the date of admission.

The Ph.D. preliminary examination contains two parts: a depth examination administered at the end of the first year of doctoral study by faculty in the student's area of specialization; and, preceding it, a breadth examination consisting of the Graduate Record

Examination Subject Test in one of several areas (see listings under Computer Engineering and Electrical Engineering concentrations). The results of the Subject Test must be made available to the faculty prior to the end of the winter quarter of the student's first year of study in the doctoral program. The Ph.D. preliminary examination may be repeated once.

COMPUTER NETWORKS AND DISTRIBUTED COMPUTING CONCENTRATION

The concentration in Computer Networks and Distributed Computing is concerned with the design and evaluation of computer networks and distributed computer systems, and their integration into a comprehensive computing system. Both hardware and software aspects of these systems are covered. Specific topics include computer communication protocols; performance modeling and analysis of computer networks; computer network hardware; reliability, security, and fault tolerance in computer networks and distribution computer systems; distributed operating systems; distributed software architectures, distributed data bases, network-based parallel computing, and programming languages for parallel/distributed processing. Related topics are addressed within the Computer Systems and Networks concentration in the Department of Information and Computer Science (ICS).

Master of Science Degree

Plan I: Thesis Option

A total of 36 units, including the core and concentration course requirements are required. At most, 12 units of ECE296 (M.S. Thesis Research) may be counted toward the degree.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires the completion of 36 units. A minimum of seven Computer Networks and Distributed Computing concentration courses are required. Four of these courses must be the core courses; the other three may be chosen from the concentration courses. The remainder of the 36 units must consist of relevant courses listed below.

Doctor of Philosophy Degree

A GRE subject test in Computer Science or Mathematics is required as a component of the Ph.D. preliminary examination. A public Ph.D. dissertation defense must be given.

Relevant Courses

Core/concentration courses are indicated by an asterisk (*) and concentration courses by a plus (+) following the course number: ECE229A⁺, ECE229B⁺, ECE231*, ECE233*, ECE235*, ECE252*, ECE253, ECE254, ECE255⁺, ECE257, ECE281A, ECE281B⁺, ICS 244, ICS 248.

COMPUTER SYSTEMS AND SOFTWARE CONCENTRATION

The Computer Systems and Software Concentration is concerned with the set of engineering principles which are used for design and construction of information-processing systems and software. The engineering design procedures are based on both the computational principles and theories discovered in the field of computer science and new highly integrated component devices made by electrical engineers. The main research activities of the faculty of this concentration are in the areas of fault-tolerant computing, parallel and distributed computer systems, ultra-reliable real-time computer systems, VLSI architectures, computer design automation, numerical processing, and intelligent management.

In addition to the general department requirements, the following requirements must be met.

Master of Science Degree

Plan I: Thesis Option

Four out of five Computer Engineering core courses must be completed with a grade of B or better. Three additional Computer Engineering concentration courses must be completed. With approval of the thesis advisor and the Department's graduate advisor, two of these courses may be non-seminar, non-research graduate courses outside of the Computer Engineering concentration list. These courses must be related to the student's thesis topic. No more than 12 units of ECE296 (M.S. Thesis Research) may be counted toward the degree. Two quarters of ECE294 must be completed.

Plan II: Comprehensive Examination Option

A minimum of seven Computer Engineering concentration courses of which four are core courses must be completed. A minimum of three additional non-seminar, non-research graduate courses are required.

Doctor of Philosophy Degree

A GRE Subject Test in Mathematics or Computer Science is required for the breadth portion of the preliminary examination. A public Ph.D. dissertation defense must be given.

Concentration Courses

Core courses are indicated by an asterisk (*) following the course number: ECE207, ECE231*, ECE233*, ECE235*, ECE251*, ECE252*, ECE253, ECE254, ECE257, and ECE258.

ELECTRICAL ENGINEERING CONCENTRATION

The Electrical Engineering faculty study the following areas: optical and solid-state devices, including quantum electronics and optics, integrated electro-optics and acoustics, design of semiconductor devices and materials, and scanning acoustic microscopy; and systems engineering and signal processing, including machine vision, signal processing, power systems, neural networks, communications networks, systems engineering, control systems, and manufacturing systems.

In addition to the general departmental requirements, the following requirements must be met.

Master of Science Degree

Plan I: Thesis Option

A minimum of seven Electrical Engineering concentration courses must be completed. No more than eight of the required 36 units may be from ECE296 (M.S. Thesis Research).

Plan II: Comprehensive Examination Option

A minimum of nine Electrical Engineering concentration courses of which four are core courses must be completed.

Doctor of Philosophy Degree

A GRE Subject Test in Physics, Mathematics, Computer Science, or Engineering is required for the breadth portion of the preliminary examination.

Concentration Courses

Core courses are indicated by an asterisk (*) following the course number: ECE206, ECE207, ECE210A-B, ECE212, ECE217A-B, ECE227A-B, ECE228A-B, ECE229A-B, ECE230A, ECE233*, ECE234A-B, ECE235*, ECE240A*-B-C, ECE242, ECE251, ECE260, ECE275A*-B-C, ECE279A*-B, ECE281A, ECE281B, and ECE287A*.

Courses in Electrical and Computer Engineering

LOWER-DIVISION

NOTE: With the exception of ECE181A-B-C, the undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

ECE11 Computational Methods in Electrical and Computer Engineering (4) W. An introduction to computers and structured programming. Binary Data Representation. Hands-on experience with a high-level structured programming language. Introduction to algorithm efficiency. Applications of structured programming in solving engineering problems. Prerequisite: Mathematics 2A. (Design units: 0)

ECE20 System Programming I (4) S. Advanced programming concepts for system software including data types, pointers, recursion and modules. The UNIX programming environment and software development tools. Prerequisite: ECE11. Formerly ECE11B. (Design units: 1)

ECE31 Introduction to Digital Systems (4) F. Digital representation of information. Specification of combinational and sequential systems. Analysis and design of networks of gates and flip flops. Standard modules and their use. Introduction to algorithmic systems: datapath and control. Prerequisite: ECE11. (Design units: 2)

ECE31LA Introduction to Digital Systems Laboratory (1) F, Summer. Laboratory to accompany ECE31 for non-computer engineering majors. Corequisite: ECE31. (Design units: 1)

ECE31LB Introduction to Digital Logic Laboratory (3) W. Introduction to common digital integrated circuits: gates, memory circuits, MSI components. Operating characteristics, specifications, and applications. Design of simple combinational and sequential digital systems such as arithmetic processors, game-playing machines. Construction and debugging techniques, using CAD tools and Breadboards. Prerequisites: ECE20, ECE31. (Design units: 3)

ECE40 System Programming II (4) S. Advanced programming techniques including data abstraction, object-orientation, code reuse, and design methodology. Techniques for window programming and advanced user interface design. Prerequisite: ECE20. ECE40 and Information and Computer Science 54 may not both be taken for credit. (Design units: 2)

ECE70A Network Analysis I (3) W. Modeling and analysis of electrical networks. Basic network theorems. Sinusoidal steady state and transient analysis of RLC networks and the impedance concept. Corequisite: Mathematics 3A or 3D. Prerequisites: ECE11 and Physics 5B. Formerly ECE70. (Design units: 1)

ECE70B Network Analysis II (4) S. Laplace transforms, complex frequency, and the s-plane. Network functions and frequency response, including resonance. Bode plots. Two-port network characterization. Corequisite: ECE70LB. Prerequisites: ECE11, ECE70A. Formerly ECE75. (Design units: 1)

ECE70LB Networks Analysis II Laboratory (1) S. Laboratory to accompany ECE70B. Corequisite: ECE70B. Prerequisites: ECE11 and ECE70A. Formerly ECE75L. (Design units: 1)

ECE72 Network Theory and Operational Amplifiers (3) S. Basic network theorems and analysis. Sinusoidal steady state and transient response of RLC circuits and the impedance concept. Analysis and design of operational amplifier circuits. Corequisite: Mathematics 3A or 3D. Prerequisites: Physics 5B; Engineering E10 or ECE11. Open only to Engineering, Civil Engineering, and Mechanical or Aerospace Engineering majors only. (Design units: 1)

UPPER-DIVISION

ECE104 Fundamentals of Computer Graphics (4) F. Instruction in the fundamental algorithms and data structures used in computer image generation and manipulation including: output primitives, linear transformations, windowing, hidden-line removal, and shading. Corequisite or prerequisite: Mathematics 3A or Mathematics 3D. (Design units: 2)

ECE111A Analysis and Design of Electrical Circuits (4) S. Active and passive electrical circuits. Topology, network theorems, sensitivity considerations. Classical synthesis and computer-aided techniques for two-, three-, and four-terminal networks. Prerequisites: ECE113C, ECE113LC; ECE120B. (Design units: 4)

ECE113A Electronics I (4) F. The properties of semiconductors, electronic conduction in solids, the physics and operation principles of semiconductor devices such as diodes and transistors, transistor equivalent circuits, and transistor amplifiers. Corequisites: ECE113LA. Prerequisites: Physics 5D, ECE70A. (Design units: 1)

ECE113LA Electronics I Laboratory (1) F. Laboratory accompanying Engineering ECE113A to perform experiments on semiconductor material properties, semiconductor device physics and operation principles, and transistor amplifiers to improve experimental skills and to enhance the understanding of lecture materials. Corequisite: ECE113A. Prerequisites: Physics 5D, ECE70A. (Design units: 1)

ECE113B Electronics II (4) W. Principles of operation and design of differential amplifiers, multistage amplifiers, biasing circuits, basic CMOS, digital electronic circuits: inverters, logic gates, and memory elements, other logic families. Corequisites: ECE113LB. Prerequisites: ECE113A, ECE113LA. (Design units: 2)

ECE113LB Electronics II Laboratory (1) W. Laboratory accompanying Engineering ECE 113B. Corequisites: ECE113B. Prerequisites: ECE113A, ECE113LA. (Design units: 1)

ECE113C Electronics III (4) S. Principles of operation, design, and utilization of integrated circuit modules, including operational amplifiers and logic circuits. Corequisites: ECE113LC. Prerequisites: ECE113B, ECE113LB. (Design units: 2)

ECE113LC Electronics III Laboratory (1) S. Laboratory accompanying Engineering ECE 113C to provide hands-on training in design of digital/analog circuits/subsystems. Corequisites: ECE113C. Prerequisites: ECE113B, ECE113LB. (Design units: 1)

ECE114A Field-Effect Semiconductor Devices (4) F. Semiconductor theory, metal-semiconductor contacts and diodes, metal-oxide-semiconductor (MOS) structures; MOS field-effect transistors, junction field-effect transistors, device modeling and fabrication technologies. Prerequisites: ECE113A, ECE113LA. (Design units: 2)

ECE114B Bipolar Semiconductor Devices (4) W. PN-junction diodes, bipolar (NPN or PNP) transistors, photodiodes, light-emitting diodes, laser diodes, device modeling, and fabrication technologies. Prerequisites: ECE113, ECE113LA. (Design units: 2)

ECE115A Integrated Electronic Circuit Design (4) F. Specialized analysis and design techniques associated with the design of LSI and VLSI electronic circuits. Current approaches to computer-aided design and fabrication. Prerequisites: ECE31, ECE113B, ECE113LB, and consent of instructor. (Design units: 4)

ECE116 Wafer Fabrication Processes (4) W. Fabrication of microelectronic components on a silicon wafer. Processes include lithographic techniques, oxidation, diffusion, ion implementation, thin film deposition, etching techniques, diagnostic techniques, wafer probing and process integration. Prerequisite: ECE113A, 113LA. (Design units: 2)

ECE117 Microelectronics Manufacturing Technology (4) S. Manufacturing technology leading to the production of microelectronic devices. Topics include cleanroom, electronic materials, vacuum technology, thin film deposition, etching techniques, bonding techniques, thermal management, stress analysis, injection molding, electronic packaging and process integration. Prerequisite: ECE113A, 113LA. (Design units: 2)

ECE118 Reliability and Yield in Microelectronic Circuits (4) W. Reliability issues in the design of Very Large Scale Integrated Circuits: VLSI failure modes, yield and reliability modeling, yield enhancement techniques, wafer-scale integration and reconfiguration. Introduction to testing and testing techniques. Economics of design, test, and manufacturing. Prerequisites: ECE151 and ECE186. (Design units: 2)

ECE120A Signals and Systems I (4) W. Studies of signals and systems. Application of Fourier series and Fourier and Laplace transforms to continuous-time system analysis. Convolution and modulation theory. Prerequisites: ECE70B, ECE180 or Mathematics 114A. (Design units: 0)

ECE120B Signals and Systems II (4) S. Application of sampling theorem, z-transforms, and discrete Fourier transforms to discrete-time system analysis. Difference equations, discrete-time convolution. Prerequisite: ECE120A. (Design units: 0)

ECE128 Communication Systems (3) S. Introduction to analog and digital communication systems, including effects of noise. Modulation-demodulation for AM, FM, PM, and PCM, with applications to radio, television, and recorders. Signal processing as applied to communication systems. Prerequisites: ECE120B and ECE186. Formerly ECE128A. (Design units: 1)

ECE132 Organization of Digital Computers (4) W. Building blocks and organization of digital computers, the arithmetic, control, and memory units, and input/output devices and interfaces. Microprogramming and microprocessors. Prerequisite: ECE31LB. ECE132 and Information and Computer Science 152 may not both be taken for credit. (Design units: 4)

ECE132L Organization of Digital Computers Laboratory (3) S. Techniques for the design of microprocessors (RISC and CISC), and microcode-based architectures. Covers all aspects of the design ranging from concept development to implementation and testing using FPGA chips. Prerequisites: ECE31LB and ECE132. Formerly ECE132LB. (Design units: 3)

ECE135A Digital Signal Processing (3) F. Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, w-transform, digital filters, Butterworth and Chebyshev filters, quantization effects. Prerequisites: ECE120B and ECE186. (Design units: 2)

ECE135B Digital Signal Processing Design and Laboratory (3) S. Students plan and perform 10 core laboratory exercises covering signal synthesis and analysis with various filter and frequency transform processes. Models of radio and radar/sonar signal processing are included. Prerequisite: ECE135A. (Design units: 3)

ECE136 Introduction to Machine Vision (3) F. The use of digital computers for the analysis of visual scenes; image formation and sensing, color, segmentation, shape estimation, motion, stereo, pattern classification, computer architectures, applications. Computer experiments are used to illustrate fundamental principles. Prerequisite: ECE120B or consent of instructor. (Design units: 2)

ECE137 Parallel Computer Systems (3) W. General introduction to parallel computing focusing on parallel algorithms and architectures. Parallel models: Flynn's taxonomy, dataflow models. Parallel architectures: systolic arrays, hypercube architecture, shared memory machines, dataflow machines, reconfigurable architectures. Parallel algorithms appropriate to each machine type area also discussed. Prerequisites: ECE20 and ECE132. (Design units: 1)

ECE140A Introduction to Control Systems (4) F. Modeling, stability, and specifications of feedback control systems. Root locus, Bode plots, Nyquist criteria, and state-space methods for dynamic analysis and design. Corequisite: ECE140LA. Prerequisites: ECE11, ECE113B, ECE113LB, ECE120B. (Design units: 2)

ECE140LA Control Systems I Laboratory (1) F. Laboratory accompanying ECE140A. Corequisite: ECE140A. (Design units: 1)

ECE140B Sampled-Data and Digital Control Systems (3) W. Sampled-data and digital control systems. Sampling process and theory of digital signals; z-transform and modeling; stability; z-plane, frequency response, state-space techniques of digital control system synthesis. Prerequisites: ECE31, ECE140A, ECE140LA. (Design units: 2)

ECE142 System Software (4) S. Multiprogramming, interrupt, processes, kernel, parallelism, critical sections, deadlocks, communication, multiprocessing, multilevel memory management, binding, name management, file systems, protection, resource allocation, scheduling. Experience with concurrent programming, synchronization mechanisms, interprocess communication. Prerequisite: ECE132; Information and Computer Science 23. ECE142 and Information and Computer Science 143 may not both be taken for credit. (Design units: 2)

ECE143 Microprocessor Interface Techniques (3) W. Concepts and techniques necessary for using mini- and micro-computer systems to gather data and control equipment. Covers microprocessor architecture and peripheral devices. Experience with a microprocessor system is provided. Functional requirements are realized through software and I/O hardware design. Prerequisite: ECE132L. (Design units: 3)

ECE145 Senior Design Project (4) W. Conception, planning, implementation, programming, testing of an approved project. Options include: parallel processing, VLSI design, microprocessor-based design, among others. Prerequisite: senior standing. (Design units: 4)

ECE146 File and Database Management (4) W. Database system architecture—data structures, storage structures, and data languages. Alternate approaches to database management systems; relational approach, hierarchical approach, network approach. Database security and integrity. Query processing. Prerequisite: Information and Computer Science 23. Same as Information and Computer Science 184. (Design units: 1)

ECE151 Introduction to VLSI (4) F. A first course in the design of Very Large Scale Integrated (VLSI) systems and chips. Review of CMOS VLSI technology. Analysis and synthesis of basic and complex CMOS gates. Introduction to CAD methodology and usage of CAD Tools. Prerequisite: ECE132. (Design units: 4)

ECE151L VLSI Design Laboratory (4) W. Train students to apply the latest computer design techniques and VLSI design tools for the implementation of VLSI chips. As part of this course, students will design, test, and develop the layout for final submission of the chip to a foundry for fabrication. Prerequisite: ECE151.

ECE160 Energy Conversion (4) F. Magnetic circuits and transformers. Fundamentals of energy conversion. Application to synchronous, induction, commutator, and special purpose machines such as robotic actuators and computer disk drives. Corequisite: ECE160L. Prerequisites: ECE70B, ECE113B, ECE113LB. (Design units: 2)

ECE160L Energy Conversion Laboratory (1) W. Laboratory exercises supplementing the content of ECE160. Corequisite or prerequisite: ECE160. (Design units: 0)

ECE161 Introduction to Computer Networks (4) W. Introduction to the techniques for design and analysis of computer networks. Layered network architecture. Communication media and hardware. Local area network (LAN) topologies and access protocols. Flow and congestion control. Introduction to network operating systems. Queuing and reliability analyses. Prerequisite: ECE142. (Design units: 2)

ECE163 Electric Power Systems (4) F. Generation, transmission, and use of electrical energy. Fault calculation, protection, stability, and power flow. Corequisite: ECE163L. Prerequisites: ECE70B, ECE113B, ECE113LB. (Design units: 1)

ECE163L Electric Power Systems Laboratory (1) F. Experiments and field trips relevant to studies in power systems. Corequisite: ECE163. Prerequisite: ECE110LA. (Design units: 0)

ECE166 Power Electronics (4) S. Power switching devices; generic power electronic converters; design and applications of rectifiers, inverters, motor controllers, uninterruptible power supplies. Prerequisite: ECE113C, ECE113LC. (Design units: 1)

ECE170 Engineering Electromagnetics (4) W. Electromagnetic fields and solutions of problems in engineering applications; electrostatics, magnetostatics, steady D.C. current, Maxwell's equations and plane wave propagation, reflection, and transmission. Corequisite or prerequisite: Mathematics 2D and 3D. Prerequisite: Physics 5D. (Design units: 0)

ECE176 Engineering Optics (3) F. Fundamentals of optical systems design: incoherent light sources, lens, mirror, photodetectors, radiometry, image recording and display. Optical systems and components; resolution, modulation, transfer functions, and noise. Corequisite: ECE176L. Prerequisite: ECE170. (Design units: 1)

ECE176L Engineering Optics Laboratory (1) F. Basic optics and laser experiments. Lens, prism, grating, diffraction, interferences, He-Ne and CO₂ gas lasers. Corequisite: ECE176. (Design units: 0)

ECE177 Engineering Electrodynamics (3) S. Time-varying electromagnetic fields including waveguides, resonant cavities, radiating systems. Motion of charged particles in electromagnetic fields, radiation by moving charges. Scattering and dispersion. Corequisite: ECE177L. Prerequisite: ECE170. (Design units: 1)

ECE177L Engineering Electrodynamics Laboratory (1) S. Transmission line, waveguides, antenna microwave oscillators, and detectors. Corequisite: ECE177. (Design units: 0)

ECE178 Optical Electronics (3) W. Photodiodes and optical detection, photometry and radiometry, geometric optics, lens theory, imaging system, EM wave propagation, optical waveguides and fibers, heterojunction structures, laser theory, semiconductor lasers, and optical transmission system. Corequisite: ECE178L. Prerequisite: consent of instructor. (Design units: 1)

ECE178L Optical Electronics Laboratory (1) W. Imaging systems, characterization of photodiodes and laser diodes, laser operation, optical transmitters, optical receiver, and fiber optics. Corequisite: ECE178. (Design units: 1)

ECE180 Electrical Engineering Analysis (3) F. Functions of complex numbers and their application to electrical engineering problems. Applications to lumped and continuous parameter engineering systems. Prerequisite: Mathematics 3A or 3D; Engineering ECE70B. Only one course from ECE180, Mathematics 114A, and Mathematics 147 may be taken for credit. (Design units: 0)

ECE186 Engineering Probability (4) S. Sets and set operations; nature of probability, sample spaces, fields of events, probability measures; conditional probability, independence, random variables, distribution functions, density functions, conditional distributions and densities; moments, characteristic functions, random sequences, independent and Markov sequences. (Design units: 0)

ECE198 Group Study (1 to 4) F, W, S. Group study of selected topics in engineering. (Design units: varies)

ECE198L Group Laboratory (1 to 4) F, W, S. Group laboratory for experimentation or design in connection with special projects or ECE198 courses. May be repeated for credit. (Design units: varies)

ECE199 Individual Study (1 to 4) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. (Design units: varies)

ECE199 Individual Study for Honors Students (1 to 5) F, W, S. For undergraduate honor students majoring in Electrical Engineering. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Electrical and Computer Engineering. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor; open only to Campuswide Honors students. May be taken for credit four times.

GRADUATE

ECE206 Spline Theory and Applications (3) W. Mathematical background for three-dimensional realistic graphics, CAD/CAM, and geometric modeling. Polynomials, vector spaces, divided differences, B-Splines, Bezier Curves, and Beta Splines.

ECE207 Modeling and Rendering for Image Synthesis (3) S. Provides the fundamental understanding of mathematical and physical models used in image synthesis applications: geometric models, physics of color image formation, polygon approximations, ray tracing, and radiosity.

ECE210A Advanced Analog Integrated Circuit Design I (3) F. Basic transistor configurations; differential pairs; active load/current sources; supply/temperature-independent biasing; op-amp gain and output stages; amplifier frequency response and stability compensation; nonidealities in op-amps; noise and dynamic range in analog circuits. Prerequisites: ECE113B, 113LB; ECE113C, 113LC; or equivalent.

ECE210B Advanced Analog Integrated Circuit Design II (3) W. Advanced transistor modeling issues; discrete-time and continuous-time analog IC filters; phase-locked loops; design of ICs operating at radio frequencies; low-voltage/low-power design techniques; A/D and D/A converters; AGC circuits. Prerequisite: ECE210A or consent of instructor.

ECE212 Topics in Electronic System Design (3). New research results in electronic system design. Prerequisite: consent of instructor. May be repeated for credit.

ECE216 Solid-State Electronics (3) F. Covers the fundamentals of solid-state electronics which govern the operating principles of semiconductor devices. Specific topics include crystal structure, energy band, carrier transport, carrier generation and recombination, optical properties, heterostructure, quantum confinement effect, and nanostructures. Prerequisites: ECE113A, ECE170; or consent of instructor. *Offered alternate years.*

ECE217A Advanced Semiconductor Devices I (3) W. Advanced complementary metal-oxide-semiconductor field-effect transistors (CMOSFET), device scaling, device modeling and fabrication, equivalent circuits, and their applications for digital, analog, RF. Prerequisite: ECE114A.

ECE217B Advanced Semiconductor Devices II (3) S. Metal-semiconductor field-effect transistors (MESFET), heterojunction bipolar transistors (HBT), microwave semiconductor devices, equivalent circuits, device modeling and fabrication, microwave amplifiers, transmitters, and receivers. Prerequisite: ECE114A.

ECE227A-B Detection, Estimation, and Demodulation Theory (3-3). Application of statistical design theory, state variables, random processes, and Ito calculus to deriving optimum receiver structures for signal detection, parameter estimation, and analog demodulation. Prerequisite: ECE287A. *ECE227A offered alternate years beginning winter 1999; ECE227B offered alternate years beginning winter 2000.*

ECE228A-B Communication and Information Theory (3-3) W, S. Communication over noisy channels; optimum receiver design; information theory concepts entropy, mutual information, encoding of information. Shannon's coding theorems, channel capacity, and implementation of some coded systems. Prerequisite: ECE287A or consent of instructor.

ECE229A Computer Communication Networks (3) F. Introduction to computer communication networks. Fundamental concepts of data communications, layered network architecture and network protocols. Integrated service networks and quality of service. The Internet Protocol and the Asynchronous Transfer Mode. Fundamental concepts of wireless networks and network security.

ECE229B Performance Analysis of Computer Communication Networks (3) W. Introduction to performance analysis of computer communication networks. Error correction codes and data link layer protocols. Queuing models for communication networks. Multi-access communication. Flow and congestion controls. Routing and admission control. Mathematical modeling and optimization of network performance and design. Prerequisite: ECE229A.

ECE230A Digital Signal Processing I (3). Fundamental principles of digital signal processing, sampling, decimation and interpolation, discrete Fourier transforms and FFT algorithms, transversal and recursive filters, discrete random processes, and finite-word effects in digital filters. Prerequisites: ECE135A, ECE240A, and ECE287A.

ECE231 Advanced System Software (3) W. Study of operating systems including interprocess communication, scheduling, resource management, concurrency, reliability, validation, protection and security, and distributed computing support. System software design languages and modeling analysis. Prerequisite: ECE142 or equivalent.

ECE233 Computer Architecture (3) F. Problems in hardware, firmware (microprogram), and software. Computer architecture for resource sharing, real-time applications, parallelism, microprogramming, and fault tolerance. Various architectures based on cost/performance and current technology. Prerequisites: ECE132, ECE132L.

ECE234A Digital Image Processing (3) W. Pixel-level digital image representation and elementary operations; Fourier and other unitary transforms; compression, enhancement, filtering, and restoration; laboratory experience is provided. Prerequisite: ECE135A.

ECE234B Digital Image Understanding (3) S. Image and texture segmentation and symbolic representation; three-dimensional modeling; relational structures; three-dimensional object recognition; three-dimensional scene analysis and interpretation. Prerequisites: ECE136 and ECE234A.

ECE235 Design and Analysis of Algorithms (3) F. The analysis of computer algorithms from a practical standpoint. Algorithms for symbolic and numeric problems such as sorting, searching, curve fitting, and FFT considered. Analysis includes algorithm time and space complexity.

ECE238 Topics in Computer Engineering (3). New research results in computer engineering. Prerequisite: consent of instructor. May be repeated for credit.

ECE240A Linear Systems I (3) F. State-space representation of continuous-time and discrete-time linear systems. Controllability, observability, stability. Realization of rational transfer functions. Prerequisite: ECE140A or equivalent.

ECE240B Linear Systems II (3) W. Continuation of deterministic linear multivariable systems. Linear state feedback and observers in continuous-time and discrete-time system control. Introduction to stochastic systems. Prerequisite: ECE240A.

ECE240C Linear Systems III (3) S. Continuation of stochastic linear multivariable systems. Kalman filtering, prediction, estimation, and smoothing. Prerequisite: ECE240B.

ECE242 Topics in Systems and Control (3). New research results in system and control theory. May be repeated for credit. Prerequisite: consent of instructor.

ECE251 VLSI System Design (3) S. Overview of integrated circuit fabrication, circuit simulation, basic device physics, device layout, timing; MOS logic design; behavioral simulation; logic simulation; silicon compilation; testing and fault tolerance. Prerequisite: ECE132.

ECE252 Distributed Computer Systems (3) S. Design and analysis techniques for decentralized computer architectures, communication protocols, and hardware-software interface. Performance and reliability considerations. Design tools. Prerequisites: ECE231 and ECE233.

ECE253 Real-Time Computer Systems (3). Time bases, clock synchronization, real-time communication protocols, specification of requirements, task scheduling. Validation of timelines, real-time configuration management. Prerequisites: ECE231 and ECE233.

ECE254 Fault-Tolerant Computing (4). Various aspects of fault-tolerant computing systems. Includes hardware and software failures, reliability, mechanism to recover from failures. Prerequisite: consent of instructor. Same as Information and Computer Science 250.

ECE255 Distributed Software Architecture and Design (3). Practical issues for reducing the software complexity, lowering cost, and designing and implementing distributed software applications. Topics include the distributed object model distributed environment, platform-independent software agents and components, the middleware architecture for distributed real-time and secure services. Prerequisite: ECE231.

ECE257 Advanced Database Systems (3). Advanced data models, distributed database management systems, parallel databases, multimedia and visual databases, Web database management, advanced database applications. Prerequisite: ECE 146 or Information and Computer Science 184.

ECE258 Numerical Processors (3). Number representations. Fast algorithms and implementations for addition, multiplication, division, and square root. Floating-point processors. On-line arithmetic. Function evaluation. CORDIC processors. Residue arithmetic. Prerequisite: ECE132.

ECE260 Design and Control of Electromechanical Energy Converters (3). Advanced topics in the generalized theory of electrical machines. Design criteria and methodology, including analytical and numerical field analysis. Electronic control of generators and motors. With laboratory where appropriate. Prerequisite: ECE160 or consent of instructor. May be repeated for credit with consent of instructor.

ECE266A Advanced Power Electronics (3). New developments in power electronics: switching converter topologies, control, magnetics, and applications. Prerequisite: ECE113B, 113LB; ECE140B; ECE166; or consent of instructor.

ECE275A Electro-optic Devices (3) F. Review of basic laser principles. Optics in crystals. Electro-optic effects. Electro-optic devices and applications. Prerequisite: ECE170.

ECE275C Integrated and Fiber Optics (3) S. Optical waveguides; passive and active guided-wave devices; integrated optics modules/circuits and applications; optic fibers; fiber optic devices; fiber optic communications systems; fiber optic sensors. Prerequisites: ECE275A and ECE275B.

ECE279A Advanced Engineering Electromagnetics I (3) W. Stationary electromagnetic fields, Maxwell's equations, circuits and transmission lines, plane waves, guided waves, and radiation. Prerequisite: ECE170 or equivalent.

ECE279B Advanced Engineering Electromagnetics II (3) S. Two- and three-dimensional boundary value problems, dielectric waveguides and other special waveguides, microwave networks and antenna arrays, electromagnetic properties of materials, and electromagnetic optics. Prerequisite: ECE279A or equivalent.

ECE281A Linear Optimization Methods (3). Formulation, solution, and analysis of linear programming and linear network flow problems. Simplex methods, dual ascent methods, interior point algorithms and auction algorithms. Duality theory and sensitivity analysis. Shortest path, max-flow, assignment, and minimum cost flow problems. Prerequisite: Mathematics 3A.

ECE281B Nonlinear Optimization Methods (3). Formulation, solution, and analysis of nonlinear programming problems. Unconstrained optimization, optimization over a convex set, Lagrange multiplier theory, Lagrange multiplier algorithms, duality theory, convex programming, dual methods, and multi-objective optimization theory. Emphasizes mathematical analysis. Prerequisite: Mathematics 3A.

ECE287A Random Signals and Systems (3) F. Extensions of probability theory to families of random variables indexed on time. General properties of stochastic processes such as stationarity, ergodicity, stochastic continuity, differentiability, and integrability. Linear and nonlinear transformations, correlation, power spectrum, and linear filtering of stochastic processes. Linear mean-square estimation, the orthogonality principle, Wiener Kolmogoroff theory, filtering, and prediction. Wide-sense Markoff sequence, recursive filtering, and the Kalman filter. Prerequisite: ECE186.

ECE294 Electrical Engineering Colloquium (varies) F, W, S. Guest speakers discuss their latest research results in electrical engineering. Prerequisite: consent of instructor. May be repeated for credit.

ECE295 Seminars in Engineering (varies) F, W, S. Scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor. May be repeated for credit.

ECE296 Master of Science Thesis Research (varies) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

ECE297 Doctor of Philosophy Dissertation Research (varies) F, W, S. Individual research or investigation conducted in preparing and completing the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor. May be repeated for credit.

ECE298 Topics in Electrical and Computer Engineering (2 to 4) F, W, S. Study of Electrical and Computer Engineering concepts. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

ECE299 Individual Research (varies) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

DEPARTMENT OF MECHANICAL AND AEROSPACE ENGINEERING

S4221 Engineering Gateway; (949) 824-8451
Said E. Elghobashi, **Department Chair**

Faculty

James E. Bobrow: Nonlinear control systems, optimization methods, robotics
Donald Dabdub: Mathematical modeling of air pollution dynamics, parallel computations in environmental sciences
Derek Dunn-Rankin: Combustion, optical particle sizing, particle aerodynamics, laser diagnostics and spectroscopy
Donald K. Edwards: Heat and mass transfer
Said E. Elghobashi: Direct numerical simulation of turbulent, chemically reacting and dispersed two-phase flows
Carl A. Friehe: Fluid mechanics, turbulence, micrometeorology, instrumentation
Faryar Jabbari: Robust and nonlinear control theory, adaptive parameter identification
John C. LaRue: Fluid mechanics, heat transfer, turbulence, instrumentation
Enrique J. Lavernia: Solidification processing of metals, powder metallurgy, intermetallics
Feng Liu: Computational fluid dynamics
J. Michael McCarthy: Kinematic theory of spatial motion, design of mechanical systems, cooperating robots
Kenneth D. Mease: Flight guidance and control, geometric nonlinear control
Melissa E. Orme: Droplet dynamics, fluid mechanics of materials synthesis, netform manufacturing
Dimitri Papamoschou: Compressible mixing and turbulence, supersonic jet noise reduction, diagnostics for compressible flow, acoustics in moving media
Roger H. Rangel: Fluid dynamics and heat transfer of multiphase systems including spray combustion, atomization, and metal spray solidification; applied mathematics

G. Scott Samuelsen: Energy, propulsion, combustion and environmental conflict; turbulent transport in complex flows, spray physics, NOx and soot formation, laser diagnostics and experimental methods; application of engineering science to practical propulsion and stationary systems; environmental ethics

William E. Schmitendorf: Control theory and applications

Athanasios Sideris: Control systems, neural networks

William A. Sirignano: Combustion theory and computational methods, multiphase flows, turbulent reacting flows, flame spread

Harry Skinner: Bio-materials and design of implants, knee joint proprioception, gait analysis, finite element analysis for fracture prediction in bones

Edriss Titi: Partial differential equations, nonlinear analysis

Frederic Yui-Ming Wan: Applied mathematics

Lecturers

Donald J. Barrus: Computer-aided design, computer-aided manufacturing

Jean Pierre Delplanque: Fuel spray combustion and metal spray deposition

David J. Dimas: Finite element analysis and structural dynamics

Eugene Evancoe: Design and analysis of signal conditioning and data acquisition circuits

Hai N. Phan: Computer-aided design, computer-aided manufacturing

Mechanical engineers design, manufacture, and control machines ranging from robots to aircraft and spacecraft, design engines and power plants that drive these machines, analyze the environmental impact associated with power generation, and strive to promote environmental quality. To achieve their goals, mechanical engineers use mathematics, physics, and chemistry together with engineering science and technology in areas such as fluid mechanics, heat transfer, dynamics, controls, and atmospheric science. Mechanical Engineering students at UCI learn the problem-solving, modeling, and testing skills required to contribute to advances in modern technology.

Mechanical Engineering undergraduates complete required courses that provide engineering fundamentals and technical electives that allow students to study particular areas of interest. Specializations are available in: Aerospace Engineering, Combustion/Propulsion, Environmental Engineering, Heat Transfer/Fluid Mechanics, Materials Science and Engineering, and Mechanical Systems. Independent research opportunities allow students to pursue other avenues for focusing their studies.

Since mechanical engineering covers a wide spectrum of subjects, many students use the undergraduate curriculum as preparation for further studies in engineering or in areas such as medicine, law, and management.

Aerospace Engineering deals with all aspects of aircraft and spacecraft design and operation, thus requiring the creative use of many different disciplines. Aerospace engineers work on the forefront of technological advances and are likely to be leaders in scientific discoveries.

The undergraduate curriculum in Aerospace Engineering includes courses in subsonic and supersonic aerodynamics, propulsion, controls and performance, light-weight structures, and advanced materials. In the senior capstone course, students work in teams on the preliminary design of a commercial jet transport.

Career opportunities for Aerospace Engineering graduates are in the broad range of aerospace industries, including manufacturers of aircraft, spacecraft, engines, and aircraft/spacecraft components; makers of aircraft/spacecraft simulators; and government research laboratories.

Areas of graduate study and research are the thermal and fluid sciences, combustion and propulsion, mechanical systems and robotics, environmental engineering, and aerospace engineering. Application areas in mechanical engineering include combustion, heat engines, refrigeration, and robotics. Application areas in aerospace engineering include propulsion, aerodynamic design, and guidance and control.

Undergraduate Major in Aerospace Engineering

The undergraduate Aerospace Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas constitute much of the remaining curriculum.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), and one course in computational methods (FORTRAN, Pascal, C or C++). Courses in linear algebra, differential equations, second-year engineering physics (with laboratory), dynamics, thermodynamics, statics, materials science, and electronics and power systems are required for junior academic standing, and it is recommended that these courses be completed prior to transfer. Dynamics, materials science, thermodynamics, and statics may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN AEROSPACE ENGINEERING

Credit for at least 192.5 units including:

University Requirements: See pages 54–58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 2F (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 5A-B-C-D and 5LB-LC-LD (32.5 units).

Basic Engineering Courses: Engineering MAE10, E54, ECE72, MAE30, MAE80, and MAE91 (23 units).

Aerospace Engineering Core Courses: Engineering MAE106, MAE108, MAE112, MAE120, MAE130A, MAE130B, MAE135, MAE136, MAE140, MAE146, MAE150, MAE157, MAE158, MAE159, MAE170, and MAE175 (64 units).

Technical Electives: 4 units; students may select, with the approval of their faculty advisor, a technical elective incorporating at least 1 design unit.

Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements. Selection of elective courses must be approved by the student's faculty advisor and the departmental undergraduate advisor.

At most an aggregate total of 4 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

Sample Program of Study — Aerospace Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Physics 5B, 5LB
MAE10	Physics 5A	Breadth
Breadth	Breadth	Breadth
Sophomore		
Mathematics 2D	Mathematics 3A	Mathematics 2F
Physics 5C, 5LC	Physics 5D, 5LD	MAE91
MAE30	MAE80	ECE72
Breadth	E54	Breadth
Junior		
MAE130A	MAE106	MAE120
MAE140	MAE130B	MAE146
Breadth	MAE150	MAE157
	Breadth	MAE170
Senior		
MAE108	MAE112	MAE159
MAE135	MAE158	Technical Elective
MAE136	MAE175	Breadth
Breadth	Breadth	

The sample program of study chart shown is typical for the major in Aerospace Engineering. This program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Aerospace Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisor.

Undergraduate Major in Mechanical Engineering

The undergraduate Mechanical Engineering curriculum includes a core of mathematics, physics, and chemistry. Engineering courses in fundamental areas fill much of the remaining curriculum; a few electives allow the undergraduate student to specialize somewhat or to pursue broader areas.

ADMISSIONS

High School Students: See page 152.

Transfer Students. Preference will be given to applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of calculus, one year of engineering physics (with laboratory), one year of general chemistry (with laboratory), and one course in computational methods (FORTRAN, Pascal, C, or C++). Courses in linear algebra, differential equations, dynamics, thermodynamics, statics, materials science, and electronics and power systems are required for junior academic standing, and it is recommended that these courses be completed prior to transferring to UCI. Dynamics, materials science, statics, and thermodynamics may be offered during the summer session at UCI. Students should work closely with the UCI Office of Admissions and Relations with Schools to ensure that they are enrolled in the appropriate courses.

For further information, contact the School of Engineering Undergraduate Student Affairs Office at (949) 824-4334.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN MECHANICAL ENGINEERING

Credit for at least 195.5 units including:

University Requirements: See pages 54–58.

School Requirements: See page 152.

Departmental Requirements:

Mathematics Courses: Mathematics 2A-B-C-D, 3A, and 2F (24 units).

Basic Science Courses: Chemistry 1A-B and 1LA-LB, Physics 5A-B-C-D and 5LB-LC-LD (32.5 units).

Basic Engineering Courses: Engineering MAE10, E54, ECE72, MAE30, MAE52, MAE80, and MAE91 (27 units).

Mechanical Engineering Core Courses: Engineering MAE106, MAE107, MAE115, MAE120, MAE130A, MAE130B, MAE140, MAE145, MAE147, MAE150, MAE151, MAE170, and MAE189A-B-C (51 units).

Restricted Technical Electives: Engineering MAE108 or MAE180 (4 units).

Technical Electives: 12 units; students may select, with the approval of their faculty advisor, an area of specialization and complete the associated requirements, as shown below.

Specialization in Aerospace Engineering: Completion of a Senior Design Project in this area and three courses selected from Engineering MAE108, MAE112, MAE135, MAE136, MAE158, MAE159, and MAE175.

Specialization in Combustion/Propulsion: Completion of a Senior Design Project in this area and three courses selected from Engineering MAE110, MAE112, MAE135, MAE164, MAE180, and MAE185.

Specialization in Environmental Engineering: Completion of a Senior Design Project in this area and two courses selected from Engineering MAE110, MAE162, or MAE164, and one course selected from CEE173, ChE160, or Earth System Science 201A.

Specialization in Heat Transfer/Fluid Mechanics: Completion of a Senior Design Project in this area and the following three courses: Engineering MAE135, MAE180, and MAE185.

Specialization in Materials Science and Engineering: Completion of a Senior Design Project in this area and three courses selected from Engineering ChE60, MSE153, MSE155A, MAE155B, MAE156, and MAE199 (3 or 4 units).

Specialization in Mechanical Systems: Completion of a Senior Design Project in this area and three courses selected from Engineering MAE171, MAE172, MAE180, and MAE185.

In addition, students must aggregate a minimum of 26.5 design units, at least 3 of which must be obtained in the courses approved as technical electives. Design unit values are indicated at the end of each course description. The faculty advisors and the Undergraduate Student Affairs Office can provide necessary guidance for satisfying the design requirements. Selection of elective courses must be approved by the student's faculty advisor and the departmental undergraduate advisor.

At most an aggregate total of 4 units of 199 or H199 courses may be used to satisfy degree requirements.

PROGRAM OF STUDY

The sample program of study chart shown is typical for the accredited major in Mechanical Engineering. Students should keep in mind that this program is based upon a rigid set of prerequisites, beginning with adequate preparation in high school mathematics, physics, and chemistry. Therefore, the course sequence should not

be changed except for the most compelling reasons. Students who are not adequately prepared, or who wish to make changes in the sequence for other reasons, must have their programs approved by their faculty advisor. Mechanical Engineering majors must consult at least once every year with the academic counselors in the Undergraduate Student Affairs Office and with their faculty advisors.

Sample Program of Study — Mechanical Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Physics 5B, 5LB
MAE52	Physics 5A	Breadth
Breadth	Breadth	
Sophomore		
Mathematics 2D	Mathematics 3A	Mathematics 2F
Physics 5C, 5LC	Physics 5D, 5LD	MAE91
MAE30	MAE80	ECE72
MAE10	E54	Breadth
Junior		
MAE115	MAE106	MAE120
MAE130A	MAE130B	MAE170
MAE140	MAE150	Breadth
MAE147	Breadth	Breadth
Senior		
MAE145	MAE151	MAE107
MAE189A	MAE189B	MAE189C
MAE108 or MAE180	Technical Elective	Technical Elective
Technical Elective	Breadth	Breadth
Breadth	Breadth	

Mechanical Engineering and Aerospace Engineering Double Major

Students can complete the double major in Mechanical Engineering and Aerospace Engineering by following the program outlined below. The double major requires that MAE159 be substituted for either MAE189A, B, C or MAE151, and that MAE108 be used for the Mechanical Engineering Restricted Technical Elective. In addition, four breadth courses not shown in the table must be taken either during any summer term(s) or during a thirteenth quarter.

Sample Program of Study — Mechanical and Aerospace Engineering

FALL	WINTER	SPRING
Freshman		
Mathematics 2A	Mathematics 2B	Mathematics 2C
Chemistry 1A, 1LA	Chemistry 1B, 1LB	Physics 5B, 5LB
MAE52	Physics 5A	Breadth
Breadth	Breadth	Breadth
Sophomore		
Mathematics 2D	Mathematics 3A	Mathematics 2F
Physics 5C, 5LC	Physics 5D, 5LD	ECE72
E10	MAE80	MAE91
MAE30	E54	Breadth
Junior		
MAE115	MAE106	MAE107
MAE130A	MAE130B	MAE120
MAE140	MAE150	MAE146
MAE147	Breadth	MAE170
Senior		
MAE108	MAE112	MAE159
MAE135	MAE151	MAE157
MAE136	MAE158	MAE185
MAE145	MAE175	Breadth

Graduate Study in Mechanical and Aerospace Engineering

The Mechanical and Aerospace Engineering faculty have special interest and expertise in three thrust areas: systems and design, fluid and thermal sciences, and combustion and propulsion. Systems and design faculty are studying robust control, parameter identification for flexible space structures, computer-aided design, and robotics—including mechanical design, robot navigation, and coordination of multiple robot systems. Thermal and fluid sciences encompasses multiphase heat transfer and fluid flow, convection, turbulent transfer, atmospheric processes, and supersonic shear flows. Combustion and propulsion research efforts include studies of the processes of fuel-air mixing, turbulent transport, liquid sprays, and the formation of gaseous and solid pollutants in gas, liquid, and coal-fueled combustion systems, including gas turbines, boilers, incinerators, and rockets.

Aerospace engineering research efforts combine specialties from each of the three thrust areas as well as study in propulsion, aerodynamics, trajectory optimization and guidance, and control of flexible space structures.

Programs of study leading to the M.S. and Ph.D. degrees in Mechanical and Aerospace Engineering are offered.

MASTER OF SCIENCE DEGREE

Two plans are available to pursue study toward the M.S. degree: a thesis option and a comprehensive examination option. Opportunities are available for part-time study toward the M.S. degree.

Plan I: Thesis Option

The thesis option requires completion of 36 units of study; the completion of an original research project, the writing of the thesis describing it; and approval of the thesis by a thesis committee. This plan is available for those who wish to gain research experience or as preparation for study toward the doctoral degree. To complete the required 36 units, students must complete a minimum of 20 units in graduate courses numbered MAE200–289, and 16 units from unrestricted courses of which not more than eight units are in MAE296 and not more than five units are in other courses numbered MAE291–299. The courses planned for study must be approved by a faculty advisor and the graduate advisor.

Plan II: Comprehensive Examination Option

The comprehensive examination option requires completion of 36 units of study, 24 units of which must be from graduate courses numbered MAE200–289. With a faculty advisor approval, the remaining 12 units can include execution and documentation of a research or design project (which can count for up to seven of the 36 required units). The courses planned for study must be approved by a faculty advisor and by the graduate advisor.

DOCTOR OF PHILOSOPHY DEGREE

The doctoral program in Mechanical and Aerospace Engineering is tailored to the individual needs and background of the student. The detailed program of study for each Ph.D. student is formulated in consultation with a faculty advisor who takes into consideration the objectives and preparation of the candidate.

Within this flexible framework the Department maintains specific guidelines that outline the milestones of a typical doctoral program. All doctoral students should consult the Departmental Ph.D. guidelines for program details, but there are several milestones to be passed: admission to the Ph.D. program by the faculty; completion of six non-research courses beyond M.S. degree requirements; passage of a preliminary examination or similar assessment of the student's background and potential for success in the doctoral program; course work; meeting departmental teaching requirements, which can be satisfied through service as a teaching assistant or

equivalent; research preparation; formal advancement to candidacy through a qualifying examination conducted on behalf of the Irvine division of the Academic Senate; development of a research proposal; completion of a significant research investigation, and completion and defense of an acceptable dissertation. There is no foreign language requirement. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies. A program of part-time study is not available for the Ph.D. Doctoral programs must be completed in seven calendar years from the date of admission.

Before seeking admission, Ph.D. applicants are encouraged to communicate directly and in some detail with prospective faculty sponsors. The student's objectives and financial resources must coincide with a faculty sponsor's research interests and research support. Financial aid in the form of a teaching assistantship or fellowship may not cover the period of several years required to complete the program. During the balance of the period the student will be in close collaboration with the faculty research advisor.

Courses in Mechanical and Aerospace Engineering

LOWER-DIVISION

NOTE: The undergraduate courses listed below are open only to students in the School of Engineering. All other majors must petition for permission to enroll.

MAE10 Introduction to Engineering Computations (4) F. Introduction to the solution of engineering problems through the use of the computer. Elementary programming in FORTRAN and C is taught. No previous knowledge of computer programming is assumed. Prerequisite or corequisite: Mathematics 2A. Only one course from Engineering MAE10, E10, and CEE10 may be taken for credit. (Design units: 1)

MAE30 Applied Mechanics: Statics (4) F. Applies the principles of static equilibrium of classical physics to the analysis of structures such as trusses and frames, and the determination of stresses in a beam. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 5A. MAE30 and CEE30 may not both be taken for credit. Formerly Engineering ME30. (Design units: 0)

MAE52 Computer-Aided Design (4) F. Develops skills for interpretation and presentation of mechanical design drawings and the use of CAD in engineering design. An integrated approach to drafting based on sketching, manual drawing, and three-dimensional CAD techniques is presented. Formerly Engineering ME52. (Design units: 0.5)

MAE57 Manufacturing Processes in Engineering (2) F, W, S. With laboratory. Machines and processes of mechanical manufacturing. Safety and professional procedures emphasized. Use of measuring instruments, hand tools, lathe, mill, drill press, bandsaw, grinder, welding equipment. Pass/Not Pass only. Formerly Engineering ME57. (Design units: 0)

MAE80 Engineering Dynamics (4) W. Introduction to the kinetics and dynamics of particles and rigid bodies. The Newton-Euler, Work/Energy, and Impulse/Momentum methods are explored for ascertaining the dynamics of particles and rigid bodies. An engineering design problem using these fundamental principles is also undertaken. Prerequisite: MAE30 or CEE30. Only one course from MAE80, CEE80, E80 may be taken for credit. Formerly Engineering ME80. (Design units: 0.5)

MAE91 Introduction to Thermodynamics (4) S. Thermodynamic principles; open and closed systems representative of engineering problems. First and second law of thermodynamics with applications to engineering systems and design. Prerequisites: Physics 5B, Mathematics 2D. Only one course from Engineering MAE91, ChE60, and E101 may be taken for credit. Formerly Engineering ME91. (Design units: 0.5)

MAE99T Design and Orientation for Transfer Students (1 to 2) F. Provides a design experience to transfer students in CAD, dynamics, and thermodynamics as well as an overview of the program. Formerly Engineering ME99T. (Design units: 0.5–1.5)

UPPER-DIVISION

MAE106 Mechanical Systems Laboratory (4) W. Experiments in linear systems, including op-amp circuits, vibrations, and control systems. Introduction to digital sampling concepts. Emphasis on demonstrating that mathematical models are useful tools for analysis and design of electro-mechanical systems. Prerequisites: MAE140 or MAE147; ECE72. Formerly Engineering ME106. (Design units: 2)

MAE107 Fluid Thermal Science Laboratory (4) S. Fluid and thermal engineering laboratory. Experimental analysis of fluid flow, heat transfer, and thermodynamic systems. Probability, statistics, and uncertainty analysis. Report writing stressed. Corequisite or prerequisite: MAE120. Prerequisites: MAE91, MAE130B. Formerly Engineering ME107. (Design units: 1)

MAE108 Aerospace Laboratory (4) F. Analytical and experimental investigation in aerodynamics, fluid dynamics, and heat transfer. Emphasis on study of flow over objects and lift and drag on airfoils. Introduction to basic diagnostic techniques. Report writing is emphasized and a design project is required. Prerequisite: MAE130B. Formerly Engineering AE108. (Design units: 2)

MAE110 Combustion in Practical Systems (4) F. Combustion and design of gaseous, liquid, and coal-fired combustion systems. Fuels, fuel injection, combustion aerodynamics, and fuel-air mixing. Operating and design aspects of practical systems including engines, boilers, furnaces, and incinerators. Prerequisite: MAE115. Formerly Engineering ME110. (Design units: 2)

MAE112 Propulsion (4) W. Application of thermodynamics and fluid mechanics to basic flame processes and cycle performance in propulsion systems: gas turbines, ramjets, scramjets, and rockets. Prerequisites: MAE91, MAE135. Formerly Engineering AE112. (Design units: 1)

MAE115 Applied Engineering Thermodynamics (4) F. Application of thermodynamic principles to compressible and incompressible processes representative of practical engineering problems—power cycles, refrigeration cycles, multicomponent mixtures, air conditioning systems, combustion and compressible flow. Design of a thermodynamic process. Prerequisite: MAE91. Formerly Engineering ME115. (Design units: 1)

MAE116 Statistical Thermodynamics (3) W. Classical and quantum mechanical descriptions of substances and thermodynamic properties of gases, liquids, and solids. Elementary kinetic theory of gases and evaluation of transport coefficients. Prerequisite: Physics 5E. Formerly Engineering ME116. (Design units: 0)

MAE120 Heat Transfer (4) S. Fundamentals of heat transfer with application to practical problems. Conduction, convection in laminar and turbulent flow, radiation heat transfer, and combined heat transfer. Application to insulation requirements and heat exchangers. Individual design project. Prerequisites: MAE91, MAE130B. Formerly Engineering ME120. (Design units: 0)

MAE130A Introduction to Fluid Mechanics (4) F. Fundamental concepts; fluid statics; fluid dynamics; Bernoulli's equation; control-volume analysis; basic flow equations of conservation of mass, momentum, and energy; differential analysis; potential flow; viscous incompressible flow. Prerequisites: Physics 5A; Mathematics 2F or equivalent; Engineering MAE80. MAE130A and CEE170A may not both be taken for credit. Formerly Engineering ME130A. (Design units: 0)

MAE130B Introduction to Viscous and Compressible Flows (4) W. Introduction to the analysis of viscous flows including fully developed laminar and turbulent flow in a pipe, viscous flow over immersed bodies, evaluation of boundary layer characteristics, lift and drag, compressible flow in a duct and normal shock waves. Prerequisites: MAE91, MAE130A. Formerly Engineering ME130B. (Design units: 1)

MAE135 Compressible Flow (4) F. Compressibility effects in fluid mechanics. One-dimensional flow with area variation, friction, heat transfer, and shocks. Design of gas supply systems. Two-dimensional flow with oblique shocks and isentropic waves. Supersonic airfoil theory and design, wind-tunnel design. Basic diagnostics. Prerequisites: MAE91, MAE130A, MAE130B. Formerly Engineering AE135. (Design units: 1)

MAE136 Aerodynamics (4) F. Analysis of flow over aircraft wings and airfoils, prediction of lift, moment, and drag. Topics: fluid dynamics equations; flow similitude; viscous effects; vorticity, circulation, Kutta-Joukowski theorem, potential flow; superposition principle, Kutta-Joukowski theorem; thin airfoil theory; finite wing theory; compressibility. Prerequisites: MAE130A, MAE130B. Formerly Engineering AE136. (Design units: 1)

MAE140 Introduction to Engineering Analysis II (4) F. Analytical methods in engineering. Variable coefficient linear ordinary differential equations. Eigenfunction expansions. Complex variables, contour integrations, inverse Laplace transform. Linear partial differential equations. Introduction to Fourier transforms. Prerequisite: Mathematics 2F or equivalent. Formerly Engineering AE140. (Design units: 0)

MAE145 Theory of Machines and Mechanisms (4) F. Presents the basic mathematical theory of machines. Focuses on the principles of CAM design, gearing and gear train analysis, and the kinematic and dynamic analysis of linkages, together with an introduction to robotics. Prerequisites: Engineering MAE80; Mathematics 3A. (Design units: 2)

MAE146 Astronautics (4) S. Motion in gravitational force fields, orbit transfers, rocketry, interplanetary trajectories, attitude dynamics and stabilization, navigation, reentry, the space environment. Prerequisite: MAE80. Formerly Engineering AE146. (Design units: 1)

MAE147 Vibrations (4) F. Analysis of structural vibrations of mechanical systems. Modeling for lumped and distributed parameter systems. Topics: single- and multi-degree of freedom systems, free and forced vibrations, Fourier series, convolution integral, mass/stiffness matrices, and normal modes with design project. Prerequisites: MAE80; Mathematics 2F or equivalent. Formerly Engineering ME147. (Design units: 1)

MAE150 Mechanics of Materials (4) W. Concepts of stress and strain. Analysis of deformable solids under axial, torsional, shearing, and bending loads. Two-dimensional analysis of stress and strain. Residual stresses, indeterminate beam analysis methods, buckling, impact loading, design of fundamental structure components. Corequisite or prerequisite: Engineering E54. Prerequisite: MAE30. Same as Engineering MSE150. MAE150 and CEE150 may not both be taken for credit. Formerly Engineering ME150. (Design units: 1)

MAE151 Mechanical Engineering Design (4) W. A series of product-specific design models that illustrate the application of engineering analysis in the design process of a practical device. Modules include: heat transfer; mechanisms and static loads; dynamics and stress; and vibrations and control. Prerequisites: MAE120, MAE145, and MAE170. Formerly Engineering MAE151B. (Design units: 3)

MAE152A Introduction to Computer-Aided Engineering (4) F. Elements and principles of computer-aided engineering with modern hardware and software are presented with a design focus. Case studies are used to assist in finite-element method techniques. Prerequisites: MAE120, MAE150. Formerly Engineering ME152A. (Design units: 2)

MAE156 Mechanical Behavior and Design Principles (4) S. Elastic and plastic deformation (three-dimensional analysis). Stress-strain relationships. Yielding criteria. Necking. Buckling. Fracture. Fatigue. Impact. Design parameters and criteria. Use of library is stressed. Prerequisites: E54; MAE150 or MSE150. Same as MSE156. Formerly Engineering ME156. (Design units: 2)

MAE157 Lightweight Structures (4) S. Fundamentals of torsion and bending. Analysis and design of thin-wall and composite beams. Applications of energy methods and matrix methods. Stress analysis of aircraft components. Stiffness, strength, and buckling. Prerequisite: CEE150 or MAE150. Same as Engineering CEE157. (Design units: 2)

MAE158 Aircraft Performance (4) W. Fundamentals of flight theory applied to subsonic propeller and jet aircraft. Nature of aerodynamic forces, drag and lift of wing and fuselage, high-lift devices, level-flight performance, climb and glide performance, range, endurance, takeoff and landing distances, static and dynamic stability and control. Prerequisites: MAE80, MAE130A. Formerly Engineering AE158. (Design units: 2)

MAE159 Aircraft Design (4) S. Preliminary design of subsonic general aviation and transport aircraft with emphasis on layout, aerodynamic design, propulsion, and performance. Estimation of total weight and weight distribution, design of wings, fuselage, and tail, selection and location of engines, prediction of overall performance. Prerequisites: MAE112; MAE130A; MAE136; MAE158 or consent of instructor. Formerly Engineering AE159. (Design units: 4)

MAE162 Engineering Meteorology (4) W. Fundamentals and aspects of atmospheric sciences important to engineering and environmental problems. Basic physics and thermodynamics of the atmosphere; dispersion of pollutants. A design problem is included. Prerequisite: MAE91 or E101 or CEE91 or ChE60; MAE130A or CEE170A or ChE120A or consent of instructor. Same as Earth System Science 162. Formerly Engineering ME162. (Design units: 1)

MAE164 Air Pollution and Control (4) S. Sources, dispersion, and effects of air pollutants. Topics include emission factors, emission inventory, air pollution, meteorology, air chemistry, air quality modeling, impact assessment, source and ambient monitoring, regional control strategies. Prerequisites: MAE91; MAE130A or CEE170A. Formerly Engineering ME164. (Design units: 2)

MAE170 Introduction to Control Systems (4) S. With laboratory. Feedback control systems. Modeling, stability, and systems specifications. Root locus, Nyquist, and Bode methods of analysis and design. Prerequisites: MAE80; MAE147 or MAE140 or equivalent. Formerly Engineering ME170. (Design units: 2)

MAE171 Digital Control Systems (4) W. Methods for analysis and design of discrete-time control systems. Applications of the sampling theorem, z-transforms, difference equations, discrete Fourier transforms. State-space techniques of digital control system design, z-plane stability, frequency response. Prerequisite: MAE170. Formerly Engineering ME171. (Design units: 2)

MAE172 Analysis and Design of Control Systems (4) S. System modeling, simulation, analysis, design, and experimental verification of control system operation. Case studies include experiments in hydraulic and pneumatic position control, liquid leveling, force, temperature, and fluid flow control. Prerequisites: MAE170, MAE180. Formerly Engineering ME172. (Design units: 3)

MAE175 Dynamics and Control of Aerospace Vehicles (4) W. Equations of motion, linearization, stability derivatives, and longitudinal and lateral modes of motion. Handling qualities, sensors and actuators, and effects of various feedbacks on stability and performance. Autopilot design. Prerequisite: MAE170. Formerly Engineering AE175. (Design units: 2)

MAE180 Instrumentation and Data Acquisition (4) F. The use of semiconductor devices, digital and linear circuits in the design of interfaces to mechanical engineering systems. Emphasis on design and use of microprocessor interfacing for control and data acquisition. Prerequisite: MAE106. Formerly Engineering ME180. (Design units: 3)

MAE183 Computer-Aided Mechanism Design (4) W. Focuses on the design of planar, spherical, and spatial mechanisms using modern computer workstations. Topics include both exact and approximate, graphical and analytical design techniques. Students are required to use the existing software (or develop new algorithms) to design and build various mechanisms for new applications. Prerequisite: Mathematics 3A. Formerly Engineering ME183. (Design units: 4)

MAE185 Numerical Analysis in Mechanical Engineering (4) W. Solution of mechanical-engineering equations by means of numerical methods. Errors in numerical analysis. Nonlinear equations and sets of equations. Numerical differentiation and integration. Ordinary differential equations. Boundary-value problems. Partial differential equations. Prerequisites: Engineering MAE10, Mathematics 3A; Mathematics 2F or equivalent. Only one course from Engineering MAE185, Engineering CEE185, and Mathematics 105A may be taken for credit. Formerly Engineering ME185. (Design units: 2)

MAE188 Engineering Design in Industry (4) F, W, S. Presents the principles of engineering design in the context of an industrial application. Local manufacturing firms define an engineering design project to be completed by students in 10 weeks. Projects include initial brainstorming to final design, with a formal result. Formerly Engineering ME188. (Design units: 4)

MAE189A-B-C Senior Project (1-1-1) F, W, S. Group or individual supervised senior project of theoretical or applied nature involving design. Corequisite for 189A: MAE151A; for 189B: MAE151B. (Design units: 1)

MAE195 Seminars in Engineering (1 to 2) F, W, S. Seminars by individual faculty in major fields of interest. Prerequisite: consent of instructor. May be repeated for credit. (Design units: varies)

MAE198 Group Study (1 to 4) F, W, S. Group study of selected topics in engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. Formerly Engineering ME198. (Design units: varies)

MAE199 Individual Study (2 to 4) F, W, S. For undergraduate Engineering majors in supervised but independent reading, research, or design. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Prerequisite: consent of instructor. May be repeated for credit as topics vary. Formerly Engineering ME199. (Design units: varies)

MAEH199 Individual Study for Honors Students (1 to 5) F, W, S. Independent reading, research, or design under the direction of a faculty member or group of faculty members in Mechanical and Aerospace Engineering. Students taking individual study for design credit are to submit a written paper to the instructor and to the Undergraduate Student Affairs Office in the School of Engineering. Open only to members of the Campuswide Honors Program who are Mechanical or Aerospace Engineering majors. May be repeated for credit. Formerly Engineering MEH199. (Design units: varies)

GRADUATE

MAE200A Engineering Analysis I (4) F. Linear algebra, including vector spaces, matrices, linear system of equations, and the eigenvalue problem. Scalar and vector field theory. Calculus of variations and optimization. Notions of stability for linear and nonlinear differential equations. Formerly Engineering ME200A.

MAE200B Engineering Analysis II (4) W. Review of ordinary differential equations, including Bessel and Legendre functions. Partial differential equations, including the diffusion equation, Laplace's equation, and the wave equation. Fourier series, Fourier and Laplace transforms and their applications. Introductions to functions of a complex variable and conformal mapping. Formerly Engineering ME200B.

MAE201 Computer-Aided Geometric Modeling (3) W. Parametric representation of curves and surfaces. Boundary representation of solids, approximation techniques, constructive solid geometry. Prerequisite: MAE200A. Formerly Engineering ME201.

MAE202 Geometric Methods of Mechanics (3) S. A mathematical treatment of mechanics, with applications to robotic and general multibody systems. Local and global methods of Riemannian geometry and lie theory. Symplectic geometry, Hamiltonian and Lagrangian systems, variational principles of mechanics. Applications to kinematics, dynamics, and control of multibody systems. Prerequisites: MAE200A, MAE200B. Formerly Engineering ME202.

MAE203 Numerical Methods in Engineering (3) S. Simple difference schemes for model PDEs. Richardson's extrapolation. Error estimate. Interpolation theory. Approximation theory, least squares, minimax approximation, orthogonal polynomials. Trigonometric interpolation, FFT. Numerical quadrature. Solution of linear and nonlinear equations, stability and convergence. Concepts of finite volume, finite element, and spectral methods. Formerly Engineering ME203.

MAE204 Characterization of Dynamical Systems (3) F. Introduction to the modern theory of dynamical systems. Ordinary differential equations and maps: invariant spaces and structural stability. Local bifurcations. The Smale horseshoe, fractal sets, symbolic dynamics, chaos. Global bifurcations. Applications and examples. Formerly Engineering ME204.

MAE205 Perturbation Methods in Engineering (3) S. Asymptotic expansions of integrals. Regular and singular perturbations. Perturbation methods for ordinary and partial differential equations. Matched asymptotic expansions. Formerly Engineering ME205.

MAE206 Nonlinear Optimization Methods (3) S. Numerical methods for constrained and unconstrained optimization. Barrier functions, quadratic programming, trust region algorithms. Use of orthogonal factorizations for numerical stability. Prerequisite: MAE200A. Formerly Engineering ME206.

MAE210 Advanced Fundamentals of Combustion (3) W. Premixed, non-premixed, and heterogeneous reactions, with emphasis on kinetics, thermal ignition, turbulent flame propagation, detonations, explosions, flammability limits, diffusion flame, quenching, flame stabilization, and particle spray combustion. Prerequisite: MAE110. Formerly Engineering ME210.

MAE215 Advanced Combustion Technology (3) S. Emphasis on pollutant formation and experimental methods. Formation of gaseous pollutants and soot; transformation and emission of fuel contaminants in gas, liquid, and solid fuel combustion; methods employed to measure velocity, turbulence intensity, temperature, composition, and particle size; methods to visualize reacting flows. Prerequisite: MAE110. Formerly Engineering ME215.

MAE216 Statistical Thermodynamics (3) F. Statistics of independent particles, development of quantum mechanical description of atoms and molecules, application of quantum mechanics, evaluation of thermodynamic properties for solids, liquids, and gases, statistical mechanics of dependent particles (ensembles). Prerequisites: MAE91, MAE200A. Formerly Engineering ME216.

MAE217 Generalized Thermodynamics (3) F. Generalized thermodynamics develops the laws of continuum thermodynamics from a set of plausible and intuitive postulates. The postulates are motivated qualitatively by a statistical description of matter and are justified by a posterior success for the resulting theory. Prerequisites: MAE91, MAE115 or equivalent. Formerly Engineering ME217.

MAE220 Conduction Heat Transfer (3) F. Analytical and numerical methods for the determination of steady state and transient conduction of heat in solids with and without heat sources and phase change. Classical and approximate solutions with applications to various geometric configurations. Prerequisite: MAE120. Formerly Engineering ME220.

MAE221 Convective Heat Transfer (3) S. Laminar and turbulent heat transfer in external and internal flows. Similarity solutions. Integral methods. Free convection. Prerequisite: MAE230B. Formerly Engineering ME221.

MAE222 Radiation Heat Transfer (3) F. Black body radiation. Radiative transport equations for surfaces separated by nonparticipating media. Radiant energy transfer through absorbing, emitting, and scattering media. Radiation-conduction interaction. Radiation-convection interaction. Introduction to numerical methods in radiation. Prerequisite: MAE120. Formerly Engineering ME222.

MAE223A Numerical Methods in Heat, Mass, and Momentum Transport (Laminar Flows) I (3) W. Introduction to the discretization of various types of partial differential equations (parabolic, elliptic, hyperbolic). Finite-volume discretization for one- and two-dimensional flows. Use of a two-dimensional elliptic procedure to predict sample laminar flows. Corequisite or prerequisite: MAE230A. Formerly Engineering ME223A.

MAE223B Numerical Methods in Heat, Mass, and Momentum Transport (Turbulent Flows) II (3) S. Introduction to turbulence. Reynolds-averaging of Navier-Stokes equations. Second-order closure of the average equations. Use of two-dimensional elliptic procedure to predict confined turbulent flows. Prerequisite: MAE223A. Formerly Engineering ME223B.

MAE224 Convective Mass Transfer (3) F. Concentrations, velocities, and mass fluxes. Mechanisms of mass transport and transport properties in multicomponent media. Mass transfer problems described by ordinary differential equations. Partial differential transport equations and some solutions of technical importance. Interphase mass transfer formulations and solutions. Prerequisite: MAE120. Formerly Engineering ME224.

MAE225 Multiphase Flow and Heat Transfer (3) F. Formulation and solution of the equations of multiphase flow and heat transfer. Boiling heat transfer, nucleation, bubble dynamics, film and pool boiling; condensation; flow patterns in two-phase pipe flows; bubbly, plug, and annular flows. Prerequisites: MAE120, MAE221. Formerly Engineering ME225.

MAE226 Special Topics in Heat and Mass Transfer (3) F. Selected topics of current interest in heat transfer. Topics include conductive, convective, radiative, and coupled heat and mass transfer; multicomponent systems; and phase change. Prerequisites: MAE120, MAE221. May be repeated for credit as topics vary. Formerly Engineering ME226.

MAE230A Inviscid Incompressible Fluid Mechanics I (3) F. Equations of motion. Vector notation. Flow kinematics. Potential flow and complex potential. Vorticity and circulation. Bernoulli's theorem. Crocco's theorem. Conformal, Joukowski, and Schwarz-Christoffel transformations. Prerequisite: MAE130A. Formerly Engineering ME230A.

MAE230B Viscous Incompressible Fluid Dynamics II (3) W. Review of mass, momentum, energy equations. Stress tensor, constitutive relations. Exact solutions to laminar flows. Stokes and Oseen flows. Concept of self-similarity. Boundary layer theory: thin-layer approximation, Falkner-Skan, Blasius solutions, integral methods. Jet, wake, cavity flows. Introduction to turbulence: instability, Reynolds averaging, mixing length. Prerequisite: MAE230A. Formerly Engineering ME230B.

MAE230C Compressible Fluid Dynamics (3) S. One-dimensional unsteady flow: Riemann invariants, acoustics, shock tube. Two-dimensional flow: shock polars, linear theory, similarity rules, method of characteristics. Three-dimensional flow: slender-body theory. Effects of viscosity and conductivity: laminar boundary layer, Crocco-Busemann relations. Prerequisite: MAE230A or MAE230B. Formerly Engineering ME230C.

MAE230D Theoretical Foundations of Fluid Mechanics (3) F. Review of tensor and vector calculus. Well-posed problems and boundary, initial, and interface conditions; strong and weak solutions. Similarity, perturbation theory and limit behavior, bifurcations. Wave propagation. Vortices: mutual interactions and stability. Newtonian and non-Newtonian flows. Jets, wakes, and cavities. Prerequisites: MAE230A, MAE230B. Formerly Engineering ME230D.

MAE231 Fundamentals of Turbulence (3) S. Phenomenon of turbulence. Reynolds equations. Dynamics of turbulence. Free turbulent shear flows. Wall-bounded turbulent shear flows. Turbulent transport of scalar quantities. Spectral dynamics. Mathematical models of turbulence. Prerequisite: MAE230A. Formerly Engineering ME231.

MAE232 Atmospheric Turbulence (3) S. Turbulent motion. Statistical and spectral methods. Homogeneous and shear flow problems. Turbulence in the atmosphere. Boundary layer, effects of buoyancy, rotation. Prerequisite: MAE230A. Formerly Engineering ME232.

MAE233 Stability of Fluids (3) S. Stability of motion of an inviscid or Newtonian fluid. Instability of a shear layer. Onset of convection. Stability of plane parallel flows. Stability of drops, bubbles, and interfaces. Techniques include linear and nonlinear analysis. Prerequisites: MAE200A, MAE200B, MAE230A, MAE230B. Formerly Engineering ME233.

MAE236 Nonequilibrium Gas Dynamics (3) W. Molecular description of fluid flow. Boltzmann equation. Chapman-Enskog expansion for flows with translational nonequilibrium. Shock structure. Inviscid flows with chemical and vibrational nonequilibrium. Prerequisite: MAE230C. Formerly Engineering ME236.

MAE241 Dynamics (3) F. Kinematics and dynamics of three-dimensional motions. Lagrange's equations, Newton-Euler equations. Applications include robot systems and spinning satellites. Prerequisite: MAE147 or equivalent. Formerly Engineering ME241.

MAE242 Robotics (3) S. Spatial rigid-body transformations. Forward and inverse kinematics. Screw coordinates and transformations. Rate and static analyses using screw theory. Reciprocal screw systems. Singularity analysis. Parallel manipulators. Hybrid serial/parallel manipulators. Manipulator dynamics. Compliance and force control. Trajectory generation. Prerequisites: MAE80, MAE241. Formerly Engineering ME242.

MAE243 Geometric Methods of Robotics (3) W. A mathematical treatment of robotic mechanisms, manipulation, and motion control. Local and global methods of Riemannian geometry and Lie theory. Forward and inverse kinematics, workspace and dexterity, optimal kinematic design. Grasping, compliance, dynamics, and control. Motion planning and obstacle avoidance. Prerequisites: MAE200A, MAE241. Formerly Engineering ME243.

MAE244 Theoretical Kinematics (3) S. Spatial rigid body kinematics is presented with applications to robotics. Orthogonal matrices, Rodrigues' formula, Quaternions, Plücker coordinates, screw theory, and dual numbers are studied using modern projective geometry and multi-linear algebra. Applications include trajectory planning, inverse kinematics, and workspace analysis. Formerly Engineering ME244.

MAE245 Spatial Mechanism Design (3) W. Fundamental kinematic theory required for planar, spherical, and spatial mechanism design. Complex numbers, quaternions, and dual quaternions are used as geometric algebras for four-position synthesis in the plane, on the sphere, and in space, respectively. Prerequisites: MAE200A, MAE244. Formerly Engineering ME245.

MAE260 Current Issues Related to Tropospheric and Stratospheric Processes (4) S. Examination of current issues related to the atmosphere, including energy usage; toxicology; effects on humans, forest, plants, and ecosystems; particulate matter (PM10); combustion; modeling, and meteorology; airborne toxic chemicals and risk assessment; application of science to development of public policies. Prerequisite: One course selected from Chemistry 245, Earth System Science 202, Engineering MAE164, Engineering MAE261, or consent of instructor. Same as Chemistry 241. Formerly Engineering ME260.

MAE261 Air Quality Modeling (3) W. Fundamental principles necessary to understand the dynamics of air pollutants. Derivation and description of mathematical techniques for the numerical solution of the atmospheric equation. Formulation and development of air quality models. Prerequisites: MAE230A and MAE230B or consent of instructor; Engineering MAE10 or equivalent FORTRAN knowledge. Formerly Engineering ME261.

MAE264 Combustion Particulates and Aerosols (3) S. Behavior of air-borne solid and liquid particles in air resources engineering. Description of air drag, gravity, Brownian motion, light scattering, charging phenomena, coagulation, size distributions. Applications include generation and classification of aerosols, lung deposition, formation and characteristics of atmospheric aerosols. Prerequisites: MAE130A, MAE130B. Formerly Engineering ME264.

MAE270A Linear Systems I (3) F. Methods of linear systems analysis. State-space representations of continuous-time linear systems-impulse response and state transition operators. Controllability and observability. Prerequisite: MAE170 or ECE140A. Formerly Engineering ME270A.

MAE270B Linear Systems II (3) W. Advanced topics in linear systems: bases, linear operator representations, and Jordan forms. Review of dynamical systems, and stability. Time-varying systems, discrete-time representations, and multi-input/multi-output systems. Introduction to continuous and discrete time linear regulator (LQR) problems. Prerequisite: MAE270A. Formerly Engineering ME270B.

MAE271 System Identification (3) S. Covers the latest techniques in system identification. Materials covered encompass techniques in both frequency and time domain. Linear and nonlinear dynamic processes, correlation, regression, stochastic approximation, etc., are among the topics covered. Prerequisite: MAE270A. Formerly Engineering ME271.

MAE272 Robust Control Theory (3) S. Methods for control design of systems with uncertainty. Guaranteed stability and tracking problems. Linear controls via scalar search technique and Riccati equation method. Nonlinear control design via Lyapunov theory. Kharitonov's theorem extensions for determining robustness. Simultaneous stabilization problems. Prerequisite: MAE270A. Formerly Engineering ME272.

MAE273 Control of Robot Systems (3) F. Dynamic analysis and control system design of open- and closed-chained mechanisms. Methods for real time control of nonlinear systems. Lyapunov Stability. Advanced motion planning algorithms. Prerequisites: MAE241, MAE270A. Formerly Engineering ME273.

MAE274 Optimal Control (3) F. Introduction to the principles and methods of optimal control. Topics include: objectives and issues in controlling nonlinear systems; linear variational and adjoint equations; optimality conditions via variational calculus, maximum principle, and dynamic programming; solution methods; applications to control of robots and aerospace vehicles. Formerly Engineering ME274.

MAE275 Nonlinear Feedback Systems (3). Advanced tools for feedback control system analysis and synthesis. Norms, operators, Lp spaces, contraction mapping theorem, Lyapunov techniques along with their extensions. Circle criterion, positivity and passivity. Applications to nonlinear control methods, such as sliding mode or adaptive techniques. Prerequisite: MAE270B. Formerly Engineering ME275.

MAE276 Geometric Nonlinear Control (3). Using the mathematics of differential geometry, a number of the concepts and results of linear systems theory have been extended to nonlinear systems. Describes these extensions and illustrates their use in nonlinear system analysis and design. Prerequisites: MAE200A, MAE270A. Formerly Engineering ME276.

MAE279 Special Topics in Mechanical Systems (3) W. Selected topics of current interest in mechanical systems. Topics include robotics, kinematics, control, dynamics, and geometric modeling. Prerequisites: MAE241, MAE270A. May be repeated for credit as topics vary. Formerly Engineering ME279.

MAE281 Fundamentals of Digital Signal Analysis (3) F. Fundamentals and principles of digital data acquisition and analysis of random signals as encountered in turbulence, etc. Topics include analog-to-digital conversion, aliasing, statistical and spectral analysis of random signals using high-level computer routines and languages. Student project required. Prerequisites: MAE200A, MAE200B. Formerly Engineering ME281.

MAE282 Fundamentals of Signal Transduction (3) S. Fundamentals and principles of signal transduction including the analytical methods required for the successful measurement of both steady-state and time-varying quantities of engineering interest (e.g., fluid velocity, pressure, temperature) using both linear and non-linear systems. With laboratory. Prerequisite: MAE281. Formerly Engineering ME282.

MAE283 Fundamentals of Computer Control of Experiments (3) S. Fundamentals and principles of interfacing computers to experiments for data acquisition and control of the experiment. C programming, electronic data acquisition, interfacing to low-level and "black box" hardware, and case studies of computer-controlled experiments. Student project required. Formerly Engineering ME283.

MAE284 Fundamentals of Experimental Design (3) S. Fundamentals and principles of statistical experimental design and analysis. Emphasis addresses understanding and use of designed experiments, response surfaces, linear regression modeling, process optimization, and development of links between empirical and theoretical models. Formerly Engineering ME284.

MAE294 M.S. Project (3) F, W, S. Tutorial in which master's-level students taking the comprehensive examination option undertake a master's-level research project. May be repeated for credit. Formerly Engineering ME294.

MAE295 Seminars in Engineering (1 to 4) F, W, S. Seminars by individual faculty in major fields of interest. Prerequisite: consent of instructor. May be repeated for credit as topics vary. Formerly Engineering ME295.

MAE296 Master of Science Thesis Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the thesis required for the M.S. in Engineering. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering ME296.

MAE297 Doctor of Philosophy Dissertation Research (4 to 12) F, W, S. Individual research or investigation conducted in the pursuit of preparing and completing the dissertation required for the Ph.D. in Engineering. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering ME297.

MAE298 Seminars in Mechanical Engineering (1) F, W, S. Presentation of advanced topics and reports of current research efforts in mechanical engineering. Required of all graduate students in mechanical engineering. Satisfactory/Unsatisfactory grading only. May be repeated for credit as topics vary. Formerly Engineering ME298.

MAE299 Individual Research (1 to 12) F, W, S. Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor. May be repeated for credit. Formerly Engineering ME299.

SCHOOL OF HUMANITIES

Karen R. Lawrence, **Dean**

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The School of Humanities comprises three fundamental areas of knowledge: history; literature, film, and the arts; and philosophy. The intellectual activity of departments and programs in the School reflects the discrete concerns of these basic disciplines and intersections among them. By expanding our knowledge in these three areas and developing skills in rhetoric, expository composition, and foreign languages, humanists influence the fundamental techniques of communication used throughout the modern university and our whole society. They analyze and question those techniques and examine the web of cultural beliefs in which they are practiced.

The School of Humanities at UCI also combines these scholarly and critical functions and uses both traditional and contemporary concepts to define a new field best described as "critical literacy." The study of critical literacy investigates the rhetoric and culture of innovative technologies of communication that have been spawned by the revolution in electronic media. In addition, critical literacy explores the multicultural and global contexts of communication to promote cultural diversity within a democratic society and a better understanding of cultural differences in a transnational setting.

Because language is the humanist's essential tool and the traditional medium of historical record, philosophical speculation, and literary creation and criticism, the School of Humanities places special emphasis on language and training in composition. The campuswide Writing Program is housed in the School of Humanities, as are our distinguished programs in creative writing and the Program in English as a Second Language.

The School of Humanities also offers programs in over a dozen foreign languages, both classical and modern, and requires that its majors take two years or the equivalent of foreign language study. The pursuit of critical literacy involves analyzing and understanding our immediate culture, and one way to do this is through the study of foreign languages and the cultural systems they entail. We rarely scrutinize or analyze something we know as intuitively as our native language, yet it is by means of this language that we organize and express our thoughts. The "foreignness" of a foreign language permits us to objectify an entire linguistic system, to observe its structure and its usage, and then to make comparisons with our own linguistic situation. The knowledge of one's *native* language, gained by this kind of comparative observation, is the foundation of critical reflection on texts of any nature—historical, philosophical, literary, political, legal, scientific, or other. Serious study of a foreign language is, therefore, crucial to any university education that aims at fostering critical thinking and objective self-reflection.

The School of Humanities requires all its majors to take the Humanities Core Course, which integrates the study of philosophy, literature, film and the arts, and history along with lower-division writing. Interdisciplinary studies are also an essential feature of the Humanities Honors Program, and programs in Film Studies and Comparative Literature, and a number of UCI's Interdisciplinary Programs are affiliated with the School of Humanities: African-American Studies, Asian-American Studies, Chicano/Latino Studies, Latin American Studies, and Women's Studies; as well as the minor in Religious Studies. See the Interdisciplinary Programs section of the *Catalogue* for information.

Because humanists deal analytically with the most complex problems and issues affecting people, and because they are especially adept at analyzing language and texts, students majoring in the humanities are particularly well-prepared for careers in all fields in which analysis, judgment, and argument are important. Thus a background in the humanities is advantageous not only for a career in a university or school, but also for careers in such fields as management, law, medicine, communications, diplomacy, social work, and politics. In a world where most people can expect to change careers several times during their lives, it is crucial that students develop not only knowledge of a specific field, but also the general skills of analysis and imagination that are fostered by humanistic inquiry and critical literacy.

DEGREES

Art History*	B.A.
Chinese Language and Literature	B.A.
Classical Civilization	B.A.
Classics	B.A., M.A., Ph.D.
Comparative Literature	B.A., M.A., Ph.D.
East Asian Cultures	B.A.
East Asian Languages and Literatures	M.A., Ph.D.
English	B.A., M.A., M.F.A., Ph.D.
Film Studies	B.A.
French	B.A., M.A., Ph.D.
German	B.A., M.A., Ph.D.
History	B.A., M.A., Ph.D.
Humanities	B.A.
Japanese Language and Literature	B.A.
Philosophy	B.A., M.A., Ph.D.
Russian†	B.A.
Spanish	B.A., M.A., M.A.T., Ph.D.

* In addition, a graduate concentration in Art History, leading to a Ph.D. in History, is offered by the Departments of Art History and History.

† The degree program in Russian is not open to new students at this time.

Honors at Graduation

Students are nominated for honors at graduation on the basis of scholarship and special achievements. To be eligible for nomination the student must, by the end of the winter quarter of the senior year, file an Application for Graduation and meet the following criteria: (1) achieve a UC grade point average of at least 3.50, (2) complete at least 18 courses (72 units) in residence at a UC campus, and (3) receive strong recommendation from the major department. Eligible students are automatically considered for Honors at Graduation. Other important factors are considered (see page 51).

HUMANITIES INSTRUCTIONAL RESOURCE CENTER

The Humanities Instructional Resource Center (HIRC) provides comprehensive technology support for instruction, research, and faculty and staff development, and serves as the center of innovative technology-mediated instruction within the School of Humanities.

HIRC services and facilities include computer laboratories, video editing, video and audiotape libraries, fee-based laser printing, audio production, computing consultation, and technology-related research and development assistance for faculty, graduate, and undergraduate students.

HIRC's Macintosh and AST laboratories provide a wide variety of instructional resources including, among others, multimedia applications and development stations, foreign language word processing and language learning materials, and logic simulations. Both laboratories are connected to a central server and to the campus backbone for access to the Internet, World Wide Web, Melvyl, and other research resources. The Macintosh laboratory consists of networked Centris 650 machines with CD-ROM drives. Both laboratories are available to Humanities students, instructors, and staff for class instruction and drop-in purposes.

Additional information may be obtained from the HIRC Computer Consultant's Office, 213 Humanities Hall, telephone (949) 824-8493, or the HIRC main offices, 269 Humanities Hall, telephone (949) 824-6344.

Undergraduate Programs

HUMANITIES UNDERGRADUATE STUDY

143 Humanities Instructional Building; (949) 824-5132
Gail K. Hart, **Associate Dean**

In addition to 15 majors and 17 minors, the School also offers a formal concentration in Medieval Studies and courses in Italian, Portuguese, and Russian.

The academic counselors in the Humanities Undergraduate Counseling Office, located in 143 Humanities Instructional Building, help all students in planning a program of study. Transfer students in particular need to consult an academic counselor to determine major requirements. Students who expect to pursue graduate study also should consult with appropriate faculty members to ensure proper preparation.

A corps of lower-division advisors is designed to meet the special needs of freshmen and sophomores who are interested in the humanities but who have not chosen a major in the School. The advisors are particularly interested in undergraduate education and are especially knowledgeable about University regulations, requirements in and outside the School, course content, options to major, and other matters that may present difficulties. For the first two years, students in Humanities are encouraged to explore the various disciplines represented in the School. During that time the lower-division advisor is prepared to help the undeclared student keep options to a major open, plan a coherent program of humanistic study, and reach an eventual decision about the major.

Generally each major stipulates a one-year course that is both an introduction to the discipline and a prerequisite to the major itself. Students who plan wisely will construct programs that include a good number of such courses.

NOTE: In many undergraduate courses in the School of Humanities, additional meetings between individual students and the instructor may be required. Many courses are composed of both lectures and *required* discussion sessions.

Undergraduate students in the School of Humanities participate in the affairs of the School in a number of ways: by serving on committees of various departments, by sitting with the faculty in its meetings, by working as peer academic advisors in the Undergraduate Counseling Office, and by serving on the Humanities Council, which directly advises the Dean.

HUMANITIES PEER MENTOR PROGRAM

The Humanities Peer Mentor Program is designed to address some of the academic, cultural, and social needs of disadvantaged students in the School of Humanities. The program features two-tiered mentoring, with successful upper-division students mentoring small groups of new students, and the student mentors in turn working with faculty and staff. An undergraduate intern coordinates the activities. Another focus of the program is to encourage and assist student mentors to go on to graduate school.

Participants attend workshops on topics such as study skills, library research, time management, and careers, as well as a variety of social events, and keep journals in which they express their ideas and raise issues for their mentors. Call (949) 824-5132 for additional information.

HUMANITIES HONORS PROGRAM

143 Humanities Instructional Building; (949) 824-5132
Lamar Hill, **Director**

The Honors Program of the School of Humanities is a two-year, upper-division program designed to challenge superior students from all fields by providing special opportunities for interdisciplinary work within an intellectually charged framework. Small seminars and the opportunity for independent research are some of the advantages offered by the program, which is open by invitation to all UCI students regardless of their majors.

Students in the program benefit from their involvement in the campus community of Humanities scholars. They enjoy a close relationship with the faculty and profit from intense interaction with their intellectual peers. A comprehensive advising program involving Honors faculty advisors as well as specially trained Honors peer advisors ensures that Humanities Honors students continually receive timely, individualized advice about their academic careers. Formal as well as informal gatherings, including student-organized social activities ranging from coffee hours to theater parties, augment a wide range of campus activities. Humanities Honors students have the opportunity to become some of the campus' best informed scholars on a broad range of topics: from artificial intelligence to medical ethics, from Shakespeare to Gilbert and Sullivan, from problems of the ancient Near East to the dilemmas of modernity.

Humanities Honors students complete a two-part course of study. In their junior year, students take three quarters of an interdisciplinary Proseminar (Humanities H120) organized about a single topic or problem, such as crime and punishment, the other, the development of religion in the West, the self, nature, or the American dream. The sequence is designed to compare and contrast modes of analysis and critical thinking in history, literary studies, and philosophy. In a small seminar setting, students are encouraged to become reflective about their own chosen disciplines.

In their senior year, students take a sequence beginning in the fall with a Senior Honors Seminar (Humanities H140), and continuing in the winter and spring with the Senior Honors Thesis (Humanities H141) and the Senior Honors Colloquium (H142), prepared as an independent research project under the direction of a faculty member on a topic chosen by the student. Students present their theses in an informal gathering with their faculty advisors in the spring, and a prize is awarded for the year's outstanding thesis.

In both sequences the Honors students benefit from their close association with exceptional scholars and the challenge and support of their intellectual peers.

Students interested in learning how the Humanities Honors Program will fit into their regular courses of study are encouraged to contact the Senior Academic Counselor in Humanities; telephone (949) 824-5132.

CENTER FOR INTERNATIONAL EDUCATION

The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of the many worldwide opportunities that exist for study, work, internship, volunteering, and research. School of Humanities majors and minors can benefit from a broader perspective of their fields by studying for one year at a university in such countries as China, France, Germany, Italy, Japan, Russia, Spain, or the United Kingdom through EAP. Students can also augment their exposure to other cultures with programs sponsored through IOP. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements

Satisfactory completion of the following, which must be taken for *letter grades*: Humanities 1A-B-C, taken in the freshman year (transfer students may substitute appropriate course work in composition, literature, history, humanities, and philosophy for the Core Course by permission; apply in the Humanities Undergraduate Counseling Office); two years of work in a single acceptable foreign language, either modern or classical (through 2C), or equivalent competence; quarterly consultation with an assigned advisor and the advisor's written approval for the program of study decided upon.

NOTE: Within the beginning and intermediate foreign language instructional sequences (1A-B-C and 2A-B-C, and for Latin and Greek, 1A-B-C and 25), students must earn a grade of C or better in order to advance to the next level of instruction.

Foreign Language Placement. Students entering UCI with previous foreign language training are placed as follows: in general, one year of high school work is equated with one quarter of UCI work. Thus, students with one, two, three, or four years of high school foreign language will normally enroll in 1B-, 1C-, 2A-, or 2B-level language courses, respectively. Exceptions must have the approval of the appropriate course director and the Associate Dean, Undergraduate Study. Transfer students may not repeat foreign language courses for which they received credit upon matriculation to UCI.

Native Speakers of Languages Other Than English. A native speaker of a foreign language, defined by the University as someone who attended the equivalent of secondary school in another country where the language of instruction was other than English, may be exempted from taking third-year language study in that language for some majors offered by the School of Humanities. In this case, the student must *substitute* appropriate upper-division courses in the major to replace the number of exempted courses. For example, if a native speaker of French is exempted from French 100A and 100B, that student must replace those two courses with two other upper-division French courses offered by the Department of French and Italian.

Repeating Deficient Foreign Language Grades. First- and second-year foreign language courses and third-year foreign language composition courses are sequential and each is prerequisite to the next. This is generally true also of fourth-year Chinese, Japanese, and Russian. Students wishing to repeat a deficient grade in one of these courses must repeat it *prior* to continuing on to the next level of the language. A student may not take a lower-level course for credit once a more advanced level has been completed with a passing grade.

Maximum Overlap Between Major Requirements: Students completing double majors within the School of Humanities may count no more than two courses for both majors simultaneously (i.e., a double major in Comparative Literature and Spanish can count only two upper-division Spanish literature courses for both majors).

Maximum Overlap Between Major and Minor Requirements: Students completing majors and minors within the School of Humanities may count no more than two courses for both a major and a minor. No course may be counted for two minors.

School Residence Requirement: At least five upper-division courses required for each major must be completed successfully at UCI. Completion of a minor program is optional; however, for certification in a minor, at least four upper-division courses required for the minor must be completed successfully at UCI. See individual major and minor requirements for specific courses. Exceptions are considered on a case-by-case basis and decided in consultation with the appropriate department or faculty member.

Off-campus Internship Policy. In most cases, students are not allowed to earn credit for off-campus internships taken as Independent Study in the School of Humanities. However, when the student's department or program determines that the internship is academically appropriate to the student's program and promotes the student's academic goals, credit may be given.

A maximum of four units total may be earned for internships; however, the units may not be counted toward the student's major requirements. The sponsoring department or program and the instructor will in all cases require a substantial academic product, such as a paper, growing out of the internship.

A student who wishes to seek approval for an off-campus internship must file an Independent Study form with the Humanities Undergraduate Study Office prior to beginning the internship.

Graduate Programs

HUMANITIES GRADUATE STUDY

176 Humanities Instructional Building; (949) 824-4303
Steven J. Mailloux, **Associate Dean**

The School offers a wide program of graduate degrees. Although the Master's degree is offered in most departments, the programs emphasize the Ph.D. and give distinct preference in admission to those students who intend to take that degree. Exceptions are the two-year Master of Fine Arts in English (Creative Writing) and the two-year Master of Arts of Teaching in Spanish. In addition to the seminars offered by the various departments, the School sponsors a number of interdisciplinary seminars annually. These courses are taught by faculty members from various departments. Further, several departments offer a few students the opportunity to do part of their work for the Ph.D. in a related discipline.

A limited number of students are accepted annually to study for teaching credentials. This program is a cooperative effort between the School and the UCI Department of Education.

Graduate students in the School of Humanities participate in the affairs of the School by serving on committees of the various departments and sitting with the faculty in its meetings.

DEPARTMENT OF ART HISTORY

85 Humanities Instructional Building; (949) 824-6635
Dickran Tashjian, **Department Chair**

Faculty

George Bauer, Ph.D. Princeton University, *Professor of Art History* (Renaissance and Baroque)
Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor of Art History* (Renaissance and Baroque)
Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History* (Byzantine and Medieval art)
James D. Herbert, Ph.D. Yale University, *Associate Professor of Art History* (modern European art, critical theory)
Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History* (Chinese art)
David Joselit, Ph.D. Harvard University, *Assistant Professor of Art History* (Modern and Contemporary art, critical theory, gender studies)
Philip Leider, M.A. University of Nebraska, *Senior Lecturer Emeritus in Art History*
Margaret M. Miles, Ph.D. Princeton University, *Associate Professor of Art History* (Greek and Roman art, archaeology)
Sally A. Stein, Ph.D. Yale University, *Associate Professor of Art History* (American art, history of photography, feminist theory)
Dickran Tashjian, Ph.D. Brown University, *Department Chair and Professor of Art History* (American art and literature, American and European avant-garde, art and technology)
Judith Wilson, Ph.D. Yale University, *Assistant Professor of Art History* (African-American visual culture, post-colonial art and theory, race representation in American visual culture)
Bert Winther, Ph.D. Institute of Fine Arts, New York University, *Assistant Professor of Art History* (Modern Japanese art, Asian American art, East/West discourses in modern visual culture)

Affiliated Graduate Faculty in Film Studies

Rhona Berenstein, Ph.D. University of California, Los Angeles, *Director of the Program in Film Studies and Associate Professor of Film Studies* (television studies, Canadian cinema, horror cinema, gay and lesbian studies)
Anne Friedberg, Ph.D. New York University, *Associate Professor of Film Studies* (film history and theory, film and postmodernism, avant-garde and experimental film, visual culture)
Eric Rentschler, Ph.D. University of Washington, *Professor of Film Studies* (film history, theory and criticism, cultural studies, European national cinemas)

Undergraduate Program

The Art History curriculum is designed to provide a comprehensive study of art as a humanistic discipline. The program is concerned with both the formal structure of the visual arts and their function within society. Students majoring in the history of art thus are urged to take appropriate courses in classics, history, philosophy, literature, and in other areas of the arts. All majors also are encouraged to study a second language beyond the minimum departmental requirement of two years in a single foreign language at the University level.

The University's Education Abroad Program offers students the opportunity to study abroad. Study centers of particular interest to Art History majors are in Vienna, Venice, Padua, Madrid, Cairo, Jerusalem, Leningrad, Latin America, France, Great Britain, Ireland, and Scandinavia. In addition, students focusing in Asian art may be interested in programs in China, India, Korea, Indonesia, Thailand, or Japan; and Chengchi University in Taipei offers a track in English that is devoted to Chinese art and art history. Special scholarships are available for Pacific region programs.

CAREERS FOR THE ART HISTORY MAJOR

A Bachelor's degree in Art History is excellent preparation for pursuing either a career as an art historian, art conservator, or museum curator, or professional study in an entirely different discipline. Art History majors have gone on to graduate and professional school

to study art history, archaeology, architecture, law, library science, business (in some cases with special focus in the arts), or teacher education. The study of the history of art is a valuable part of a liberal education that provides a means of looking at the history and culture of both the past and the present.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the Major

Two quarters of Art History 40A, 40B, 40C and two quarters of Art History 42A, 42B, 42C; eight upper-division courses in art history, with a minimum of one course selected from each of the following groupings: Art History 100-109 (Ancient history), 110-119 (Medieval history), 120-129 (Renaissance/Baroque history), 130-149, 165 (Modern history), and 150-164 (Asian history); Art History 190; two quarters of Art History 198; two years in a language other than English at university level that has been approved by the faculty, or equivalent competence.

Students should register for Art History 190 as early as possible in their junior year after completing the University lower-division writing requirement.

Residence Requirement for the Major: At least five upper-division courses required for the major must be successfully completed at UCI.

Departmental Requirements for the Minor

One year-long introductory sequence (either Art History 40A, 40B, 40C or 42A, 42B, 42C), one upper-division course in each of the following course groupings: Art History 100-109 (Ancient history), 110-119 (Medieval history), 120-129 (Renaissance/Baroque history), 130-149, 165 (Modern history), and 150-164 (Asian history); and one quarter of Art History 198.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Graduate Study in Art History

The Department of Art History offers a graduate concentration in Art History leading to the Ph.D. degree in History, in conjunction with the Department of History. The program and its courses are administered by the Department of Art History. Students in the program specialize in either Western Art History or Asian Art History and should indicate their area of interest on their graduate application. In addition, the Department of Art History offers an emphasis in Film Studies in conjunction with affiliated Film Studies faculty.

A campuswide graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Admission

The program is open to students applying with either a bachelor's or a master's degree, and applicants must meet the general requirements for admission to graduate study at UCI. Although an M.A. degree in Art History is preferred, students who have an M.A. in another discipline or who do not have an M.A. also may apply for admission.

Students who have an M.A. degree must have earned a minimum grade point average of 3.0 from an accredited institution. A copy of the master's thesis or a major research paper written at the master's level, should be submitted with the application packet.

Students who do not have an M.A. degree should hold a B.A. degree or its equivalent from an accredited institution with a minimum grade point average of 3.5. A recent sample of academic

writing, such as a representative undergraduate paper, should be submitted with the application packet.

The deadline for application is January 15, and the Department accepts applicants for fall quarter admission only. Additional information is available from the Director of Graduate Studies for the Department of Art History.

Requirements for Students Who Have an M.A. Degree

Students who have an M.A. degree are required to take at least two quarters of course work (24 units), including two graduate seminars (Art History 295) and Theory and Criticism in Art History (Art History 290). Students specializing in Asian Art may also be required to take Chinese Art Historical Methods (Art History 288). Students select their courses in consultation with their graduate advisor. Additional course work may be required for students who hold an M.A. degree in a field other than Art History.

Students specializing in Western Art must demonstrate a reading knowledge of two modern languages other than English and related to their field of study during the first quarter following admission. The specific languages are determined by the student's principal advisor in consultation with the departmental graduate advisor. Students of Asian Art must demonstrate a working knowledge of either Chinese or Japanese during the first quarter following admission. Students planning to specialize in Classical Art (within the Western Art specialization) are expected to have, or to acquire, a working knowledge of Greek or Latin.

Requirements for Students Who Do Not Have an M.A. Degree

Students who do not have an M.A. degree are required to take a minimum of 12 courses (48 units), eight of which must be at the graduate level and must include two graduate seminars (Art History 295), as well as Graduate Research and Methods in Western Art (Art History 286), and Theory and Criticism in Art History (Art History 290).

Students specializing in Western Art must take 10 courses distributed over at least three of the following areas, one of which must be in a related field outside Art History: Ancient—Near Eastern, Bronze Age, Classical Art; Western and Eastern Medieval Art; Northern and Southern Renaissance and Baroque; eighteenth- and nineteenth-century European and American art; twentieth-century European and American art; film and media studies; Chinese art, Japanese art; theory; related field outside Art History and Film Studies. Western Art students must demonstrate a reading knowledge of two modern languages other than English and related to their field of study; the specific languages are determined by the student's principal advisor in consultation with the departmental graduate advisor. Demonstration of reading knowledge of one foreign language is required during the first quarter following admission; knowledge of the second must be demonstrated by the end of the second year.

Students specializing in Asian Art must take Chinese Art Historical Methods (Art History 288) and nine courses from the following areas, one of which must be in a related field outside Art History: Chinese painting; Ancient Chinese art and archeology; Early Chinese Buddhist art; Japanese Buddhist art; Chinese/Japanese decorative arts and gardens; Japanese painting; film and media studies; one Western area; theory; related field outside Art History and Film Studies. Asian Art students must demonstrate a working knowledge of either Chinese or Japanese by the end of the first year. Students planning to specialize in Classical Art (within the Western Art specialization) are expected to have, or to acquire, a working knowledge of Greek or Latin.

Additional language requirements for specialists in either area may be determined by the student's principal advisor in consultation with the graduate advisor. All applicants may demonstrate reading

knowledge by submitting a Graduate Students Foreign Language Test (GSFLT) score of 550 or better, or by passing the relevant departmental language examinations, or by providing the departmental graduate advisor with other evidence of competency.

Qualifying Examination

Students who have an M.A. in Art History take the qualifying examination in their second year; all other students take it in their third year. The examination includes written and oral portions and covers the student's major and minor fields, which are determined in consultation with the student's advisor. A student is advanced to candidacy after passing the qualifying examination and completing the course work and language requirements.

Dissertation

Upon advancement to candidacy and before beginning the dissertation, students submit a prospectus which defines the scope, approach, and rationale of the proposed dissertation. Students with an M.A. degree must submit their prospectus no later than two years after entering the program; other students must submit their prospectus no later than four years after entering the program. Additional course work may be required in preparation for writing the dissertation; this is determined by the advisory committee on the basis of the candidate's past academic performance, dissertation prospectus, and area of specialization. Students are awarded the Ph.D. upon successful completion and defense of the dissertation.

Courses in Art History

LOWER-DIVISION

Lower-division courses are designed to provide the student with a comprehensive introduction to the history of art and the premises upon which such a history is based.

40A, B, C History of Western Art (4, 4, 4) F, W, S, Summer. A one-year survey of the history of Western art from its beginnings to the modern world. (IV, VII-B)

42A, B, C History of Asian Art (4, 4, 4) F, W, S. An introductory survey of the arts and architecture of Asia including India, Southeast Asia, China, Korea, and Japan. (IV, VII-B)

46 The Nature of Architecture (4). Selected topics determined by individual faculty members dealing with the development of styles and schools in Western architecture and covering all periods.

UPPER-DIVISION

Upper-division courses in the history of art are intended to expose the student to a wide variety of aims and methods—archaeological, historical, and critical—in the study of art. Topics within a given area may therefore vary from quarter to quarter, and courses may be repeated for credit when this occurs. Art History 40A, 40B, 40C, or 42A, 42B, 42C are recommended prerequisites for courses numbered from 100 through 189.

100 Studies in Ancient Art (4). Topics in Egyptian, Prehistoric, and Etruscan art of the Mediterranean area treated with specific reference to relevant cultural and historical settings. Specialized courses in Greek and Roman art are also taught. Concurrent with Art History 200.

103 Studies in Greek Art (4) F, W, S. Topics in Greek art, architecture, and topography from the Prehistoric period through the end of the fourth century B.C.E.

107 Studies in Roman Art (4) F, W, S. Topics in Hellenistic and Roman art and architecture; stresses historical and political background.

110 Studies in Medieval Art (4) F, W, S. Specialized topics in Medieval art and architecture in Europe, the Mediterranean area, and the Near East between the fourth and fifteenth centuries. Examples: the art of the Migration Period; Medieval City. Concurrent with Art History 210.

112 Studies in Early Christian and Byzantine Art (4) F, W, S. Selected topics on the development of the art and architecture of the Later Roman and Byzantine Empires between ca. 300 and 1453. Examples: Early Christian architecture, Byzantine painting. Formerly Art History 110.

114 Studies in Western Medieval Art (4) F, W, S. Selected topics on the development of art and architecture in Western Europe between ca. 700 and 1400. Examples: Romanesque painting, Gothic architecture. Same as English and Comparative Literature CL 104, Humanities 110, or Women's Studies 170CD when topic is appropriate.

118 Studies in Medieval Islamic Art (4) F, W, S. Selected topics on the development of art and architecture between the seventh and fifteenth centuries A.D. (first to ninth centuries A.H.) in the Eastern Mediterranean and the Near East after the rise of Islam.

120 Studies in Renaissance and Baroque Art (4) F, W, S. Selected topics on the art and architecture of Europe between the fifteenth and eighteenth centuries. Example: Renaissance and Baroque prints. Concurrent with Art History 220.

121 Studies in Southern Renaissance Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the fifteenth and sixteenth centuries in Italy and Spain. Examples: the art of Venice, Renaissance architecture. Formerly Art History 120.

123 Studies in Northern Renaissance Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the fifteenth and sixteenth centuries in Northern Europe. Examples: Late Medieval art, painting from Van Eyck to Bosch.

125 Studies in Southern Baroque Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the seventeenth and eighteenth centuries in Italy and Spain. Example: Rome in the seventeenth century. Same as English and Comparative Literature CL 104 when topic is appropriate.

128 Studies in Northern Baroque Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the seventeenth and eighteenth centuries in Northern Europe. Example: from Rubens to Rembrandt.

130 Studies in Eighteenth-Century Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the eighteenth century. Examples: English art, Neoclassicism. Concurrent with Art History 230.

133 Studies in Modern Art F, W, S. Varying topics within the period 1789 to 1940. Works of art are studied as cultural, social, and political practices. Same as Women's Studies 174CA, CB, CC, CD when topic is appropriate. Concurrent with Art History 233A, B, C, D.

133A Topics in Modern Art (4). Varies with each offering. Consult with instructor for specific topic.

133B Realism and Impressionism: 1830–1880 (4)

133C Symbolism through Cubism: 1880–1920 (4)

133D Visual Culture between the Two World Wars: 1920–1940 (4)

140 Studies in Contemporary Art (4) F, W, S. Varying topics within the period 1940 to the present. Examples: Abstract Expressionism, Performance Art. Works of art are studied as cultural, social, and political practices. Same as Women's Studies 174D when topic is appropriate. Concurrent with Art History 240.

150 Studies in Asian Art (4) F, W, S. Topics include such major artistic traditions as Japanese narrative painting, Indian sculpture, Chinese ceramics, and gardens of China and Japan. Concurrent with Art History 250.

152 Studies in Chinese Art and Archaeology (4) F, W, S. A study of the rich archaeological finds in mainland China (including mausolea, wall-paintings, and mortuary objects in bronze, pottery, and jade), and the dissemination of Chinese tomb art in early Korea and Japan.

153 Studies in Early Chinese Painting (4) F, W, S. An examination of major traditions in landscape and figure painting from the fourth through the thirteenth centuries and the parallel developments in art theory.

154 Studies in Later Chinese Painting (4) F, W, S. New developments in Yuan, Ming, and Qing periods: the Wu and Che Schools, the Orthodox Masters, the Individualists, and Eccentrics.

159 Japanese Buddhist Art (4) F, W, S. Traces the history of Buddhist Art in Japan from its introduction in the late sixth century through developments in subsequent periods.

161 Studies in Early Japanese Painting (4) F, W, S. Varying topics examining major developments in the history of Japanese painting from the seventh through the seventeenth centuries.

162 Studies in Later Japanese Painting (4) F, W, S. A consideration of major developments in the history of Japanese painting from 1600 to 1900 A.D.

165 Studies in American Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments in Colonial, eighteenth-, nineteenth-, and twentieth-century art. Examples: Colonial architecture, American Modernism. Formerly Art History 160. Concurrent with Art History 265.

175 Studies in Native and Tribal Art (4) F, W, S. Varying topics on the art and culture of native and tribal societies. For example, North American Indians. Concurrent with Art History 275.

180 Criticism of Art (4) F, W, S. Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. Same as Women's Studies 174E when topic is appropriate. Concurrent with Art History 280.

183 Studies in the History of Photography F, W, S. Varying topics within the history of photography from the early nineteenth century to the present. Photographic practice studied in relation to art history, cultural history, and social history. May be repeated for credit as topics vary. Concurrent with Art History 283A, B, C.

183A Nineteenth-Century Photographic History (4)

183B Twentieth-Century Photographic History (4)

183C Selected Topics in Photographic History (4). Examples: documentary; pictorialism and art photography; photomontage, photographic books.

190 Practicum for Majors (4) W. Theory and practice of art history with emphasis on formal and social models of analyzing and writing about art. Prerequisite: Art History major, junior standing, and completion of the lower-division writing requirement.

All advanced problems, special studies, and independent study courses may be repeated for credit.

198 Proseminar in Art History (4) F, W, S. Discussion and report-oriented seminar with emphasis on reading, writing, and thinking about problems in art history. Topics vary according to the faculty member in charge. Examples: Caravaggio and his followers, Dunhuang painting. Prerequisite: Art History major or consent of instructor.

199 Independent Study in Art History (1 to 4) F, W, S. Supervised, but independent reading or research on art historical topics. Prerequisite: consent of supervising instructor. May be taken for credit four times. Formerly Art History 196.

GRADUATE

Topics within a given area may vary from quarter to quarter, and courses may be repeated for credit when this occurs.

Graduate courses in Film Studies are listed in the Program in Film Studies section of the *Catalogue*.

200 Studies in Ancient Art (4). Topics in Egyptian, Prehistoric, and Etruscan art of the Mediterranean area treated with specific reference to relevant cultural and historical settings. Specialized courses in Greek and Roman art are also taught. Concurrent with Art History 100.

210 Studies in Medieval Art (4) F, W, S. Specialized topics in Medieval art and architecture in Europe, the Mediterranean area, and the Near East between the fourth and fifteenth centuries. Examples: the art of the Migration Period, Medieval City. Concurrent with Art History 110.

220 Studies in Renaissance and Baroque Art (4) F, W, S. Selected topics on the art and architecture of Europe between the fifteenth and eighteenth centuries. Example: Renaissance and Baroque prints. Concurrent with Art History 120.

230 Studies in Eighteenth-Century Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments and individual artists of the eighteenth century. Examples: English art, Neoclassicism. Concurrent with Art History 130.

233 Studies in Modern Art F, W, S. Varying topics within the period 1789 to 1940. Works of art are studied as cultural, social, and political practices. Concurrent with Art History 133A, B, C, D.

233A Topics in Modern Art (4). Varies with each offering. Consult with instructor for specific topic.

233B Realism and Impressionism, 1830–1880 (4)

233C Symbolism through Cubism, 1880–1920 (4)

233D Visual Culture between the Two World Wars, 1920–1940 (4)

240 Studies in Contemporary Art (4) F, W, S. Varying topics within the period 1940 to the present. Examples: Abstract Expressionism, Performance Art. Works of art are studied as cultural, social, and political practices. Concurrent with Art History 140.

250 Studies in Asian Art (4) F, W, S. Topics include such major artistic traditions as Japanese narrative painting, Indian sculpture, Chinese ceramics, and gardens of China and Japan. Concurrent with Art History 150.

265 Studies in American Art (4) F, W, S. Selected topics determined by individual faculty members exploring historical developments in Colonial, eighteenth-, nineteenth-, and twentieth-century art. Examples: Colonial architecture, American Modernism. Formerly Art History 160. Concurrent with Art History 165.

275 Studies in Native and Tribal Art (4) F, W, S. Varying topics on the art and culture of native and tribal societies. For example, North American Indians. Concurrent with Art History 175.

280 Criticism of Art (4) F, W, S. Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. Concurrent with Art History 180.

283 Studies in the History of Photography F, W, S. Varying topics within the history of photography from the early nineteenth century to the present. Photographic practice studied in relation to art history, cultural history, and social history. May be repeated for credit as topics vary. Concurrent with Art History 183A, B, C.

283A Nineteenth-Century Photographic History (4)

283B Twentieth-Century Photographic History (4)

283C Selected Topics in Photographic History (4). Examples: documentary; pictorialism and art photography; photomontage, photographic books.

286 Graduate Research and Methods in Western Art (4) F, W. Critical examination of the history of the discipline, with studies of various theoretical, critical, and methodological approaches to the visual arts from antiquity to the present.

288 Chinese Art Historical Methods (4) W, S. An introduction to current methods used in the study of Chinese art, and to the theoretical and critical issues encountered in traditional Chinese scholarship.

290 Theory and Criticism in Art History (4) F, W, S. Focused studies of recent theoretical and critical approaches to the visual arts and art history, concentrating on particular issues, authors, and methodologies within and across historical and cultural areas.

295 Graduate Seminar (4) F, W, S. May be repeated for credit as topics vary. Same as Classics 220 when topic is appropriate.

296 Directed Reading (4) F, W, S. Directed reading on a specific topic agreed upon by student and instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

298 Reading for the Comprehensive Examination (4) F, W, S. Directed reading in preparation for the comprehensive examination. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

299 Dissertation Research (4 to 12) F, W, S. Research and preparation of the dissertation. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor. May be repeated for credit.

399 University Teaching (4) F, W, S. Limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF CLASSICS

120 Humanities Office Building II; (949) 824-6735

Patrick Sinclair, **Department Chair**

Faculty

Luci Berkowitz, Ph.D. Ohio State University, *Research Professor of Classics* (Greek literary history, computer applications to literature)

Theodore F. Brunner, Ph.D. Stanford University, *Professor Emeritus of Classics* (computer application to Classical literature, Augustan literature)

Cynthia L. Claxton, Ph.D. University of Washington, *Lecturer in Classics and Undergraduate Program Director* (Greek prose, historiography)

Walter Donlan, Ph.D. Northwestern University, *Professor of Classics and Graduate Program Director* (early Greek literature and social history)

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics* (Roman history, Classical tradition)

Maria C. Pantelia, Ph.D. Ohio State University, *Associate Professor of Classics and Director, Thesaurus Linguae Graecae* (Greek epic poetry, Hellenistic poetry, computer applications to Classics)

B.P. Reardon, D.U. Université de Nantes, *Professor Emeritus of Classics* (Late Greek literature, Greek novel)

Patrick Sinclair, Ph.D. Northwestern University, *Department Chair and Associate Professor of Classics* (Latin prose, lexicography)

Dana F. Sutton, Ph.D. University of Wisconsin, *Professor of Classics* (Greek and Latin drama, Greek poetry, Anglo-Latin literature)

Undergraduate Program

The Department of Classics aims to provide the undergraduate student with a working knowledge of the origins and heritage of Greco-Roman civilization. The Department is committed to a twofold purpose: (1) disseminating interest in and knowledge of Classical Civilization through the teaching of Greek and Latin language and literature; and (2) helping students, through courses in Classical literature, history, civilization, mythology, and religion taught through English translations, to appreciate the high achievements of Greek and Roman culture and their pervasive influence on our own civilization.

The Department offers both a major in Classics (with an emphasis on Greek, Latin, or Linguistics) and a major in Classical Civilization in which most of the required courses are in English translation. Students are encouraged to consult with the Classics faculty regarding the appropriate choice of major and design of program.

For the Classics major, study of the Classics must be based on competence in both Greek and Latin. The Classics program is designed to provide the student with this competence as rapidly as possible, so that by the end of first-year Greek or Latin the student has already been introduced to some of the major Classical authors in the original. From then on, courses are devoted to reading and interpreting the literature of ancient Greece and Rome. In addition to their training in the languages, students gain first-hand knowledge of the literature, history, and thought of the ancient world through the close study of some of its finest writers.

The major in Classical Civilization is designed for students who do not plan to concentrate on the Classical languages or pursue graduate study in the Classics, yet wish to obtain an undergraduate degree based on a sound knowledge of the Classical world. This major requires one year of study (or its equivalent) in either Greek or Latin and a minimum of 10 courses taught in English translation concerning such topics as Classical literature, civilization, history, archaeology, art, drama, and philosophy.

The student planning to major in Classics or Classical Civilization should obtain a copy of the brochure, *Undergraduate Study in Classics*, available in the Department office.

Students entering UCI with previous Greek or Latin training can be given advanced standing. Usually, one year of high school work is equated with one quarter of UCI work. Thus, students with one, two, three, or four years of high school Latin (or Greek) will enroll in Latin (or Greek) 1B, 1C, 25, and 101 respectively. Placement

may vary, depending on the extent of the student's preparation. Students with transfer credit for Greek and/or Latin may *not* repeat those courses for credit. Students with high school training in the Classical languages are encouraged to consult with the Classics faculty before enrolling in Classics courses.

The Department adheres to the policy of giving its students an opportunity to participate in the departmental decision-making process. Student representatives, elected from and by the undergraduate majors, participate in all departmental meetings. Representatives are responsible for maintaining close liaison with their constituency, for representing the students' interest in curriculum and personnel matters, and for the evaluation of both the academic program and the academic staff.

Inquiries regarding language placement, prerequisites, planning a program of study, or other matters related to the Department's offerings should be directed to the Office of the Chair, 120 Humanities Office Building II, telephone (949) 824-6735.

Hebrew and Judaic Studies

Courses in Hebrew and Judaic Studies were initiated by the Department of Classics in September 1976, through a joint agreement between the School of Humanities and the University of Judaism in Los Angeles. Courses are offered in aspects of Jewish history, philosophy, and literature (Classics 180A-B-C, 181, and 182A-B-C). Through this program the Department of Classics is able to broaden its offerings to include both the Greek and Hebrew contributions to Western civilization.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for Majors

Two separate majors: Classics (with an emphasis in Greek, Latin, or Linguistics) and Classical Civilization.

Classics (Greek emphasis): Greek 1A-B-C; Greek 25; Greek 101-102; Greek 105A-B-C; Greek 110; Latin 1A-B-C; Latin 25; Latin 101-102.

Classics (Latin emphasis): Latin 1A-B-C; Latin 25; Latin 101-102; Latin 105A-B-C; Latin 110; Greek 1A-B-C; Greek 25; Greek 101-102.

Classics (Linguistics emphasis): two possible plans of study. *Greek concentration*—Greek 25, 101, 102, 105A-B-C; Latin 25, 101, 102; Linguistics 3, 10, 20, 170 (Greek 120 recommended) or *Latin concentration*—Latin 25, 101, 102, 105A-B-C; Greek 25, 101, 102; Linguistics 3, 10, 20, 170.

NOTE: With the permission of the Department, an additional course at the 100 level in the same language may be substituted for Greek or Latin 25.

Classical Civilization: Latin (or Greek) 1A-B-C, or equivalent; Classics 35A, 35B, 35C or 50A, 50B, 50C; four upper-division Classics courses; three additional courses in Classical history, Classical philosophy, or Classical art.

Residence Requirement for the Major: At least five upper-division courses required for the major must be successfully completed at UCI.

Departmental Requirements for Minors

The Department offers minors in Greek, Latin, and Classical Civilization.

Greek: Greek 1A-B-C, 25, 101, 102, 105A-B-C. Greek 120 may be substituted for one course at the 100 level.

Latin: Latin 1A-B-C, 25, 101, 102, 105A-B-C.

Classical Civilization: Classics 35A, 35B, 35C or Classics 50A, 50B, 50C; five upper-division Classics courses, one of which may be in a related field such as history, art history, or philosophy.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

PLANNING A PROGRAM OF STUDY

The Department believes in close consultation with students on academic advising and program planning. Students planning to major (or minor) in Classics or Classical Civilization are strongly urged to consult with the departmental faculty at the earliest possible moment to learn about the various programs.

CAREER OPPORTUNITIES

The study of the ancient world is a valuable possession for modern life. The discipline of Classics is an important part of a liberal education. Greek and Latin language and literature, history and philosophy, mythology and religion make an excellent basis for exploring all periods of Western culture down to the present day. Classics is an interdisciplinary study, exploring human culture by a variety of methods from a variety of points of view. For this reason, the student who chooses to major in Classics or Classical Civilization may find many professional opportunities open.

Graduate and professional schools in medicine, law, management, and other fields welcome students with training in the Classics. So do many business corporations. Business, industry, and technology are well acquainted with the value of a Classical education. They are aware that students with a strong background in a respected and challenging major such as Classics are disciplined thinkers who can express themselves in clear, coherent, and cogent language, capabilities that are considered valuable in future physicians, lawyers, and managers.

There are also specific vocational opportunities open to the graduate in Classics or Classical Civilization. A major in this field may lead to a career in high school teaching, or (after appropriate further study) in college or university teaching. It is also an excellent preparation for advanced study in other academic disciplines such as archaeology, history, comparative literature, philosophy, and linguistics, as well as for theological studies and for work in a wide range of the humanities and social sciences.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

The Department of Classics encourages students to take advantage of educational opportunities abroad while making progress toward their UCI degree. Classics and Classical Civilization majors and minors can benefit from a broader perspective of the field by studying for one year at a university in France, Germany, Italy, Spain, or the United Kingdom through the Education Abroad Program. Students can also augment their exposure to Greek, Latin, and Classical civilizations by studying for a summer in Greece or Italy at programs sponsored by other UC campuses through the International Opportunities Program. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

Graduate Program

From the program's inception in 1970, emphasis has been on close attention to each student's progress, together with a relatively high reliance on independent work. Each graduate student is assigned to a faculty preceptor, who monitors student progress in language skills, knowledge of the discipline, competence in research, and experience in teaching. The graduate program is closely connected

with the Thesaurus Linguae Graecae research project and the Consortium for Latin Lexicography (the electronic version of the Munich-based Thesaurus Linguae Latinae). These projects afford special opportunities for students interested in computing as a means for research and teaching.

The Department offers a Ph.D. program with specializations in Greek or Latin. Except for students with advanced standing, three years (nine quarters) of course work are required. Normal course requirements are four quarters of the core courses, Classics 200A-B-C and 201; nine quarters of Classics 220; and five quarters of Classics 205. (Classics 280 may be substituted for these courses at the discretion of the Department.) Students are encouraged to take courses and seminars in relevant areas outside the Department. Students must demonstrate reading proficiency in German by the end of the second year and in another modern language (usually French or Italian) by the end of the third year. In order to become a candidate for the Ph.D. and enter the dissertation stage, a student must pass an individually designed set of qualifying examinations consisting of translation examinations in Greek and Latin, written examinations or lengthy papers in special authors and fields, and an oral examination. The normative time for the completion of the Ph.D. is six years.

All students entering the Ph.D. program, with the exception of those granted advanced standing because they hold the M.A. degree from another institution, will be concurrently enrolled in the M.A. program. The requirements for the M.A. degree are two years (six quarters) of course work, passage of a special set of examinations, and completion of a paper. The normative time for completion of the M.A. degree is two years. Course work for the M.A. degree normally consists of four quarters of Classics 200A-B-C and 201; four quarters of Classics 220; and five quarters of Classics 205. (Classics 280 may be substituted for these courses at the discretion of the Department.) A reading knowledge of German, demonstrated by examination or other means, is a requirement for the M.A. degree. Upon completion of the requirements for the M.A. degree, a student will be permitted to continue in the Ph.D. program only upon a positive vote of a majority of the Classics faculty.

The program puts emphasis on the tradition, methods, and tools of Classical scholarship, with special attention to computer application to scholarly research. Students are required to read extensively in the general field of Classics and ancient history, under faculty guidance. Experience in supervised teaching and/or research activity normally is required.

The resources of the program are enhanced through a cooperative teaching arrangement among the Classics graduate programs of the UC campuses at Irvine, Los Angeles, Riverside, San Diego, and Santa Barbara, and the University of Southern California. The program has entered into a special arrangement with faculty in Classics and related disciplines at UCR and UCSD, with the future purpose of forming a three-campus joint-degree program in Classics.

Thesaurus Linguae Graecae

The Thesaurus Linguae Graecae, a unique resource for research in Greek literary and linguistic studies, is closely affiliated with the Department of Classics although it is administratively separate. See page 10.

Courses in Greek

Greek 1A-B-C Fundamentals of Greek (5-5-5) F, W, S. 1A-B: Elements of Classical Greek grammar, syntax, and vocabulary. **1C:** Introduction to reading texts. Greek 1A-B-C and Greek S1AB-BC may not both be taken for credit.

Greek S1AB-BC Fundamentals of Greek (7.5-7.5) Summer. First-year Greek in an intensified form. Same as Greek 1A-B-C during academic year. Will be offered if enrollment warrants; those interested should contact the Department. Prerequisite for S1AB: none; for S1BC: S1AB or 1B, or two years of high school Greek. Greek S1AB-BC and Greek 1A-B-C may not both be taken for credit.

Greek 25 Grammar Review and Survey of Greek Literature (4) F. Intensive review of grammar and survey of Greek literature with an introduction to selected authors for students who have passed 1C or its equivalent or have had three years or more of the language at the high school level. **(VI)**

Greek 99 Special Studies in Greek (1 to 4) F, W, S. Consultation with instructor necessary prior to registration. May be repeated for credit as topics vary.

Greek 101 Greek Prose (4) W. Introduction to Greek prose with readings from the works of a major prose author such as Herodotus. Prerequisite: Greek 25, equivalent, or consent of the Department.

Greek 102 Greek Poetry (4) S. Introduction to Greek poetry with readings from the works of a major poet such as Homer. Prerequisite: Greek 101, equivalent, or consent of the Department.

Greek 105A-B-C Seminar in Greek Literature (4-4-4) F, W, S. Studies in specific Greek authors and topics arranged in a two-year sequence, i.e., prose, epic, philosophy; drama, history, lyric. May be repeated for credit provided topic varies. Prerequisite: Greek 102, equivalent, or consent of the Department.

Greek 110 Prose Composition (4). Studies in Greek grammar and syntax through composition of sentences and passages in Greek prose. Prerequisite: Greek 25, equivalent, or consent of the Department.

Greek 120 Reading of Selected Portions of the New Testament (4). Portions read may change each time course is offered. May be repeated for credit provided content varies. Prerequisite: Greek 1C or equivalent.

Greek 198 Directed Group Study (4-4-4) F, W, S. Special topics in Greek culture and civilization through directed reading and research. Consultation with instructor necessary prior to registration.

Greek 199 Independent Studies in Greek (1 to 4) F, W, S. Consultation with instructor necessary prior to registration. May be repeated for credit as topics vary.

Courses in Latin

Latin 1A-B-C Fundamentals of Latin (5-5-5) F, W, S. 1A-B: Elements of Latin grammar, syntax, and vocabulary. **1C:** Introduction to reading texts, including study of the poetry of Catullus and selected readings. Latin 1A-B-C and Latin S1AB-BC may not both be taken for credit.

Latin S1AB-BC Fundamentals of Latin (7.5-7.5) Summer. First-year Latin in an intensified form. Same as Latin 1A-B-C during academic year. Will be offered if enrollment warrants; those interested should contact the Department. Prerequisite for S1AB: none; for S1BC: S1AB or 1B, or two years of high school Latin. Latin S1AB-BC and Latin 1A-B-C may not both be taken for credit.

Latin 25 Grammar Review and Survey of Latin Literature (4) F. Intensive review of grammar and survey of Latin literature with an introduction to selected major authors for students who have passed 1C or its equivalent, or have had three years or more of the language at the high school level. **(VI)**

Latin 99 Special Studies in Latin (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment. May be repeated for credit as topics vary.

Latin 101 Latin Prose (4) W. Introduction to Latin prose with readings from the works of a major prose author such as Cicero. Prerequisite: Latin 25, equivalent, or consent of the Department.

Latin 102 Latin Poetry (4) S. Introduction to Latin poetry with readings from the works of a major poet such as Vergil. Prerequisite: Latin 101, equivalent, or consent of the Department.

Latin 105A-B-C Seminar in Latin Literature (4-4-4) F, W, S. Studies in specific Latin authors and topics arranged in a two-year sequence, i.e., prose, epic, satire; drama, history, lyric. May be repeated for credit provided topic varies. Prerequisite: Latin 102, equivalent, or consent of the Department.

Latin 110 Latin Prose Composition (4). Studies in Latin grammar and syntax through composition of sentences and passages in Latin prose. Prerequisite: Latin 25, equivalent, or consent of the Department.

Latin 198 Directed Group Study (4-4-4) F, W, S. Special topics in Roman culture and civilization through directed reading and research. Consultation with instructor necessary prior to enrollment.

Latin 199 Independent Studies in Latin (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment. May be repeated for credit as topics vary.

Courses in Classics

LOWER-DIVISION

Classics 5 Building English Vocabulary through Greek and Latin Roots (4). Formation and use of English words from Greek and Latin derivatives. Particularly useful for first-year students who wish to augment their vocabulary systematically.

Classics 10 Scientific and Specialized Terminology (4). A study of English terms derived from Greek and Latin and important to contemporary medicine, science, and other professions, with emphasis on development of word-building skills. No prior knowledge of Greek or Latin required. For undergraduates, particularly those in the sciences, interested in development of their technical vocabulary.

Classics 35A, B, C The Formation of Ancient Society (4, 4, 4) F, W, S. A unified view of the cultures of the Mediterranean world in antiquity. Focuses on major institutions and cultural phenomena as seen through the study of ancient literature, history, archaeology, and religion. Same as History 35A, B, C.

35A Origins of Ancient Society (IV)

35B Classical Greece (IV)

35C Ancient Rome (IV)

Classics 50A, B, C Classical Literature (4, 4, 4) F, W, S. A survey of Greek and Latin literature with attention to relations with social developments.

50A Greek and Roman Epic (IV)

50B Greek and Roman Drama (IV)

50C Greek and Roman Historians (IV)

Classics 75 Introduction to Classical Rhetoric (4). Introduction to the principles of rhetoric among the ancient Greeks and Romans and to the critical analysis of arguments. Students are introduced to the history, law, and politics that provided the context in which ancient rhetoric operated.

Classics 99 Special Studies in Classics (1 to 4) F, W, S. Consultation with instructor necessary prior to enrollment.

UPPER-DIVISION

Classics 111 The Thesaurus Linguae Graecae (4). Exposes undergraduate students to the history, objectives, and activities of UCI's Thesaurus Linguae Graecae and provides them with basic understanding of the principles and procedures inherent in computer application to literary texts. Prerequisite: one year of ancient Greek, or consent of instructor.

Classics 140 Classics and History: The Ancient World (4). Selected topics in society and culture of the Graeco-Roman world. May be repeated for credit provided topic varies. Readings in translation.

Classics 150 Classical Mythology (4). Selected myths and legends as used in Classical literature, and their modern interpretations.

Classics 151 The Olympians (4). Examination of the origins and development of the Greek Olympian divinities with emphasis upon those who became central figures in pre-Christian religious cults.

Classics 160 Topics in Classical Literature in English Translation (4). Subject matter variable. May be repeated for credit provided topic varies.

Classics 165 New Testament Literature (4). Analysis of texts and their literary, historical, and religious contexts.

Classics 170 Topics in Classical Civilization (4). Subject matter variable. May be repeated for credit provided topic varies. Same as Women's Studies CL170 when topic is appropriate.

Classics 175 Multicultural Studies and the Classics (4). Treats the literature and culture of one or more minority groups in California and the United States in relation to Classical literatures. May be repeated for credit as topics vary. (VII-A)

Classics 176 International Studies and the Classics (4). Develops a broader understanding of the formation of different cultures and countries of Classical times and their impact on the modern world. May be repeated for credit as topics vary. (VII-B)

Classics 198 Directed Group Study (4-4-4) F, W, S. Special topics in Classical studies through directed reading and research. Consultation with instructor necessary prior to registration.

Classics 199 Independent Studies in Classics (1 to 4) F, W, S. Consultation with instructor necessary prior to registration.

COURSES IN JUDAIC STUDIES

Classics 180A-B-C Judaic Studies (4-4-4). Jewish culture, history, and philosophy. Topics vary. May be repeated for credit provided topic varies.

Classics 181 Christian-Jewish Relations (4)

Classics 182A-B-C The Epic of the Jews (4-4-4). Panorama of Jewish history highlighting great events, ideas, leaders, and interaction with other cultures. Sponsored by the Jewish Chautauqua Society in honor of Rabbi Edgar I. Magnin.

GRADUATE

Classics 200A Contemporary Literary Theory and the Classics (4). An introduction to contemporary literary theory focusing on important critical approaches; topics vary from year to year. May be repeated for credit as topics vary.

Classics 200B Diachronic Perspectives on Classical Antiquity (4). Examines ways in which Classical texts and ideas have been received and appropriated for the diverse purposes of ancient and subsequent cultures. May be repeated for credit as topics vary.

Classics 200C Greece and Rome in Their Contemporary Cultural Contexts (4). An introduction to the methods and perspectives of social scientific theory which can be used to study the material and social dimensions of the ancient cultures of Greece and Rome. May be repeated for credit as topics vary.

Classics 201 Computing in Classical Studies (4). An introduction to the latest methods of computing for research and teaching. May be repeated for credit as topics vary.

Classics 205 Concurrent Reading (2). Concurrent enrollment with advanced undergraduate courses (either Greek 105 or Latin 105) with enhanced reading and separate examinations. May be repeated for credit as topics vary.

Classics 220 Classics Graduate Seminar (4). Subject matter variable; mainly but not exclusively major literary topics. May be repeated for credit as topics vary. Same as Art History 295 when topic is appropriate.

Classics 280 Independent Study (4). Supervised independent research. Subject varies.

Classics 290 Research in Classics (4-4-4) F, W, S

Classics 299 Dissertation Research (4 to 12) F, W, S. May be repeated for credit. Satisfactory/Unsatisfactory only.

Classics 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF EAST ASIAN LANGUAGES AND LITERATURES

443 Humanities Instructional Building; (949) 824-2227

Steven D. Carter, **Department Chair**

Faculty

Steven D. Carter, Ph.D. University of California, Berkeley, *Department Chair and Professor of East Asian Languages and Literatures* (medieval Japanese poetry and intellectual history)

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture* (modern Korea, post-colonial and colonial discourse, popular culture, anthropology)

Edward Fowler, Ph.D. University of California, Berkeley, *Associate Professor of Japanese* (modern Japanese literature, cultural studies, film)

James Fujii, Ph.D. University of Chicago, *Associate Professor of Japanese* (modern Japanese literature; critical theory and cultural studies)

Michael A. Fuller, Ph.D. Yale University, *Associate Professor of Chinese* (Chinese poetry and poetics, the cultural and intellectual contexts for poetry, aesthetic theory, linguistic issues in classical Chinese)

Hu Ying, Ph.D. Princeton University, *Assistant Professor of Chinese* (narrative literature, translation theory, feminist theory)

Martin W. Huang, Ph.D. Washington University, *Associate Professor of Chinese* (narrative theories and traditional Chinese fiction)

Kyung Hyun Kim, M.A. University of Southern California, *Acting Assistant Professor of Korean Culture* (East Asian China, modern Korea, cultural theory)

Susan B. Klein, Ph.D. Cornell University, *Assistant Professor of Japanese* (premodern and modern theater and dance; Japanese religions; feminist critical theory)

Affiliated Faculty

Kenneth L. Pomeranz, Ph.D. Yale University, *Associate Professor of History and East Asian Languages and Literatures* (modern Chinese)

Anne Walthall, Ph.D. University of Chicago, *Professor of History and East Asian Languages and Literatures* (early modern and modern Japan)

R. Bin Wong, Ph.D. Harvard University, *Professor of History and East Asian Languages and Literatures* (modern Chinese, comparative economic history)

The curriculum in East Asian Languages and Literatures enables students to understand the extensive and rich literary, historical, social, and aesthetic traditions of East Asia through the intensive study of an East Asian language and of literary texts in translation and in the original language. Students take a total of four years of courses in the modern language, in which comprehension, speaking, reading, and writing are stressed. Studies of texts take place throughout the curriculum: the first three years students read texts in translation and the fourth year they read in the original language.

The literature-in-translation courses consist of general introductory overviews as well as more specific topics at the intermediate level for those students whose language proficiency is insufficient to cope with difficult literary texts. At the advanced level, course content focuses on reading texts in the original language and rotates among significant literary and cultural topics. In these courses, the curriculum integrates the study of East Asian literatures with theoretical issues that shape the study of world literature in general. In this way, the student gains the dual perspectives of studying East Asian cultures on their own terms as well as recognizing the affinities these civilizations share with the emerging world culture.

CAREERS FOR THE MAJOR

Studies in East Asian languages and literatures will give the student the intensive linguistic and cultural preparation needed to pursue a career involving these important Pacific Rim nations. In an era in which the United States is seeking to come to grips with the challenges and opportunities presented by this vital area of the world, the training in language and literature offered by the departmental faculty will serve the student well in a variety of endeavors, such as international business, law, government service, journalism, teaching, and other careers involved with public affairs.

Undergraduate studies in an East Asian language are also a valuable preparation for those students intent upon pursuing graduate study in any field of East Asian language or culture.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

The Department offers three undergraduate majors: the B.A. degree program in Chinese Language and Literature, the B.A. degree program in Japanese Language and Literature, and the B.A. degree program in East Asian Cultures. In addition, minors are offered in Chinese Language and Literature and Japanese Language and Literature.

PLANNING A PROGRAM OF STUDY

The student and the faculty advisor (assigned upon entering the major) should plan a coherent program that both fulfills the requirements of the major and covers the student's areas of interest in allied fields outside East Asian Languages and Literatures.

Students are placed in Chinese, Japanese, and Korean courses according to their years of previous study. In general, one year of high school language taken in the United States is equated with one quarter of UCI work. Thus students with one, two, three, and four years of high school work will most often enroll in levels 1B, 1C, 2A, and 2B, respectively. Students with background in an Asian language gained through primary or secondary school work taken in Asia must consult with the faculty to determine their proper placement level. Those who have gained substantial knowledge of Chinese, Japanese, or Korean either through secondary school work or through college-level language courses may not repeat those courses for credit. Prospective majors who place out of the upper-division language requirement are expected to substitute an equivalent number of other courses to be selected in consultation with their advisor.

The faculty encourages students to study abroad, either through the University's Education Abroad Program or independently, after completing at least two years of study (or its equivalent) of the relevant language at UCI. Additional information is available in the Department office.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the Majors

Three separate majors: Chinese Language and Literature, Japanese Language and Literature, and East Asian Cultures.

Chinese Language and Literature: Completion of Chinese 3C or equivalent; Chinese 100A-B-C, 101A-B-C; East Asian Languages and Literatures 190; one course dealing with the literature or culture of another East Asian country; and at least four additional courses in Chinese literature, history, art history, linguistics, or comparative literature, of which one may be a lower-division East Asian course offered by the Department.

Japanese Language and Literature: Completion of Japanese 2C or equivalent; Japanese 3A-B-C, 100A-B, 101A-B-C; East Asian Languages and Literatures 190; one course dealing with the literature or culture of another East Asian country; and at least five additional courses in Japanese literature, history, art history, linguistics, or comparative literature, of which one may be a lower-division East Asian course offered by the Department.

East Asian Cultures: Completion of Chinese 3C, Japanese 3C, or East Asian Languages and Literatures (Korean) 3C; two quarters of East Asian Languages and Literatures 155, with different topics; East Asian Languages and Literatures 190; and nine additional upper-division courses, at least three of which must pertain to a country other than the one of language specialization; up to four of these courses may be taken outside the Department, with the approval of the undergraduate advisor.

Residence Requirement for the Majors: At least five upper-division courses required for the major must be completed successfully at UCI. Students are encouraged, however, to complete up to a year of their language study in approved programs of study abroad.

Requirements for the Minors

Two separate minors: Chinese Language and Literature and Japanese Language and Literature.

Chinese Language and Literature: A three-quarter sequence selected from Chinese 3A-B-C, 100A-B-C, or 101A-B-C; and four courses selected from the East Asian Languages and Literatures offerings on Chinese topics and/or the upper-division courses in Chinese.

Japanese Language and Literature: Either Japanese 3A-B-C, 100A-B, or 101A-B-C; and four courses (or five courses, if the 100A-B sequence has been chosen) selected from the East Asian Languages and Literatures offerings on Japanese topics and/or the upper-division courses in Japanese.

Residence Requirements for the Minors: A minimum of four upper-division courses required for the minor must be successfully completed at UCI.

Graduate Program

The Department offers a program of graduate study leading to the Ph.D. degree in East Asian Languages and Literatures, with concentrations in Chinese, Japanese, and East Asian Cultural Studies. The M.A. degree may be awarded to Ph.D. students in progress toward the doctoral degree. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

The graduate program emphasizes rigorous training in language and textual analysis, with equal attention given to the historical, social, and cultural dimensions of literary study. In addition to more traditional vocabularies of criticism and theory, the curriculum encourages exploration of recent challenges to established conceptual and methodological frameworks. The program builds on the foundation of a faculty whose research interests engage major issues in Chinese, Japanese, and Korean literature and culture, while developing connections with the larger community of scholarship at UCI. An emphasis in Critical Theory is available to graduate students in all departments of the School of Humanities.

Because the graduate program is designed to prepare students for both college-level teaching and advanced research, each student will be required to serve, under direct faculty supervision, as a teaching assistant in an appropriate undergraduate course offered through the Department. As noted below, one quarter's worth of this teaching may be counted as part of the required course work toward completion of the degree.

Assuming that a student is enrolled full-time and enters the program with no major deficiencies in background or training, normal time needed to complete the Ph.D. degree is six years from matriculation. For students admitted with an M.A. degree or its equivalent from another institution, certain course requirements may be waived upon the approval of a faculty advisory committee, with a consequent reduction in normative time for completion of the Ph.D.

MASTER OF ARTS IN EAST ASIAN LANGUAGES AND LITERATURES

Students are not admitted to an M.A.-only degree program but may be granted an M.A. in recognition of progress toward the Ph.D., normally after six quarters of course work and submission of two approved seminar papers, which will serve as the M.A. examination.

DOCTOR OF PHILOSOPHY IN EAST ASIAN LANGUAGES AND LITERATURES

Requirements for Admission

In addition to meeting the general requirements for admission to graduate study at UCI, specified by the Office of Graduate Studies, all students must present the following for review by an admissions committee composed of members of the faculty in East Asian Languages and Literatures: records of prior scholastic performance, including all college transcripts; three letters of recommendation; samples of written work; and aptitude scores from the Graduate Record Examination. Although the Department does not require entering students to have received an undergraduate degree comparable to its own, it recommends as much preparation in an East Asian language as possible. It also welcomes applications from students whose language training may not be as extensive but who have shown promise in the study of related disciplines. The study of appropriate European languages is encouraged as well.

General Requirements

Upon admission to the program, the student is assigned a graduate advisor, in consultation with whom an advisory committee consisting of two additional faculty members is constituted. The student and committee plan a program of study consisting of 15 graduate courses.

Before advancement to candidacy (normally after three years of graduate study), the student must have: (1) completed required course work as detailed below; (2) prepared one paper of publishable quality; (3) completed language requirements as listed below; (4) prepared five research reports on current scholarly articles to be decided upon in consultation with the faculty advisor; and (5) passed the qualifying examinations on four topics to be selected in consultation with the faculty advisory committee no more than two quarters before the examinations are to be taken. At least one of the topics should be related directly to the student's projected area of specialization in dissertation research.

Students who complete the qualifying examinations successfully are advanced to candidacy for the Ph.D. degree. They then write their doctoral dissertation on a topic developed in consultation with the faculty advisory committee. Some period of study abroad, for enhancement of language proficiency and/or dissertation research, is strongly encouraged.

Concentration in Chinese

Course Work. Each student is required to complete: three courses from Chinese 201-204; Chinese 211A-B or 212A-B; Chinese 213A-B; Chinese 214; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on a relevant topic in literary or cultural theory. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

Language Requirements. Before advancement to candidacy, all students must have completed four years of modern Chinese, two years of classical Chinese, and three years of modern Japanese, and have demonstrated reading proficiency in another appropriate language. Much of this work may, of course, have been completed prior to admission. In addition, the requirement for a second year

of classical Chinese may be fulfilled by taking three reading courses in classical literature.

Concentration in Japanese

Course Work. Each student is required to complete: three courses from Japanese 201–204; Japanese 211A-B or 212A-B; Japanese 213A-B; Japanese 214; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on relevant topics in literary or cultural theory. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

Language Requirements. Before advancement to candidacy, all students must have completed four years of modern Japanese and one year of classical Japanese, and have demonstrated reading proficiency in another appropriate language. In addition, students emphasizing classical Japanese are required to take one year of classical Chinese. Much of this work may, of course, have been completed prior to admission.

Concentration in East Asian Cultural Studies

Course Work. Each student is required to complete: four Theory and Cultural Studies graduate courses; four graduate courses in Chinese, Japanese, or Korean; and seven additional courses (of which one may be in the graduate teaching program) as determined upon consultation with faculty advisors. At least three of these additional courses must be taken outside the Department on relevant topics. Courses taken to fulfill language requirements may not be counted toward the course work requirement.

Other Requirements. Before advancement to candidacy, all students must have completed examinations in four areas as determined upon consultation with faculty advisors. These areas will vary according to the interests of the student; examples might be Colonial and Postcolonial Theories; Modernity and East Asia; Critique of Asian Studies as a field; Gender, Class and East Asia; Visual Culture and Japan; and Theorizing Minority Status in East Asia. All students must have completed four years of Chinese, Japanese, or Korean, or the equivalent. Three years or the equivalent in a second East Asian language is recommended. Much of this work may, of course, have been completed prior to admission.

Courses in Chinese

UNDERGRADUATE

1A-B-C Fundamental Mandarin Chinese (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Mandarin Chinese using the Pinyin system of Romanization. Chinese 1A-B-C and Chinese S1AB-BC may not both be taken for credit.

S1AB-BC Fundamentals of Mandarin Chinese (7.5-7.5) Summer. First-year Mandarin Chinese in an intensified form. Same as Chinese 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Chinese S1AB or 1B, or two years of high school Chinese. Chinese S1AB-BC and Chinese 1A-B-C may not both be taken for credit.

2A-B-C Intermediate Mandarin Chinese (5-5-5) F, W, S. Conversation, reading, and composition skills; new Chinese characters introduced. Conducted in Mandarin Chinese. Prerequisite: Chinese 1C or equivalent. (2A: VI)

3A-B-C Advanced Mandarin Chinese (4-4-4) F, W, S. Emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation. Conducted in Mandarin Chinese. Prerequisite: Chinese 2C or equivalent. (VII-B)

100A-B-C Classical Chinese (4-4-4) F, W, S. Introduction to classical Chinese grammar and vocabulary with emphasis on reading basic texts. Prerequisite: Chinese 2C, Japanese 3C, East Asian 3C, or the equivalent. (VII-B)

101A-B-C Fourth-Year Mandarin Chinese (4-4-4) F, W, S. Continued emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of specific literary texts. Prerequisite: Chinese 3C or equivalent. (VII-B)

115 Chinese Literature: Advanced Texts (4). A reading course designed for students with near-fluency in reading Chinese. Readings may include both literary and philosophical work by important writers, but the emphasis will be on literary texts and writings that interpret those texts. Prerequisite: Chinese 101C or consent of instructor. May be taken for credit three times as topic varies. (VII-B)

180 Topics in Chinese Literature (4). Special topics through directed reading in Chinese. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. Formerly Chinese 198. (VII-B)

199 Independent Study (1 to 4). Investigation of special topics through directed reading in Chinese. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

GRADUATE

201 Readings in Traditional Chinese Narrative and Prose (4). Close reading of selected premodern prose texts such as historical narratives, novels, short stories, and essays. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

202 Readings in Traditional Chinese Poetry (4). Close readings of selected premodern poetic texts. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

203 Readings in Modern Chinese Literature (4). Close readings of selected modern literary texts. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

204 Readings in Chinese Literary and Cultural Theory (4). Close readings of selected texts in premodern criticism and theory. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

211A-B Studies in Traditional Chinese Narrative and Prose (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

212A-B Studies in Traditional Chinese Poetry (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C or equivalent. May be repeated for credit as topics vary.

213A-B Studies in Modern Chinese Literature (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101C or equivalent. May be repeated for credit as topics vary.

214 Studies in Chinese Literature and Cultural Theory (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 100C and/or Chinese 101C, as specified. May be repeated for credit as topics vary.

230 Topics in Chinese Literature and Culture (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Chinese 101 or equivalent. May be repeated for credit as topics vary.

290 Independent Study (4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

Courses in Japanese

UNDERGRADUATE

1A-B-C Fundamental Japanese (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing all three Katakana, Hiragana, and Kanji scripts. Conducted in Japanese. Japanese 1A-B-C and Japanese S1AB-BC may not both be taken for credit.

S1AB-BC Fundamentals of Japanese (7.5-7.5) Summer. First year Japanese in an intensified form. Same as Japanese 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Japanese S1AB or 1B, or two years of high school Japanese. Japanese S1AB-BC and Japanese 1A-B-C may not both be taken for credit.

2A-B-C Intermediate Japanese (5-5-5) F, W, S. Conversation, reading, and composition skills; approximately 400 Kanji characters are introduced. Conducted in Japanese. Prerequisite: Japanese 1C or equivalent. Japanese 2A-B-C and Japanese S2AB-BC may not both be taken for credit. (2A: VI)

S2AB-BC Intermediate Japanese (7.5-7.5) Summer. Second-year Japanese in an intensified form. Same as Japanese 2A-B-C during academic year. Prerequisite for S2AB: Japanese 1C or three years of high school Japanese; for S2BC: Japanese S2AB or 2B, or five years of high school Japanese. Japanese S2AB-BC and Japanese 2A-B-C may not both be taken for credit. (S2AB: VI)

3A-B-C Advanced Japanese (4-4-4) F, W, S. Emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation. Conducted in Japanese. Prerequisite: Japanese 2C or equivalent. (VII-B)

100A-B Classical Japanese (4-4) F, W or W, S. Introduction to classical Japanese grammar and vocabulary with emphasis on reading and analysis of basic texts. Prerequisite: Japanese 3C or equivalent. (VII-B)

101A-B-C Fourth-Year Japanese (4-4-4) F, W, S. Continued emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of a variety of texts. Prerequisite: Japanese 3C or equivalent. (VII-B)

115 Japanese Literature: Advanced Texts (4). A reading course designed for students with near-fluency in written Japanese. Texts will include both fiction and non-fiction by important writers, and may be supplemented and contextualized where needed by literary criticism and cultural-studies texts in English. Prerequisite: Japanese 101C or consent of instructor. May be taken for credit three times as topic varies. (VII-B)

180 Topics in Japanese Literature (4). Special topics through directed reading in Japanese. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. Formerly Japanese 198. (VII-B)

199 Independent Study (1 to 4). Investigation of special topics through directed reading in Japanese. Paper required. May be repeated for credit provided topic varies. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units.

GRADUATE

201 Readings in Traditional Japanese Prose (4). Close reading of selected premodern prose texts, including tales, journals, travel journals, essays. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

202 Readings in Traditional Japanese Poetry or Drama (4). Close reading of selected premodern poetic or dramatic texts. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

203 Readings in Modern Japanese Literature (4). Texts include both fiction and nonfiction by important writers, and may be supplemented where needed by literary criticism and cultural-studies texts in English. Prerequisite: Japanese 101C or equivalent, or consent of instructor. May be repeated for credit as topics vary.

204 Readings in Traditional Japanese Literary and Cultural Theory (4). Close reading of selected texts involving literary criticism and/or aesthetics. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

211A-B Studies in Traditional Japanese Prose (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

212A-B Studies in Traditional Japanese Poetry or Drama (4-4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

213A-B Studies in Modern Japanese Literature (4-4). A two-quarter, in-depth look at a major author and/or issue in modern Japanese literature. Seminar format. The first quarter is devoted to reading of the requisite texts; the second quarter, to the writing of a research paper. Prerequisite: Japanese 203 or consent of instructor. May be repeated for credit as topics vary.

214 Studies in Japanese Literary and Cultural Theory (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: Japanese 100B or equivalent. May be repeated for credit as topics vary.

230 Topics in Japanese Literature and Culture (4). A topical study that addresses important issues in Japanese literature and culture. May focus on

a specific writer or writers, or on a specific issue or set of related issues. Prerequisite: Japanese 203 or consent of instructor. May be repeated for credit as topics vary.

290 Independent Study (4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

398 Pedagogy for Teaching Japanese (4). Lecture and training on how to teach Japanese. Provides theoretical knowledge and practical skills necessary for teaching the language. Prerequisite: Japanese 101C or consent of instructor.

Courses in East Asian Languages and Literatures

UNDERGRADUATE

1A-B-C Fundamental Korean (5-5-5) F, W, S. Natural approach with emphasis on the four fundamental skills of listening, speaking, reading, and writing. Conducted in Korean. East Asian S1AB-BC and East Asian 1A-B-C may not both be taken for credit.

S1AB-BC Fundamental Korean (7.5-7.5) Summer. First-year Korean in an intensified form. Same as East Asian 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: S1AB or East Asian 1B, or two years of high school Korean. East Asian S1AB-BC and East Asian 1A-B-C may not both be taken for credit.

2A-B-C Intermediate Korean (5-5-5) F, W, S. Designed to develop writing and reading skills as well as communicative skills in authentic situations. Students also introduced to aspects of Korean culture as related to lesson topics. Prerequisites: East Asian 1C or equivalent; consent of instructor. (2A: VI)

3A-B-C Advanced Korean (4-4-4) F, W, S. Focuses on developing advanced reading, writing, and translation skills with additional instruction in Chinese characters. Prerequisites: East Asian 2C or equivalent; consent of instructor. (VII-B)

55 Introduction to East Asian Cultures (4). Interdisciplinary courses organized each year around a broad theme designed to introduce students to the cultures of East Asia. Topical organization of courses addresses issues that have been of importance historically and are reshaping East Asia today. May be taken three times for credit as topics vary. Formerly East Asian 50A, B, C and 60A, B, C. (IV, VII-B)

101A-B-C Fourth-Year Korean (4-4-4). Continued emphasis on comprehension, grammar, and proficiency in reading, composition, and conversation through intensive study and analysis of a variety of modern texts. Prerequisite: East Asian 3C. (VII-B)

110 Topics in Chinese Literature and Society (4). Studies in Chinese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topic varies. Same as Women's Studies 170EC when topics are appropriate. (VII-B)

113 Linguistic Structure of Chinese (4). Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Prerequisites: Chinese 2C, or Linguistics 10 or 20, or consent of instructor. Same as Linguistics 165A. Concurrent with Linguistics 265A.

117 Topics in East Asian Philosophy (4). Selected topics in the philosophies of East Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as Philosophy 117. May be repeated for credit as topics vary. (VII-B)

115 Korean Literature: Advanced Texts (4). Designed for students with near-fluency in reading Korean. Readings include modern Korean literary works (poetry, prose, and drama) by important writers. Emphasis on the interpretation of the texts and writings that interpret those texts in the original language. Prerequisite: East Asian Languages and Literatures 101C or consent of instructor. (VII-B)

120 Topics in Japanese Literature and Society (4) F. Studies in Japanese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topic varies. Same as Women's Studies 170EJ when content is appropriate. (VII-B)

123 Linguistic Structure of Japanese (4). Detailed analysis of essential grammatical aspects of Japanese. Comparison with aspects of English grammar. Course not designed to teach Japanese per se, but to study the grammatical characteristics of Japanese from the perspective of theoretical linguistics. Prerequisite: Linguistics 10 or 20. Same as Linguistics 165B. Concurrent with Linguistics 265B.

130 Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K and Sociology 175A. (VII-B)

133 Linguistic Structure of Korean (4). Introduction to essential grammatical aspects of the Korean language. Comparisons to other languages. Prerequisite: East Asian 2C or consent of instructor. Same as Linguistics 165C.

150 Topics in East Asian Literature in Translation (4). East Asian literary works in translation. Taught in English. May be taken for credit three times as topic varies. Same as Comparative Literature 103 when topic is appropriate. (VII-B)

155 Cultural Studies in East Asia (4). Interdisciplinary and theoretical introduction to issues in cultural studies that are pertinent to the study of East Asia. All readings in English. May be taken for credit three times as topics vary. (VII-B)

160 East Asian Cinema (4). Study of Chinese or Japanese cinema from historical, theoretical, and comparative perspectives. Taught in English. May be repeated for credit when topic changes. Same as Film Studies 160 when topic is appropriate. (VII-B)

180 Topics in East Asian Literature (4). Special topics through directed readings in English. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topic varies. Formerly East Asian Languages and Literatures 198. (VII-B)

190 Junior-Senior Colloquium (4) W. Specialized courses dealing with primary sources; required reports and papers. Each colloquium reflects the instructor's intellectual interest and is conducted as a discussion group. Limited to 15 students. Prerequisite: consent of instructor. May be taken three times for credit as topics vary. (VII-B)

192 Junior-Senior Seminar (4). Specialized courses that require analysis of a literary or cultural topic or problem through research and writing of an original research paper. Each seminar is offered in a quarter following East Asian Languages and Literatures 190 and is related to the colloquium's subject. Limited to 15 students. Prerequisite: East Asian Languages and Literatures 190 in preceding quarter or consent of instructor. May be taken for credit three times as topics vary.

198 Directed Group Study (1 to 4). Directed group study on special topics. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

199 Independent Study (1 to 4). Investigation of special topics through directed reading in translation. Paper required. Prerequisite: consent of instructor. May be taken for credit for a total of 12 units as topics vary.

GRADUATE

220 Topics in East Asian Cultural Studies (4). Seminar, with topics varying from year to year. Research paper required. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

260 Topics in East Asian Cinema (4). An examination of the possibilities of East Asian cinematic narrative. Possible topics: cinematic history; cinema in popular culture; comparisons with literary texts; major auteurs. Emphasis on technical as well as on thematic aspects. Includes readings in film theory. Prerequisite: East Asian Languages and Literatures 160 or consent of instructor. May be repeated for credit as topics vary.

290 Independent Study (4). Directed research on topic determined in consultation with faculty member. A term paper or project is required. May be repeated for credit.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

399 University Teaching (4-4-4). Required of and limited to Teaching Assistants. Satisfactory/Unsatisfactory grading only.

DEPARTMENT OF ENGLISH AND COMPARATIVE LITERATURE

435 Humanities Instructional Building; (949) 824-6712

Faculty

- Stephen A. Barney, Ph.D. Harvard University, *Professor of English* (medieval literature and culture, allegory)
- Lindon W. Barrett, Ph.D. University of Pennsylvania, *Associate Professor of English* (critical theory, African-American cultural studies)
- Homer Obed Brown, Ph.D. The Johns Hopkins University, *Professor of English* (eighteenth-century, novel, theory, Romanticism)
- James L. Calderwood, Ph.D. University of Washington, *Professor Emeritus of English* (drama, Shakespeare)
- Rey Chow, Ph.D. Stanford University, *Professor of Comparative Literature and Director of the Comparative Literature Program* (Chinese literature, Asian literatures and cultures, contemporary critical theory, film)
- Michael P. Clark, Ph.D. University of California, Irvine, *Professor of English* (Colonial American literature, critical theory)
- Jacques Derrida, Doctorat d'Etat es Lettres, Sorbonne, *Professor of French, Philosophy, and Comparative Literature* (philosophy, critical theory)
- Robert Folkenflik, Ph.D. Cornell University, *Professor of English* (eighteenth-century, novel, biography, and autobiography)
- Alexander Gelley, Ph.D. Yale University, *Director of the Emphasis in Critical Theory and Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel, critical theory, comparative literature)
- Linda Georgianna, Ph.D. Columbia University, *Professor of English* (medieval literature and culture)
- Oakley Hall, M.F.A. University of Iowa, *Professor Emeritus of English* (fiction writing, contemporary fiction)
- John Hollowell, Ph.D. University of Michigan, *Campus Writing Director and Senior Lecturer in English* (rhetorical theory, teaching of composition, American literature)
- Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of Comparative Literature and French* (literature and fine arts, modern poetry, surrealism, Romanticism, comparative literature)
- Wolfgang Iser, Ph.D. University of Heidelberg, *Professor of English* (eighteenth-century English literature, modern novel, critical theory)
- Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature* (Asian-American literature and culture, feminist theory, ethnic studies, gender)
- Ketu H. Katrak, Ph.D. Bryn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature* (Asian American literature, post-colonial literature)
- Murray Krieger, Ph.D. Ohio State University, *University Research Professor of English* (critical theory, Renaissance lyric, eighteenth-century figures)
- Richard W. F. Kroll, Ph.D. University of California, Los Angeles, *Associate Professor of English* (rhetoric, Restoration and eighteenth-century British literature, literary theory)
- Michelle Latiolais, M.F.A. University of California, Irvine, *Associate Professor of English and Creative Writing* (creative writing, fiction)
- Karen R. Lawrence, Ph.D. Columbia University, *Dean of the School of Humanities and Professor of English* (twentieth-century literature, travel writing, women's writing, the novel)
- Julia Reinhard Lupton, Ph.D. Yale University, *Associate Professor of Comparative Literature* (Renaissance literature, literature and psychology)
- Juliet Flower MacCannell, Ph.D. Cornell University, *Professor Emerita of Comparative Literature* (eighteenth-century French literature, modern semiotics, comparative literature)
- Steven Mailloux, Ph.D. University of Southern California, *Associate Dean of Humanities, Graduate Study, and Professor of English* (rhetoric, critical theory, American literature, law and literature)
- James McMichael, Ph.D. Stanford University, *Director of Poetry, Programs in Writing, and Professor of English* (contemporary poetry, poetry writing, prosody, Joyce)
- J. Hillis Miller, Ph.D. Harvard University, *UCI Distinguished Professor of English and Comparative Literature* (Victorian literature, critical theory)
- Robert L. Montgomery, Ph.D. Harvard University, *Professor Emeritus of English* (Renaissance literature, critical theory, comparative literature)
- Jane O. Newman, Ph.D. Princeton University, *Associate Professor of Comparative Literature* (sixteenth- and seventeenth-century German literature, contemporary theory and criticism, feminism)
- Robert Newsom, Ph.D. Columbia University, *Professor of English* (Victorian literature, theory of fictions)

- Margot Norris, Ph.D. State University of New York, Buffalo, *Professor of English and Comparative Literature* (modern British literature)
- Laura O'Connor, Ph.D. Columbia University, *Assistant Professor of English* (British and American modernism, Irish literary studies, postcolonial theory)
- Robert L. Peters, Ph.D. University of Wisconsin, *Professor Emeritus of English* (Victorian literature, contemporary poetry)
- Barbara L. Reed, Ph.D. Indiana University, *Senior Lecturer in English* (American literature, children's literature)
- Christine F. Ross, Ph.D. University of Pittsburgh, *Assistant Professor of English* (rhetoric, composition, eighteenth-century studies)
- John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Professor of English* (American literature, modern literature, critical theory, comparative literature)
- Michael Ryan, Ph.D. University of Iowa, *Professor of English and Creative Writing* (American literature, creative writing, poetry, poetics)
- Edgar T. Schell, Ph.D. University of California, Berkeley, *Professor Emeritus of English* (medieval and Renaissance literature)
- Gabriele Schwab, Ph.D. University of Konstanz, *Director of the Critical Theory Institute and Professor of English and Comparative Literature* (modern literature, critical theory, psychoanalysis, comparative literature)
- Martin Schwab, Ph.D. University of Bielefeld, *Associate Professor of Comparative Literature and Philosophy* (philosophy, aesthetics, comparative literature)
- Victoria Silver, Ph.D. University of California, Los Angeles, *Associate Professor of English* (Renaissance literature, Milton)
- Myron Simon, Ed.D. University of Michigan, *Professor Emeritus of English* (American and Canadian literature, early twentieth-century English poetry, ethnic literature, rhetoric)
- James Steintrager, Ph.D. Columbia University, *Assistant Professor of Comparative Literature* (eighteenth-century French, German, and English literature and aesthetics)
- Brook Thomas, Ph.D. University of California, Santa Barbara, *Professor of English* (American literature, literature and law)
- Harold Toliver, Ph.D. University of Washington, *Professor Emeritus of English* (Renaissance and seventeenth-century literature, theory of genre)
- Ann J. Van Sant, Ph.D. University of California, Berkeley, *Associate Professor of English* (seventeenth- and eighteenth-century literature, eighteenth-century literature, eighteenth-century novel, women and fiction, satire)
- Andrzej Warminski, Ph.D. Yale University, *Professor of Comparative Literature* (Romanticism, critical theory)
- Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English* (American literature, women's studies, queer theory)
- Albert O. Wlecke, Ph.D. Michigan State University, *Professor Emeritus of English* (English and American Romanticism, teaching of composition)
- Geoffrey Wolff, Novelist and Biographer, *Director of Fiction, Programs in Writing, and Professor of English and Creative Writing* (creative writing, fiction, biography)

The Department of English and Comparative Literature is concerned with the nature and value of literature, possible approaches to literary works, and the relation of literary criticism to the intellectual issues of the day. Fundamentally it is concerned with the humanistic problem of value. Thus its main literary concern is critical and theoretical. Though not alone in the task, the Department recognizes a continuing obligation to help all students write the English language with clarity and grace.

Students are given the opportunity to participate in departmental affairs through elected representatives to departmental committees. Each quarter both undergraduate and graduate students taking classes within the Department have the opportunity to evaluate their courses and teachers.

CAREERS FOR THE ENGLISH OR COMPARATIVE LITERATURE MAJOR

The study of literature helps students to express their ideas clearly, do independent research, and think analytically and imaginatively. These capabilities will help qualify majors for careers in education, law, technical writing, communications, journalism, public relations, business, and management. An undergraduate major in either English or Comparative Literature is an especially good preparation for graduate study.

Departmental advisors encourage their students to investigate various careers—especially those outside the traditional fields for such majors (e.g., graduate study and law)—before these students have completed their undergraduate educations.

For those students interested in going on for a credential in secondary school teaching, UCI has a CCTC-approved single-subject-matter preparation program in English.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

The Department offers to the undergraduate three areas of study:

The Program in Literary Criticism, which emphasizes a variety of critical approaches in the reading and criticism of English, American, and comparative literature.

The Programs in Writing, which offer an emphasis in the writing of poetry or fiction. Undergraduate courses in nonfiction are also available. The aim of these programs is to encourage the creative powers of students while introducing them to the discipline of reading and practical criticism, often in workshop situations. Under certain circumstances, creative writing courses may satisfy part of the writing requirement portion of the UCI breadth requirement (Category I).

The Program in Comparative Literature, which, though administratively a part of the Department, is basically interdisciplinary in its orientation, drawing on faculty and other resources from the fields of the various modern and classical literatures and drama. The consciousness of the modern educated person is the product of centuries of cultural heritage, including not only works of literature in one's own language but world literature from Homer to Gide and Thomas Mann. At UCI, Comparative Literature is regarded as the study of literature from the international point of view rather than in a national framework. A student who completes a degree in Comparative Literature will be expected to have a grasp of the history of literature in its broad outlines and to be able to deal competently with literary texts, whatever their period or national origins. Comparative Literature is well-suited for students interested in a double major.

Since the Department believes that a student of literature should recognize the importance of understanding theoretical problems in literature, of developing a broad acquaintance with literary texts, and of experiencing the problems of literary creation at first hand, the Department invites students to take work in all three of its programs, with an emphasis in one of the first two (toward a Bachelor's degree in English) or a major in the third (toward a Bachelor's degree in Comparative Literature).

Many of the courses will vary in specific content from year to year, depending on the plans of individual teachers, since the Department recognizes that no course can treat all the major authors and works relevant to a given period or topic.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the English Major

Three courses selected from E 28A (or E 28D), E 28B, E 28C (or E 28E), CL 50A, CL 50B, CL 50C, including either E 28A, E 28D, or CL 50A (in some cases, students who change their majors to English after taking E 6, E 7, E 8 may petition to substitute one of those courses for a course from the E 28 series); CR 100A; CR 100B and CL 100 (in some cases, students may petition to substitute courses numbered 102–106 for these courses); E 102A, E 102B, E 102C, E 102D; at least three more Departmental courses numbered 102 or above (excluding E 140, E 150, WR 139, or WR 179); and either E 105 or CL 105.

Competence in a foreign language, either classical or modern, equivalent to six quarters of work at UCI (in classical languages, 1A-B-C, 25, 101, 102) plus (in modern languages) one course in a foreign literature in which texts are read in the original language. (Some languages, such as Chinese, Japanese, Korean, or Russian, may ordinarily require three years of language study as preparation for the study of literature; students who wish to use such languages should consult with the Department about satisfaction of this requirement before doing so.)

Students selecting a writing emphasis have some flexibility in substituting writing workshops for period and genre courses; their total courses normally number more than the usual major.

Residence Requirement for the English Major: CR 100A, CR 100B, and three E 102s must be completed successfully at UCI.

Departmental Requirements for the English Minor

Three courses selected from E 28A (or E 28D), E 28B, E 28C (or E 28E), CL 50A, CL 50B, CL 50C, E 6, E 7, E 8, CL 8, including at least one quarter of E 28; and at least five English or writing courses numbered 102 or higher (excluding WR 139), although two courses from the following may be substituted: CR 100A, CR 100B, WR 100B, CL 100, CL 103, CL 104.

Residence Requirement for the English Minor: Four upper-division courses must be successfully completed at UCI.

Departmental Requirements for the Comparative Literature Major

Sufficient competence in a foreign language, either modern or classical, to be able to read any standard literary or critical text in that language. If the student intends to continue with graduate work, the study of a second foreign language is highly recommended before graduation.

Three quarters of lower-division work: Comparative Literature majors are normally required to take CL 50A, B, C. Transfer students may be required to take one or more courses in the sequence depending on the courses they have taken previously.

Normally 10 upper-division courses in addition: usually these will include CR 100A, CL 100 twice, two courses (one 101 and one above 101) in a selected foreign language, or two 101s in two different foreign languages, or two years of a classical language; two courses from CL 103 or CL 104; three additional upper-division courses chosen from the offerings in comparative literature, English, literary criticism, and creative writing. Courses in allied areas, e.g., history, philosophy, social science, may be counted toward the major if they deal with literary or philosophical texts, though prior approval of a faculty advisor is necessary.

Residence Requirement for the Comparative Literature Major: CR 100A and four upper-division English or Comparative Literature courses must be completed successfully at UCI.

Departmental Requirements for the Comparative Literature Minor

CL 50A, B, C, CR 100A, CL 100, CL 103 or 104 (three courses), and one upper-division literature course taught in a foreign language.

Residence Requirements for the Comparative Literature Minor: Four upper-division courses must be successfully completed at UCI.

PLANNING A PROGRAM OF STUDY

Students should plan coherent programs of study with their faculty advisors, including undergraduate seminars, workshops in writing (for students choosing a writing emphasis), and courses in allied areas outside the Department. It is possible to combine a cluster of courses in literature with other majors in the sciences and social sciences, and to use an English or Comparative Literature major as preprofessional training in government, law, or medicine. Students who wish advice in planning such programs should consult both the Department and people in their prospective professional areas.

Students who intend to pursue a single-subject or multiple-subject teaching credential must consult the UCI Department of Education as early as possible to ensure that they understand the departmental and State requirements.

A student who intends to continue with graduate work is urged to study a second foreign language before graduation.

Students are also encouraged to take advantage of the opportunity to study abroad through the Education Abroad Program. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

Graduate Program

The Department's three principal areas of work on the undergraduate level—English and American Literature, Comparative Literature, and the English major with writing emphasis—are reflected in the graduate programs: the M.A. and Ph.D. in English, the M.A. and Ph.D. in Comparative Literature, and the M.F.A. in English (Creative Writing). A student's courses for the M.A. and Ph.D. in English may include or emphasize work in American literature as well. The faculty is particularly equipped to guide students with special interests in criticism and theory, an area which candidates for the Ph.D. in English or in Comparative Literature may stress in their qualifying examinations and dissertations. Ordinarily students are not admitted to the English or Comparative Literature programs unless they plan to continue, and are qualified to continue, to the degree of Ph.D. Students are admitted to the M.F.A. program chiefly on the basis of submitted creative work. A committee of the Department, with the consent of the Dean of Graduate Studies, admits students to these programs. Each program has a director appointed by the Department Chair, but there are close administrative and intellectual ties among the programs.

Specific requirements for the graduate degrees will be established by consultation between members of the faculty and the candidate. The first-year graduate student or the candidate for the Master of Fine Arts in English (Creative Writing) plans a program with an assigned advisor; candidates for the Ph.D. plan with an advisor and three-person committee. At the time of the M.A. examination, the Graduate Committee evaluates the student's graduate career up to that point and offers advice about future prospects. Candidates for literary degrees are encouraged to study philosophy, history, foreign languages and literatures, and the fine arts.

Applicants for graduate degrees in English must submit scores for the Graduate Record Examination (GRE) including the Subject Test in Literature in English; applicants to the Comparative Literature program need not submit the Subject Test in Literature in English.

Only in exceptional circumstances will students be permitted to undertake programs of less than six full courses during the academic year. The normal expectation is enrollment in three courses each quarter; Teaching Assistants take two courses in addition to earning credit for University teaching. Students who are not teaching should be able to complete course work in two years. The Ph.D. qualifying examination should be taken within a couple of quarters after courses are finished. Dissertations can be written in a year. The Ph.D. in English or the Ph.D. in Comparative Literature normally should be completed in six years or less.

The Department recognizes that many of its graduate students intend to become teachers, and it believes that graduate departments should be training college teachers as well as scholars—indeed, that teaching and most literary scholarship complement one another. Thus the Department has initiated a program by which all its Ph.D. candidates, in English as well as in Comparative Literature, may gain supervised training as part of the formal seminar work required for the degree. M.F.A. candidates also have the opportunity to participate in this program. Candidates for the Ph.D. are expected to acquire experience in teaching.

All those interested in graduate study in the Department should obtain the brochure on graduate programs from the departmental office.

The Murray Krieger Endowed Fellowship in Literary Theory was awarded for the first time in the 1996–97 academic year. It is intended for an outstanding entering graduate student who is pursuing the Ph.D. in English or Comparative Literature and who demonstrates a primary interest in theory as theory relates to literary texts. This prestigious grant is the foremost fellowship in the Humanities and one of the largest at UCI. The five-year support package is worth over \$92,000. Also included is a readership and study space in the René Wellek Collection at the UCI Library, in addition to benefits such as priority housing and access to child care. A range of other fellowships is also available to students in the Department.

Emphasis in Feminist Studies

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

ENGLISH

Master of Arts in English

Each candidate for the M.A. will be assigned to a graduate advisor who will supervise the student's program. The M.A. plan of study includes (1) the completion of course work, as advised, for three quarters or the equivalent; (2) demonstrated proficiency in reading a designated foreign language, modern or classical; and (3) the submission of materials (including a statement about work accomplished and plans for future study, and a sample essay) to the Graduate Committee, who will review and assess the student's progress, recommend whether further study toward the Ph.D. is advisable, and, if so, give advice about areas for further study.

The Department of English and Comparative Literature sponsors a Summer M.A. Program in English designed for teachers. The M.A. degree in English is awarded to candidates who complete 32 units of graduate course work through two consecutive summers in the program and submit an acceptable Master's essay. Applicants from outside the State of California may apply for the program.

Master of Fine Arts in English

The Master of Fine Arts (M.F.A.) is a degree in creative writing. The M.F.A. degree is normally conferred upon the completion of a two- to three-year residence. Each quarter the candidate will be enrolled in either the poetry or fiction section of the Graduate Writers' Workshop, which will constitute two-thirds of a course load, the other course to be selected in consultation with the student's advisor. It is expected that M.F.A. candidates will complete at least one supervised teaching seminar.

In addition to course work, the candidate is required to pass an examination on a reading list of literary works in the genre selected, and to present as a thesis an acceptable book-length manuscript of poetry or short stories or a novel.

Doctor of Philosophy in English

The program for the Ph.D. in English requires about two years of full-time enrollment in regular courses beyond the B.A. (two courses of which may be in the graduate teaching program); proficiency in the reading of two acceptable foreign languages, modern or classical; the dissertation; and satisfactory performance on designated examinations.

The languages acceptable depend upon the nature of the student's program as determined by the student's advisors. Reading competence in one of these languages must be established in the first year of residence, and competence in the second well before the general examination.

Students admitted at the post-M.A. level must provide evidence of satisfactory competence in foreign languages. Competence in one of the two languages required for the Ph.D. is verified through a course in theory and practice of translation; the other language may be verified through examination.

Upon completion of course work the student is examined in four areas: (1) literary theory and criticism; (2) literary form; (3) historical period of English and/or American literature; and (4) selected major authors. The student has the opportunity to present personal choices for the examination, but the choices must enable an individual to demonstrate breadth of historical knowledge and literary understanding and therefore must be approved by the advisory committee.

Upon satisfactorily completing the general examination and the oral Qualifying Examination, the student is admitted to candidacy for the degree. As soon after completion of the general examination as is practical, the student presents an essay leading to dissertation for the approval of the doctoral committee. The dissertation itself must also be approved by the committee, which may or may not require an oral examination on it. All work for the Ph.D. degree must be in courses limited to graduate students.

COMPARATIVE LITERATURE

Applicants to the Comparative Literature program must hold a B.A. or equivalent degree and should normally have majored in Comparative Literature, English, or a foreign literature. Majors in other disciplines (e.g., philosophy, history) can be considered, provided that a sufficient background in literature and literary theory, as well as in at least one foreign language, is demonstrated.

For the graduate student in Comparative Literature a professional competence in foreign languages is essential. French and German are usually expected of all doctoral students, but other languages (for instance, Spanish, Italian, Russian, or an Asian language) may be substituted. A classical language may prove indispensable for work in many traditional fields of literary study, and the scholar's own specialization may require the mastery of still other languages.

An important part of the foreign language requirement is the course CL 220 (Problems in Translation) in which the student plans and carries out a high-quality translation of a literary or theoretical

text. The translation, along with an introduction or other scholarly apparatus explaining and defending the technical decisions involved in the task, is then submitted as a paper for course credit.

Master of Arts in Comparative Literature

Entering students are assigned a faculty advisor who usually serves as the chair of the student's M.A. examination committee (which consists of at least two other members of the faculty). The M.A. examination is normally taken during the quarter in which the student completes the course work; nine courses, including at least one CL 220, are required. The candidate submits an M.A. paper as well as a statement of purpose outlining past and future course work and preliminary plans for the qualifying examination. The M.A. examination itself consists of a discussion of the student's paper and the statement of purpose. In practice, the examination resembles an extended advising session, but with particularly close attention given to the student's paper.

Doctor of Philosophy in Comparative Literature

The doctoral program in Comparative Literature is designed to prepare the student for a professional career in literary studies. Details of the program may be found in the departmental graduate student handbook. Normally, students who have not done graduate work at another university complete at least 16 courses before the qualifying examination, including two translation seminars (CL 220).

Upon completion of the course work, the student takes a general examination based on six topics formulated by the student in consultation with the four faculty members who will make up the examination committee. The topics should combine historical breadth and some generic variety with special fields. The examination is part written, part oral, according to a formula decided by the student and the committee. The examination as a whole should reflect the student's ability to work in at least two foreign languages.

After passing the qualifying examination, the student forms a dissertation committee of three faculty members, formulates a dissertation topic in consultation with them, and submits a prospectus for the dissertation along with a preliminary bibliography. The study toward the Doctor of Philosophy degree culminates in the writing of a suitable dissertation, often on a comparative subject, although subjects lying within a single literature or dealing with general literary and theoretical problems not confined to any specific literatures are also acceptable.

Courses in English and Comparative Literature

LOWER-DIVISION

Satisfaction of the Subject A requirement is a prerequisite for all departmental courses except E 6, E 7, E 8, and CL 8. See the Requirements for a Bachelor's Degree section for information on fulfilling the Subject A requirement.

Descriptions of the topics to be offered in the undergraduate literary courses during a given year are available in the departmental office in the fall.

E 6 British Literature to the Renaissance (4) F. Lecture, three hours. Various topics in literature of the Middle Ages and Renaissance in English, such as the heroic, the rise of tragedy, women in literature, literature and nature. Primarily designed for nonmajors. (IV)

E 7 Literature in English from the Eighteenth to the Twentieth Centuries (4) W. Lecture, three hours. Various topics in literature in English outside the U.S., such as Romanticism, the development of the novel, revolution and industrialism in literature, the literary representation of war. Primarily designed for nonmajors. (IV)

E 8 American Literature (4) S. Lecture, three hours. Various topics in American literature, such as the literature of colonialism, U.S. literature and popular culture, the New England tradition, the English literature of the Pacific Rim. Primarily designed for nonmajors. (IV)

CL 8 Comparative Literature (4). Lecture, three hours. Comparative studies in different literatures. Readings in English and in English translation on such generic topics as tragedy, epic, short tales, and such thematic topics as love, war, cities, travel writing, politics, violence. May be substituted for one quarter of the E 6, E 7, E 8 series.

CL 9 Introduction to Multicultural Topics in Literature (4). Introduction to multicultural literature including African-American, Asian-American, Chicano/Latino, and Native American. May be repeated for credit as topics vary. (VII-A)

E 28 The Nature of Literature F, W, S, Summer. Discussion, three hours. Reading of selected texts to explore the ways in which these modes formulate experience. Students write several short analytic papers in each course. E 28D and E 28E also require creative writing. Prerequisite: satisfaction of the lower-division writing requirement. E 28A and E 28D may not both be taken for credit; E 28C and E 28E may not both be taken for credit.

E 28A The Poetic Imagination (4). (IV)

E 28B Comic and Tragic Vision (4). (IV)

E 28C Realism and Romance (4). (IV)

E 28D The Craft of Poetry (4). (IV)

E 28E The Craft of Fiction (4). (IV)

WR 30 The Art of Writing: Poetry (4) F, W, S. Beginners' workshop in the writing of poetry, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. (I)

WR 31 The Art of Writing: Prose Fiction (4) F, W, S. Beginners' workshop in fiction writing, evaluation of student manuscripts, and parallel readings. May be repeated once for credit with a different instructor. (I)

WR 32 The Art of Writing: Drama (4). Beginners' workshop in play-writing, evaluation of student manuscripts, and parallel readings. Same as Drama 32. (I)

WR 37 Intensive Writing (6). Discussion, three hours; tutorial, two hours. Deals with review of grammar and usage, the process of writing, rhetorical principles, and guided practice in writing. Readings selected from current fiction and nonfiction; writing assignments require analysis of readings and demonstration of rhetorical principles. Successful completion of WR 37 with letter grade of C or above fulfills the Subject A requirement and one quarter of the lower-division writing requirement. Students who achieve a C- or below must repeat the course or enroll in the equivalent. Students held for Subject A must satisfy the requirement before the beginning of their fourth quarter of residency. Prerequisite: students must have taken the Subject A examination. Enrollment open to recommended students only.

WR 38 The Art of Writing: Nonfiction and Journalism (4). Beginners' workshop in the writing of nonfiction and news articles, evaluation of student manuscripts, projects. (I)

WR 39A Fundamentals of Composition (0-2) F, W, S, Summer. Discussion, three hours. Deals with the fundamentals of grammar, usage, paragraph development, principles of rhetoric, and the writing of expository essays. Some exercises; frequent papers. A student seeking to satisfy the Subject A requirement who receives a grade below C must repeat the course, normally in the next quarter of residency. A student who satisfies the Subject A requirement during WR 39A and achieves a grade of C or above in WR 39A will earn four units of workload credit, two units of which count toward baccalaureate credit. Students held for Subject A must satisfy the requirement before the beginning of their fourth quarter of residency.

WR 39B Expository Writing (4) F, W, S, Summer. Discussion, three hours. Guided practice in the writing of expository prose. Readings selected from current fiction and nonfiction; writing topics require analysis of the readings and demonstration of rhetorical principles. Prerequisite: English and Comparative Literature WR 39A or the equivalent. (I)

WR 39C Argument and Research (4) F, W, S, Summer. Discussion, three hours. Guided writing practice in argumentation, logic, and inquiry. Readings are selected from current nonfiction and from materials students select from the University library. Research strategies emphasized. Prerequisite: English and Comparative Literature WR 37 or WR 39B. (I)

CL 40A, B, C Development of Drama (4, 4, 4) F, W, S. Same as Drama 40A, B, C. (IV, VII-B)

CL 50 The Literary Tradition F, W, S. Lecture, three hours. The reading of selected major works in the Western literary tradition. Prerequisite: satisfaction of the lower-division writing requirement.

50A Homer to Renaissance (4). (IV)

50B Renaissance to Romanticism (4). (IV)

50C Modernism (4). (IV)

UPPER-DIVISION

CL 100 Undergraduate Seminar in Literary Theory and Practice (4) F, W, S. Seminar, three hours. Open to upper-division majors in English and Comparative Literature only, and required of them. Sections limited to 20 students. Each instructor announces a topic that joins theoretical considerations of comparative literary study with the practical criticism of individual literary texts. May be repeated for credit by Comparative Literature majors as topics vary. Prerequisite: a lower-division series in literature.

CR 100A Literary Theory and Criticism (4) F, W. Required of beginning majors in English and Comparative Literature. A series of lectures and discussions devoted to the theoretical dimensions of literary criticism as reflected in major theorists from Plato to the present. Prerequisite: a lower-division series in literature.

CR 100B Undergraduate Seminar in Literary Theory (4) F, W, S. Seminar, three hours. Open to upper-division majors in English and Comparative Literature only, and required of them soon after the completion of CR 100A. Sections limited to 20 students. Each instructor announces a theoretical topic deriving from CR 100A and explores it through a number of theoretical and literary texts. Prerequisite: English and Comparative Literature CR 100A. May be taken for credit twice.

WR 100B Undergraduate Seminar in Literary Theory (4). Seminar, three hours. Substitute for CR 100B for writing emphasis students. Prerequisite: English and Comparative Literature CR 100A.

E 102 English and American Literary History F, W, S, Summer. Lecture, three hours. Studies of works representative of historical periods of literature in English, with attention to literary history, treating at a minimum more than one author and more than one genre. Prerequisites: upper-division standing; majors only. May be repeated for credit as topics vary.

102A Medieval and Renaissance Literature (4)

102B Restoration and Eighteenth-Century Literature (4)

102C Romantic and Nineteenth-Century Literature (4)

102D Twentieth-Century Literature (4)

E 103 Undergraduate Lectures in English Literature (4) F, W, S, Summer. Three hours. May be taken more than once provided the topic changes. A series of lectures on and discussions of announced topics in literary criticism, history, genres, modes, major authors. Prerequisite: none for most topics; check descriptions of individual course topics.

CL 103 Undergraduate Lectures in Comparative Literature (4) F, W, S, Summer. Lecture, three hours. A series of lectures on and discussions of announced comparative topics in literary criticism, history, genres, modes, major authors. May be repeated for credit as topics vary. Same as East Asian Languages and Literatures 150 or Women's Studies 170CB when topic is appropriate.

CR 103 Contemporary Critical Theory (4). Lecture, three hours. Discussion of contemporary critical theory. May be repeated once for credit toward graduation, but not repeated for credit within the major. Prerequisite: English and Comparative Literature CR 100A.

CL 104 The Interdisciplinary Course (4) F, W, S. Lecture and discussion course open to all students, three hours. Treats interdisciplinary topics of various kinds (e.g., literature and politics, literature and religion, literature and science, literature and other arts). Prerequisites: none for most topics; check descriptions of individual course topics. May be taken for credit as topics vary. Same as Art History 114, Art History 125, Humanities 110, or Women's Studies 170CD when topic is appropriate.

E 105 Multicultural Topics in English-Language Literature (4) F, W, S. Treats the literary consequences of relations and conflicts between races, genders, classes, ethnic groups, and other forms of cultural identity prevalent at different moments in history. May be repeated for credit as topics vary. Same as Women's Studies 170CF when topic is appropriate. (VII-A)

CL 105 Multicultural Topics in Comparative Literature (4) F, W, S. Treats the literature and culture of one or more minority groups in California and the United States, including African-Americans, Asian-Americans, Chicano/Latinos, and Native Americans, in relation to other national literatures. May be repeated for credit as topics vary. Same as Women's Studies 170CE when topic is appropriate. (VII-A)

E 106 Advanced Seminar (4). Three hours. Focuses on a topic within an area already studied. Sections limited to 25 students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

WR 109 Nonfiction and Journalism (4). Three hours. The course develops out of WR 38 for students with special competence for advanced work in journalism. Prerequisite: consent of instructor.

WR 110 Short Story Writing (4) F, W, S. Three-hour workshop in short fiction; discussion of student writing and of relevant literary texts. May be repeated once for credit toward graduation, but not repeated for credit within the major. Prerequisite: consent of instructor.

WR 111 Poetry Writing (4) F, W, S. Three-hour advanced poetry writing workshop; discussion of student writing and of relevant literary texts. May be repeated once for credit toward graduation, but not repeated for credit within the major. Prerequisite: consent of instructor.

WR 113 Novel Writing (4). Three-hour advanced workshop in fiction writing; discussion of student writing and of relevant literary texts. Prerequisite: consent of instructor.

WR 115 Conference in Writing (4). Primarily for writing emphasis seniors. May be repeated for credit toward graduation but not repeated for credit within the major. Prerequisite: consent of instructor.

WR 139 Advanced Expository Writing (4) F, W, S, Summer. Discussion, three hours. Study of rhetorical techniques; practice in writing clear and effective prose. Several essays of varying lengths, totaling at least 4,000 words. Prerequisites: satisfaction of the lower-division writing requirement of the breadth requirement and junior standing. May not be counted toward the upper-division requirements for English or Comparative Literature majors or minors. (I)

E 140 Children's Literature (4). Lecture course open to all students. Explores the nature of children's literature and the special critical problems raised by it. Primarily for nonmajors. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors.

E 150 Topics in Literature for Nonmajors (4). Lecture, three hours. Major texts in English, American, and Comparative Literature explored for basic humanistic issues and themes, on announced topics. Primarily for upper-division students, but not requiring previous training in literature. May be repeated as topics change. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors.

WR 179 Advanced Composition for Teachers (4). Principles of formal composition and teaching composition. Selected handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. May *not* be counted toward the upper-division requirements for English or Comparative Literature majors. Same as Education 179.

E 181 The Structure of English (4). An examination of American English phonology, morphology, and syntax. Intended primarily for prospective teachers of English in elementary and secondary schools and for teachers of English as a second language. Prerequisite: Linguistics 3. Same as Linguistics 163B.

E 187 Selected Topics in English Linguistics (4)

E 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

CL 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

E 199 Reading and Conference (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings, and when the student will have no formal chance to pursue the subject. Prerequisites: consent of the student's advisor, the instructor, and the Department Chair.

CL 199 Reading and Conference (1 to 4). To be taken only when the materials to be studied lie outside the normal run of departmental offerings, and when the student will have no formal chance to pursue the subject. Prerequisites: consent of the student's advisor, the instructor, and the Department Chair.

GRADUATE

All graduate courses may be repeated when the topic varies. Descriptions of the topics to be treated in a given academic year are published by the Department in the fall. Enrollment in each graduate course requires the consent of the instructor. The courses are limited to registered graduate students, except for specially qualified fifth-year students seeking teaching credentials, who may enroll if they have first received permission from the Department's Graduate Committee and if space permits.

In addition to the following courses, graduate students in the Department of English and Comparative Literature might find Humanities 200 (The Nature and Theory of History) and Humanities 291 (Interdisciplinary Topics) of special interest.

CL 200 Methods of Comparative Literature (4) F. Introduction to comparative literary study required of first-year graduate students in Comparative Literature. Study of representative theories of the discipline.

E 210 Studies in Literary History (4) F, W, S

CL 210 Comparative Studies (4) F, W, S

E 215 Prospectus Workshop (2) F. Workshop for the writing of the graduate student prospectus for those who have completed their qualifying examinations. Topics covered and assignments completed culminate in a presentation of a draft of the prospectus in class. Biweekly discussions.

CL 220 Problems in Translation (4) F, W, S

CR 220A, B, C Studies in Literary Theory and Its History (4, 4, 4) F, W, S. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists. Same as Humanities 220A, B, C.

E 225 Studies in Literary Genres (4) F, W, S

E 230 Studies in Major Writers (4) F, W, S

E 235 Methods of Literary Scholarship (4)

CR 240 Advanced Theory Seminar (4) F, W, S

WR 250A-B Graduate Writers' Workshop (Fiction) (4-4) F, W, S. Satisfactory/Unsatisfactory only.

WR 250C Graduate Writers' Workshop (Poetry) (8) F, W, S. Satisfactory/Unsatisfactory only.

WR 251A-B Writing in Conference (Fiction) (4-4) F, W, S. Satisfactory/Unsatisfactory only.

WR 251C Writing in Conference (Poetry) (8) F, W, S. Satisfactory/Unsatisfactory only.

E 290 Reading and Conference (4) F, W, S

CL 290 Reading and Conference (4) F, W, S

E 291 Guided Reading Course (4)

CL 291 Guided Reading Course (4)

E 299 Dissertation Research (4 to 12) F, W, S. Satisfactory/Unsatisfactory only.

CL 299 Dissertation Research (4 to 12) F, W, S

E 398 Rhetoric/Teaching of Composition (2 to 4) F. Readings, lectures, and internship designed to prepare graduate students to teach composition. Formal instruction in rhetoric and practical work in teaching methods and grading. Consent of instructor required.

E 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants. Satisfactory/Unsatisfactory only.

PROGRAM IN FILM STUDIES

235 Humanities Instructional Building; (949) 824-5386

Rhona Berenstein, **Program Director**

Faculty

Rhona Berenstein, Ph.D. University of California, Los Angeles, *Director of the Program in Film Studies and Associate Professor of Film Studies* (television, film genre, film history)

Homer Obed Brown, Ph.D. The Johns Hopkins University, *Professor of English* (film theory, American film, popular culture)

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano studies)

David Carroll, Ph.D. The Johns Hopkins University, *Chair of the Department of French and Italian and Professor of French* (film history and criticism, French cinema, film and society)

Key Chow, Ph.D. Stanford University, *Professor of Comparative Literature* (Chinese literature, Asian literatures and cultures, contemporary critical theory, film)

Edward Fowler, Ph.D. University of California, Berkeley, *Associate Professor of Japanese* (modern Japanese literature, film, and cultural studies)

Anne Friedberg, Ph.D. New York University, *Associate Professor of Film Studies* (film history and theory, film and postmodernism, avant-garde and experimental film, and new technologies)

James Herbert, Ph.D. Yale University, *Associate Professor of Art History* (modern European art, critical theory, and visual culture)

Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature* (surrealist film/fantastic film, early comedy)

David Joselit, Ph.D. Harvard University, *Assistant Professor of Art History* (modern and contemporary art, critical theory, gender studies)

Kyung Hyun Kim, M.A. University of Southern California, *Acting Assistant Professor of Korean Culture* (history of film, Asian films)

Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German* (feminism, critical theory, German film, cultural studies, race)

Alejandro Morales, Ph.D. Rutgers University, *Chair of the Department of Spanish and Portuguese and Professor of Spanish* (Latin American film)

Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (Spanish cinema)

John Carlos Rowe, Ph.D. State University of New York at Buffalo, *Professor of English* (film and documentary images of war, film theory)

Sally A. Stein, Ph.D. Yale University, *Associate Professor of Art History* (American art, history of photography, photography and media)

Our understanding of the modern world is to a large extent a mediated one: film and television greatly influence our sense of who we are and how we live. Yet so much of our exposure to these forces remains taken for granted, indeed unreflected. The sights and sounds of movies and television compel and excite us, perhaps more so than many of us realize or would like to admit. An undergraduate education in Film Studies encourages students to explore the appeal and operation of these complex meaning-producing machines we call cinema and television.

The course work leading to the B.A. degree in Film Studies trains students to become visually and aurally literate, to grasp films and images in their socioeconomic, political, and aesthetic dimensions. This entails looking at mainstream films with a more critical gaze as well as gaining a regard for different kinds of movies and alternative ways of seeing. The Film Studies curriculum is systematic and comprehensive; courses are typically taught by regular faculty in classes of about 20 to 50 students. During the 1997–98 academic year, there were more than 80 Film Studies majors enrolled at UCI.

The Program familiarizes students with the history, theory, and art of cinema, individual filmmakers, period styles, genres, and aspects of television. Additional courses address the practical and technical concerns of video production and scriptwriting. Regular course offerings are complemented by student-run film series; special screenings and retrospectives; visits from directors, critics, film and television industry professionals, and scholars; and trips to film festivals, as well as critical symposia.

Film Studies at UCI is unique in its concentration on the history, theory, and criticism of cinema and television. The faculty has published books and articles on such topics as French surrealist cinema, films of the Third Reich, images of the Vietnam war, Hollywood melodramas, contemporary avant-garde directors, film and postmodernism, horror cinema, and women filmmakers. The Program provides its majors with a thorough appreciation of the modern media's innumerable functions in contemporary society.

The School of Humanities charges a laboratory fee of \$20 per course to all students taking Film Studies courses.

Film Studies students can complete a professional internship in film or television for elective course credit.

Film Studies students also have the opportunity to spend their junior year in France studying at the Inter-University Center for Film and Critical Studies in Paris, through the University's Education Abroad Program. Information is available both in the Film Studies Office and the Education Abroad Program Office.

CAREER OPPORTUNITIES

A degree in Film Studies will provide students with a variety of opportunities leading to a career choice or to further education at the graduate or professional level. Graduates from the program have gone on to a host of different careers. Some have pursued graduate work in critical film studies at leading institutions such as the University of California, Los Angeles, and the University of Iowa. Others have entered M.F.A. programs in production at places like the University of Southern California, UCLA, or San Francisco State University. Many are now at work in various sectors of the entertainment industry as feature film editors, executives in video distribution companies, technicians for local news programs, and independent filmmakers.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Program Requirements for the Major

Film Studies 85A-B-C, 101A-B-C, 110, either 117A or 120A, 139, and four of the following: 112, 113, 114, 115, 160, 185, 198, and/or no more than two of the following: 117B, 117C, 120B, 120C.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Program Requirements for the Minor

Film Studies 85A, 101A-B-C, and three of the following: 85B-C, 110, 112, 113, 114, 115, 160, 185, 198.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Courses in Film Studies

LOWER-DIVISION

85A-B-C Image Culture

85A Visual Media and Contemporary Culture (4) F. An introduction to the study of visual media—such as advertising, movies, television, and video—and analysis of their role in contemporary culture. Introduces students to the critical vocabulary of film and television studies. Formerly Film Studies 85. (IV)

85B History of Broadcasting (4) W. A history of broadcast media. Social, political, economic, legal, institutional, and cultural perspectives guide analysis. United States commercial TV serves as the primary case study. Prerequisite: Film Studies 85A or consent of instructor. (IV)

85B New Technologies and Visuality (4) S. The study of electronic communication technologies, such as virtual reality and the internet, from social, cultural, psychological, and political perspectives. Prerequisites: Film Studies 85A-B or consent of instructor. (IV)

UPPER-DIVISION

101A-B-C History of Film

101A The Silent Era I (4) W. An investigation of the technological, economic, social, and aesthetic determinants of the cinema in its first 30 years. The formal strategies and historical importance of films by Méliès, the Lumières, Porter, Griffith, Murnau, Lang, Eisenstein, Pudovkin, and others. Prerequisite: Film Studies 85A.

101B The Sound Era I (4) S. Explores the formal strategies and socio-historical dynamics of films made between 1930 and 1960, concentrating on representative cinemas and works by Lang, Riefenstahl, Renoir, Welles, De Sica, Ophüls, Kurosawa, and others. Prerequisite: Film Studies 101A.

101C The Sound Era II (4) F. Studies narrative strategies and formal possibilities in films made since 1960, framing aesthetic questions in political, social, and economic terms, using selected features from Western and non-Western countries. Prerequisite: Film Studies 101B.

110 Film Theory (4) F, W, S. A survey of major directions in film theory of the silent and sound eras. Includes Frankfurt School theorists of mass culture, formalism, realism, auteurism, semiotics, feminism, and cultural studies. Prerequisite: Film Studies 101A-B-C or consent of instructor.

112 Film Genre (4) F, W, S. Analytical and theoretical approaches to the serial productions we call "genre" films, the patterns of recognition known as westerns, weepies, musicals, horror films, and others. May be repeated for credit as topics vary. Same as Women's Studies 174A when topic is appropriate.

113 Film/Narrative/Image (4) F, W, S. What relations do sound, image, and story assume in film narrative? In what ways does film interact with and borrow from other story-telling media? How have filmmakers explored non-narrative strategies and to what end? May be repeated for credit as topics vary.

114 Film and the Other Arts (4) F, W, S. A synthetic entity, film draws on both established and popular arts. Looks at film's exchanges with high and low culture, exploring its relation to areas such as photography, music, painting, and architecture. May be repeated for credit as topics vary.

115 Film Authorship (4) F, W, S. Theoretical and analytical discussions of film authorship, focusing on case studies of directors, producers, scriptwriters, and artists. May be repeated for credit as topics vary.

117A Introduction to Screenwriting (4) F, W, S. Introduction to the history and technique of the screenplay, with a particular focus on its different aesthetic forms as well as on the various roles it has assumed within the evolution of the film industry.

117B Basic Script Writing (4) F, W, S. Exercises in the development of screenplays with emphasis on formal and structural considerations as well as on film industry praxis. Conducted in an intimate workshop setting with frequent group discussions of student scripts-in-progress. Prerequisite: Film Studies 117A.

117C Scriptwriting Workshop (4) F, W, S. Continuation and intensification of work initiated in 117B. Students complete a full-length screenplay. Concentrates on both practical and technical concerns, addressing pragmatic and aesthetic questions in intensive small-group discussions. Prerequisite: Film Studies 117B.

120A Basic Production (4) F, W, S. Introduction to the basic apparatus of video/film production. The elementary essentials of production, including the use of camera and lenses, lighting, editing, and sound. Formerly Film Studies 50A.

120B Intermediate Production (4) W. Students work on individual and group projects, utilizing skills and insights introduced in Film Studies 120A. Prerequisite: Film Studies 120A. Formerly Film Studies 50B.

120C Production Workshop (4) S. As film and video are collaborative media, students form production groups and ultimately produce final 10–15 minute film/video projects. Prerequisite: Film Studies 120B.

139 Writing About Film (4) F, W, S. Practical exercises in film criticism as a form of cultural analysis. Requires at least 4,000 words of assigned composition. Film Studies majors are given admission priority. Prerequisites: Film Studies 85A and 101A; satisfaction of lower-division writing requirement; junior standing.

160 National Cinemas (4) F, W, S. Period styles, national schools, oppositional movements, e.g., Classical Japanese Cinema, Italian Neorealism, Nouvelle Vague, Weimar Film, Cinema Novo. Same as East Asian 160, French 160, German 160, or Spanish 160 when topics are appropriate. May be repeated for credit when topics vary. (VII-B)

185 Television and New Media (4) F, W, S. An advanced seminar focusing on special issues pertaining to broadcasting and/or new technologies. Topics include, but are not limited to: television criticism; space and new technologies; and broadcast advertising. Prerequisite: Film Studies 85A-B-C or consent of instructor.

198 Special Topics in Film Studies (4) F, W, S. Exploration of special issues concerned with film history and theory. Examples include close textual analysis, film and pornography, representing war, film and gender. May be repeated for credit as topics vary.

199 Individual Study (varying credit) F, W, S. Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member.

GRADUATE

Graduate students in Art History can pursue an emphasis in Film Studies. Contact the Film Studies office at (949) 824-5386 for information regarding requirements.

210 Comparative Studies (4) F, W, S, Summer. May be repeated for credit as topics vary.

212 Genre Study (4) F, W, S. Close study of film and television genres (musical, western, pornography, horror, gangster, science fiction, police drama, situation comedy, news magazine). May analyze the concept of genre itself, addressing generic modes (film noir) and cross-generic explorations in cinema, TV, video, other media. May be repeated for credit as topics vary.

213 Media/Narrative/Image (4) F, W, S. Situates changes in electronic technologies that impact experiences of the body, identity, urban and architectural space, and information, within a cultural history of vision and visuality. Examines social, cultural, psychological, and political impact of new technologies. May be repeated for credit as topics vary.

214 Media and the Other Arts (4) F, W, S. Comparison and contrast between film, television, literature, video art, photography, new technologies. The integral rapport between visual mass media, high art, music; performance in various media; issues of adaptation from one medium to another (e.g., literature to film, film to CD-ROM). May be repeated for credit as topics vary.

218 Special Topics in Film and Modern Media (4) F, W, S. Special issues concerned with film and media history, theory, criticism. Examples include *Gone Primitive* (Anglo-American romance with the "primitive" in literature, film, other media); television criticism (review and analysis of models and modes of criticism applied to television since the 1940s). May be repeated for credit as topics vary.

240 Theory and Methods of Film and Modern Media (4) F, W, S. Examines classical and contemporary film and media theories: the film as art form, the director as author, films as textual systems, the cinematic apparatus, feminist theories, and theoretical paradigms offered by new media.

245 Historiography of Film and Modern Media (4) F, W, S. Studies historiographic questions regarding cinema and modern media in light of contemporary debates about historical inquiry. What is the past? How can it be known/studied? How do we access and trace the cinema and modern media's pasts? How do media transform definitions of history?

250 Debates in Film and Modern Media (4) F, W, S. Focuses on theoretical and critical debates in film, TV, and media; cultural studies; and new technologies. Addresses terms of analysis of films and other media. Topics vary but include: theories of spectatorship and queer film/video. May be repeated for credit as topics vary.

290 Independent Study (4) F, W, S. A project proposal must be prepared by the student and approved by a faculty advisor who will direct the independent study. Area of focus to be determined by graduate student in consultation with faculty advisor. May be repeated for credit as topics vary.

399 University Teaching (4) F, W, S. Required of and limited to teaching assistants. Satisfactory/Unsatisfactory only. May be repeated for credit.

DEPARTMENT OF FRENCH AND ITALIAN

312 Humanities Hall; (949) 824-6407

David Carroll, **Department Chair**

Faculty

Luke P. Bouvier, Ph.D. Cornell University, *Assistant Professor of French* (nineteenth-century narrative)

Ellen S. Burt, Ph.D. Yale University, *Associate Professor of French* (eighteenth-century French literature and nineteenth-century poetry)

David Carroll, Ph.D. The Johns Hopkins University, *Department Chair and Professor of French* (literary theory and twentieth-century French literature)

James Chiampi, Ph.D. Yale University, *Associate Professor of Italian* (Italian Renaissance)

Jacques Derrida, Doctorat d'Etat ès Lettres, *Professor of French, Philosophy, and Comparative Literature* (philosophy, critical theory)

Suzanne Gearhart, Ph.D. The Johns Hopkins University, *Professor of French* (seventeenth- and eighteenth-century French literature, philosophy and literature)

Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the French Language Program and Lecturer in French* (second-language acquisition and teaching)

Judd D. Hubert, Ph.D. Columbia University, *Professor Emeritus of French* (seventeenth- and nineteenth-century French literature)

Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature* (literature and fine arts, modern poetry, surrealism, Romanticism, comparative literature)

Alice M. Laborde, Ph.D. University of California, Los Angeles, *Professor Emerita of French* (eighteenth-century French literature)

Carrie J. Noland, Ph.D. Harvard University, *Assistant Professor of French* (twentieth-century poetry; World War II and literature of the avant-garde)

Leslie W. Rabine, Ph.D. Stanford University, *Professor of French* (nineteenth-century French literature and women's studies)

Richard L. Regosin, Ph.D. The Johns Hopkins University, *Professor of French* (sixteenth-century French literature)

Undergraduate Program in French

The Undergraduate Program in French offers a broad humanistic course of study designed for students in the liberal arts. The orientation of the program is multidisciplinary, where the study of literature is linked to critical, cultural, and historical concerns. Courses reflect the faculty's interest in the related disciplines of history, philosophy, anthropology, women's studies, cultural studies, and comparative literature, and express its conviction that the study of French literature and culture is enriched by pursuing its relations with other disciplines, fields, and cultures.

Lower-division language courses encourage students to participate in the creative process of language, to think in French as they learn to understand, speak, read, and write. These courses are taught entirely in French, and the approach to teaching stresses the interdependence of the four basic language skills and makes them mutually reinforcing. The Language Laboratory is used to complement classroom activity.

At the intermediate lower-division level, texts of contemporary literary and social interest provide the focus for advanced conversation, reading, and composition. After the second year, advanced courses in conversation and writing enable students to attain a greater degree of proficiency, preparing them for further study in the multidisciplinary upper-division program.

All upper-division offerings are taught in the seminar mode. Because classes are limited in size, they promote and encourage participation and discussion and facilitate direct contact with professors. In the introductory courses in literature, complete texts are studied in their historical context. The student learns to analyze and interpret different types of creative literature and is introduced

to various critical concepts and vocabularies. At the more advanced level, the multidisciplinary courses bring together material and methodologies from the various disciplines in order to address interpretive problems of French literature, culture, and history. In recent years, courses have been offered in literature and political opposition, monsters and madness in Renaissance literature, ethnography and literature, women and sexuality, autobiography, and the supernatural in nineteenth-century narrative. The content of these courses changes yearly according to the interests of both faculty and students.

Students are placed in French courses according to their years of previous study. In general, one year of high school French is equated with one quarter of UCI work. Thus, students with one, two, three, or four years of high school French will enroll in French 1B, 1C, 2A, and 2B, respectively. Exceptions to this placement formula must be approved by the appropriate course director. Students with transfer credit for college-level French may *not* repeat those courses for credit.

Student representatives serve on departmental committees. These representatives also participate in Department meetings and are responsible for student evaluation procedures.

CAREERS FOR THE FRENCH MAJOR

The great majority of students who major in French pursue careers in business and commerce, where they can take advantage not only of their proficiency in French language but also of their knowledge of French literature and culture. Many students also go on to law school, to medical school, and to careers in the diplomatic service. In recent years, graduates have entered the field of education in increasing numbers. The Department's multidisciplinary approach to the study of literature teaches students to think critically and develops analytical skills that can be applied to a wide range of problems. It also helps students to develop the interpretive and writing skills necessary to express their own ideas clearly and persuasively. Whether they enter business or professions such as law, education, or government, French majors acquire the intellectual and communicative skills requisite for success.

The UCI Career Center provides service to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the Major

French 100A-B, 101A-B-C, and nine other upper-division courses taught in the Department. Students may take up to two courses from the Department offerings taught in English.

Residence Requirement for the Major: At least five upper-division courses (above 101A-B-C) required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

French 100A-B plus five other French courses, four of which must be upper-division. Prerequisite: French 2C or equivalent.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

PLANNING A PROGRAM OF STUDY

The student and the faculty advisor (assigned upon entering the major) should plan a coherent program of courses to fulfill the major requirements.

The Department encourages the student to study in France, either through the University's Education Abroad Program or independently. Information is available in the Department Office.

Students should consult with faculty members concerning career plans in areas such as teaching, industry, journalism, law, and civil service.

Undergraduate Program in Italian

The Department offers a minor in Italian. Lower-division courses gradually develop the student's mastery of spoken and written Italian and, as the sequence progresses, introduce readings in literature and culture.

A third-year, two-quarter sequence is designed to improve the student's proficiency in aural and written comprehension as well as in speaking and writing skills. A three-quarter introduction to Italian literature acquaints the student with major historical periods and genres, and introduces the student to various critical concepts and vocabulary. Tutorial and seminar courses provide the advanced student with an opportunity for in-depth study of a single author, critical problem, or historical period. From year to year, the Department's offerings in literature vary considerably; students interested in planning course work in Italian should consult with Department of French and Italian faculty.

Students are encouraged to pursue their interests through a major in Humanities, leading to a B.A. degree in Humanities, which combines Italian literature, culture, history, art, and music.

Departmental Requirements for the Minor

Italian 100A-B, 101A-B-C, 130, and one other course outside the Department on Italian history, film, art, or other aspect of Italian culture, chosen in consultation with Department of French and Italian faculty.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Graduate Program in French

The Department of French and Italian offers a graduate program in French with a strong theoretical, cultural, and multidisciplinary orientation. In addition to their specialties in the traditionally constituted fields of French literature, the faculty is actively involved in related disciplines such as philosophy, psychoanalysis, anthropology, history, women's studies, cultural studies, and comparative literature. A theoretical and multidisciplinary approach to literature is a demanding one requiring, among other things, a restless critique of its own evaluations and concepts.

In small seminars designed to stimulate intellectual exchange, students and faculty explore literature written in French within the context of relevant historical, cultural, or theoretical issues. They raise questions engaged by literary discourse and study critically the theories formulated to account for it. Courses tend to cross lines between disciplines and to emphasize both the close reading of texts and modern theories of history, culture, literature, and criticism. Students are encouraged to pursue their work in related fields outside the Department. They are also strongly encouraged to study abroad at some point during their graduate career.

MASTER OF ARTS IN FRENCH

The Master of Arts degree is considered to be a step toward the Ph.D. degree; only students intending to pursue studies for the doctorate are admitted to the program. Performance on the Master's examination, usually given in the second year of graduate study, determines entrance into the doctoral program. Most candidates take a minimum of 11 graduate courses. All entering graduate students are counseled by the graduate advisor. During the winter quarter of each year, the teaching performance and academic

record of each student who is a Teaching Assistant are evaluated. All graduate students are also given a written evaluation of their work on a course-by-course basis. Proficiency in a foreign language in addition to French is required for the M.A. degree (proficiency is defined as the equivalent of the level attained at the end of course 2C).

All M.A. candidates are required to pass the Master's examination. Plan I allows particularly well-prepared students to receive special permission to take nine courses and to write a short thesis, for which two course credits are given. Under Plan II candidates take a minimum of 11 courses and have the option of taking a written examination or of writing a research paper. The written examination consists of essays that demonstrate skills of literary analysis and an understanding of theoretical concepts and their application to the study of specific literary texts. The research paper involves a carefully developed and well-documented analysis that reflects extensive critical reading. In all cases students also take an oral examination that focuses on the written essays or the research paper and that seeks as well to test the student's broader knowledge.

The Master's examination is normally given at the end of the winter quarter of the second year of studies. Students who are Teaching Assistants normally take the examination in the fifth quarter of their studies.

Students transferring to the program from other graduate institutions may receive credit for up to two courses, subject to the approval of the Department. A maximum of five courses may be transferable from other UC graduate programs, with departmental approval.

DOCTOR OF PHILOSOPHY IN FRENCH

Upon successful completion of the Master's examination and admission to the Ph.D. program, or upon admission with a Master's degree from an accredited institution, a Guidance Committee is appointed in consultation with the student. The Guidance Committee advises the student in the choice of courses to help prepare for the written and oral Qualifying Examinations leading to advancement to candidacy for the Ph.D. degree. The Committee is comprised of five faculty members: three from the Department, one from outside the Department who represents the student's outside area of specialization, and, for the qualifying examination, another faculty member not affiliated with the Department who represents the faculty-at-large. One member of the Committee is expected to direct the dissertation.

Language Requirements: A reading knowledge of two foreign languages relevant to the student's area of specialization and subject to the approval of the Guidance Committee.

Course Requirements: A minimum of 15 graduate courses or seminars in French beyond the B.A. and three graduate courses outside the Department in areas related to the field of specialization are required.

A student may pursue the Ph.D. with particular emphasis in literary theory by taking additional course work in the Department and in the Critical Theory Program beyond the minimum number required.

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Teaching: Since the overwhelming majority of Ph.D. candidates plan to teach, the Department recognizes its responsibility to train them as teachers. Therefore, as far as it is possible, all candidates without previous teaching experience are required to participate in a program of supervised teaching for at least one year.

Qualifying Examination—Written and Oral: Upon completion of course work, the student takes a series of examinations involving problems of a critical and interpretive nature. The Ph.D. Examination encourages focus and depth at a time when the student's area

of specialization and eventual dissertation topic should be taking an increasingly clearer shape. In consultation with the Guidance Committee, the student defines the precise nature and scope of four topics for the examination, which consists of written and oral parts. Upon successful completion of the written and oral Qualifying Examinations, the student is advanced to candidacy for the Ph.D. degree.

Dissertation: The dissertation topic chosen by the candidate will normally, but not necessarily, fall within one of the major fields covered by the Qualifying Examination. The dissertation must be defended in an oral examination and approved by the Doctoral Committee before the candidate is recommended for the degree.

Three faculty members, chosen by the candidate, proposed by the Department, and appointed on behalf of the Dean of Graduate Studies and the Graduate Council, constitute the Doctoral Committee which directs the preparation and completion of the doctoral dissertation. The Doctoral Committee supervises an oral defense, the focus of which is the content of the doctoral dissertation, and certifies that a completed dissertation is satisfactory.

Courses in French

LOWER-DIVISION

1A-B-C Fundamentals of French (5-5-5) 1A (F), 1B (F, W), 1C (W, S). Students are taught to conceptualize in French as they learn to understand, read, write, and speak. Classes are conducted entirely in French and meet daily. Language Laboratory attendance is required. French 1A-B-C and S1AB-BC may not both be taken for credit.

S1AB-BC Fundamentals of French (7.5-7.5) Summer. First-year French in an intensified form. Same as French 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: French S1AB or 1B, or two years of high school French. Formerly French S1A-B. French S1AB-BC and 1A-B-C may not both be taken for credit.

2A-B-C Intermediate French (4-4-4) 2A (F, S), 2B (F, W), 2C (W, S). Texts of contemporary literary or social interest provide the focus for more advanced conversation, reading and composition. Classes are conducted entirely in French. Prerequisite: normally three years of high school French or one year of college French. French 2A-B-C and S2AB-BC may not both be taken for credit. (2A: VI)

S2AB-BC Intermediate French (6-6) Summer. Second-year in an intensified form. Same as French 2A-B-C during academic year. Prerequisite: French 1C or three years of high school French. Formerly French S2A-B. French S2AB-BC and 2A-B-C may not both be taken for credit. (S2AB: VI)

13 Conversation (4) F, W, S. Helps students increase their fluency and enrich their vocabulary. Prerequisite: French 2C or equivalent.

UPPER-DIVISION

100 Composition and Grammar Review

100A Advanced Grammar and Composition (4) F, W. Systematic review of grammar with written compositions on various topics. Students study and practice forms of descriptive and imitative writing, techniques of translation, and textual analysis including *explication de texte* of prose and poetry passages. Prerequisite: French 2C or equivalent.

100B Essay Writing (4) W, S. Trains students to write about literature in French, and introduces them to specific critical approaches and strategies for utilizing library resources, organizing arguments, and developing a coherent essay. Topics for weekly compositions drawn from texts of literary, historical, and social interest. Prerequisite: French 100A or equivalent.

101A-B-C Introduction to French Literature (4-4-4) F, W, S. Introduction to all of the genres of a narrowly defined period in relationship to a specific literary problem. In French. French 100A and 100B are recommended as prerequisites but may be taken concurrently with French 101A-B-C. (VII-B)

105 Advanced Composition and Style (4). Helps the student attain greater proficiency and elegance in the written language. Prerequisites: French 100B.

NOTE: The prerequisite for the following upper-division courses is French 101A-B-C or the equivalent. The content of these upper-division courses changes yearly. Courses numbered 110 through 198, except 139 and 180, may be repeated for credit when topics change.

110 Problems in French Culture (4). Same as Women's Studies 170FB when topic is appropriate. (VII-B)

111 French Phonetics (4) W. Study of the sound structure of French. Introduction to elements of general phonetics, contrastive (French/English) phonetics, and French phonetics and phonology. Designed to help students improve their pronunciation. Also serves as a preparatory course for language teaching. Prerequisite: French 2C or equivalent. Same as Linguistics 164B. Formerly French 11. *Not offered 1998-99.*

116 Sixteenth-Century French Literature (4). (VII-B)

117 Seventeenth-Century French Literature (4). (VII-B)

118 Eighteenth-Century French Literature (4). (VII-B)

119 Nineteenth-Century French Literature (4). (VII-B)

120 Twentieth-Century French Literature (4). (VII-B)

125 African Literature of French Expression (4). Introduction to the principal African and Caribbean works written in French. Offers opportunity to study literature and culture in French in a non-European context. Lectures and papers in French. (VII-B)

127 Francophone Literature and Culture (4). Literature and cultures of the francophone world. Same as Women's Studies 170FC when topic is appropriate. (VII-B)

130 Junior-Senior Seminar in French Literature (4). Provides advanced students in French literature an opportunity to explore in-depth selected topics in French literature and culture in a seminar environment. Class discussion and independent research projects are emphasized. Prerequisite: two upper-division French literature courses beyond French 101A-B-C. May be repeated for credit as topics vary.

139 Literature and Society (4). In English. Readings of masterpieces of French literature in their social, political, and historical contexts. Course requires at least 4,000 words of assigned composition based on French works. Several essays required. Topics vary. French majors have admission priority. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. May be repeated for credit as topics vary. (VII-B)

140 Studies in French Literary Genre (4)

150 Topics in French Literature and Culture (4). In English. Same as Women's Studies 170FA when topic is appropriate. (VII-B)

160 French Cinema (4) F, W, S, Summer. In English. May have discussion sections in French. May be repeated when topic varies, but can be taken only twice for credit toward the major. Same as Film Studies 160. (VII-B)

170 History and Literature (4)

171 Politics and Literature (4)

180 Junior/Senior Seminar in Theory and Criticism (4). May be repeated for credit once when topics vary.

199 Special Studies in French (1 to 4) F, W, S. Open only to outstanding students. Research paper required. Prerequisites: consent of instructor and of Department Chair; student must submit a written description of the proposed course to the instructor and the Chair prior to the beginning of classes. May be repeated for credit as topics vary.

GRADUATE

The content of these courses changes yearly. Students should also consult the offerings of the Department of Linguistics.

In addition to the following courses, graduate students in French might find these Humanities courses of special interest: Humanities 200 (History and Theory); Humanities 220 (Literary Theory and Its History); and Humanities 270 (Advanced Critical Theory).

200 Selected Topics in French Linguistics (4). May be repeated for credit when topics vary.

201 History of the French Language (4)

202 Contrastive French Phonology (4)

203 Contrastive French Morphology and Syntax (4)

NOTE: Courses numbered 216 through 399, except 280 may be repeated for credit when topics vary.

216 Studies in Renaissance Literature (4)

217 Studies in Seventeenth-Century Literature (4)

218 Studies in Eighteenth-Century Literature (4)

219 Studies in Nineteenth-Century Literature (4)

220 Studies in Twentieth-Century Literature (4)

231 Studies in Fiction (4)

232 Studies in Nonfictional Prose (4)

233 Studies in Poetry and Poetics (4)

240 Studies on a Major Writer (4)

250 Studies in Theory and Criticism (4)

254 History and Literature (4)

272 Cultural Studies (4)

280 Directed Study in French Literature (4) F, W. Restricted to graduate students taking the Master's examination the same quarter.

290 Research in French Language and Literature (4-4-4) F, W, S. A project proposal must be prepared by the student and approved by the faculty member who will direct the project. This proposal, with the faculty member's signature, must be given to the Chair for approval and will be put in the student's file. This procedure can be completed before or after registration or at the very latest must be completed by the end of the first week of classes. After the end of the first week no 290s can be approved. M.A. candidates may take this course once; Ph.D. candidates may take it twice.

291 Research in French Linguistics (4-4-4) F, W, S. A project proposal must be prepared by the student and approved by the faculty member who will direct the project. This proposal, with the faculty member's signature, must be given to the Chair for approval and will be put in the student's file. This procedure can be completed before or after registration or at the very latest must be completed by the end of the first week of classes. After the end of the first week no 291s can be approved. M.A. candidates may take French 291 or French 290 only once; Ph.D. candidates may take French 291 or French 290 twice.

299 Dissertation Research (4 to 12) F, W, S

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

Courses in Italian

LOWER-DIVISION

1A-B-C Fundamentals of Italian (5-5-5) F, W, S. Students are taught to conceptualize in Italian as they learn to understand, read, write, and speak. Classes are conducted entirely in Italian and meet daily. Language Laboratory attendance is required.

2A-B-C Intermediate Italian (4-4-4) F, W, S. Texts of contemporary literary or social interest provide the focus for more advanced conversation, reading, and composition. Classes are conducted entirely in Italian. Prerequisite: normally three years of high school Italian or one year of college Italian. (2A: VI)

99 Special Studies in Italian (4) F, W, S. Both student and instructor arrive at the theme of the course and the critical approach to be followed in consultation. Intended to offer courses in Italian otherwise unavailable. Prerequisites: consent of instructor and Department Chair; student must submit a written description of the course to the Chair prior to the first week of classes to obtain consent. May be repeated for credit when topic changes.

UPPER-DIVISION

100A-B Italian Language and Civilization (4-4). Systematic review of grammar with written and oral composition on topics chosen from readings on Italian culture and civilization. Prerequisite: completion of Italian 2C or equivalent. (VII-B)

101A, B, C Introduction to Italian Literature (4, 4, 4). Introduction to all of the genres of a narrowly defined period in relationship to a specific literary problem. In Italian. Prerequisite: Italian 2C or equivalent; Italian 100A-B recommended. (VII-B)

140A-B-C Readings in Medieval and Renaissance Literature (4-4-4). In English.

199 Tutorial in Italian Literature and Culture (4-4-4) F, W, S. The student must submit a written description of the proposed course to the instructor and the Chair prior to the beginning of the course. Prerequisites: consent of instructor and approval of the Department Chair.

DEPARTMENT OF GERMAN

120 Humanities Office Building II; (949) 824-6406
Meredith Lee, **Department Chair**

Faculty

- Gail Hart, Ph.D. University of Virginia, *Associate Dean of Humanities, Undergraduate Study, and Professor of German* (eighteenth- and nineteenth-century German literature, drama, fictional prose)
Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German* (twentieth-century German literature, cultural studies, critical theory, feminism, film)
Ruth Kluger, Ph.D. University of California, Berkeley, *Professor Emerita of German* (Kleist, nineteenth-century literature, Stifter, Holocaust literature)
Meredith Lee, Ph.D. Yale University, *Department Chair and Professor of German* (lyric poetry, eighteenth-century literature, Goethe, German-Scandinavian literary relations)
Herbert Lehnert, Ph.D. University of Kiel, *Research Professor of German* (modern German literature)
William J. Lillyman, Ph.D. Stanford University, *Research Professor of German* (Romanticism, Goethe, Tieck)
Bert Nagel, Ph.D. University of Heidelberg, *Professor Emeritus of German* (medieval German literature)
Jens Rieckmann, Ph.D. Harvard University, *Professor of German* (twentieth-century literature, fin-de-siècle Austria, Hofmannsthal, Thomas Mann)
Thomas P. Saine, Ph.D. Yale University, *Professor of German* (eighteenth-century German literature, Goethe)
John H. Smith, Ph.D. Princeton University, *Associate Professor of German* (eighteenth- and nineteenth-century literature and intellectual history, literary theory)

The Department of German pursues a program of German studies as part of the humanistic endeavor to understand and evaluate culture. Departmental courses are focused on language, literature, and film *in context*, that is, within the historical, social, intellectual, and political circumstances of their production and continuing reception. Clearly, we come to understand ourselves and our immediate culture much better through the study of different languages and cultural systems. Therefore, university language study is not merely a matter of memorizing vocabulary and practicing pronunciation. It is the serious investigation of a foreign linguistic system and the cultures which are defined by it. It is difficult—in fact, nearly impossible—for us to scrutinize and analyze something we know as intimately as our native language, and yet this is the order by which we formulate our thoughts and the order which may sometimes formulate our thoughts for us. The “foreignness” of a foreign language allows us to objectify an entire linguistic system, to observe its structure and its usage, and then to make comparisons with our own linguistic situation. This kind of knowledge of one’s *native* language is the foundation of critical reflection on texts of any nature—historical, philosophical, literary, political, legal, journalistic, and others. Thus, serious study of a foreign language is absolutely crucial to a university education. The Department teaches its language courses with this principle in mind and seeks to provide its students with a framework for these linguistic and cultural comparisons.

Department literature and film courses offer a variety of critical perspectives from historical, social, or politically engaged readings to feminist and post-structuralist analysis. Topics range from studies of individual authors, periods, and genres to the history of German-language literature and film, the theory of criticism, and the relations of German-language literature to other literatures.

Undergraduate Program

The German major offers alternative emphases, one in literature and another in linguistics. The majority of students choose the literature major.

All courses in the Department are taught in German to the extent compatible with the aim of the course. In the basic courses, students develop an understanding of the language and its cultural context while learning the necessary skills for oral and limited written communication. Sessions in the language laboratory, the recently updated Language Learning Resource Center, assist students with their speaking and listening skills. By the end of the first year, students have learned the basic structure of the German language as they develop fundamental reading, writing, and speaking skills and listening comprehension.

The intermediate and advanced levels reinforce these basic skills, while concentrating on increasing reading speed, writing fluency, and cultural competency.

After completion of the intermediate level, students enroll in the Introduction to Literature course (German 101), which provides an introduction to genre, periodization, and the German terminology used in critical analysis. This course is taken in preparation for the upper-division literature and film courses (German 102, 117, 118, 119, 120), which range historically from the Reformation to the present and cover a variety of topics and approaches. A further series of courses (German 130, 140, 160) is taught in English for both German students and those who do not speak the language, and covers topics in literary theory and criticism as well as German-language cinema.

Students are encouraged to participate in work- and study-abroad programs during the summer and their junior year. The Department recommends the University’s Education Abroad Program (EAP) in Göttingen, Germany. Göttingen is an old university town in central Germany, where EAP students complete an advanced language program and enroll in university courses with great success, usually achieving native or near-native fluency during this exciting year abroad. All EAP courses taken in Göttingen are accepted for UCI graduation credit and many contribute to fulfillment of the German major and minor requirements. More information is available from your academic counselor.

Students are placed in German courses according to their years of previous study. In general, one year of high school work is equated with one quarter of UCI work. Thus students with one, two, three, and four years of high school German will normally enroll in German 1B, 1C, 2A, and 2B respectively. Exceptions to this placement procedure must have the approval of the director of first- or second-year German instruction. Students with transfer credit for college-level German may *not* repeat those courses.

CAREERS FOR THE GERMAN MAJOR

The ability to speak and write German can open up opportunities in communications, foreign trade and banking, transportation, government, science and technology, tourism, library services, and teaching. Because German plays such an important role in modern technology, employers in international law, business, the foreign service, the airline industry, journalism, professional translating, and all levels of education increasingly seek students with a knowledge of German. German is excellent preparation for professional schools. It can be combined successfully with work in the

natural sciences, business and management, and the computer sciences, and it is invaluable for advanced work in the humanities and the arts.

Recent graduates of the German Department have begun careers in international law, business, the foreign service, the airline industry, journalism, and all levels of education, including university teaching.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the German Major with Literature Emphasis

German 100A-B-C; German 101; eight upper-division literature courses; and two courses selected from German 140, 150, 160, Linguistics 3, English and Comparative Literature CL 50A, B, C, a course in German history, German philosophy, or German political science, as approved by the advisor for the major. The upper-division writing requirement must be met by additional course work either within or outside the Department.

Students who plan to acquire a teaching credential, or intend to do graduate work in literature, are encouraged to take the major with literature emphasis.

Departmental Requirements for the German Major with Linguistic Emphasis

German 100A-B-C; German 101; five upper-division literature courses; Linguistics 3, 10, 20; one course selected from Linguistics 170, a Middle High German course, or a course in the history of the German Language; one course selected from German 140, 150, 160. The upper-division writing requirement must be met by additional course work either within or outside the Department.

The German major with linguistic emphasis is recommended especially for students who intend to do graduate work in linguistics or enter a linguistics-related profession.

Residence Requirements for the Major: At least five of the upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

Seven upper-division courses, which must include German 100A-B-C and German 101. Not more than one course from German 140, 150, or 160 may be counted for the minor. German 139 may not be used to satisfy minor requirements.

Residence Requirement for the Minor: Four upper-division courses required for the minor must be completed successfully at UCI.

Distinguished Visiting Professors

The Department's Distinguished Visiting Professors program brings students into direct contact with some of the outstanding scholars in the field of German Studies. Distinguished Visiting Professors typically visit for one quarter, during which they teach a graduate course and an undergraduate course and present a lecture to which students, faculty, and other members of the University community are invited. Program participants include Bengt Algot Sørensen (Odense), Uwe Ketelsen (Bochum), Peter Pütz (Bonn), Leslie Adelson (Ohio State), Hans Wysling (Zürich), Hans-Wolf Jäger (Bremen), Norbert Oellers (Bonn), Hans Rudolf Vaegt

(Smith College), Heinrich Detering (Göttingen), Wolfgang Martens (Munich), Anna Kuhn (UC Davis), and Renate Möhrmann (Köln).

Graduate Program

In its graduate courses the Department stresses theoretical understanding of the nature of literature and culture. Seminars focus on German literary and cultural development after 1700. An emphasis in Critical Theory is available to graduate students in all departments of the School of Humanities. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

The graduate program in German is essentially a program leading to the Ph.D. The M.A. requires a minimum of one year in academic residence and must be completed in no more than two years of full-time graduate study. The Department will decide after completion of the M.A., at the latest, whether or not to permit the student to continue in the Ph.D. program. The M.A. thus may be in some cases a terminal degree. In those cases where the student enters the UCI graduate program in German with an M.A. from another institution, the Department will evaluate the student's progress during the first year of study before deciding to allow continuation toward the Ph.D.

Students who enter with normal academic preparation and pursue a full-time program of study ordinarily should be able to earn the Ph.D. degree within six years or less.

MASTER OF ARTS IN GERMAN

Before entering the program, a candidate is expected to have the equivalent of our undergraduate major. Students with a bachelor's degree in another subject may be considered for admission. Normally their course of studies will have to be extended in order to make up for the deficiency. However, each case is considered individually by the faculty. The minimum course requirement for the M.A. degree is nine courses, eight of which must be taken within the Department of German. Reading knowledge of a foreign language other than German also is required for the M.A. degree. Whenever possible, a candidate is urged to complete this requirement before entering the program. Further requirements follow.

The Preparation of a Reading List. All candidates should prepare as early as possible a list of works read in the field of German literature, both primary texts and critical works. This list should preferably be augmented by critical texts and by works from other literatures which, in the candidate's opinion, relate to the German works on the list. Since it should ultimately contain representative selections from various eras of German literature and some works of criticism, a tentative list must be discussed with the graduate advisor before the end of the fall quarter of the year in which the candidate expects to receive the M.A. Candidates should indicate on the list a number of works with which they are especially familiar. In its final form (including works read during the course of study both in and out of class) the list will be submitted together with the essay two weeks before the oral examination. It is the student's responsibility to keep the reading list current.

The Master's Essay. The purpose of the written part of the M.A. comprehensive examination is to show the candidate's methodological progress in interpreting German literature. It consists of an essay in which a text is elucidated and related to: (a) pertinent works by the same author, (b) its social and historical context, and (c) other works of German or other literatures with which the candidate is familiar. The level of the discussion will normally be enhanced by the candidate's knowledge of the relevant secondary literature. The topic of the essay should be tentatively formulated and reported to the graduate advisor before the end of the second quarter of the student's residence.

The Oral Examination. During the oral examination the following items will be discussed: (a) the essay, (b) the reading list. The discussion based on the reading list will focus on works which the student knows well, but may broaden into other areas.

One Year of Residence.

DOCTOR OF PHILOSOPHY IN GERMAN

The Department requires a minimum of 22 approved courses from students entering with a bachelor's degree. These may include courses in philosophy, history, comparative literature, and others suitable for the individual student's program of study. The student also will participate in each of the German Department's colloquia. The student will augment the reading list and keep it current during the whole course of study. At least two years of residence are required.

Students entering with the master's degree will be advised individually as to remaining course requirements.

Since the majority of Ph.D. candidates choose careers as teachers, the German Department recognizes its obligation to offer them preparatory experience. Therefore, all candidates for the Ph.D. are required to teach under the supervision of a faculty member at least one course in each of three quarters (for which they will receive credit as German 399). Three of these courses may be counted toward the 22 courses required for the Ph.D.

Comprehensive Examination. There are two parts to the examination. In order to fulfill the written examination requirement the student will choose either (1) to present a lecture to the faculty and to the other graduate students, or (2) to write a three-part examination (one part on a significant author, one on a major genre, and one on an historical period) within a period of two weeks. These examination essays may be either closed-book or take-home, by agreement with the candidate's examination committee. The examination essays or the lecture will be on a text or texts selected by the faculty from a reading list submitted by the student for the comprehensive examination. The second part of the comprehensive examination is the formal oral qualifying examination of up to three hours duration ranging over the whole field of the student's studies, to be taken within two weeks after completion of the written examination. The student will submit the reading list at least two weeks before the written examination after consultation with the members of the examination committee.

Language Requirements. The candidate must demonstrate reading knowledge of two languages or extensive competence in one language other than German or English. Choice of language(s) depends on the student's area of specialization. French and Latin are recommended. For the various ways in which these requirements may be fulfilled, the student should see the graduate advisor.

Dissertation. Toward the end of the second year of study, the student should formulate a tentative dissertation topic. Three faculty members proposed by the Department and appointed on behalf of the Dean of Graduate Studies and the Graduate Council constitute the Doctoral Committee which directs the preparation and completion of the dissertation. The Doctoral Committee certifies that a completed dissertation is satisfactory through the signature of the Committee members on the signature page of the dissertation.

Courses in German

LOWER-DIVISION

1A-B-C Fundamentals of German (5-5-5) F, W, S. Basic language skills of understanding, speaking, reading, and writing. Classes conducted in German. Language Laboratory attendance is required. German 1A-B-C (10A-B-C) and S1AB-BC may not both be taken for credit.

R1A-B-C Fundamentals of German (with emphasis on reading) (4-4-4) F, W, S. For students not planning to major in German who want to develop reading ability rapidly. Does not serve as prerequisite for any higher-level course in German.

S1AB-BC Fundamentals of German (7.5-7.5) Summer. First-year German in an intensified form. Same as German 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: German S1AB or 1B, or two years of high school German or one semester of college-level German. German S1AB-BC and 1A-B-C (10A-B-C) may not both be taken for credit.

2A-B-C Intermediate German (4-4-4) F, W, S. Conversation, reading, and composition skills; texts of literary and social interest. Intensive review of grammar. Conducted in German. Prerequisite: German 1C. (2A: VI)

S2AB-S2BC Intermediate German (6-6) Summer. Second-year German in an intensified form. Same as German 2A-B-C during academic year. Prerequisite for S2AB: German 1C or three years of high school German or two semesters of college-level German; for S2BC: German 2B or S2AB, or five years of high school German, or three semesters of college-level German. German S2AB-S2BC and German 2A-B-C may not both be taken for credit. (S2AB: VI)

10A-B-C Fundamentals of German: Individualized Instruction (1 to 5, 1 to 5, 1 to 5) F, W, S. Basic language skills of understanding, reading, writing, and speaking. For students wishing to advance at an individual pace. Prerequisite: junior standing. Students may complete the first-year German sequence by combining quarters selected from German 1A-B-C and 10A-B-C. Credit will be given for 1A or 10A, 1B or 10B, and 1C or 10C. German 10A-B-C (1A-B-C) and S1AB-BC may not both be taken for credit.

50 Science, Society, and Mind (4) F, W, S. Historical, philosophical, and literary reflections by German writers on the rise of the modern sciences. In English. Designed primarily for nonmajors. May be taken three times for credit as topics vary. (IV, VII-B)

53 Advanced Conversation (2) S. Includes reading of political and cultural material. Conducted in German. May be repeated for credit. Prerequisite or corequisite: German 2C or consent of instructor.

99 Special Studies German (1 to 5) F, W, S. Consultation with instructor necessary prior to enrollment. Prerequisite: consent of instructor.

UPPER-DIVISION

NOTE: Upper-division courses normally are taught in German. Exceptions are German 103, 139, 140, 150, and 160.

100A-B-C Advanced Composition (4-4-4) F, W, S. Competence in writing and reading expository German. Prerequisite: German 2C or equivalent or consent of instructor. (VII-B)

101 Introduction to Literature (4) F. Sample interpretations of poetry and prose. Introduction to critical language in German. Prerequisite: German 2C. (VII-B)

102A Literature and Society Since World War II (4). Interdisciplinary introduction to recent German literature not only as an aesthetic phenomenon but also as a social and political force. Methodological problems arising from an analysis of literature in its historical context. Prerequisite: German 2C or consent of instructor. (VII-B)

102B Literature and Society 1918–1945 (4). See above description. Prerequisite: German 2C or consent of instructor. (VII-B)

103 German Phonetics (4) S. Contrastive analyses of the sound of English and German. Emphasis on standard German pronunciation. Prerequisite: German 2C. *Not offered 1998-99.*

NOTE: Courses numbered 117 to 199 (with the exception of German 139) may be repeated provided course content changes. German 101 or consent of instructor is prerequisite for courses 117 to 130.

117 Topics in German Literature and Culture 750–1750 (4). Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. Same as Women's Studies 170GA when topics are appropriate. (VII-B)

118 Studies in the Age of Goethe (4). Individual authors such as Lessing, Goethe, Schiller, Kleist, and Hölderlin, or the drama of the "angry young men" of the German 1770s. Same as Women's Studies 170GB when topics are appropriate. (VII-B)

119 Studies in Nineteenth-Century German Literature and Culture (4). Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena. Same as Women's Studies 170GC when topics are appropriate. (VII-B)

120 Studies in Twentieth-Century German Literature and Culture (4). Individual authors such as Thomas Mann, Brecht, and Kafka, or topics addressing questions of genre and/or social-literary problems. Same as Women's Studies 170GD when topics are appropriate. (VII-B)

130 Topics in German Literature and Culture (4). Literary and cultural topics not fully contained within the periods listed above, such as "German Comedy" and "Turn-of-the-Century Vienna." Same as Women's Studies 170GE when topics are appropriate. May be repeated for credit as topics vary.

139 Writing about Literature and Culture (4). In English. Requires at least 4,000 words of assigned composition based upon readings in Germanic literatures and cultures. Several essays required. Topics vary. German majors given admission priority. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor. Same as Women's Studies 170GF when topics are appropriate.

140 Topics in Literary Theory and Criticism (4). In English. Theoretical dimensions of literary criticism and the German philosophical tradition. Topics such as Marxism, Freudian thought, the German Idealistic tradition of aesthetics, Historicism, twentieth-century hermeneutics, Frankfurt School, and *Rezeptionsästhetik* are explored in a selection of theoretical, critical, and literary texts. Same as Women's Studies 170GG when topics are appropriate.

150 Germanic Literatures and Cultures (4). In English. Major works of Germanic literature and culture in context. Prerequisite applicable only when offered as 150W: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. Same as Women's Studies 170GH when topic is appropriate. (VII-B)

160 German Cinema (4). Historical, theoretical, and comparative perspectives on German cinema. Same as Film Studies 160 or Women's Studies 170GJ when topic is appropriate. (VII-B)

199 Individual Study (1 to 4) F, W, S. May be repeated for credit as topics vary.

GRADUATE

All graduate courses offered in the Department fall under the generic titles German 200, 210, 220, and 230. Course titles and contents change according to the instructor teaching them; courses offered under these numbers may be repeated for credit provided the content has changed. Complete course descriptions are available quarterly from the Department and School of Humanities. Applicants and other interested students are encouraged to contact the Department for a description of current offerings.

200 Literary Criticism (4)

210 Literary Theory (4)

220 Selected Topics in German Linguistics (4)

230 Literary and Cultural History (4)

290 Independent Study (4). Counted toward course requirements for the M.A. or Ph.D. A term paper or project is required. Letter grade only. May be repeated for credit.

298 Independent Directed Reading (4 to 12). For students preparing for doctoral examination. Satisfactory/Unsatisfactory only.

299 Dissertation Research (4 to 12). For students who have been admitted to doctoral candidacy. Satisfactory/Unsatisfactory only.

398A-B The Teaching of German (2-2) F, W, S. Required of all Teaching Assistants in the German Department. Also open to present and prospective teachers of German who are not Teaching Assistants.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF HISTORY

300 Humanities Office Building; (949) 824-6521

Steven C. Topik, **Department Chair**

Faculty

- Marjorie A. Beale, Ph.D. University of California, Berkeley, *Assistant Professor of History* (European intellectual and cultural)
- Barbara H. Becker, Ph.D. The Johns Hopkins University, *Assistant Adjunct Professor of History* (history of science)
- Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History* (American culture, African-American history)
- Yong Chen, Ph.D. Cornell University, *Assistant Professor of History and Asian American Studies* (Asian American history)
- Alice Fahs, Ph.D. New York University, *Assistant Professor of History* (U.S. intellectual/cultural history)
- Thelma Foote, Ph.D. Harvard University, *Director (Interim) of the Program in African-American Studies and Associate Professor of History and African-American Studies* (early America, African-American history)
- Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics* (Roman empire, Classics)
- Dorothy Fujita Rony, Ph.D. Yale University, *Assistant Professor of Asian American Studies and History* (Asian American, Filipino American history)
- Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History* (Chicana/Chicano and Latina/Latino Studies, American working-class)
- James B. Given, Ph.D. Stanford University, *Professor of History* (medieval Europe)
- Douglas M. Haynes, Ph.D. University of California, Berkeley, *Assistant Professor of History* (social and cultural history of modern Britain, social history of modern medicine)
- Lamar M. Hill, Ph.D. University of London, *Professor of History* (Tudor-Stuart Britain)
- Robert V. Hine, Ph.D. Yale University, *Professor Emeritus of History* (intellectual history of the American West)
- Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor of History* (social history of science)
- Jon S. Jacobson, Ph.D. University of California, Berkeley, *Professor of History* (European international)
- Michael P. Johnson, Ph.D. Stanford University, *Professor Emeritus of History* (American social and political)
- Lynn Mally, Ph.D. University of California, Berkeley, *Associate Professor of History* (modern Russian and Soviet)
- Samuel C. McCulloch, Ph.D. University of California, Los Angeles, *Professor Emeritus of History* (British empire and commonwealth)
- Henry Cord Meyer, Ph.D. Yale University, *Professor Emeritus of History* (twentieth-century Europe)
- Robert G. Moeller, Ph.D. University of California, Berkeley, *Professor of History* (modern Germany, European women)
- Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor of History* (American foreign relations)
- Patricia A. O'Brien, Ph.D. Columbia University, *Director of the UC Humanities Research Institute and Professor of History* (modern French social)
- Spencer C. Olin, Ph.D. Claremont Graduate School, *Professor Emeritus of History* (American social and political)
- Kenneth L. Pomeranz, Ph.D. Yale University, *Associate Professor of History and East Asian Languages and Literatures* (modern Chinese)
- Mark S. Poster, Ph.D. New York University, *Professor of History and of Information and Computer Science* (modern European intellectual)
- Kathryn Ragsdale, Ph.D. University of Chicago, *Assistant Adjunct Professor* (social and cultural history of modern Japan)
- David C. Rankin, Ph.D. The Johns Hopkins University, *Associate Adjunct Professor of History* (American social, African-American)
- Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History* (Latin America, Mexico)
- Daniel Schroeter, Ph.D. University of Manchester, *Director of Religious Studies, Associate Professor of History, and Teller Family Chair in Jewish History* (Jewish history, Middle East and North Africa)
- Ulrike Strasser, Ph.D. University of Minnesota, *Assistant Professor of History* (early modern continental Europe)
- Timothy Tackett, Ph.D. Stanford University, *Professor of History* (Old Regime Europe, French Revolution)
- Tanis Thorne, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of History and Social Ecology*

Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History* (Latin America)
 Steven C. Topik, Ph.D. University of Texas, *Department Chair and Professor of History* (Latin America)
 Anne Walthall, Ph.D. University of Chicago, *Professor of History and East Asian Languages and Literatures* (early modern and modern Japan)
 Jonathan M. Wiener, Ph.D. Harvard University, *Professor of History* (recent American, theory and history)
 R. Bin Wong, Ph.D. Harvard University, *Professor of History and East Asian Languages and Literatures* (modern Chinese, comparative economic)

Undergraduate Program

The undergraduate program in History is designed to develop critical intelligence and to foster an awareness of ourselves and our world through the study of the past. The Department presents a variety of approaches to history, and each emphasizes basic disciplinary skills: weighing evidence, constructing logical arguments, and exploring the role of theory in historical analysis and human action.

The Department offers a number of lower-division courses open to nonmajors as well as majors, most of which fulfill part of the UCI breadth requirement. The Department requires all majors to take a survey course in world history, United States history, European history, Latin American history, or East Asian history. These courses are also open to nonmajors.

Students who are interested in the study of history but are majoring in other disciplines may minor in History. The minor incorporates elements of the Department's program for majors but allows students enough flexibility to pursue programs in other departments and schools.

Upper-division courses range from the examination of individual nation-states (e.g., Chinese history), to studies of the relations among nation-states (e.g., European International History), to historical analyses of political, socio-economic, and cultural factors (e.g., Women in the United States). Students are also provided the opportunity for small-group learning experiences in a series of colloquia in social history, political history, international history, intellectual history, social thought, and comparative history. The colloquia are conducted as discussion groups and involve close reading and analysis of secondary texts. The research seminar is a one-quarter seminar in primary materials that culminates in the writing of a research paper.

The faculty encourages History majors and minors to study abroad and experience a different culture while making progress toward their UCI degree. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of the many worldwide opportunities that can provide other perspectives on history. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

CAREERS FOR THE HISTORY MAJOR

The training and discipline derived from historical studies provide a valuable experience for all educated persons seeking to understand themselves and their world. Many students who complete undergraduate degrees in the Department of History go on to graduate school in a variety of fields, including history, law, business, international relations, and teacher education. The study of history is valuable preparation for many other careers as well. The strong academic and professional orientation acquired by History majors is necessary to pursue successful careers in such diverse fields as advertising, banking, journalism, management, public relations, publishing, and government service.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a

career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: See page 190.

Departmental Requirements for the Major

Fourteen courses are required: a year-long survey selected from world history (History 21A, 21B, 21C), United States history (History 40A, 40B, 40C), European history (History 41A, 41B, 41C), Latin American history (History 42A, 42B, 42C), or East Asian history (History 43A, 43B, 43C); five upper-division History courses; two colloquia (History 190), one of which is followed by a research seminar (History 192); and three additional lower- or upper-division History courses.

If a student has satisfied the survey requirement with United States or European history, then at least two of the other required History courses selected must deal with Latin American, East Asian, Middle Eastern, North African, or world history. Conversely, if a student has satisfied the survey requirement with Latin American or East Asian history, then at least two of the other required History courses selected must deal with United States or European history.

Residence Requirement for the Major: Three history courses, a colloquium, and a research seminar must be completed successfully at UCI.

Departmental Requirements for the Minor

Seven courses are required: a year-long survey in world history (History 21A, 21B, 21C), United States history (History 40A, 40B, 40C), European history (History 41A, 41B, 41C), Latin American history (History 42A, 42B, 42C), or East Asian history (History 43A, 43B, 43C); and four upper-division History courses.

Residence Requirement for the Minor: At least four upper-division History courses must be completed successfully at UCI.

Graduate Program

The graduate program leading to the M.A. and Ph.D. degrees in History is designed to provide students with both advanced historical skills and a rigorous grounding in historical theory. This combination of theoretical study with training in historical method reflects the Department's conviction that scholars should be encouraged to deal with significant questions about the past and to approach these questions in a methodologically sophisticated way. This approach requires that the student develop the critical abilities necessary to deal with primary sources, secondary syntheses, and the interrelationship of history and theory. Candidates for an advanced degree in History are expected to gain teaching experience as an integral part of their graduate training. Ordinarily this is accomplished through service as a Teaching Assistant.

Basic to the curriculum is the Department's course in History and Theory which deals with both theoretical texts and historical studies that have utilized theoretical concepts and models. The course directs attention to the diverse implications of modernity, to the groups who dominated and were dominated by it, and to the costs and benefits of the process. These matters can be studied most satisfactorily by the historian whose theoretical self-consciousness and methodological facility have been systematically and carefully developed.

The colloquium, a reading course that examines a field's chief historical works, enriches the student's knowledge of the main areas of historical research and develops critical reading skills. A colloquium series is offered annually in American history; biannually (depending on demand) in modern European history, early modern

European history, Latin American history, East Asian history, and ancient history; and occasionally in medieval history. A student may prepare a dissertation in any of these fields.

In addition to the History and Theory sequence and the major field colloquia, students also take a proseminar/research seminar sequence during their first year. The proseminar provides an orientation to the literature on a broad historical subject, and the associated seminar offers guidance in research and writing on problems within this broad area. Students awarded M.A. degrees at other institutions before entering the graduate program at UCI may be exempted from this requirement, subject to evaluation of their M.A. theses.

During the second year of study, Ph.D. students normally take a colloquium series in their second field. They also take a two-quarter research seminar where they have an opportunity to work on problems of their own choosing; students who entered the program with an M.A. degree must also take this seminar. In addition, independent reading and research courses are provided for advanced, specialized study in tutorial form.

The immediate objective for the doctoral student is to develop two fields of competence in addition to History and Theory. Competence in the two fields is demonstrated by the satisfactory completion of three courses in each of these areas. A comprehensive oral examination on the student's major field follows fulfillment of all degree requirements. However, those students who elect a second field administered by another program or department (e.g., Critical Theory) must complete requirements, which sometimes include a written examination, for that field. Competence in History and Theory is demonstrated by satisfactory completion of History 200A and 200B. History 200C may be taken as an elective.

The subsequent objective, to write a distinctive dissertation, is of crucial importance. To assist in accomplishing both objectives, the Department offers intensive consultation with the faculty as well as a lively intellectual atmosphere. Students have long shared in the decision-making processes of the Department, which engages the entire historical community at UCI in the collective pursuit of excellence. Students profit also from a vigorous visiting speakers program that brings scholars from other campuses and other nations to meet and interact with UCI students and faculty.

MASTER OF ARTS IN HISTORY

Requirements for Admission. Although it is desirable that an applicant have the equivalent of an undergraduate major in History, the Department also accepts students who have previously specialized in other subject areas and who show promise of sustained and self-disciplined work in history. Typically, a minimum undergraduate grade point average of 3.3 (B+) is required for admission, with evidence of better work in history. In addition, all applicants are asked to submit three letters of recommendation and scores from the Graduate Record Examination. An example of written work in history from undergraduate courses is also required. Students are accepted for admission for fall quarter only, and the deadline for application for fall admission is February 1.

Program of Study. The M.A. program emphasizes the theoretical and historiographical dimensions of history. Each candidate for the M.A. will choose a graduate advisor who will supervise the student's program. Nine courses are required for the degree: two in History and Theory (History 200A and 200B), three in a colloquium series, three in proseminars (or two in proseminars and one in History 200C), and one in a related first-year research seminar. Students intending to pursue the Ph.D. should begin at once to delineate doctoral interests in order to fit their work for the M.A. into the total program.

Language Requirement. Normally a reading knowledge of one foreign language is required for the M.A. degree. Students in

American history, with an advisor's permission, may substitute a one-quarter departmental course in quantitative methods for the M.A. foreign language requirement. Language competency is demonstrated by passing a departmental examination administered by a faculty member proficient in the chosen language.

Comprehensive Examination. At the end of the final quarter the M.A. candidate must pass a comprehensive oral examination covering the student's major field (e.g., America, Early Modern Europe) and focusing upon material assigned in the three-quarter colloquium series.

Time Limits. The M.A. requires a minimum of one year in academic residence and must be completed in no more than two years of graduate study.

DOCTOR OF PHILOSOPHY IN HISTORY

Requirements for Admission. Applicants submit transcripts, three letters of recommendation, aptitude scores from the Graduate Record Examination, and a sample of written work. In addition, a departmental interview may be required.

Ph.D. students are advised to begin their graduate work at UCI, since those who have taken the M.A. elsewhere will be expected to enroll in the same courses that are required of all incoming students, with the exception of the First-Year Research Seminar. Subject to evaluation of their M.A. theses, these students will be exempted from this requirement. In the second and third years, the greater experience of those who enter with an M.A. may work to their advantage in speeding them to the qualifying examination.

To be admitted formally into the doctoral program, students must satisfactorily pass a departmental evaluation at the end of their first year of study; this includes students who entered with an M.A. from another institution.

Incoming students are admitted for fall quarter only, and the deadline for application for fall admission is February 1.

Art History. A concentration in Art History, leading to the Ph.D. degree in History, is available through the Departments of Art History and History. Information is available in the Department of Art History section of the *Catalogue*.

Feminist Studies. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Program of Study. The Department requires doctoral students to prepare themselves in three different areas:

1. History and Theory.
2. The first field (such as Modern Europe), which is designed as a teaching field as well as the focus of the student's dissertation.
3. The second field (such as American History or Critical Theory), which is designed as a second teaching field.

The courses required in this preparation include the History and Theory sequence, colloquium series in both fields, First-Year Proseminar/Research Seminar sequence, and the Second-Year Research Seminar. The normal academic load is three courses per quarter. However, applicants may be eligible for approved part-time status, which allows students to take a lighter course load at reduced fees for a maximum of two academic years.

Every doctoral student will be assisted by a departmental advisor in the student's general area of study who will be responsible for approving defined fields, guiding the student to consultant faculty, and supervising the examination.

Language Requirements. All students, except as specified below, must demonstrate a reading knowledge of two foreign languages prior to taking the Ph.D. candidacy qualifying examination. Competency in a language may be established either by passing a

departmental examination or through extensive language use in one of the research seminars. The specific languages that may be used to satisfy this requirement depend on the student's first field.

Students in American history may use a substitute for one of their languages. They may take either the Department's graduate course in quantitative methods or two graduate courses in an allied discipline (e.g., critical theory, political theory, cultural anthropology, feminist theory, art history linguistics). Students pursuing the second option are expected to write a substantial paper that demonstrates the value of the allied discipline to historical inquiry. The two courses for the second option may not count toward fulfilling the requirement for the second field.

Qualifying Examination and Dissertation. In preparation for the oral Qualifying Examination, the student will present to the Ph.D. Candidacy Committee a portfolio of three papers totaling at least 45 pages on subjects related to the major field. Successful completion of this examination results in the student's advancement to Ph.D. candidacy. Within one academic quarter of the oral examination, new candidates must meet in a colloquy with their Doctoral Committee to present their dissertation proposal. Once the Doctoral Committee approves the proposal, the student begins intensive work upon the dissertation. The research and writing involved in this effort are expected to require from one to four years. At the end of this period an oral defense of the dissertation normally will be held, focusing on the adequacy of the student's research and thesis.

Students who enter with normal academic preparation and pursue a full-time program of study should be able to earn the Ph.D. degree within seven years.

Courses in History

LOWER-DIVISION

INTRODUCTORY COURSES

Courses of general interest for all students. No prerequisites. Designed to survey particular fields or themes and to introduce methods and premises of historical study. Many of these courses fulfill part of the UCI breadth requirement.

11 Introduction to Peace and Conflict (4). Examines the causes and effects of international violence, focusing on World War I, World War II, and the Cold War. Relates what is known about the dynamics of war to what is understood by conditions of peace. Required for the minor in Global Peace and Conflict Studies. (VII-B)

15 American Ethnic History

15A Native American History (4). Introduction to multiple topics: indigenous religious beliefs and sociopolitical organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. (VII-A)

15B African-American Studies I (4). Introduction to the main contours of the African-American experience from the importation of Africans into the Americas to the present. Focuses on the unique expressions of African-American society and culture. Same as African-American Studies 40A. (IV, VII-A)

15C Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as Asian American Studies 60A and Social Sciences 78A. (VII-A)

21 World History

21A World History: Beginnings to 1650 (4). Treats major themes of world historical development through the mid-seventeenth century, focusing on the Eurasian world, but with secondary emphasis on Africa and the Americas. (IV, VII-B)

21B World History: 1650–1870 (4). Examines three major transformations that made the world of 1870 dramatically different from that of 1650: e.g., the scientific revolution, industrialization, and the formation of modern states and nations. (IV, VII-B)

21C World History Since 1870 (4). Considers several major currents of modern history: technological change and its social effects; changes in gender relations; totalitarianism; peasant revolutions and the crisis of colonization; international migration; and ecological problems. (IV, VII-B)

35 The Formation of Ancient Society. A unified view of the cultures of the Mediterranean world in Antiquity. Focuses on major institutions and cultural phenomena, as seen through the study of ancient literature, history, archaeology, and religion. Same as Classics 35A, B, C.

35A Origins of Ancient Society (4). (IV)

35B Classical Greece (4). (IV)

35C Ancient Rome (4). (IV)

40 The Formation of American Society. An introduction to the social, economic, political, and cultural development of the United States from the fifteenth century to the present. Any one quarter of history 40A, 40B, or 40C satisfies the American History portion of the UC American History and Institutions requirement.

40A The Formation of American Society: 1492–1790 (4). (IV)

40B The Formation of American Society: The Nineteenth Century (4). (IV)

40C The Formation of American Society: The Twentieth Century (4). (IV)

41 The Formation of European Society. An introduction to the social, economic, political, and cultural development of Europe from the fourteenth century to the present.

41A The Formation of European Society: From the Fourteenth to the Eighteenth Century (4). (IV, VII-B)

41B The Formation of European Society: The Eighteenth and Nineteenth Centuries (4). (IV, VII-B)

41C The Formation of European Society: 1914 to Present (4). (IV, VII-B)

42 Latin America. An overview of Latin American history from pre-Columbian civilizations to today. Topics include native cultures, European conquest, colonialism, independence, nation-building, economic development, foreign influences, social protests, and revolutions.

42A Pre-Columbian Civilizations and European Colonization: 1200–1750 (4). (IV, VII-B)

42B Independence and the Nineteenth Century (4). (IV, VII-B)

42C Twentieth Century (4). (IV, VII-B)

43 East Asia: Traditions and Transformations. A survey of the distinctive cultures and histories of China, Japan, and neighboring countries. The first quarter is devoted to premodern patterns of politics, thought, social organization, and economic activity. The second and third quarters focus principally upon the modern histories of China and Japan, with attention to the different responses to Western impact each country made.

43A Pre-Modern East Asia (4). (IV, VII-B)

43B Modern China (4). (IV, VII-B)

43C Modern Japan (4). (IV, VII-B)

50 Crises and Revolutions (4). Study of turning points in world history, illustrating themes and methods of historical analysis. May be taken for credit three times as topics vary. (VII-B)

60 Introduction to the History of Science (4). The emergence of modern science since 1500. Case studies to illuminate revolutionary change in science and the impact of science-based technology on society. (IV)

UPPER-DIVISION

HISTORICAL STUDIES

Courses in which students gain experience in analysis, interpretation, and writing. No prerequisites.

101 History of the World Economy (4). Beginning with a discussion of different economic "worlds" of the 1400s, traces the complex processes by which these worlds began to influence each other, ending with the twentieth-century world economy. Topics include imperialism, industrial revolution, migration, slave trade. (VII-B)

ANCIENT HISTORY

105 The Roman Empire. Creation of a bureaucratic empire; rule by gentry and officers; official culture and rise of Christianity; social conflict and political disintegration.

105A Early Roman Empire (4)

105B Later Roman Empire (4)

105C The Classical Tradition (4)

EUROPEAN HISTORY

110 Medieval Europe

110A Europe in the Early Middle Ages (4). Survey of Europe between 300 A.D. and 900 A.D. Topics include the breakup of the Roman Empire, barbarian invasions, spread of Christianity, rise of Islam, the Carolingian Empire, and the Vikings. (VII-B)

110B Europe in the Central Middle Ages (4). Survey of European history from ca. 900 to ca. 1300. Topics discussed include the growth of the economy, feudalism, the crusades, the rise of towns, the development of the church, popular heresy, and the rise of large-scale polities. (VII-B)

110C Europe in the Later Middle Ages (4). Survey of European history from ca. 1300 to ca. 1500. Topics include the Black Death, the crisis of the economy, the Hundred Years' War, peasant and urban uprisings, and the Great Schism. (VII-B)

110D Topics in Medieval Europe (4). May be repeated for credit as topics vary.

112 Early Modern Europe

112A Renaissance Europe (4). Survey of the Renaissance in Italy and northern Europe.

112B Reformation Europe (4). Survey of the Protestant and Catholic Reformations in sixteenth- and seventeenth-century Europe.

112C Europe of the Old Regime (4). Survey of the social, cultural, and political history of Europe from the middle of the seventeenth century to the French Revolution. (VII-B)

112D Topics in Early Modern Europe (4). Theme-based approach to the main social, political, and cultural developments in Europe between the fifteenth and eighteenth centuries. Topics include Renaissance humanism, Reformation and Counter-Reformation, scientific revolution, court culture and nation building, interactions with non-European peoples, and cities and commerce. May be repeated for credit as topics vary. (VII-B)

114 Topics in Modern European History (4). Course content changes with instructor. Topics include the Inquisition; science and religion in modern Europe; sex and society in modern Europe; French revolutions; culture in interwar Europe; the Holocaust; the fall of communism in Eastern Europe. May be repeated for credit as topics vary. (VII-B)

116 Medieval England

116A England in the Early Middle Ages (4). Survey of English history from ca. 400 to ca. 1200. Topics include the Anglo-Saxons, the Viking settlement, the Norman Conquest, the Angevin Empire, and the development of royal, legal, and administrative mechanisms. (VII-B)

116B Later Medieval England (4). Survey of English history between ca. 1200 and ca. 1500. Topics include the Magna Carta, the Barons' War, the Welsh and Scottish wars, the development of Parliament, the Hundred Years' War, and the Wars of the Roses. (VII-B)

117 Early Modern England

117A Tudor England (4). Survey of English history from the fifteenth century until the early seventeenth century. Concentrates on the formation of Tudor political, social, and economic institutions. (VII-B)

117B Stuart England (4). Survey of English history from the early-seventeenth century until the early-eighteenth century. Concentrates on the causes of the English Revolution and the Revolution itself, the Restoration, and the Protestant ascendancy. (VII-B)

118 Great Britain

118A Modern Britain: 1700 to 1850 (4). Examines the major developments in British politics, socioeconomic structure, and culture from 1700–1850. The development of the British nation-state and the fashioning of a national identity. Explores basic questions about British national identity. (VII-B)

118B Modern Britain: 1850 to 1930 (4). Examines the social, economic, and political history of Britain from 1850–1930. Post-industrialism, urbanization, population and economic change, increased political participation by working classes and women, consolidation of the empire and the breakup of the United Kingdom. (VII-B)

118C Modern Britain: 1930 to Present (4). Explores Britain from the Second World War to the resignation of Margaret Thatcher. Examines Britain's devolution from world power to member of the European Community; transition from a manufacturing to service-based economy; changing demographic and racial composition in light of decolonization. (VII-B)

120 France. Emphasis on social, economic, and cultural history of France since the Great Revolution.

120A Early Modern France: 1500–1774 (4). Formerly History 124. (VII-B)

120B The French Revolution and Napoleon: 1774–1815 (4). (VII-B)

120C France in the Nineteenth Century (4). (VII-B)

120D France in the Twentieth Century: 1914 to Present (4). (VII-B)

122 Germany. Political, social, and economic history from 1815 to the present.

122A Emergence of the German Nation: 1815–1890 (4). (VII-B)

122B From the Kaiserreich to the Third Reich: 1890–1939 (4). (VII-B)

122C World War, Cold War, and Reunification: 1939– (4). (VII-B)

124 Russia. Political and social developments from traditional Russia to the present Soviet society.

124A Imperial Russia: 1689–1905 (4). (VII-B)

124B Twentieth-Century Russia (4). (VII-B)

126 European International History. Europe and world politics; the wars and diplomacy of the major powers.

126A The Era of World War I: 1900–1939 (4). (VII-B)

126B World War II: 1939–45 (4). (VII-B)

126C The Cold War and After: Europe and the World, 1945–91 (4). (VII-B)

127 European Cultural and Intellectual History. Main currents of Western thought, emphasizing English, French, and German thinkers.

127A Enlightenment Europe (4). (VII-B)

127B Hegel to Nietzsche (4). (VII-B)

127C Freud to Sartre (4). (VII-B)

127D Contemporary European Thought (4)

128 Topics in the History of Women in Europe (4). May be repeated for credit as topics vary. Same as Women's Studies 171F. (VII-B)

130 Jewish History

130A Jewish History, Ancient to Early Modern Times (4). The history of the Jewish people from their origins in the ancient world to the 1700s. Social, religious, and intellectual life of Jewish communities in the Middle East, North Africa, and Europe. (VII-B)

130B Modern Jewish History (4). History of the Jews in Europe, the Middle East, North Africa, and the United States from the early-eighteenth century to recent times. Emancipation, assimilation, religious reform, antisemitism, Zionism, socialism, the Holocaust, and modern Israel are the major themes. (VII-B)

135 History of Science and Medicine

135A The Scientific Revolution (4). An examination of early modern European science from 1500 to 1700. Includes readings from central figures (Copernicus, Harvey, Bacon, Descartes, et al.); themes include the impact of printing, humanism, patronage, technology, and discussion of the term "revolution" in this context. (IV)

135B Science and Religion (4). Historical analysis of two episodes in the interaction between science and religion in the West: Galileo's defense of heliocentrism and Darwin's theory of evolution. Emphasizes historical context for each case and changes in definitions of science, religion, and their relationship. (IV)

135C Exploring the Cosmos (4). After briefly considering the invention of astronomy in antiquity and the Copernican revolution, examines the development of solar science; the triumph of the view of the expanding universe; and a medley of themes in post-1945 astrophysics and cosmology. (IV)

135D Science and the Environment (4). Science and ideas about ecology, the exploitation of natural resources, and the protection of nature since the Enlightenment. (IV)

135E The Making of Modern Medicine (4). Examination of medical care in Britain from the 1660 plague to establishment of the National Health Service Act in 1946. Structured around meanings of health and disease, the organization of medicine, and the politics of health care. (IV)

135F Topics in the History of Science and Medicine (4). May be repeated for credit as topics vary. (IV)

139 History and Prose Composition (4) Summer. Requires at least 4,000 words of assigned composition based upon historical works. History majors are given admission priority. Prerequisites: satisfaction of the lower-division writing requirement; junior standing or consent of instructor. May be repeated for credit as topics vary.

AMERICAN HISTORY

140 The Development of the American Nation. Growth of a distinctively American society out of the colonial heritage, with emphasis on social and economic bases of culture and politics, sectionalism, industrialization, and the United States as a world power.

140A Early America: 1492–1740 (4). Examines the history of the land that became the first 13 states of the United States, from early attempts at exploration and discovery to the economic growth and demographic heterogeneity that marked the white settlements of the early 1700s.

140B Revolutionary America: 1740–1790 (4). An exploration of why 13 continental colonies, whose commercial and cultural connections with Britain far exceed their interaction with one another, resisted imperial reform after 1763 to the point of war in 1775 and independence the following year.

140C Coming of the Civil War (4). Investigates the social, political, economic, cultural, and constitutional changes that transformed antebellum America and culminated in civil war.

140D Civil War and Reconstruction (4). Focuses upon the social, economic, political, cultural, and constitutional changes that transformed the United States during the Civil War era.

140E The Cold War and After (4). Explores topics in gender, race, and class in American history since 1945, considering politics and popular culture, domestic issues, and foreign policy. Topics include McCarthyism and the civil rights, anti-war, and feminist movements.

142 American Social and Economic History

142A California in Modern America (4). California as a case study of national trends and as a unique setting: its specific problems and culture. Major themes include: colonization, immigration, race relations, agricultural development, industrialization, urbanization, working class movements, social conflict, and political reform.

142B Topics in American Social and Economic History (4). May be repeated for credit as topics vary.

144 American Intellectual and Cultural History

144A Early American Cultural and Intellectual History (4). Examination of ideas and culture during the early American period, with emphasis on the relationship of ideas to their social, political contexts. From contact to Puritanism to the Revolutionary era, with attention to constructions of class, race, gender.

144B Nineteenth-Century American Cultural and Intellectual History (4). Topics include religious revivals; antislavery thought; theories of the body; Transcendentalism; feminism and suffrage; the meanings of the Civil War; corporatism; realism; forms of racism and nativism.

144C Twentieth-Century American Cultural and Intellectual History (4). Topics include modernism and anti-modernism; Pragmatism; the Harlem Renaissance; theories of sexuality; mass culture and consumer culture; the rise of social science; Marxism; McCarthyism; the civil rights movement; the New Left; feminism, postmodernism.

144D Religion and Society in the United States (4). An examination of major issues in the study of relationships between religion and society in American history, focusing on the ways in which religious institutions and ideas have influenced, and been influenced by, significant developments in American life.

144E Racial Thought in America (4). An examination of the development, significance, and persistence of racism in American society. Looking mainly at white racial ideas, considers some of the major historical approaches to understanding their origin, character, and role in American life.

144F Utopian Experiments in American History (4). Focus on the cooperative dimension of the American experience; the large number of intentional experiments in community living and alternative lifestyles in the nineteenth and twentieth centuries. Examination of both the ideological foundations of communitarianism and specific historical case studies. Formerly History 142B.

144G Topics in American Cultural and Intellectual History (4). May be repeated for credit as topics vary.

145 American Working-Class History (4). Traces formation of the American working-class and examines its response to the changing structures of economic/political power determined by nineteenth-century industrial capitalism and twentieth-century imperialism. Issues/intersections of race, culture, and gender are examined. Same as Women's Studies 171H.

146 Women and Gender Relations in the United States. An examination of changes in gender relations and in the conditions of women's lives from the 1700s on. Emphasis on race and class, cultural images of women and men, sexuality, economic power, and political and legal status. Same as Women's Studies 171A, 171B, 171C.

146A American Women to 1820 (4). (VII-A)

146B United States Women: 1820–1980 (4). (VII-A)

146C Topics in Women and Gender Relations in the United States (4). May be repeated for credit as topics vary. (VII-A)

148 Multicultural United States History

148A Law and Minorities in the United States (4). An analysis of American law as it has affected major minority groups throughout United States history. Readings focus on legal cases and documents, and class sessions are conducted in the Socratic method. (VII-A)

148B Topics in Multicultural U.S. History (4). Examines the variety of cultural expressions through which the people who came to inhabit the United States historically signify their collective identities. May be repeated for credit as topics vary. (VII-A)

150 Topics in African-American History (4). May be repeated for credit as topics vary. (VII-A)

151 Chicana/Chicano History

151A Chicana/Chicano History: Pre-Colonial to 1900 (4). Examines social history of the southwest region from antiquity to 1900. Discusses major questions, theory and research methods pertinent to Chicanas/Chicanos. Themes include: indigenous empires, conquest, colonialism, social stratification, ideology, marriage, sexuality, industrial capitalism, accommodation and resistance. (VII-A)

151B Chicana/Chicano History: Twentieth Century (4). Examines social history of the Southwest with emphasis on Mexican-origin people. Discusses major questions, theory and research methods pertinent to Chicana/Chicano history. Themes explored include: immigration, xenophobia, class struggle, leadership, generational cohorts, unionization, education, barrioization, ethnicity, patriarchy, sexuality. History 151B and Social Sciences 173F may not both be taken for credit. (VII-A)

152 Topics in Asian-American History (4). Introduction to important themes in the history of people of Asian ancestry in the United States from the nineteenth century to the present. May be repeated for credit as topics vary. (VII-A)

153 American Legal History (4). Introduction to American legal case materials, to legal categories and ways of thinking, and to selected topics in U.S. legal history. Does *not* offer a chronological survey of the development of law in the United States.

154 American Urban History (4). A study of urban communities in the United States, from colonial times to the present. Traces the impact of industrialization and urbanization on social and cultural life and investigates the significance of urban life for U.S. democratic culture.

158 History of American Foreign Relations

158A U.S. Foreign Relations Since World War II (4). Deals with relations between the U.S. and the remainder of the world since 1940, with attention to U.S. "cold war" and "detente" with the communist powers, the growing ties with European and Asian allies, the continuing impact on less-developed nations. (VII-B)

158B Imperialism in American History (4). The focus: to what extent has the U.S. been imperialistic in its relations with other countries and peoples. Examines the causes and effects of American behavior toward less powerful nations, from early dealings with our neighbors to twentieth-century interventions. (VII-B)

158C America and the Third World (4). Introduction to the mounting problems of the underdeveloped, or "Third" World: population pressure, hunger, exploitation, ethnic struggle, political instability. Attention to the ways in which the industrialized "North" and, particularly, the United States affect and are affected by these difficulties. (VII-B)

LATIN AMERICAN HISTORY

161 Mexico

161A Indian and Colonial Societies in Mexico (4). Examines the history of Colonial Mexico from prehistoric times to the eighteenth century. Focuses on the social, economic, and political evolution of the new Mexican society which resulted from the "meeting" of two cultures. (VII-B)

161B Nineteenth-Century Mexico (4). Examines the history of Mexico in the nineteenth century. Focuses on the social, economic, political, and cultural transformation of Mexico in the last century. (VII-B)

161C Twentieth-Century Mexico (4). Examines the history of contemporary Mexico beginning with the Mexican Revolution and concluding with the present administration. Social, economic, and political effects of the Revolution; formation of a "one-party democracy"; economic transformation of the nation; the present crisis. (VII-B)

162 Brazil (4). Overview of social, economic, and political developments since 1500.

166 United States-Latin America Relations (4). U.S. relations with Latin America with emphasis on the twentieth century. Topics include the Monroe Doctrine, Mexican-American and Spanish-American Wars, the Big Stick and Good Neighbor policies, and recent events in Central America and the Caribbean.

169 Topics in Latin American History (4). May be repeated for credit as topics vary. (VII-B)

ASIAN HISTORY

170 China

170A Chinese History to 1800 (4). A survey of the history of China to 1800. (VII-B)

170B Chinese History: 1800-1949 (4). An examination of Chinese society and thought from the late-eighteenth century to the 1949 revolution. Focuses on the role of intellectuals; popular culture; women in Chinese society; developments in commerce and urban life; rebellion; foreign imperialism. (VII-B)

170C Chinese History: 1949-Present (4). A discussion of major themes in the social, cultural, political, economic and intellectual history of China since the founding of the People's Republic in 1949. Emphases will vary from year to year. (VII-B)

171 Japan

171A Age of the Samurai (4). Topics include the simultaneous elaboration of a civilian aristocratic tradition and the military ethos, the conflict between martial and economic values in the context of an expanding economy, and the development of Japan's indigenous religions, art, and literature. (VII-B)

171B Imperial Japan (4). Topics in the rise of modern Japan include the relationship between centralization and imperialism, democracy and fascism, industrialization and feminism in the context of the complex and competing forces that shaped Japan's experience in the modern world. (VII-B)

171C Postwar Japan (4). From the ashes of defeat to economic superpower, from poverty to material consumerism, from the ethic of diligence and fortitude to hedonism. Addresses what these changes have meant for ordinary people, as well as government policy and Japan's international position. (VII-B)

172 Topics in Asian History (4). May be repeated for credit as topics vary. (VII-B)

173 Topics in the Social History of Asia (4). Topics include the history of the family, changing expectation of men and women, changes in patterns of work urbanization, and leisure, often with a strong comparative focus across different Asian societies. May be repeated for credit as topics vary. (VII-B)

174 Topics in the Cultural History of Asia (4). Topics include the development of popular religion; changes in the relationships between personal, communal, and national identities; and the significance of new cultural media (print, TV, others). Perspective may be either comparative across nations or may focus on one nation. May be repeated for credit as topics vary. (VII-B)

175 Topics in the Political-Economic History of Asia (4). Topics include state formation, economic development, conflicts over participation and representation, and class relations, often with a strong comparative focus. May be repeated for credit as topics vary. (VII-B)

AFRICAN AND MIDDLE EASTERN HISTORY

177 Israel and Palestine (4). Origins of Zionism in the nineteenth century, Arab-Jewish conflict in Palestine, emergence of Palestinian nationalism, the formation of the Israeli nation after 1948, and the development of the Palestinian movement. Focus on Palestinian and Israeli society and culture. (VII-B)

178 Modern Middle East and North Africa (4). A survey of the history of the Middle East and North Africa from the Ottoman period to the present day. Examination of the Ottoman Empire and the impact of the West, imperialism and colonialism, nationalism, and independence of the Arab states, Turkey, and Iran. (VII-B)

SPECIAL STUDIES. Topics with particular methodological foci. Content varies; departmental office has quarterly list of topics. May be repeated for credit.

180 Special Studies in Social History (4). Same as Women's Studies 171G when topic is appropriate.

181 Special Studies in Economic History (4)

182 Special Studies in Intellectual-Cultural History (4)

183 Special Studies in International History (4)

184 Special Studies in Comparative History (4)

185 Special Studies in Social Theory (4)

HISTORICAL RESEARCH FOR HISTORY MAJORS

190 Colloquium (4). Specialized courses dealing primarily with close reading and analysis of secondary works; required reports and papers (critical essays). Each colloquium reflects the instructor's intellectual interests and is conducted as a discussion group. Limited to 15 students. Prerequisites: junior/senior standing and history major, or consent of instructor. May be repeated for credit as topics vary. Same as Women's Studies 171D when topic is appropriate.

192 Research Seminar (4). Specialized courses that require analysis of a historical problem through research in primary sources and the preparation of an original research paper. Each research seminar is offered in a quarter following a History 190 colloquium and is related to the colloquium's subject. Prerequisites: History 190 in the preceding quarter; junior or senior standing; and History major or consent of instructor. May be taken for credit six times as topic varies. Same as Women's Studies 171E when topic is appropriate.

198 Directed Group Study (4). Special topics through directed reading. Paper required. Prerequisites: consent of instructor; a minimum of two students must enroll.

199 Independent Reading (1 to 4). Investigation of special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE COURSES

In addition to the following courses, graduate students in History might find Humanities 220 (Literary Theory and Its History) and Humanities 270 (Advanced Critical Theory) to be of interest.

HISTORY AND THEORY

200A, B, C History and Theory (4, 4, 4) F, W, S. Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Completion of History 200A and 200B is required for all History graduate students. History 200C is optional. Same as Humanities 200A, B, C.

202 Proseminar (4). Topical courses devoted to the literature of a broad historical subject, e.g., the absolutist state, the French Revolution, comparative industrialization, women's history. May be repeated for credit as topics vary.

203 First-Year Research Seminar (4). Course devoted to research and writing on questions connected with proseminar topics. Normally required of all entering graduate students. Includes review of the current state of the literature and practical experience in conducting research and writing a research paper. Prerequisite: History 202.

204A-B Second-Year Research Seminar (4-4). Two-quarter sequence required of all Ph.D. students. Normally taken during the second year of the Ph.D. program; not required for M.A. students. Includes review of the current state of the literature and practical experience in conducting research and writing a research paper.

COLLOQUIA

210A, B, C The Literature and Interpretations of Ancient History (4, 4, 4). Historiography of Antiquity (Ancient Near East, Greece, and Rome to A.D. 395). Selected problems, philology and social thought, and directions of contemporary research. Emphasis on development of interpretations through scholarly dialogue. *Not offered every year.*

220 The Literature and Interpretations of Early-Modern Europe. *Not offered every year.*

220A Society and Economy (4)

220B Political History (4)

220C Intellectual and Cultural History (4)

230 The Literature and Interpretations of Modern European History. *Not offered every year.*

230A Europe: 1789-1848 (4)

230B Europe: 1850-1914 (4)

230C Europe: 1914-1989 (4)

250 The Literature and Interpretations of Latin American History. *Not offered every year.*

250A Colonial Period (4)

250B Nineteenth Century (4)

250C Twentieth Century (4)

260 The Literature and Interpretations of American History

260A Seventeenth and Eighteenth Centuries (4)

260B Nineteenth Century (4)

260C Twentieth Century (4)

270 The Literature and Interpretations of East Asian History. *Not offered every year.*

270A Early East Asia (4)

270B China Since 1600 (4)

270C Japan Since 1600 (4)

280A, B, C Seminar in Southern History (4, 4, 4). Analysis of major works on the history of the southern United States, focusing on social groups, class and race relations, economic development, culture, and politics. An intercampus course taught jointly by participating faculty from the Irvine and San Diego campuses. May be used to fulfill the First-Year Research Seminar requirement. Prerequisite: UCI participants must obtain consent of one of the UCI instructors. *Not offered every year.*

282 Seminar in Medieval and Early Modern British History. (4) F, W, S. An intercampus seminar in Medieval and Early Modern British history that is taught both at the Huntington Library in San Marino and at UCI. Focuses on the development of thesis statements, thesis chapters, and/or publishable articles. May be repeated for credit.

284A, B, C Seminar in French History (4, 4, 4) F, W, S. The development of French society and culture from the Old Regime to the present. May be used to fulfill the First-Year Research Seminar requirement. Prerequisite for 284C: 284A and 284B. *Not offered every year.*

SPECIAL STUDIES

290 Special Topics (4) F, W, S. Lectures, readings, and discussion on subjects more limited in scope than those included in the year-long colloquium series. May be repeated for credit as topics vary.

291 Directed Reading (4 to 12) F, W, S. Reading courses focused on specialized topics. Prerequisite: consent of instructor.

295 Special Methods (4). Development of particular research skills.

298 Experimental Group Study (4). Open to four or more students. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

299 Dissertation Research (4 to 12) F, W, S. Specifically designed for students researching and writing their dissertations. Prerequisite: consent of instructor; advancement to Ph.D. candidacy.

399 University Teaching (4) F, W, S. Required of and limited to Teaching Assistants and Teaching Associates. May be repeated for credit.

SPECIAL PROGRAMS

Undergraduate Major in Humanities

The interdisciplinary major in Humanities is one of the many options available to a student who wants to select a major in the School of Humanities. As such, the major in Humanities is on a par with the major in Spanish, the major in Classics, the major in Philosophy, and other majors in the School. The major in Humanities accommodates students who want to organize their undergraduate education around a humanistic perspective on a topic, a field, or a problem which is interdisciplinary in scope (e.g., Literature and Politics in Twentieth-Century America; The Problem of Community; Social and Religious Thought in the Age of the Reformation); Italian Society and Culture. The student enters the program at the end of the sophomore year and, in consultation with the Humanities Major Committee, devises an individually tailored set of "major requirements," not all of which need be offered in the School of Humanities. The Committee will assign an advisor on the basis of the student's own preference, if possible. At the end of the senior year the student will prepare, under the advisor's supervision, a long paper (40–50 pages) in the area of the special major. This requirement is satisfied by taking Humanities 199. A student majoring in Humanities must also meet the regular School, UCI, and University requirements for graduation. Inquiries by third-quarter sophomores should be addressed to the Senior Academic Counselor in the School's Office of Undergraduate Study.

Residence Requirement: At least five upper-division courses in Humanities required for the major must be completed successfully at UCI.

Minor in Humanities and Law

220 Humanities Office Building II; (949) 824-6525
Terence Parsons, **Director**

Participating Faculty

Jeffrey Barrett, *Assistant Professor of Philosophy*
Marjorie Beale, *Assistant Professor of History*
Ermanno Bencivenga, *Professor of Philosophy*
Yong Chen, *Assistant Professor of History and Asian American Studies*
Lara Denis, *Assistant Professor of Philosophy*
James B. Given, *Professor of History*
Gail Hart, *Professor of German*
Lamar M. Hill, *Professor of History*
Marcia Klotz, *Assistant Professor of German*
Richard W. F. Kroll, *Professor of English*
Steven Mailloux, *Professor of English*
Alejandro Morales, *Chair of the Department of Spanish and Portuguese and Professor of Spanish*
Robert Newsom, *Professor of English*
Terence Parsons, *Professor of Philosophy*
Victoria Silver, *Associate Professor of English*
Preston Kyle Stanford, *Assistant Professor of Philosophy*
Brook Thomas, *Professor of English*
Tanis Thorne, *Assistant Adjunct Professor of History and Social Ecology*
Gary Watson, *Professor of Philosophy*

The minor in Humanities and Law is based on courses in the humanities that UCI graduates have found to be useful in developing skills that prepare them for law-related careers. One set of courses develops skills in critical reading, writing, and analysis that are necessary in dealing with legal issues. Another set presents theoretical and analytical perspectives on ethical, political, and social issues relevant to the law. A final set focuses on specific legal issues from a humanistic perspective. Lower-division requirements primarily develop foundational skills in the first set, whereas upper-division requirements build on these skills by addressing the concerns from the other sets. The minor does not include how-to courses on particular legal practices.

Requirements for the Minor

Lower-Division: Philosophy 29 (Critical Reasoning) or Classics 75 (Classical Rhetoric); Humanities 1A-B-C (Humanities Core Course) or Philosophy 1 (Introduction to Philosophy), 4 (Introduction to Ethics), and either 5 (Contemporary Moral Problems) or 9 (Feminist Moral and Political Philosophy).

Upper-Division: Six courses from among a list of quarterly approved courses. Each year the list will include courses from classics, history, literature/writing, and philosophy. Consult the School of Humanities Web site (<http://www.humanities.uci.edu>) or an academic counselor for currently approved courses.

Students considering a career in law are strongly encouraged to take advantage of other law-related courses offered across the campus and of extracurricular activities such as the Pre-Law Society.

Interdisciplinary Minors

A variety of interdisciplinary minors are available to all UCI students. See the Interdisciplinary Studies section of the *Catalogue* for complete information.

The minor in African-American Studies offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora and to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches.

The minor in Asian American Studies examines the historical and contemporary experiences of Asians after their arrival in the United States and seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities.

The minor in Chicano/Latino Studies is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/ Latino communities.

The minor in Global Peace and Conflict Studies addresses international violence, the threat of war, paths to cooperation in global and regional security, and international economic and environmental matters.

The minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

The minor in the History and Philosophy of Science explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

The minor in Latin American Studies is designed to develop in students an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, folk medicine, and creative (art, dance, film, drama, music) accomplishments.

The minor in Native American Studies focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

The minor in Religious Studies focuses on the comparative study of religions in various cultural settings around the world and seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society.

The minor in Women's Studies offers a curriculum drawing from the humanities, social sciences, and the arts to examine contributions of women from different backgrounds to culture and society and to explore women's and men's lives in the context of changing gender relations.

Concentration in Medieval Studies

379 Humanities Instructional Building; (949) 824-5441
Linda M. Georgianna, **Coordinator**

The concentration in Medieval Studies allows undergraduate students in the Schools of Humanities and the Arts to augment their major by completing a coherent program of courses in the area of medieval studies. The concentration is available to students in any major offered by the Schools and is particularly well-suited to majors in English and Comparative Literature, History, Philosophy, and the Arts.

Students in the concentration must complete at least two quarters of Humanities 110, the Core Course in Medieval Studies. These courses are interdisciplinary, team-taught examinations of such topics as Medieval Cities, The Dark Ages, Medieval Liturgy and Theater, Medieval Women, and The Plague. In addition, students must complete at least four additional courses in medieval studies selected from an approved quarterly list. One of these four courses may be satisfied by completing a senior essay in some area of medieval studies.

3-2 Program with the Graduate School of Management

Outstanding students who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program

early in their junior year. See the Graduate School of Management section for additional information.

English as a Second Language Program

601 Humanities Trailer Complex; (949) 824-6781

Robin Scarcella, Ph.D. University of Southern California, *Director of the English as a Second Language Program and Associate Professor of Humanities* (linguistics, bilingual emphasis)

Humanities 20A-B-C-D through 29 are for students who have been admitted to UCI and whose scores on the ESL Placement Test indicate the need for additional work in English as a second language. Students may receive up to 12 baccalaureate credits for English-as-a-second-language course work. Students may receive workload credit for courses taken beyond this 12-unit limit but will not receive additional credits applicable to the bachelor's degree.

Humanities 20A-B-C-D Writing for Students for Whom English Is a Second Language (4-4-4-4). Grammar, sentence structure, paragraph and essay organization of formal written English. Pass/Not Pass only. Corequisite: Humanities 22A, if indicated by results of the ESL Placement Test. Prerequisite: ESL placement examination.

Humanities 21A ESL Speaking and Listening (2). Basic listening and speaking skills in five fundamental areas: pronunciation, lecture comprehension and discussion, academic oral reporting, informal interviewing, and non-verbal communication. Pass/Not Pass only. Prerequisite: ESL placement examination. Primarily for graduate students.

Humanities 21B ESL Speaking and Listening (2). Further development of listening and speaking skills: oral reporting, panel presentation, functional/situational dialogue, and public argumentation and debate. Primarily for graduate students. Pass/Not Pass only. Prerequisite: ESL placement examination.

Humanities 22A ESL Reading and Vocabulary (2). Intensive reading exercises with occasional practice in extensive reading, focusing on comprehension, development of vocabulary, syntax, rhetorical features, reading strategies, and study skills. Pass/Not Pass only. Corequisite: concurrent enrollment with Humanities 20A-B. Prerequisite: ESL placement examination.

Humanities 22B ESL Reading and Vocabulary (2). Extensive reading with emphasis on long magazine and journal articles, short stories, textbook chapters, notetaking, and the interpretation of charts, diagrams, tables, and figures. Pass/Not Pass only. Prerequisite: ESL placement examination.

Humanities 29 Special Topics in ESL (1 to 2). Directed and individualized work in English as a second language not covered in the Humanities 20, 21, 22 sequence. Pass/Not Pass only. Prerequisite: consent of ESL Director.

Courses in Humanities

LOWER-DIVISION

The following set of courses has no necessary relation to the undergraduate interdisciplinary major in Humanities. Most of the courses are open to any UCI student. Humanities 1A-B-C is required for the major in Humanities, as it is a requirement of any student majoring in the School of Humanities. Also, Humanities 199 is required of any undergraduate in the School who is approved to complete an interdisciplinary major in Humanities.

1A-B-C The Humanities Core Course (8-8-8) F, W, S. A freshman course required of all Humanities majors. Each year the course deals with problems of concern to the humanistic disciplines (history, literature, philosophy), emphasizing the careful reading of major texts that bear on these problems and developing the ability to think clearly and write well about the issues they raise. A writing program is integral to the course and counts for half the grade each quarter. Students held for Subject A will earn an additional two units of workload credit, and *must* take the course for a letter grade. (1A-B-C: I, IV; 1C: VII-A)

5A World Religions I (4). An introduction to the history, doctrine, culture, and writing of the three "religions of Abraham": Judaism, Christianity, and Islam. (IV, VII-B)

5B World Religions II (4). An introduction to various religious traditions in selected areas of the world—including India, East Asia, Africa, the Americas, or elsewhere. Attention to the expressions, teachings, culture, and history of selected religious groups. (IV, VII-B)

5C World Religions III (4). An examination of various aspects of religious expression, including symbolization of the sacred, collective religious behavior, and religious dissent. (IV)

75 Library Research Methods (2) F, W, S. Search strategy techniques relevant for library research at UCI and other academic institutions, with emphasis on application of these techniques to individual research interests. Recommended for, but not limited to, students with assigned papers for other classes.

UPPER-DIVISION

100 Latin America and the Caribbean (4). This foundational course in Latin American and Caribbean studies begins with discussions of the social, cultural, economic, and political process tracing the events from Pre-Columbian to present which have circumscribed the insertion of this region into the world economy. (VII-B)

105A-B Senior Seminar in Religious Studies (2-2). A seminar for students completing the Religious Studies minor. **105A:** Research techniques and preparation for the senior paper; discussion of topics. In-progress grading. **105B:** Independent study with the advice of a faculty member and the instructor of Humanities 105A, leading to a research paper to be submitted to the Religious Studies Committee in the School of Humanities.

110 Core Course in Medieval Studies (4). A seminar in selected topics in medieval studies. Interdisciplinary, ordinarily team-taught. Open to all students, and designed especially for those electing the concentration in Medieval Studies. May be taken for credit four times as topic varies. Same as English and Comparative Literature CL 104 and Art History 114 when topic is appropriate.

H120 Honors Proseminar (4) F, W, S. Interdisciplinary Honors courses organized each year around a single topic or problem designed to compare and contrast modes of analysis in history, literary studies, and philosophy. Required of participants in the Humanities Honors Program. Prerequisites: consent of instructor and the Humanities Honors Program Committee. May be taken three times for credit as topics vary.

H140 Senior Honors Seminar (4) F. Directed by the Humanities Honors Thesis Advisor and required of students in the Humanities Honors program and Humanities majors in the Campuswide Honors Program. Designed to facilitate the exchange of ideas and research strategies among Honors students and to begin the process of writing the senior honors thesis. Prerequisites: senior standing and consent of the Honors Program Committee.

H141 Senior Honors Thesis (4) W. Directed independent research required of participants in the Humanities Honors Program and Humanities majors in the Campuswide Honors Program. Prerequisites: Humanities H140; consent of Honors Program Committee.

H142 Senior Honors Colloquium (4) S. Completion, presentation, and discussion of Senior Honors Theses. Satisfies upper-division writing requirement. Prerequisites: Humanities H141 and consent of Humanities Honors Program Committee.

183A Global Peace and Conflict Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to global peace and conflict studies. Pass/Not Pass only. May be taken for credit four times. Same as Social Ecology 183A and Social Science 183A.

183B Senior Seminar on Peace and Conflict (4). Designed for seniors (juniors may also enroll) who are pursuing the Global Peace and Conflict Studies (GPACS) minor and/or International Studies major. Provides a forum in which students will mature as independent researchers and gain fundamental knowledge of contemporary global issues and scholarly approaches to the field. Same as Social Ecology 183B and Social Science 183B. Formerly Humanities 181B. (VII-B)

183C Senior Seminar on Peace and Conflict (4). Continuation of Humanities 183B. Students write a senior research paper under the direction of a faculty member, and analyze GPACS forum presentations. Designed for seniors (juniors may also enroll) who are pursuing the Global Peace and Conflict Studies minor and/or International Studies major. Prerequisite: Humanities 183B. Same as Social Ecology 183C and Social Science 183C. Formerly Humanities 181C.

197 Individual Field Study (varying credit) F, W, S. Individually arranged field study. Prerequisite: consent of instructor.

198 Directed Group Study (1 to 4) F, W, S. Directed group study on special topics. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

199 Directed Research (1 to 4) F, W, S. Directed research for senior Humanities students. Prerequisite: senior standing and consent of instructor. May be repeated for credit as topics vary.

Ph.D. with Interdisciplinary Emphasis in Humanities

The School of Humanities offers no degree called the Ph.D. in Humanities. However, some Ph.D. students in regular programs in the School may elect an interdisciplinary modification of their degree with the permission of the departments or programs concerned. Such students will do about 60 percent of their graduate work in a major field and about 40 percent in one or more minor fields. Those interested in an interdisciplinary degree should contact the Associate Dean for Graduate Study or the graduate advisor in their major department.

Emphasis in Critical Theory

200 Humanities Office Building; (949) 824-6718
Alexander Gelley, **Director**

Associate Faculty in the Critical Theory Emphasis

Stephen Barker, *Director of Arts Interdisciplinary and Professor of Drama*
Lindon W. Barrett, *Associate Professor of English*
Marjorie A. Beale, *Assistant Professor of History*
Ermanno Bencivenga, *Professor of Philosophy*
Rhona Berenstein, *Director of the Program in Film Studies and Associate Professor of Film Studies*
Homer Obed Brown, *Professor of English*
Juan Bruce-Novoa, *Professor of Spanish*
Ellen Burt, *Associate Professor of French*
David Carroll, *Department Chair of French and Italian and Professor of French*
Chungmoo Choi, *Associate Professor of Korean Culture*
Rey Chow, *Professor of Comparative Literature*
Michael Clark, *Professor of English*
Jacques Derrida, *Professor of French, Philosophy, and Comparative Literature*
Anne Friedberg, *Associate Professor of Film Studies*
James Fujii, *Associate Professor of Japanese*
Suzanne Gearhart, *Professor of French*
Alexander Gelley, *Director of the Emphasis in Critical Theory and Professor of Comparative Literature*
Lucia Guerra-Cunningham, *Professor of Spanish*
James D. Herbert, *Associate Professor of Art History*
Wolfgang Iser, *Professor of English*
Murray Krieger, *University Research Professor of English*
Richard W. Kroll, *Associate Professor of English*
Julia Reinhard Lupton, *Associate Professor of Comparative Literature*
Juliet Flower MacCannell, *Professor Emerita of Comparative Literature*
Steven Mailloux, *Associate Dean of Humanities, Graduate Study, and Professor of English*
Liisa Malkki, *Associate Professor of Anthropology*
J. Hillis Miller, *UCI Distinguished Professor of English and Comparative Literature*
Gonzalo Navajas, *Professor of Spanish*
Jane Newman, *Associate Professor of Comparative Literature*
Margot Norris, *Professor of English and Comparative Literature*
Mark Poster, *Professor of History and of Information and Computer Science*
Leslie Rabine, *Professor of French*
John Carlos Rowe, *Professor of English*
Gabriele Schwab, *Director of the Critical Theory Institute and Professor of English and Comparative Literature*
Martin Schwab, *Associate Professor of Comparative Literature and Philosophy*
Patrick J. Sinclair, *Associate Professor of Classics*
David W. Smith, *Professor of Philosophy*

John H. Smith, *Associate Professor of German*
Brook Thomas, *Professor of English*
Andrzej Warminski, *Professor of Comparative Literature*
Gary L. Watson, *Professor of Philosophy*
Robyn Wiegman, *Director of the Program in Women's Studies and Associate Professor of Women's Studies and English*

An emphasis in Critical Theory, under the supervision of the Committee on Critical Theory, is available for doctoral students in all departments of the School of Humanities. Ph.D. students may, with Committee approval, complete the emphasis in addition to the degree requirements of their graduate program. Although there is no change in the existing Ph.D. program requirements or procedures, if the student wishes to have a letter (signed by the Dean and by the Director of Critical Theory) testifying that the student has satisfactorily added this theoretical dimension to the graduate program, then additional requirements must be met. Critical theory at UCI is understood in the broad sense as the study of the shared assumptions, problems, and commitments of the various discourses in the humanities. The faculty regards critical theory not as an adjunct to the study of one of the traditional humanistic disciplines but as a necessary context for the study of any humanistic discipline.

Requirements for the emphasis are: a three-quarter Critical Theory Workshop, three Humanities 270 courses offered under the supervision of the Committee on Critical Theory, participation in two mini-seminars (six to eight hours) offered by visiting scholars and sponsored by the Committee, and a research paper (which may be part of the dissertation) written under the guidance of a three-member committee selected by each individual student in consultation with the Director.

Emphasis in the History and Philosophy of Science

220 Humanities Office Building II; (949) 824-6565
Brian Skyrms, **Director**

An emphasis in the History and Philosophy of Science is available for doctoral students in the Departments of History and Philosophy. The emphasis is administered by the Committee on the History and Philosophy of Science. It provides a means for doctoral students to supplement their general studies in history and philosophy with specific studies directed toward the natural and social sciences. It also allows history of science and philosophy of science students to broaden their knowledge of each other's fields.

The history of science encompasses such topics as how science is actually done and how it has been influenced by and has influenced other aspects of culture. The history of science has recently proven a very active and influential field of historical research. It has changed many assumptions about science and mathematics in a way that has deeply influenced the philosophy of science and has arguably influenced the practices of the sciences themselves.

The philosophy of science includes such topics as the nature of scientific explanation, the role of logic and language in science and mathematics, the problems inherent in inductive or ampliative inference, the cognitive and epistemic status of scientific laws and theories, and the nature of empirical evidence and its role in theory construction. Students in the emphasis study various ways to assess the epistemological foundations of scientific and mathematical inquiry, account for the apparent successes of the sciences, and resolve problems of philosophical interest that arise within the context of particular sciences.

Students are required to take three graduate-level courses in the history of science and three in the philosophy of science, as well as fulfill special examination and dissertation requirements. Additional information is available from the Director.

Graduate Courses in Humanities

Graduate courses in Humanities are under the direction of the School's Associate Dean for Graduate Studies and are designed for all graduate students in the School of Humanities.

Humanities 200 and 220 introduce study in various disciplinary areas, either to students planning a degree in history or one of the literature departments or to those seeking familiarity with disciplines other than their own.

200A, B, C History and Theory (4, 4, 4) F, W, S. Introduction to role of theory in historical writing, focusing on several major theorists, their relation to their setting, the structure of their thought, and its application to significant historical issues. Same as History 200A, B, C.

220A, B, C Studies in Literary Theory and Its History (4, 4, 4) F, W, S. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists. Restricted to graduate students only. Same as English and Comparative Literature CR 220A, B, C.

260A-B-C Critical Theory Workshop (4) F, W, S. A year-long Critical Theory Workshop, conducted by a team of instructors, conceived as a reading group, and developed with the input of all participants, where significant texts are discussed and analyzed in class. In-progress, Satisfactory/Unsatisfactory grading only.

270 Advanced Critical Theory (4) F, W, S. Seminars on various topics in critical theory. Students should have taken introductory courses before enrolling in these seminars.

399 University Teaching (4) F, W, S. Required of and limited to Teaching Associates in the Humanities Core Course. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

DEPARTMENT OF PHILOSOPHY

220 Humanities Office Building II; (949) 824-6525

Alan Nelson, **Department Chair**

Faculty

Jeffrey Barrett, Ph.D. Columbia University, *Assistant Professor of Philosophy* (philosophy of science, philosophy of physics)

Ermanno Bencivenga, Ph.D. University of Toronto, *Professor of Philosophy* (logic, history of philosophy, philosophy of language)

Lara Denis, Ph.D. Cornell University, *Assistant Professor of Philosophy* (ethics, Kant)

J. Karel Lambert, Ph.D. Michigan State University, *Professor Emeritus of Philosophy* (logic, philosophy of science, metaphysics)

Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and of Mathematics* (philosophy of mathematics, philosophy of logic)

Alan Nelson, Ph.D. University of Illinois at Chicago, *Department Chair and Professor of Philosophy* (history of philosophy, philosophy of science)

Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy* (metaphysics, philosophy of language)

Nelson C. Pike, Ph.D. Harvard University, *Professor Emeritus of Philosophy* (philosophy of religion, history of philosophy)

Gerasimos Santas, Ph.D. Cornell University, *Professor of Philosophy* (ancient philosophy, history of philosophy, ethics)

Martin Schwab, Ph.D. University of Bielefeld, *Associate Professor of Comparative Literature and of Philosophy* (aesthetics, philosophy of mind)

Brian Skyrms, Ph.D. University of Pittsburgh, *Director of the Emphasis and Minor in the History and Philosophy of Science and UCI Distinguished Professor of Philosophy and Economics* (philosophy of science, metaphysics)

David W. Smith, Ph.D. Stanford University, *Professor of Philosophy* (phenomenology, metaphysics, epistemology, existentialism)

Preston Kyle Stanford, Ph.D. University of California, San Diego, *Assistant Professor of Philosophy* (philosophy of science, history of philosophy)

Gary Watson, Ph.D. Princeton University, *Professor of Philosophy* (ethical theory, philosophy of mind, political philosophy)

Peter Woodruff, Ph.D. University of Pittsburgh, *Professor Emeritus of Philosophy* (philosophy of logic, metaphysics)

Affiliated Faculty

Francisco J. Ayala, Ph.D. Columbia University, *Founding Director of the Bren Fellows Program, Bren Chair, and Professor of Ecology and Evolutionary Biology and of Philosophy*

Jacques Derrida, Doctorate d'Etat ès Lettres, *Professor of French, Comparative Literature, and Philosophy* (philosophy, critical theory)

Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and of Philosophy*

Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and of Information and Computer Science*

Ruth Barcan Marcus, Ph.D. Yale University, *Visiting Professor of Philosophy*

Robert May, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Philosophy*

Roger N. Walsh, M.B.B.S., Ph.D. University of Queensland, *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*

Philosophy addresses itself to questions that arise insistently in every area of human experience and in every discipline within the university. Each discipline inevitably poses problems concerning the nature of the standards appropriate to it and the place of its subject matter within the total framework of human knowledge. If we are to understand science or art or literature, or such human practices as religion and moral thought, we are bound to address ourselves to philosophical issues relating to their nature, the uses of reason appropriate to them, and the contributions they make to our understanding and appreciation of ourselves and the world in which we live.

CAREERS FOR THE PHILOSOPHY MAJOR

The study of argument and the precision and clarity of thought and writing required of Philosophy majors are excellent preparation for a variety of careers. Many undergraduates trained in Philosophy go on to professional schools in medicine, business, or law. The analytical skills developed in Philosophy courses are especially useful in legal education; indeed, many UCI Philosophy graduates have been successful at top law schools. Former Philosophy students have also used their skills to advantage in careers in government, business, teaching, law enforcement, and computer programming. Many Philosophy majors also continue their education at the graduate level, either in philosophy or a related discipline.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Undergraduate Program

Instruction in philosophy relies essentially upon discussion in which students are active participants. Wherever possible, therefore, classes are severely limited in size in order to permit sustained interchanges between students and instructor.

Some of the courses offered are of general interest to all students. Others are designed to explore issues that arise in selected and special disciplines such as art or science. The undergraduate advisor should be consulted for advice about courses best suited to the specialized needs of particular students.

The program of course offerings is also designed for those Philosophy majors whose intention may be either to enter some professional school upon graduation (e.g., law) or to engage in graduate work in philosophy.

The faculty encourages Philosophy majors and minors to seriously consider expanding their perspective through an experience of study abroad. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities for study and research. Specifically, those interested in analytic philosophy could consider

the EAP programs in the United Kingdom, Canada, Sweden, Australia, and New Zealand, and those interested in Continental philosophy could consider the EAP programs in France, Germany, and Italy. See the Center for International Education section of the *Catalogue* or your academic counselor for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the Major

Philosophy 30A-B, 10, 12, and either 11 or 13; Philosophy 101, 102, 103, and five additional quarter courses from Philosophy 100, 105-199. Students planning to go on to graduate school are strongly advised to take Philosophy 105A and 105B.

Residence Requirement: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Minor

The minor consists of two portions: a lower-division portion and an upper-division portion. Both must be satisfied.

Lower division: Three courses selected from Philosophy 1, 4, 5, 30A or three courses selected from Philosophy 1, 6, 7, 30A or three courses selected from Philosophy 10, 11, 12, 13, 30A.

Upper division: Four courses in a given subfield of philosophy, some of which have been pre-approved by the Department and are included below: History of Philosophy (Philosophy 110–117); Metaphysics and Epistemology (Philosophy 120–124); Value Theory (Philosophy 113B, 130–135); Logic and Methodology (Philosophy 105–108, 115, 140–148). Other four-course sequences may be possible, subject to written permission by the Department. Such a sequence must consist of related courses in a coherent subfield.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Graduate Program

Students are encouraged to seek the counsel of any and all members of the Department whose recommendations the student would deem helpful. It is hoped that there will be a close intellectual relationship between graduate students and professors in order to provide the students with optimum conditions for philosophical development and to expedite their progress toward advanced degrees. In addition, the Department sponsors a series of colloquia each year. Participation in these colloquia is an important part of the graduate student's training.

Every new graduate student is assigned a faculty member whose purpose is to oversee the student's progress through the major requirements for the advanced degree. The student consults with the faculty each quarter about progress and any administrative or academic difficulties. Each student's overall record is evaluated by the Department each year, customarily during the first two weeks of April. When the student has satisfied residency, tools of research, logic, and portfolio requirements, the Candidacy Committee supervises the qualifying examination and the development of a dissertation project, and the subsequent writing of the dissertation itself. The Chair of this committee is the principal person with whom the graduate student will consult on the dissertation.

MASTER OF ARTS IN PHILOSOPHY

There is no list of courses required for the M.A. degree. The M.A. program in Philosophy takes one year at a minimum. The student may elect to follow either of the following routes to the degree: write a thesis on a subject to be chosen in consultation with an advisor and defend the thesis in an oral examination, or satisfy the Logic and Portfolio requirements for the Ph.D. degree. Please refer

to the Research and Graduate Studies section for information on the minimum number of courses required for the M.A. degree.

Advancement to candidacy for the M.A. degree is not automatic, but requires formal application to the Dean of Graduate Studies via the Philosophy Department Office. Application must be made with the recommendation of the Philosophy Department and must take place before the beginning of the quarter in which the student expects to receive the degree.

DOCTOR OF PHILOSOPHY IN PHILOSOPHY

There is no set number of courses required for the Ph.D., so that work can be tailored to the individual student's needs and interests. However, as a prerequisite for the Ph.D. degree, every student is required to have some experience in teaching.

The Ph.D. program is designed to take five years for the normally qualified student. In exceptional cases it may be possible to obtain the degree within four years. A Master's degree is not a prerequisite for the Ph.D. The following items are requirements for the Ph.D. degree.

Distribution Requirements. Students are required to take a range of courses designed to expose them to the various historical periods and fields of philosophy. No particular courses are required; when course offerings are announced, students are notified about which courses can be used to satisfy which requirements. In some cases, the requirement satisfied will ultimately depend on the content of the student's term paper(s).

The Distribution Requirements are:

1. **History.** To satisfy this requirement, students must receive a grade of B or better in at least four courses covering at least three of the following five historical periods: Ancient, Medieval, Modern, Kant and Nineteenth Century, and Twentieth Century.
2. **Field.** To satisfy this requirement, students must receive a grade of B or better in two courses in value theory and one course each in metaphysics and epistemology.

These requirements must be completed by the end of the seventh quarter in residence.

Logic Requirement. Students entering the program are expected to be familiar with elementary propositional and quantificational logic, including natural deduction techniques for both. A student with a weak background may wish to audit the lower-division courses Philosophy 30A and 30B or review the material in an independent study course (299) under the supervision of individual faculty members.

Given that background, to satisfy the Logic Requirement, students must receive a grade of B or better in Philosophy 205A and 205B. The first of these covers the language and techniques of elementary set theory: basic operations with sets, relations and functions, natural numbers and mathematical induction, and cardinal numbers. The second covers basic proof theory and model theory of first-order logic, including the deduction theorem, soundness and completeness theorems, compactness, and Löwenheim-Skolem theorems. These courses are devised to provide students with (a) the tools to assess logic-based arguments in the contemporary literature, and (b) a firm foundation on the basis of which students can explore further logical topics as their area of concentration requires.

This requirement must be completed by the end of the seventh quarter in residence.

Tools of Research. This requirement allows students to pursue the tool which they and their advisors deem most useful for their area of concentration, either a foreign language or some course of study outside philosophy. To satisfy this requirement, a student must pass an examination in a single appropriate foreign language or receive

a grade of B or better in each of three appropriate graduate-level courses in a discipline other than philosophy.

The two-hour foreign language examination (administered by the Philosophy Department) requires students to translate, with the aid of a dictionary, passages from one or two philosophical authors. For the second option, courses of study outside philosophy will be approved (by the Director of Graduate Studies) when they bear on a student's area of philosophical concentration. Though the courses must be in a discipline other than philosophy, they may in fact be taught in the Philosophy Department (e.g., a course in mathematical logic taught by a Philosophy faculty member).

This requirement must be completed by the end of the ninth quarter in residence.

The Portfolio. A portfolio is an extended writing sample designed to demonstrate a student's ability (a) to understand, analyze, and evaluate positions and arguments in classical and contemporary philosophical literature, and (b) to formulate and defend an original philosophical thesis. These virtues must be displayed at a level of sophistication that indicates the student's ability to write a Ph.D. dissertation.

The portfolio must be submitted to the Graduate Coordinator at the end of the fourth week of the student's seventh quarter in residence.

Candidacy Examination. In preparation for the Candidacy Examination, students consult with their thesis advisor and other appropriate faculty to prepare a reading list on their area of concentration and a brief dissertation proposal. Students apply for candidacy by filing appropriate forms, including a list (devised in consultation with their advisor) of appropriate members for their Candidacy Committee; one of these, the External Examiner, must come from outside the School of Humanities. The Committee is then appointed by the Department, on behalf of the Dean of Graduate Studies and the Graduate Council, to administer the oral Candidacy Examination on the reading list and proposal to determine whether or not the student is prepared to begin work on the dissertation.

This requirement must be completed by the end of the ninth quarter in residence. The Department Chair, on behalf of the Dean of Graduate Studies and the Graduate Council, then appoints a Doctoral Committee (typically taken from the Candidacy Committee and naturally including the dissertation advisor) to supervise the writing of the dissertation.

Dissertation Defense. Students must defend their dissertation during an oral examination administered by their Doctoral Committee.

THE SALZBURG EXCHANGE PROGRAM

Both faculty and graduate students participate in this exchange of scholars between the University of Salzburg and the UCI Philosophy Department. To be eligible, students must have advanced to candidacy. Students who are selected spend one semester in Salzburg and teach one course in the general area of their dissertation topic. An upper-division course may be taught in English, but lower-division courses must be taught in German. (Some previous visitors have learned serviceable German by attending a Goethe institute during the preceding summer.) Typically, a Salzburg visitor receives a Salzburg Fellowship intended to cover travel expenses, and a stipend; those who teach while in Salzburg also receive a salary intended to cover living expenses (including health and dental insurance).

EMPHASIS IN CRITICAL THEORY

The School of Humanities offers an Emphasis in Critical Theory. Students may petition the Critical Theory Committee for admission to the emphasis, normally by the middle of the second year of graduate study, after completing the Critical Theory Workshop, and with

the recommendation of a workshop instructor or a faculty representative from Philosophy. In addition to the requirements for the Ph.D. in Philosophy, students must satisfy the following requirements:

- 1) The Workshop. Students must successfully complete the three-quarter Critical Theory Workshop. This sequence is conceived as a reading group, normally conducted by a team of instructors, and developed with the input of all participants. Significant texts are discussed and analyzed in class; no term papers are required. (Students receive 0 units and In-progress grades for the fall and winter quarters; passing students receive 4 units and a Satisfactory grade for the spring quarter.)
- 2) Advanced Critical Theory. Students must receive a grade of B or better in three Humanities 270 courses offered under the supervision of the Critical Theory Committee. At least three such courses will be offered each year. With the approval of the Department, these courses can be used to satisfy the Tools of Research requirement.
- 3) Students must participate in two committee-sponsored mini-seminars (six-eight hours each) offered by visiting scholars on their ongoing research.
- 4) Students must complete a research paper under the guidance of a three-member committee, selected in consultation with the Director of the Emphasis; at least one member must be from outside of the Philosophy Department. This paper may (but need not) be part of the portfolio or dissertation.

Upon completion of the Emphasis requirements, a letter certifying that fact, signed by the Dean of Humanities and the Director of the Emphasis, will be added to the student's dossier.

EMPHASIS IN HISTORY AND PHILOSOPHY OF SCIENCE

An interdisciplinary group of faculty in the humanities and various sciences offers an emphasis in History and Philosophy of Science. In addition to the requirements for the Ph.D. in Philosophy, students must satisfy the following requirements:

- 1) History of Science. Students receive a grade of B or better in History 275 and two sections of independent readings in the history of science, which are often offered in conjunction with an upper-division undergraduate section of History 135A-F. With the approval of the Department, this sequence can be used to satisfy the Tools of Research Requirement.
- 2) Philosophy of Science. Students must receive a grade of B or better in three courses from the following list: Philosophy 205C, 206, 240, 245, 247. (These may be repeated as topics vary, except Philosophy 205C.)
- 3) The portfolio must contain at least one paper in the philosophy of science.
- 4) The dissertation must contain a significant philosophy of science component. With the recommendation of a Department of Philosophy faculty member of the History and Philosophy of Science Committee, the dissertation proposal may be submitted to the Committee for approval.

EMPHASIS IN LOGIC AND METHODOLOGY

An interdisciplinary group of faculty in the humanities and various sciences offers an emphasis in Logic and Methodology. This Emphasis is offered for students who wish to study topics related to logic, the philosophy of mathematics or logic, or the philosophy of science. In addition to the requirements for the Ph.D. in Philosophy, students must satisfy the following requirements:

- 1) Mathematics or Science. Students must receive a grade of B or better in three graduate-level courses in mathematics or in the same science which have methodological content. With the

approval of the Department, these courses can be used to satisfy the Tools of Research Requirement. Students may elect to satisfy a more stringent requirement (the math track) by taking a series of at least six mathematics courses either at UCI or at UCLA through the Inter-campus Exchange Program. The courses are selected in consultation with the student's UCI Philosophy advisor. Regular mathematics department qualifying examinations may be substituted for some of the course work.

- 2) Philosophy of Science. Students must receive a grade of B or better in three courses from the following list: Philosophy 205C, 206, 240, 245, 247. (These may be repeated as topics vary, except Philosophy 205C.) Courses used to satisfy this requirement cannot also be used to satisfy requirement 1.
- 3) The portfolio must contain at least one paper in logic, the philosophy of mathematics or logic, or the philosophy of science.
- 4) The dissertation must contain a significant logic, philosophy of mathematics or logic, or philosophy of science component.

Courses in Philosophy

LOWER-DIVISION

1 Introduction to Philosophy (4). A selection of philosophical problems, concepts, and methods, e.g., free will and cause and substance, personal identity, the nature of philosophy itself. (IV)

4 Introduction to Ethics (4). Selected topics from the history of ethics, e.g., the nature of the good life and the moral justification of conduct. (IV)

5 Contemporary Moral Problems (4). Selected moral issues of current interest, e.g., abortion, sexual morality, euthanasia, capital punishment, reverse discrimination, civil disobedience, or violence. (IV)

6 Philosophy and Psychoanalysis (4). An analysis of Freudian psychoanalytic theory and therapy, and its significance for such classical philosophical problems such as the mind-body problem, self-identity and self-deception, psyche and consciousness, innatism, and the origins of moral behavior. (IV)

7 Introduction to Existentialism (4). An analysis of themes in phenomenology and existentialism and their philosophical origins, e.g., consciousness, self and other, freedom and individuality. (IV)

9 Feminist Moral and Political Philosophy (4). Selected topics in moral and political philosophy analyzed from feminist perspectives, e.g., gender-based differences in moral attitudes and virtues, hidden in traditional accounts of political obligation, and feminism and sexual orientation. Prerequisite: Philosophy 4 recommended. (IV)

10 History of Ancient Philosophy (4). Examination of the central philosophical themes developed by the pre-Socratics, Socrates, Plato, Aristotle, the Stoics, the Epicureans, and the Skeptics. (IV)

11 History of Medieval Philosophy (4). A study of some of the major theological and philosophical texts from the Medieval period. Philosophy 10 recommended as background. (IV)

12 History of Modern Philosophy (4). A study of major developments in western philosophy from Descartes to Kant with readings from Descartes, Leibniz, Locke, Berkeley, Hume, and Kant. Philosophy 10 or 11 recommended as background. (IV)

13 History of Contemporary Philosophy (4). A study of recent philosophical developments in Anglo-American and Continental philosophy with readings from such figures as Russell, Moore, Wittgenstein, Quine, Heidegger, and Sartre. Philosophy 12 recommended as background. (IV)

29 Critical Reasoning (4). Introduction to analysis and reasoning. The concepts of argument, premise, and conclusion, validity and invalidity, consistency and inconsistency. Identifying and assessing premises and inferences. Deductive versus inductive reasoning, and introduction to the probability calculus. Evaluating definitions. Informal fallacies. (V)

30 Introduction to Logic

30A Introduction to Symbolic Logic I (4). An introduction to the symbolism and methods of the logic of statements, including evaluation of arguments by truth tables, the techniques of natural deduction, and semantic tableaux. (V)

30B Introduction to Symbolic Logic II (4). Continuation of Philosophy 30A. An introduction to the symbolism and methods of first-order predicate logic with identity, including evaluation of arguments by the techniques of natural deduction and semantic tableaux. Prerequisite: Philosophy 30A. (V)

31 Introduction to Inductive Logic (4). Philosophical questions concerning the foundations of scientific inference, e.g., the traditional problem of induction, the Goodman paradox, the concept of cause, Mill's method of inductive reasoning, probability calculus, different interpretations of probability, and their interaction in inductive reasoning. Prerequisite: Philosophy 30A. (V)

40 Introduction to the Philosophy of Science (4). An introduction to philosophical theories of scientific method. Examples drawn from actual scientific theories and experiments. (IV)

UPPER-DIVISION

NOTE: These courses are grouped in four main subfields: History of Philosophy (110–117); Metaphysics and Epistemology (120–124); Value Theory (130–135); and Logic and Methodology (105–108, 115, 140–148).

100 Writing Philosophy (4). Discussion of those aspects of writing of special importance in philosophy, e.g., philosophical terminology, techniques for evaluating arguments, philosophical definitions and theories. At least 4,000 words of assigned composition based on philosophical readings. Prerequisites: satisfaction of lower-division writing requirement; junior standing or consent of instructor. Philosophy majors given admission priority.

101 Introduction to Metaphysics (4). A study of one or more of the problems of "first philosophy," e.g., substance, free will, causation, abstract entities, identity.

102 Introduction to the Theory of Knowledge (4). A study of one or more of the basic issues in epistemology, e.g., the role of perception in the acquisition of knowledge, the nature of evidence, the distinction between belief and knowledge, and the nature of truth and certainty.

103 Introduction to Moral Philosophy (4). A study of one or more of the problems of contemporary moral philosophy, e.g., the nature of justice, liberalism versus conservatism, happiness and its relation to virtue and right conduct, the objectivity of moral standards.

105A Elementary Set Theory (4). An introduction to the basic working vocabulary of mathematical reasoning. Topics include: sets, Boolean operations, ordered n-tuples, relations, functions, ordinal and cardinal numbers. Prerequisite: Philosophy 30B or an upper-division course in mathematics or consent of instructor. Philosophy 105A and Mathematics 151 cannot both be taken for credit.

105B Metalogic (4). Introduction to formal syntax (proof theory) and semantics (model theory) for first-order logic, including the deduction, completeness, compactness, and Löwenheim-Skolem theorems. Prerequisites: Philosophy 30B and 105A, or consent of instructor. Philosophy 105B and Mathematics 150 cannot both be taken for credit.

105C Effective Processes (4). Introduction to the formal theory of effective processes, including recursive functions, Turing machines, Church's thesis, and proofs of Gödel's incompleteness theorem for arithmetic, and Church's undecidability theorem for first-order logic. Prerequisite: Philosophy 105B or consent of instructor. Philosophy 105C and Mathematics 152 cannot both be taken for credit.

106 Topics in Mathematical Logic (4). Selected topics in mathematical logic, e.g., set theory, modal theory, recursion theory, proof theory. Prerequisite: Philosophy 105A-B or consent of instructor. May be repeated for credit as topics vary.

107 Topics in Philosophical Logic (4). Selected topics in philosophical logic, e.g., relevance logic, free logic, modal and tense logic, deontic logic, theory of definite descriptions, calculus of individuals. Prerequisite: Philosophy 105A-B or consent of instructor. May be repeated for credit as topics vary.

108 Topics in Inductive Logic (4). Selected topics in inductive logic, e.g., Bayes-LaPlace-Carnap systems of inductive logic, confirmation of generalizations, exchangeability and partial exchangeability, analogy and periodicity in inductive logic, variety of evidence. Prerequisite: Philosophy 31 or an appropriate course in probability. May be repeated for credit as topics vary.

109 Legal Reasoning, Argument, and Evidence (4). A comparison of philosophical investigations of reasoning, argument, and evidence, with the theory and practice of similar notions in the law. Prerequisite: Philosophy 29 or 30A.

110 Topics in Ancient Philosophy (4). Selected topics from the writings of Plato and Aristotle, e.g., Aristotle's criticisms of Plato's metaphysics, ethics, or politics. May be taken for credit twice as topics vary.

111 Topics in Medieval Philosophy (4). Studies of some of the major issues of concern to Medieval philosophers, e.g., universals, the nature and existence of God, faith, and reason. May be taken for credit twice as topics vary.

112 Topics in Renaissance Philosophy (4). Studies of such authors as Bruno and Montaigne. May be taken for credit twice as topics vary.

113 Topics in Modern Philosophy. Studies of how one or two central topics are treated by various figures of the modern period (e.g., Descartes, Hobbes, Leibniz, Locke, Hume, Kant). May be repeated for credit as topics vary.

114 Topics in Nineteenth-Century Philosophy. Studies of some of the major figures after Kant (e.g., Hegel, Nietzsche, Marx, Kierkegaard), especially in German idealism and social thought. May be repeated for credit as topics vary.

115 Topics in Analytic Philosophy. Selected topics in analytic philosophy (e.g., conceptual analysis, the nature of truth and meaning, the analytic/synthetic distinction), studying such thinkers as Frege, Russell, Wittgenstein, Quine. May be repeated for credit as topics vary.

116 Topics in Continental Philosophy. Studies of some of the major figures (e.g., Husserl), movements (e.g., phenomenology, existentialism) in early twentieth-century continental European thought. May be repeated for credit as topics vary.

117 Topics in East Asian Philosophy (4). Selected topics in the philosophies of East Asia, e.g., Yoga, Buddhism, Vedanta, Confucianism, Taoism, and Shinto. Same as East Asian Languages and Literatures 117. May be repeated for credit as topics vary. (VII-B)

120 Topics in Metaphysics (4). Selected topics in metaphysics. May be repeated for credit as topics vary.

121 Topics in Epistemology (4). Selected topics in the theory of knowledge. May be repeated for credit as topics vary.

122 Topics in Philosophy of Mind (4). Selected topics involving the concept of mind, e.g., the relation between mind and body, the self, personal identity, consciousness, the unconscious. May be repeated for credit as topics vary.

123 Topics in Philosophy of Religion (4). Critical examination of concepts involved in the theological literature, e.g., the nature and existence of God, miracles, the problem of evil, divine command theories in ethics. May be repeated for credit as topics vary.

130 Topics in Moral Philosophy (4). Selected topics in ethics. May be repeated for credit as topics vary.

131 Applied Ethics. Application of moral theories and arguments to important problems facing contemporary society.

131A Applied Ethics (4). Topics may include capital punishment, world hunger, obligations to future generations, environmental ethics, animal rights, economic justice, sexual morality, affirmative action, racism and sexism, or legalization of drugs.

131B Morality and Nuclear Weapons (4). A study of moral issues concerning nuclear war, nuclear deterrence, and the arms race. Readings from the works of moral philosophers, theologians, and nuclear strategists.

131C Medical Ethics (4). Analysis of moral issues concerning health care. Topics may include: just allocation of scarce medical resources, the doctor/patient relationship, genetic engineering, surrogate motherhood, abortion, euthanasia, or social policy concerning AIDS.

131D Ethical Issues in Engineering (4). Application of ethical theory to moral problems confronted by engineers, scientists, managers, e.g., conscience and free expression within corporations; professional obligations to the public; the role of values in safety decisions; ethics codes; whistleblowing. Examination of case studies. Prerequisite: satisfactory completion of the lower-division writing requirement. Prerequisite: completion of the lower-division writing requirement. Same as Engineering 192.

131E Race and Gender (4). Investigation of philosophical issues concerning race and gender, e.g., the grounding of these concepts (is it scientific or social?); race, gender, and individual self-conception; race and ethnicity; "color-blind" society; group solidarity versus racism; affirmative action; multiculturalism. Same as Women's Studies 173B. (VII-A)

132 Topics in Political and Social Philosophy (4). Selected topics in social and political philosophy, e.g., the functions of government, the justification of political authority, the nature of democracy, the varieties of liberty, and social justice. Readings from classical and contemporary sources. May be repeated for credit as topics vary.

133 Topics in Philosophy of Law (4). Selected topics concerning legal systems and the concept of law, e.g., the nature and purpose of law, the nature of authority, the relationship between law and morality, law and political-economic systems. May be repeated for credit as topics vary.

140 Topics in Philosophy of Science (4). Selected topics in contemporary philosophy of science, e.g., the status of theoretical entities, the confirmation of theories, the nature of theoretical entities, the confirmation of theories, the nature of scientific explanation. Philosophy 40 recommended as background. May be repeated for credit as topics vary. (IV)

141 Topics in Philosophy of Physics (4). Selected topics in the philosophy of physics, e.g., the interpretation of quantum mechanics, the nature of space-time, the problem of quantum field theories. Philosophy 40 recommended as background. May be repeated for credit as topics vary.

142 Writing/Philosophy of Biology (4). Philosophy of biology, e.g., scientific method in biology, the structure of evolutionary theory, teleology, ethics, and evolution. Coursework includes one 4,000-word and four 1,000-word papers. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor; Philosophy 40 recommended as background. Same as Biological Sciences 142.

143 Topics in Philosophy of Psychology (4). Selected topics in the philosophy of psychology, e.g., the nature of psychological explanation, reductionism, issues in cognitive, behavioral, and neuroscience. May be repeated for credit as topics vary.

144 Topics in Philosophy of Social Science (4). Selected topics in the philosophy of the social sciences, e.g., is their goal to understand behavior or to predict and control it?; are they normative and the natural sciences not?; do they incorporate philosophical doctrines about language and mind? Formerly Philosophy 182. May be repeated for credit as topics vary.

145 Topics in Philosophy of Language (4). Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. Same as Linguistics 141. May be repeated for credit as topics vary.

146 Topics in Philosophy of Logic (4). Selected topics in the philosophy of logic, e.g., the nature of our knowledge of logical truths, the status of propositions, definite descriptions, and existential presuppositions. May be repeated for credit as topics vary.

147 Topics in Philosophy of Mathematics (4). Selected topics in the philosophy of mathematics, e.g., the status of mathematical entities, the nature of our knowledge of mathematical truths, the relationship of mathematics to logic. May be repeated for credit as topics vary.

148 Philosophical Foundations of Probability (4). A study of probability as limiting relative frequency, rational degree of belief, or propensity. Bayesian inference. DeFinetti's theorem. Prerequisite: Philosophy 31 or consent of instructor.

149 Senior Seminar in History and Philosophy of Science (4). Topics in the history and philosophy of science. Required of and limited to History and Philosophy of Science minors. May be repeated for credit as topics vary.

150 Phenomenology (4). A study of the foundations of phenomenology in Husserl and its background in Bolzano, Frege, Brentano, Meinong, Kant, and Descartes. Topics include phenomenological method, theory of intentionality, meaning, perception, evidence, ego, other minds, intersubjectivity, and life-world. May be repeated for credit as topics vary.

151 Existentialism (4). A study of such central existentialist thinkers as Heidegger and Sartre. Philosophy 7 or 150 recommended as background. Formerly Philosophy 128.

152 Topics in Feminism (4). A study of selected topics in feminist theory and/or gender studies. Same as Women's Studies 173A. May be repeated for credit as topics vary.

190 Special Topics in Philosophy (4). Lectures on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

199 Directed Special Studies (2 to 4). Independent study on a research topic supervised by a faculty member. May be repeated for credit as topics vary.

GRADUATE COURSES

200 Special Topics in Philosophy (4). Seminars on selected topics to be given by regular faculty and visiting faculty. May be repeated for credit as topics vary.

201 First-Year Seminar (4). Examination of some standard works in history of philosophy, value theory, metaphysics, or epistemology. Open to and strongly recommended for all first-year Philosophy graduate students.

205A Set Theory (4)

205B Metalogic (4)

205C Effective Processes (4)

206 Topics in Logic (4). May be repeated for credit as topics vary.

210 Topics in Ancient Philosophy (4). May be repeated for credit as topics vary.

211 Topics in Medieval Philosophy (4). May be repeated for credit as topics vary.

212 Topics in Renaissance Philosophy (4). May be repeated for credit as topics vary.

213 Topics in Modern Philosophy (4). May be repeated for credit as topics vary.

214 Topics in Nineteenth-Century Philosophy (4). May be repeated for credit as topics vary.

215 Topics in Analytic Philosophy (4). May be repeated for credit as topics vary.

216 Topics in Continental Philosophy (4). May be repeated for credit as topics vary.

218 Topics in Contemporary Philosophy (4). May be repeated for credit as topics vary.

220 Topics in Metaphysics (4). May be repeated for credit as topics vary.

221 Topics in Epistemology (4). May be repeated for credit as topics vary.

222 Topics in Mind and Action (4). May be repeated for credit as topics vary.

230 Topics in Ethics (4). May be repeated for credit as topics vary.

232 Topics in Political and Social Philosophy (4). May be repeated for credit as topics vary.

234 Topics in Aesthetics (4). May be repeated for credit as topics vary.

240 Topics in Philosophy of Science (4). May be repeated for credit as topics vary.

241 Topics in Philosophy of Physics (4). May be repeated for credit as topics vary.

242 Topics in Philosophy of Biology (4). May be repeated for credit as topics vary.

245 Topics in Philosophy of Language (4). Same as Linguistics 241. May be repeated for credit as topics vary.

246 Topics in Philosophy of Logic (4). May be repeated for credit as topics vary.

247 Topics in Philosophy of Mathematics (4). May be repeated for credit as topics vary.

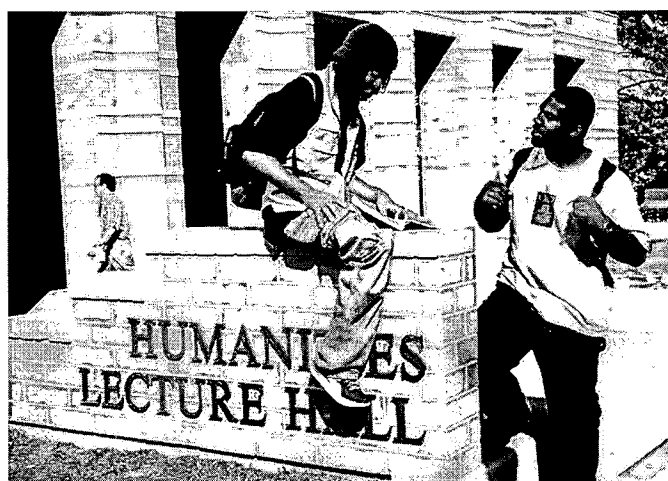
248 Continental Philosophy Workshop (1 to 4). A two- or three-quarter long workshop, conceived as a reading group and developed with the input of all participants, where significant texts are discussed and analyzed in class. In-progress, Satisfactory/Unsatisfactory grading only. May be repeated as topics vary.

249 Logic and Methodology Workshop (1 to 4). A two- or three-quarter long workshop on selected topics in logic and methodology. In-progress, Satisfactory/Unsatisfactory grading only. May be repeated as topics vary.

250 Topics in Existentialism and Phenomenology (4). May be repeated for credit as topics vary.

298 Independent Study (4 to 12). May be repeated for credit.

299 Directed Research (4 to 12). May be repeated for credit.



398 Teaching Assistant Training Program (4). An introduction to theories, methods, and resources that are useful in teaching at the university level, designed specifically for teaching assistants. Short reading assignments, video-tape screenings, guest speakers. Credits received for this course do not count toward the residency requirement for the Ph.D. Satisfactory/Unsatisfactory grading only.

399 University Teaching (4-4-4). Required of and limited to Teaching Assistants.

THE CURRICULUM IN RUSSIAN

120 Humanities Office Building II; (949) 824-5433

Faculty

Guy de Mallac, Ph.D. Cornell University, *Professor Emeritus of Russian* (modern Russian literature, peace studies, philosophy of nonviolence, Tolstoy's thought, Gandhi's thought, religious studies, Russian intellectual thought, Pasternak's life and work)

Michael A. Green, Ph.D. University of California, Los Angeles, *Professor Emeritus of Russian* (eighteenth-century Russian theatre and literary theory, Pushkin, Chekhov, Kuzmin, Russian Symbolist theater, cabaret theatre, Russian literature and theater of the 1920s)

Victorina Lefebvre, Ph.D. Lomonosov Moscow State University, *Lecturer* (methods of teaching, comparative study of Western and Soviet culture, Russian language and literature)

During the twentieth century, Russia has become one of the world's dominant political, cultural, and economic entities. Due to the peculiar relationship of antagonism that has existed between Russia and the United States through most of this century, most career possibilities using Russian in this country have been in government, and specifically in the foreign policy, national security, intelligence, and defense establishments.

In recent years, the relationship of antagonism has ended, but Russia's importance in the world has not been essentially altered. While the demand for specialists in various sectors of government has eased, relationships between our countries at other levels of society are growing more active and business opportunities are exciting and rewarding. Other areas in which the need for Russian language competence is evident right now include trade, environmental protection, social services, law, medicine, and technology.

All students in Russian language courses are encouraged to take part in the University's Education Abroad Program and spend a portion of their junior or senior year studying in Russia. Additional information is available in the Center for International Education section of this *Catalogue*.

Courses in Russian

LOWER-DIVISION

1A-B-C Fundamentals of the Russian Language (5-5-5) F, W, S. Focuses on reading, comprehension, basic composition, and conversation skills, and gives the student an initial exposure to the Russian cultural scene.

2A-B-C Second-Year Language Study (5-5-5) F, W, S. Students read simple passages from contemporary Russian literary texts and newspapers. Development of oral skills and exposure to Russian culture continue. Prerequisites: Russian 1A-B-C. (2A: VI)

3 Russian Conversation (2) F, W, S. Enables students to engage more easily in everyday activities using the Russian language. Discussions based on articles from Russian periodicals and on selected texts as well as on Russian radio and television broadcasts. Eligible students at all levels encouraged to enroll. Prerequisite: Russian 1C or consent of instructor. May be taken for credit six times.

50 Russian Culture (4) F, W, S. Study of varied topics in Russian culture, area studies, and society, both in the present and in historical perspective. Topics are not normally repeated for a two-year period. May be taken four times for credit as topics vary. (IV, VII-B)

99 Special Studies Russian (1 to 5). Prerequisite: consultation with instructor necessary prior to enrollment.

UPPER-DIVISION

100A-B-C Third-Year Language Study (4-4-4) F, W, S. Continuation of second-year program, with emphasis on grammar review, development of oral and written composition skills, and reading comprehension. Prerequisite: Russian 2C or consent of instructor. (VII-B)

101A-B-C Fourth-Year Language Study (4-4-4) F, W, S. Advanced study of Russian. Aim is to enhance comprehension and develop vocabulary at the conceptual level of oral and written exposition. Reading and analysis of literary and nonliterary texts; advanced study of morphology, syntax, and stylistics; exploration of translation techniques. Prerequisite: Russian 100C. Open to qualified nonmajors by consent of instructor. (VII-B)

150 Russian Realist Novel: Dostoevsky and Tolstoy (4) F. Introduces students to selected masterworks by Russia's most widely famous authors. The texts are studied in their historical, formal, and philosophical dimensions; instruction is by lecture and discussion. Requirements include short papers and a final examination. Taught in English. Prerequisite: satisfactory completion of the lower-division writing requirement. (VII-B)

151 Classics of Russian Literature (4). Employs a variety of approaches—historical, sociological, formalist, comparativist—to illuminate one of the world's great bodies of writing. Among writers whose work and thought examined are Pushkin, Lermontov, Gogol, Belyi, Bulgakov, Turgenev, Grekova. Taught in English. Prerequisite: satisfactory completion of the lower-division writing requirement. May be taken two times for credit as topics vary. (VII-B)

152 Soviet Russian Literature (4) S. Examination of novels and short stories by Russian writers of the Soviet period; topics may include examples of Socialist Realism, dissident and emigre literature, literature of the Thaw and Perestroika. Relevant social and political contexts are discussed. Taught in English. Prerequisite: satisfactory completion of the lower-division writing requirement. (VII-B)

191 Proseminar in Reading Russian Sources (4) F. Intensive training in reading original scholarly texts in Russian. Emphasis on developing reading speed and efficiency. Required for Russian majors in preparation for Russian 192 and 193. Prerequisite: Russian 100C or consent of instructor. May be taken for credit two times as topics vary.

192 Seminar in Advanced Russian Studies (4) W. Students explore range of topics in Russian culture and area studies through independent reading, oral presentations, and discussion. Instructor provides basic bibliography. Conducted in Russian. Prerequisite: Russian 101A and 191 or consent of instructor. May be taken for credit two times as topics vary.

193 Undergraduate Research in Russian Studies (4) S. Independent research in a carefully defined topic of Russian culture or area studies under individual direction of faculty member or members. Normally involves substantive work with Russian language sources or field work in Russian and results in extensive written report summarizing research and results. Prerequisites: Russian 101B, 191, and 192.

195A-B-C Research Internship (4-4-4) F, W, S. Year-long commitment to assist in a faculty-originated research project, either in the Program in Russian or outside of it, in research directly concerned with Russia or Russian culture or society and utilizing the Russian language. Prerequisite: Russian 100C or consent of instructor.

198 Directed Group Study (4) F, W, S. Group independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit.

199 Independent Study (1 to 4) F, W, S. Independent study under direct faculty supervision. Prerequisite: consent of instructor. May be taken two times for credit.

DEPARTMENT OF SPANISH AND PORTUGUESE

322 Humanities Hall; (949) 824-6901

Alejandro Morales, **Department Chair**

Faculty

Luis F. Avilés, Ph.D. Brown University, *Assistant Professor of Spanish* (Golden Age literature and literary theory)

Richard Barrutia, Ph.D. University of Texas, *Professor Emeritus of Spanish* (applied linguistics, bilingualism and English as a second language)

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish* (Latin American and Chicano literatures)

Anne J. Cruz, Ph.D. Stanford University, *Professor Emerita of Spanish* (Golden Age Spanish and comparative literature)

Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese* (Portuguese, Brazilian, and Lusophone African literatures)

Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish* (Latin American literature, literary theory, and women's studies)

Juergen Kempff, Ph.D. University of California, Santa Barbara, *Lecturer and Language Curriculum Director* (theoretical and applied linguistics, Spanish as a foreign language, technology and instruction)

Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese* (Latin American novel and short story)

Alejandro Morales, Ph.D. Rutgers University, *Chair of the Department and Professor of Spanish* (Latin American and Chicano literature, film studies, creative writing)

Gonzalo Navajas, Ph.D. University of California, Los Angeles, *Professor of Spanish* (eighteenth- through twentieth-century Spanish literature; film and critical theory)

Héctor Orjuela, Ph.D. University of Kansas, *Professor Emeritus of Spanish* (Latin American literature, poetry and essay)

Julian Palley, Ph.D. University of New Mexico, *Professor Emeritus of Spanish* (modern Spanish literature)

Jill Robbins, Ph.D. University of Kansas, *Assistant Professor of Spanish* (contemporary Spanish literature)

Armin Schwegler, Ph.D. University of California, Berkeley, *Professor of Spanish* (history of Spanish, dialectology, historical linguistics, typology, Creoles)

Jacobo Sefamí, Ph.D. University of Texas at Austin, *Director of Latin American Studies and Associate Professor of Spanish* (Latin American literature, contemporary poetry)

Dayle Seidenspinner-Núñez, Ph.D. Stanford University, *Professor of Spanish* (medieval Spanish and comparative literature)

Juan Villegas, Ph.D. Universidad de Chile, *Research Professor of Spanish* (literary theory, modern Spanish literature, Latin American theatre and poetry)

Zidia Webb, M.A. Michigan State University, *Lecturer Emerita in Spanish and Portuguese*

Undergraduate Program

The main objectives of the program in Spanish and Portuguese are to develop competence in the ability to understand, speak, read, and write Spanish and Portuguese, and to provide through the knowledge of these two languages an understanding and appreciation of their literature and culture.

Students are placed in Spanish courses according to their years of previous study. In general, one year of high school Spanish is equated with one quarter of UCI work. Thus, students with one, two, three, and four years of high school Spanish will enroll in Spanish 1B, 1C, 2A, and 2B, respectively. Exceptions to this placement formula must be approved by the Spanish Curriculum Director. Students with transfer credit for college-level Spanish may *not* repeat those courses for credit.

All courses in Spanish and Portuguese, unless specifically stated, are taught in the foreign language. By the end of the first year, students attain mastery of the basic structure of the language and ability to converse on everyday topics as well as to read and write on an elementary level.

In the second year, emphasis is put on gradually raising the level of the student's ability to read and write. A third-year two-quarter sequential course stresses composition and introduces literary analysis. Further, a course in phonetics aims to perfect pronunciation and presents historical and dialect variants of Spanish. The introductory courses in literature, also to be taken in the third year, emphasize the analysis and appreciation of complete literary works rather than the study of many short selections of innumerable authors in an anthology. The courses in Hispanic civilization combine a panoramic overview with a close look at a specific country or topic.

Although a major in Portuguese is not offered, advanced literature courses are available. In addition, an undergraduate minor is offered.

The faculty encourages Spanish majors or minors who are serious about improving their Spanish language ability in reading, writing, and speaking to take advantage of opportunities to immerse themselves in the Spanish language by studying in Chile, Costa Rica, Mexico, Spain, or other Spanish-speaking countries through the Education Abroad Program (EAP) or through the International Opportunities Program (IOP). Programs are available for the summer, one quarter, one semester, or one year. While studying abroad through EAP, students can continue to make progress toward their UCI degree. See the Center for International Education section of the *Catalogue* or an academic counselor for additional information.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 190.

Departmental Requirements for the Major

Spanish 2C (or Spanish 5, for native speakers) or the equivalent is a prerequisite to Spanish 10A. Spanish 10A is a prerequisite to Spanish 10B and to major requirements. Spanish 10B may be taken concurrently with upper-division Spanish courses.

Students must choose one or more of the following emphases:

Literature and Culture: Spanish 10A-B; 100A, 100B, 100C, 100D, 100E; 110A, 110B, or 110C; 113A; and six upper-division courses in literature, two of which may be in culture, film, and/or creative writing. NOTE: Two courses in the Spanish 100A–E series must be completed before enrolling in upper-division literature courses numbered above 100. Students may not enroll in more than two of the 100 series courses per quarter.

Linguistics: Spanish 15*; 100A or 100B; 100C or 100D; 100E; 107; 110A, 110B, or 110C; 113B; 187; 201, 202, or 205 (consent of instructor required for these graduate courses); Linguistics 3, 10, 20, 100; and either Spanish 199 or Linguistics 154, 164A, or 168A. NOTE: Students may double major in Spanish and Linguistics but may not apply more than two courses toward both majors.

Teaching Language and Culture: Spanish 10A-B; 15*; 100A or 100B; 100C or 100D; 100E; 105; 106A or 106B; 107; 110C; 113A; 113B; 142; one additional upper-division Spanish course; and Linguistics 3.

* For non-native speakers only; semi-native and native speakers must substitute another upper-division course in either literature, culture, or linguistics for Spanish 15.

Residence Requirement for the Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Departmental Requirements for the Spanish Minor

Spanish 2C or 5 (or equivalent) is a prerequisite to minor requirements.

Seven courses in Spanish, including Spanish 10A and 10B and at least four upper-division courses.

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI.

Departmental Requirements for the Portuguese Minor

Prerequisite: Portuguese 1C or the equivalent. Requirements: Seven upper-division courses: Portuguese 140A-B, 141, 142, 143, 144, 145. (These are offered on a two-year cycle.)

Residence Requirement for the Minor: At least four upper-division courses required for the minor must be completed successfully at UCI.

CAREER OPPORTUNITIES

Spanish is particularly useful in international business or trade, community or social service, and in foreign service. Spanish majors interested in writing may look to publishing, writing, or editing positions.

Majoring in Spanish is excellent preparation for graduate and professional study in law, medicine, social welfare, library science, business or public administration, education, international relations, journalism, or advanced study in Spanish. An option available to Spanish majors is UCI's 3-2 Program offered by the Graduate School of Management, in which students may earn a Bachelor's degree in Spanish and a Master's degree in Management in five years rather than the usual six.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

Distinguished Visiting Professors

The Department's Distinguished Visiting Professors program brings students in direct contact with some of the outstanding intellectuals in the field of Spanish, Latin American, and Chicano/United States Latino literatures and cultures. Distinguished visiting professors teach both graduate and undergraduate courses during two quarters and produce a publication for the *Hispanic Studies Series* published by Juan De La Cuesta. Past program participants have included: Professor Elias J. Rivers (1990-91), State University of New York at Stonybrook, Spanish Golden Age literature; Alfonso Sastre (1991-92), Spanish playwright and intellectual; Professor Hernán Vidal (1992-93), University of Minnesota, theorist and scholar in Latin American literature and culture; Professor John Kronik (1993-94), Cornell University, modern Spanish literature; Professor José Agustín (1994-96), leading Mexican novelist and cultural critic; and Professor Alan D. Deyermond (1997-98), Queen Mary and Westfield College, London, internationally known medievalist.

Graduate Program

All graduate courses in the Department of Spanish and Portuguese are taught in Spanish, unless otherwise indicated in the course description.

MASTER OF ARTS IN SPANISH

The Master of Arts degree in Spanish is a two-year program of study designed to expose the beginning graduate student to all periods of peninsular, Latin American, and Chicano/Latino literature and culture. The degree is awarded upon the successful completion of course work and written and oral comprehensive examinations. A minimum of 11 courses must be completed with a letter grade; at least eight of these must be graduate seminars or proseminars. Required course work includes Spanish 239A, and two courses in linguistics (Spanish 201 and 204 are recommended). To help students prepare for their master's examination, the Department offers a sequence of proseminars on peninsular literature (Spanish 210, 214, 225) and on Latin American literature (Spanish 238A, B, C) during alternate years. Proficiency (defined as the equivalent of completing 2C) in a foreign language other than Spanish is required; it is recommended that master's students take Portuguese as their foreign language, although other languages are accepted. Students may choose a focus in literature, linguistics, or creative writing. Master's candidates must complete a minimum of three quarters of course work in the Department; the maximum time to complete the master's program is three years. Normally only students who are studying for the Ph.D. are admitted to the graduate program.

MASTER OF ARTS IN TEACHING IN SPANISH

This program is specifically designed to meet the needs of working credentialed teachers, although others may apply. It seeks to provide a group of modern, relevant courses that will enable teachers to keep abreast of recent developments in their field. Applicants should have a B.A. in Spanish and should acquire proficiency in a foreign language other than Spanish. The program consists of 10 courses (eight of which must be at the graduate level) as follows: three courses in Hispanic literature; three courses in Hispanic civilization; three courses in Hispanic linguistics; and one course in Recent Trends in Foreign Language Teaching, to be combined with a curricular research project or a thesis.

DOCTOR OF PHILOSOPHY IN SPANISH

The Department of Spanish and Portuguese offers a Ph.D. degree in Spanish with a specialization in Spanish, Spanish-American, or Chicano/Latino literature and culture. The program integrates period and genre studies with work in literary theory, linguistics, sociohistorical studies, and cultural studies. The Department seeks to professionalize its Ph.D. candidates not as narrow specialists but rather as scholars and critics acquainted with a range of fields that relate to and enhance their discipline. Graduate emphases in Critical Theory and in Feminist Studies are available; other areas of study (for example, film, comparative, literature, history) may be designed with approval from the student's Ph.D. guidance committee. The Department has been traditionally committed to excellence in teaching, both in its own practice and in the formation of its graduates.

Language Requirements

In addition to Spanish and English, all doctoral candidates should have the necessary command of Portuguese to take Portuguese 243. An additional foreign language (with proficiency equivalent to the 2C level) is also required; this requirement may be satisfied by examination or course work. The selection of a second foreign language must be approved by the student's guidance committee and is based on the specific research interests and field of study of the candidate.

Course Requirements

A minimum of 24 courses beyond the B.A. or 13 beyond the M.A. are required: two courses in literary theory (including Spanish 239A) two courses in linguistics (one diachronic and one synchronic), one graduate course in Luso-Brazilian literature, and Spanish 292. Note that these requirements may include course work completed in the master's program; the remaining elective courses are selected with the approval of the student's guidance committee to prepare for the doctoral examination and the dissertation. Students are encouraged to take more than the minimum number of required courses.

A student who transfers into the doctoral program from elsewhere must take a minimum of 13 graduate courses at UCI, of which nine must be in the Department of Spanish and Portuguese (of these, six must be regularly scheduled graduate seminars or proseminars). With regard to students who enter the Ph.D. program with their master's degree from another institution, the Ph.D. guidance committee will determine the number of courses that will be accepted.

Teaching

The Department recognizes its responsibility to train all Ph.D. candidates as teachers and requires that all doctoral students with no prior teaching experience complete a minimum of three quarters of language teaching (Spanish 399). Moreover, all doctoral students are required to complete a teaching practicum by co-teaching an upper-division course with a professor and enrolling in Spanish 292 for a letter grade.

Comprehensive Examination

The Ph.D. student advances to candidacy by passing by majority vote the qualifying examination. The qualifying examination consists of:

1. An essay of 25–30 pages written on a topic related to the student's primary field of study. The essay should be presented as a publishable article for a professional journal with an original scholarly, critical, or theoretical component as well as a critical evaluation of relevant bibliography, and will be discussed during the oral examination. It will be circulated to the full committee two months prior to the date of the written examination.
2. A four-hour written examination on the student's major field of study that requires a cultural perspective of the total literary production of a given period with emphasis on one genre, topic, or problem. The definition of the major field of study is approved by the Ph.D. examination committee and the graduate director.
3. A three-hour written examination in the minor field.
4. A two-hour oral examination that includes discussion of the written examinations and the essay.

Dissertation

A dissertation topic is chosen by the candidate in consultation with the dissertation director and committee and normally falls within the major field covered by the qualifying examinations. The candidate presents a plan for the work to the dissertation committee which approves the proposal and a preliminary research outline. The student submits drafts of chapters to the dissertation director who corrects and approves the drafts and circulates them to other committee members for commentary. The defense of the dissertation occurs at an appropriate point of its development, certainly before its completion and during residency of the candidate, so that faculty input is maximized. The doctoral committee certifies the acceptance of a completed final dissertation with the signatures of individual members on the title page.

Courses in Portuguese

LOWER-DIVISION

1A-B-C Fundamentals of Portuguese (4-4-4) F, W, S. Basic grammar, composition, and conversation with an initial exposure to the varied cultures of the Portuguese-speaking world.

UPPER-DIVISION

140A-B Luso-Brazilian Prose Fiction (4-4) F, W. Comparative study of the development of the novel in Portugal and in Brazil from Romanticism to the postmodern period. First segment devoted to the nineteenth century; second segment to the twentieth century, including works by women and by African writers. Prerequisites: Portuguese 1A-B-C or equivalent. (140A: VII-B)

141 Luso-Brazilian Civilization (4) F. An introduction to significant historical, social, and cultural trends in the Portuguese-speaking world through the use of essays, short literary works, paintings, and popular art. Prerequisites: Portuguese 1A-B-C or equivalent.

142 Luso-Brazilian Short Story (4) W. Discussion of Machado de Assis and Eca de Queiroz's best-known short stories, followed by an introduction to subsequent developments of the genre in twentieth-century literatures of Portuguese expression, including African and Luso-American. Prerequisites: Portuguese 1A-B-C or equivalent.

143 Luso-Brazilian Poetry (4) W. An overview of selected poetic works in the Portuguese language, ranging from the medieval "Cancioneiros" to the Modernist period and beyond. Prerequisites: Portuguese 1A-B-C or equivalent.

144 Masterpieces of Luso-Brazilian Literature (4) F. In-depth analysis of one period or major author of Portuguese literature or one period or major author of Brazilian literature. Prerequisites: Portuguese 1C or equivalent. Same as Women's Studies 170PA when topic is appropriate. May be repeated for credit as topics vary.

145 Luso-Brazilian Theatre (4) S. The study of selected twentieth-century plays, predominantly from Brazil, within a socio-historical context. The problem of dramatic production and political repression is discussed in relation to the Portuguese "teatro de revista." Prerequisites: Portuguese 1A-B-C or equivalent.

190 Individual Studies (4-4-4) F, W, S

GRADUATE

243 Seminar on Luso-Brazilian Literature (4) F. Critical analysis of selected literary works from Portugal and/or Brazil. Contextualizes the works within their historical and literary specificity and discusses pertinent theoretical issues raised by them. Conducted in Portuguese. Prerequisite: reading knowledge of Portuguese. May be repeated for credit once provided course content varies.

290 Individual Study (4) F, W, S

Courses in Spanish

LOWER-DIVISION

1A-B-C Fundamentals of Spanish (5-5-5) 1A (F), 1B (W), 1C (S). Communicative approach with emphasis on conversational skills: the students and their environment, their experiences, and their opinions about issues. Reading and writing skills also introduced. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. Spanish 1A-B-C and Spanish S1AB-BC may not both be taken for credit.

S1AB-BC Fundamentals of Spanish (7.5-7.5) Summer. First-year Spanish in an intensified form. Same as Spanish 1A-B-C during academic year. Prerequisite for S1AB: none; for S1BC: Spanish S1AB or 1B, or two years of high school Spanish. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. Spanish S1AB-BC and Spanish 1A-B-C may not both be taken for credit.

2A-B-C Intermediate Spanish (4-4-4) 2A (F), 2B (W), 2C (S). Conversation, reading, and composition skills are developed using texts of literary and social interest. Emphasis on grammar review. Prerequisite: Spanish 1C or S1BC or equivalent. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. Spanish 2A-B-C and Spanish S2AB-BC may not both be taken for credit. (2A: VI)

S2AB-BC Intermediate Spanish (6-6) Summer. Second-year Spanish in an intensified form. Same as Spanish 2A-B-C during academic year. Prerequisite for S2AB: Spanish 1C or three years of high school Spanish; for S2BC: Spanish S2AB or 2B or four years of high school Spanish. Not open to native or semi-native speakers of Spanish; those students should take Spanish 5 instead. Spanish S2AB-BC and Spanish 2A-B-C may not both be taken for credit. (S2AB: VI)

5 Spanish for Spanish Speakers (4) F, W, S. Workshop for writing concise compositions in Spanish with emphasis on contrastive features and interferences from English. Learning by doing approach to teaching of Spanish grammar, vocabulary, and orthography. Equivalent to Spanish 2C. Prerequisite: advanced (native-like) oral proficiency in Spanish. (VI)

10A-B Advanced Composition (4-4) F, W, S. 10A: Compositions on a variety of themes and types of writing, motivated and prepared in the classroom and arranged in order of difficulty. Review of selected grammatical topics. Prerequisite: Spanish 2C or 5 or equivalent. **10B:** Includes introduction to literary analysis. (VII-B)

15 Advanced Spanish Conversation (4). Primarily designed to improve the fluency of non-native speakers of Spanish. Concentrates on the active expansion of vocabulary, as well as listening and speaking skills in general. Introduction to Spanish dialect variations of both American and Peninsular Spanish. Not open to native or semi-native speakers of Spanish. Prerequisite: Spanish 10B.

44 Hispanic Literatures for Nonmajors (4). Focuses on major Spanish and Latin American literary texts within a historical and theoretical perspective. Taught in English with literary texts read in the original language. Prerequisites: Spanish 2C or 5 or equivalent; English majors only. (VII-B)

UPPER-DIVISION

100A, B, C, D, E Introduction to Spanish, Latin American, and Chicano/Latino Literature. Survey of major works of Peninsular, Latin American, and Chicano/Latino literature that contextualizes representative works in their historical period and introduces students to methods of literary analysis. Prerequisite: Spanish 10A.

100A Introduction to Medieval and Golden Age Spanish Literature (4). (VII-B)

100B Introduction to Modern Spanish Literature: Eighteenth–Twentieth Centuries (4). (VII-B)

100C Introduction to Spanish American Literature: Pre-Hispanic to Nineteenth Century (4). (VII-B)

100D Introduction to Spanish American Literature: Nineteenth and Twentieth Centuries (4). (VII-B)

100E Introduction to Chicano and U.S. Latino Literature (4). (VII-A)

105 Theory and Practice of Bilingual Education (4). Theoretical and historical framework for bilingual education as practiced in the United States. Theoretical research regarding bilingual education and language acquisition. Analysis of historical context in which bilingual education is grounded. Examination of various changes in government policy and perceptions. Prerequisite: Spanish 10A; Linguistics 3 recommended.

106A Methods for Elementary Bilingual Teachers (4). Direct observation of bilingual classrooms in local elementary schools, classroom lectures, discussions, and presentations on the culture and language of the bilingual student. Prerequisite: Spanish 10B or equivalent. Same as Education 140A.

106B Methods for Secondary Teachers of Spanish (4). Communicative approaches to teaching Spanish at the secondary school level. Theory and practice of oral proficiency acquisition techniques. Requires field work. Emphasis placed on training differences for native versus nonnative Spanish speakers. Prerequisite: Spanish 10B or equivalent. Same as Education 140B.

107 Advanced Spanish Grammar (4). Designed primarily for students who have demonstrated a substantial level of proficiency in their studies of the Spanish language. Takes a thorough approach to advanced grammatical problems, in order to assist students in their mastery of the elements of the Spanish language. Prerequisite: Spanish 10B or equivalent.

110A Peninsular Civilization (4). Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. Same as Women's Studies 170SE when topic is appropriate. (VII-B)

110B Latin American Civilization (4). Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. Same as Women's Studies 170SF when topic is appropriate. (VII-B)

110C Chicano History (4). Explores the cultural history of the Chicano from pre-Columbian cultures, Colonial and Modern Mexico, to the Chicano experience in the United States. Prerequisite: Spanish 10A or equivalent. (VII-A)

113A Spanish Phonetics (4). Introduction to basic notions of Spanish phonetics. Particular attention is paid to problems of pronunciation that arise in native and non-native speakers of Spanish due to interference between Spanish and English. Phonology (the system that underlies phonetics) and Spanish dialectology also included. Prerequisite: Spanish 10B or equivalent.

113B Introduction to Spanish Linguistics (4). Application of basic notions of linguistics to Spanish. Spanish phonology, morphology, syntax, and semantics. Special attention to the application of linguistics to the teaching of Spanish. Prerequisite: Spanish 10B or equivalent; Linguistics 3 recommended.

114 Methods of Teaching English as a Second Language (4). Methods and materials for teaching English to speakers of other languages. Includes methodology for teaching children, adolescents, and adults. Field experience required.

116 Medieval Spanish Literature (4). Medieval literature in Spain from ninth century to 1500. Works of lyric and epic poetry, prose fiction, and non-fiction. Substantial historical and cultural background explored. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. (VII-B)

121 Golden Age Literature (4). Golden Age literature in Spain including the Renaissance and Baroque periods. Works of poetry, narrative, and theater. Historical and cultural background. Prerequisite: two courses from Spanish 100A, 100B, 100C, 100D, or 100E. May be taken for credit three times as topics vary. (VII-B)

122 Eighteenth- and Nineteenth-Century Spanish Literature (4). The main literary and ideological trends in eighteenth- and nineteenth-century Spain, including the enlightenment, romanticism, realism, and naturalism. Prerequisite: Spanish 10A or equivalent. May be taken for credit three times as topics vary.

123 Twentieth-Century Spanish Literature (4). Twentieth-century Spanish authors. Works of poetry, narrative, or theater. Historical context of the period and principles of literary theory. Prerequisite: Spanish 10A or equivalent; Spanish 10B recommended. May be taken for credit three times as topics vary.

130A Spanish-American Prose Fiction 1830–1920 (4). Development of the novel and short story from Romanticism through Modernism. Prerequisite: Spanish 10A or equivalent; Spanish 10B recommended. (VII-B)

130B Spanish-American Prose Fiction 1920–1950 (4). The search for a national identity in the context of European values and indigenous tradition. Criollismo, Surrealism, and Existentialism. Prerequisite: Spanish 10A or equivalent; Spanish 10B recommended. (VII-B)

130C Spanish-American Prose Fiction 1950 to Present (4). Magic Realism, the Fantastic, Self-Conscious Fiction. Mass media techniques, linguistic play. Borges, Rulfo, García Márquez, Cortázar, Puig. Prerequisite: Spanish 10A or equivalent; Spanish 10B recommended. (VII-B)

131A Spanish-American Poetry (4). The study of a particular movement, period, or theme, emphasizing poetry, e.g., modernismo, Vanguardismo, Post-Vanguardismo, or women's literature. Prerequisite: Spanish 10A or equivalent; Spanish 10B recommended. May be repeated for credit as topics vary. (VII-B)

131B Spanish-American National Literature (4). The literature of specific countries with emphasis on the socio-historical contexts. Representative texts from all genres, including the essay. Prerequisite: Spanish 10A or equivalent; Spanish 10B recommended. May be repeated for credit as topics vary. (VII-B)

131C Spanish-American Theatre (4). The twentieth-century Spanish-American theatre in one or more countries. Structured around movements, chronological periods, or themes. Prerequisite: two courses from Spanish 100A, 100B, 100C, 100D, or 100E. (VII-B)

139 Writing about Literature (4). Requires at least 4,000 words of assigned English composition based on Peninsular Spanish and/or Latin American texts in English translation. Several essays required. Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing.

140A, B Chicano Literature (4, 4). Focus on contemporary Chicano literature, in relation to Chicana literature, women's literature, American literature, and Latino literature. Prerequisite: Spanish 10A or equivalent; Spanish 10B highly recommended. Same as Women's Studies 170SA, 170SB when topic is appropriate. (VII-A)

142 Chicano Culture (4). Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Prerequisite: Spanish 10A; Spanish 10B recommended. May be taken twice for credit as topics vary. (VII-A)

143 Latino Literatures of the United States (4). Acquaints non-Spanish majors with the literatures written in the United States by Spanish-speaking sectors of our population. In English. Does not satisfy Spanish major or minor requirements. May be repeated for credit as topics vary. (VII-A)

150 Spanish-American Literature in Translation (4). Recent Latin American fiction of Revolution and Escapism. Readings of Cortázar, Borges, Fuentes, García Márquez, Rulfo, and Desnoes. Taught in English. (VII-B)

160 Topics in Hispanic Film Studies (4). Study of Spanish, Latin-American, or Chicano cinema from historical and stylistic perspectives. Sociological implications of the media and its relation to literature. Scenarios, cinematographic theories, films. May be repeated for credit when topic changes. In English. Same as Film Studies 160. (VII-B)

161 Creative Writing Workshop (4). Focuses on the development of writing techniques based on discussion of student short fiction and poetry and relevant literary texts. Writing may be in English, Spanish, or bilingual. Prerequisite: consent of instructor.

165 The Cinema of Spain (4) F. Study of the main films of Spanish cinema from the classical period to modern authors. Readings and discussion on the connections between film and the major cultural developments in modern Spain placed in a European context. Introduction to film techniques. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary.

185 Selected Topics in Spanish Literature (4). Selection of representative topics in Spanish literature. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. Same as Women's Studies 170SD when topic is appropriate. (VII-B)

186 Selected Topics in Latin American Literature (4). Selection of representative topics in the history of Latin American literature. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary.

187 Selected Topics in Spanish Linguistics (4). Major topics in Spanish linguistics. May be repeated for credit as topics vary.

199 Independent Study (1 to 4) F, W, S. Research paper required. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

GRADUATE

In addition to the following courses, graduate students might find Humanities 200A, B, C (History and Theory) and Humanities 220A, B, C (Studies in Literary Theory and Its History) of special interest.

200 Second-Language Acquisition (4) F, S. A survey of the psycholinguistic research in language acquisition; children's first, second, and/or foreign language. Includes studies in contrastive analysis (Spanish-English) and error analysis in a variety of acquisition processes.

201 History of the Spanish Language (4) W. Diachronic survey of phonological changes from Latin to Old Spanish to Modern Spanish. Focuses on Castilian including Romance languages and other peninsular dialects for comparative purposes. Morphological changes.

202 Spanish in the United States (4) S. Focuses on sociolinguistic functions of the various social and stylistic varieties of Spanish in the U.S. in spoken and written forms. Study of phonological, morphological, syntactical, and lexical differences and similarities with the standard Latin American and peninsular Spanish. Emphasis on recent work in Chicano discourse, and examination of relevant research on various dialects.

204 Recent Trends in Foreign Language Teaching (4). Recent theories and implications for language teaching. Topics include recent research in new methodologies of language acquisition. Review of linguistic research comparing various communicative trends including the cognitive code, the natural approach, the direct method, audiolingual, and most of the communicative and proficiency-oriented strategies of language teaching.

205 Spanish Dialectology (4) S. Phonological, morphological, and syntactic variations in Spanish as spoken in the Hispanic world, from synchronic and diachronic points of view. The study of Spanish as spoken in the United States.

210 Proseminar in Medieval Literature (4) S. Survey of Spanish Medieval literature covering main literary and cultural trends. Analysis of Spanish masterpieces including *Poema del Mio Cid*, *Libro de Buen Amor*, and Manrique's *Coplas*.

212 Studies in Medieval Spanish Literature (4) F. Seminar focusing on particular work, aspect, theme, genre, or period of medieval Spanish literature. Taught in Spanish or English. May be repeated for credit as topic varies.

214 Proseminar in Golden Age Literature (4) W. Survey of the major literary and cultural developments in sixteenth- and seventeenth-century Spain, such as the Italianate lyric, the pastoral, and the new narrative of the *novelas ejemplares*. Mysticism and the Counter Reformation, the concept of *honra*, the formation of a national theater, and the Baroque *desengaño*. Recommended for M.A. students.

215 Golden Age Prose Fiction (4) F. Examines major examples of Spanish Golden Age narrative: its genesis, development, and intertextuality. Analyzes the genre both as a literary phenomenon and as a critique of Spain's changing political and social conditions.

216 Golden Age Lyric Poetry (4) S. Critical analysis of major Spanish Golden Age lyric poets (Garcilaso, Luis de León, San Juan de la Cruz, Lope de Vega, Góngora, Quevedo) with an attempt to present a historical development of Spanish poetry and to relate this to larger sociohistorical forces.

217 Golden Age Theatre (4) F. Major *comedias* of the Golden Age. Prefaced by a brief survey of prior dramatic traditions in Spain. Includes Lope de Vega in the *comedia nacional*; social and religious drama and the *comedia capa y espada* (Ruiz de Alarcón, Tirso de Molina, Calderón).

218 The Enlightenment and Romanticism: Spanish Subparadigm (4) F. Enlightenment and romanticism in their European context. Emergence of modernity and its ramifications in Spain. Similarities, differences of these two movements. Works by Jovellanos, Moratín, Feijoo, Cadalso in relation to philosophical, aesthetic premises established by major thinkers, from Voltaire, Rousseau, to Goethe.

219 The Aesthetics of Representation in the Nineteenth Century (4) S. The work as a social document. The ideological and aesthetic proposals of realism and naturalism versus traditionalist view. The positivist controversy. The impact of liberalism and utopian vision in fiction. Works by Clarín, Galdós, Pardo Bazán, and Blasco Ibáñez.

220 Turn-of-the-Century Literature (4) W. Analysis of the turn-of-the-century literature. Philosophical, historical, and cultural underpinnings of the changes in literature and art that took place at the time. Major authors: Unamuno, Valle Inclán, Machado.

221 Spanish Literature and European Modernism (4) S. Study of the links of the Spanish literary production of the 1920s with the aesthetic and social premises prevalent in European Modernism. The Avant-garde. Surrealism. The elitist view of art. Works by Salinas, Guillén, Aleixandre, García Lorca, Pérez de Ayala, and Jarnés.

222 Modern Spanish Theatre (4) F. Reading and discussion of the works of Spain's most representative twentieth-century playwrights. Includes theory of theater and history of Spain.

223 Post-War Literature: Art as Resistance (4) W. The literature of the period following the Spanish Civil War. The politics of repression and the emergence of art as resistance. The new social realism. Lukacs and Marxist aesthetics. Major authors: Cela, Blas de Otero, Sastre, and Juan Goytisolo.

224 Spanish Thought: The Discourse of Modernity (4) S. Study of the major thinkers of modern Spain, emphasizing their connections with European thought in particular. Works of Ortega y Gasset, Unamuno, Aranguren, Savater, Trias, and others. Emphasis on the study of aesthetic ideas.

225 Modern Spanish Literature (4) S. Overview of modern Spanish literature and culture in relation to the concept of modernity. Focuses on major literary texts from the eighteenth century to the present. Study of the links between literature and other cultural developments of the time. Works by Feijoo, Jovellanos, Galdós, Unamuno, García Lorca, Muñoz, Molina, and others.

226 Aesthetics of Contemporary Spain: The Postmodern View (4) F. Literature within the postmodern context. High and low culture aesthetics. The explosion of antihierarchical concepts in the post-Franco period. Works by Muñoz Molina, Pérez Reverte, Rossetti, and Esther Tusquets.

227 Chicano/Latino Autobiography (4) S. A study of autobiographies authored by Latinos in North America from the sixteenth to the twentieth century. Focus on theories of ethnogenesis and difference.

231A History of Latin American Theatre (4) W. An overview of Latin American theater from pre-Hispanic theatrical forms to the present, emphasizing the relationships between cultural and political systems and theater, and the utilization of theater as a tool of self-legitimization for the exercise of cultural power.

231B Modern Latin American Theatre (4) S. History of theater in one country. Emphasis on theatrical discourses and their relationship with other forms of visual representation and arts in the conflicting processes of national identity or national self-definitions. May be taken for credit twice as topics vary.

231C Contemporary Latin American Theater (4) F. The impact of modernization as a cultural and political tool in Latin America, and its forms of expression as theatrical discourses. Emphasis on the inclusion and utilization of new forms of mise-en-scene, and the presence of postmodern forms.

232 Spanish-American Short Story (4-4) S. Study of the Spanish-American short story, including its theory and history. Devoted to the works of a particular region or country, and/or a specific literary trend. May be taken for credit twice as topics vary.

233 Spanish-American Novel (4). Focuses on different regions and/or periods within the twentieth century. Novels are examined in different contexts such as the problematics of representation, national identity, ethnicity, and notions of gender. May be repeated for credit as topics vary.

234 Spanish-American Poetry (4) S. Study of major movements and poetic trends, working with specific historical currents or analyzing a particular feature in several periods, i.e., baroque and neo-baroque, political committed poetry, the long poem. May be repeated for credit as topics vary.

235 Intellectual History in Latin America (4) F. Concentrates on different theories and hypotheses about cultural identity, national autonomy, ethnic diversity, colonialism, and postmodernism. May be repeated for credit as topics vary.

236 Selected Topics in Latin American Cultures (4) W. Focuses on one of the following areas: national cultures; specific author(s); theoretical discourses. May be repeated for credit as topics vary.

237 Selected Topics in Chicano Literature (4) S. Explores different topics in Chicano literature, from the Colonial period to the present, considering questions of migrancy, culture, language, gender, and identity as related to the people of Mexican ancestry residing in the United States. May be repeated for credit as topics vary.

238A Precolonial and Colonial Spanish-American Literature (4) S. Focuses on the literature produced during the colonial period (1521–1810) in Latin America. Examination of a few pre-Hispanic texts. Readings from the early chroniclers such as Díaz del Castillo, Garcilaso de la Vega, Ercilla y Zúñiga, and Sor Juana.

238B Proseminar in Latin American Fiction: Nineteenth and Twentieth Centuries (4) W. An overview of fiction and metafiction in the context of dominant ideologies, minority discourses, and the notions of gender. Special emphasis is given to the different theories on the cultural specificity of Latin America.

238C Nineteenth- and Twentieth-Century Spanish American Poetry (4). Overview of major works and literary currents. Topics include: continental self-definition, assimilations and rejections of European movements, effects of historical events, nationalism, lyricism. Poets: Hernández, Darío, Martí, Lugones, Huidobro, Borges, Vallejo, Neruda, Mistral, Villaurrutia, Paz, Cardenal, Castellanos, and others.

239A Introduction to Literary Theory (4) F. Through selected readings of key figures in intellectual history (Aristotle, St. Augustine, Descartes, Kant, Hegel, Marx, Nietzsche, William James, and Freud), traces the development of Western literary critical principles from Aristotle to the twentieth century.

239B Methods of Literary Criticism: Twentieth Century (4) W. Study of major critical movements of the twentieth century, from Modernism's varied trends to those of the Postmodern/Postcolonial period. Emphasis on the development of prior critical discourses (Spanish 239A: Freudianism, Marxism, Phenomenology) as well as revisionary theories. Prerequisites: Spanish 239A and graduate standing.

241A-B-C Feminist Theory and Writing (4-4-4) F, W, S. Women's literary production is analyzed in the wider context of patriarchal constructions, social subordination, and feminist discourses. Focuses on writings from these five areas: Spain, Latin America, Chicana/Latina, Portugal, Brazil.

245 The Spanish Cinema: Theories of Narrativity (4) F. Study of the modern Spanish film with an emphasis on the films of the last fifteen years. Special attention to the study of narration in film and fiction and the formal links between the two media. May be repeated for credit as topics vary.

251 Latino Literatures of the United States (4) W. Analysis of important works of Hispanic-American fiction. Explores works that are considered marginal to the canon. Component of theories of ethnic discourse. May be repeated for credit as topics vary.

252 Cultural Readings: Selected Topics (4) F. Considers the artistic discourses manifested by the various Latino cultures. Film, art, music are some of the mediums of cultural expression to be analyzed. May be taken for credit twice as topics vary.

260 Seminar in Spanish (4) W. Topics vary. May be repeated for credit when topic changes.

270 Creative Writing Workshop in Spanish/English (4) F, W, S. Discussion of theory and practice of creative writing. Focus on critical analysis of participant's work in progress. Texts may be written in Spanish and/or English and may be written in poetry or prose format. May be repeated for credit as topics vary. Prerequisite: consent of graduate advisor.

290 Individual Study (4) F, W, S. May be repeated for credit as topics vary.

291 Directed Reading (4) F, W, S. Satisfactory/Unsatisfactory only. May be repeated for credit as topics vary.

292 Teaching Practicum (4) F, W, S. Satisfactory/Unsatisfactory only.

293 Creative Writers' Thesis Consultation (4) F, W, S. Students work with professor in the development of their creative writing project—either a novel, collection of short fiction, or collection of poetry. The goal of this writing in consultation is to conduct on-going critique of the work in progress. Prerequisite: consent of graduate advisor.

299 Dissertation Research (4 to 12) F, W, S. Satisfactory/Unsatisfactory only.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

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William Rodman Shankle, M.D. Brown University Medical School, *Associate Adjunct Professor of Cognitive Sciences and of Information and Computer Science* (application of learning systems, informatics, image processing, and other methods of artificial intelligence to the diagnosis, treatment, and management of persons with memory problems due to Alzheimer's disease and related disorders)

Phillip C.-Y. Sheu, Ph.D. University of California, Berkeley, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (database systems, multimedia information management, simulation, object-oriented systems)

Wei Kang (Kevin) Tsai, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Electrical and Computer Engineering and of Information and Computer Science* (data communication networks, neural networks, parallel algorithms and architectures, CAD for VLSI systems engineering)

Computers and communications technologies have changed the world. From the largest information processing problems to the control of the engines in our automobiles, these technologies play a vital role. This revolution is only a few decades old, but already futurists talk about the twenty-first century in terms of the "information economy," the "information society," and even the "information age." UCI's Department of Information and Computer Science (ICS) is in the center of this revolution, with programs of instruction and research in a variety of areas within computer and information technology.

ICS faculty cover a broad spectrum of important topics in their research and teaching interests including: formal and mathematical methods for improving the performance and power of computational systems; advanced processes for design and engineering of computer systems and communication networks; the software that makes the computer useful, with particular concern for the design and engineering of large software systems for critical applications; the fascinating area of intelligence, and the connections between natural and artificial intelligence; the economics, sociology, and application of the technology in modern organizations, and the use of interactive multimedia in computer systems that facilitate learning. The faculty are concerned with more than just technology, however. The fundamental intellectual features of the information and computer sciences are applicable to many scholarly and scientific fields. ICS is truly an interdisciplinary department, simultaneously grounded in science and oriented toward application.

Computer resources available for campuswide use include the Maspar and Hypercube parallel processors, which are made available by various departments at UCI. Additionally, systems available from the UCI Office of Academic Computing (OAC) include a Hewlett Packard SPP2000 parallel computer, Sun SPARC servers, a graduate student laboratory with DEC Alpha workstations, and various peripherals. Commercial dial-up services and campus dial-up lines provide support for home connections to many of these systems as well as systems within the Department of Information and Computer Science. X terminals, Pentium PCs, and Power Macintoshes also are available via laboratories open 24 hours a day. Additional information may be obtained by calling OAC at (949) 824-6116; e-mail: oac@uci.edu; World Wide Web: <http://www.oac.uci.edu>.

Computer resources within the Department of Information and Computer Science include a wide range of instructional and research machines. For instructional computing, these include two UNIX servers (a Sun SPARCserver 1000 multiprocessor and a Sun 670MP multiprocessor), 50 SPARC workstations, 70 Macintoshes, 80 Pentium and Pentium Pro PCs, and some general purpose terminals. For research computing, resources include a Sequent multiprocessor and over 250 varying types of Sun workstations and servers.

DEGREES

Information and Computer Science B.S., M.S., Ph.D.

Honors

Honors at graduation, e.g., *cum laude*, *magna cum laude*, *summa cum laude*, are awarded to approximately 12 percent of the graduating seniors. Students are nominated for honors based on criteria such as grade point average (including overall, ICS, mathematics); number of upper-division ICS courses completed beyond the minimum; courses taken outside ICS beyond required breadth; and research activities. To be eligible for honors, a general criterion is that students must have completed at least 72 units in residence at a University of California campus. Other important factors are considered (see page 51).

CAREERS FOR THE ICS MAJOR

Graduates of the Department of Information and Computer Science pursue a variety of careers. Many graduates specify, design, and develop a variety of computer-based systems comprised of software and hardware in virtually every application domain, such as aerospace, automotive, biomedical, consumer products, engineering, entertainment, environmental, finance, investment, law, management, manufacturing, and pharmacology. ICS graduates also find jobs as members of research and development teams, developing advanced technologies, designing software and hardware systems, and specifying, designing, and maintaining computing infrastructures for a variety of institutions. Some work for established or start-up companies while others work as independent consultants. After a few years in industry, many move into management or advanced technical positions. Some ICS students also use the undergraduate major as preparation for graduate study in computer science or another field (e.g., medicine, law, engineering, management).

Undergraduate Program

The ICS undergraduate program prepares students for professions and careers in industry and provides students with the tools for advanced education at the graduate level. Many ICS graduates follow career paths immediately after graduation; others go on to advanced study in a variety of fields, including computer science, management, engineering, law, medicine, and so on. An ICS undergraduate education is a blend of scholarship, science, technology, and practical application that forms an excellent foundation for professional life in the twenty-first century and prepares a student with serviceable skills useful for a lifetime.

The basis of the ICS undergraduate program is a set of fundamental courses in mathematics and computer science, supplemented by breadth requirements from other academic disciplines. A premium is placed on writing and quantitative skills. Students start early with hands-on experience with advanced computing systems, and intense use of computer and network technologies continues throughout the undergraduate program. ICS students study data organization, algorithm design and analysis, design and organization of hardware and network systems, software engineering, artificial intelligence, social aspects of system design and use, and management of technology. In the process, students work with state-of-the-art hardware and software technologies, learn several contemporary programming languages, and make extensive use of computer-based utilities such as electronic mail.

Students who are doing, or planning to do, extensive work with numerical problems are advised to consider courses in numerical analysis, statistics, probability, or other applied mathematics areas.

Students may also wish to consult the list of courses offered by the School of Engineering. Some Engineering courses can count toward intermediate-level and project course requirements for the ICS major. See the **upper-division** requirements for details.

Students enrolled in other degree programs who are interested in digital computer programming and the field of computer science will normally begin their studies with Introduction to Computer Science I (ICS 21) and continue in the programming sequence with Introduction to Computer Science II and Fundamental Data Structures (ICS 22 and 23) as far as their interests require and their programs permit.

The ICS Undergraduate Student Affairs Office is staffed by professional academic counselors and peer advisors. These individuals are available to assist students with program planning, questions on University and departmental policies and procedures, progress toward graduation, and other questions that arise in the course of a

student's education. Faculty also are available for advising, generally for suggestions of additional course work in the student's area of specialization and on preparation for graduate school.

ADMISSIONS

Freshmen

In the event the major in ICS receives more qualified applicants than can be accommodated, applicants may be subject to screening beyond minimum University of California admissions requirements. There is a limit on the number of applicants admitted to the major. See page 37–38.

Transfer Student Policy

Students transferring to UCI fall 1998 or thereafter must satisfy the following requirements:

1. Completion of one year of college mathematics. Courses equivalent to Mathematics 6A-B-C (Discrete Mathematics) are preferred as this facilitates scheduling after transfer to UCI. If not available, students should take first-year calculus. A semester of pre-calculus and a semester of calculus may not be used to satisfy this requirement.
2. Completion of one year of computer science courses. The course work must contain one UC-transferable programming course involving concepts such as those found in C++, Ada, Java, Modula-3, or another modern, high-level language. Programming-only courses in Basic, Fortran, and Cobol are not sufficient. Programming courses in Pascal or C may be used to satisfy this requirement but are not recommended. Additional courses beyond the programming course must be taken to satisfy the year of computer science. It is strongly recommended that students select UC-transferable courses that do not focus strictly on learning a programming language but rather focus on topics such as data structures or computer architecture, if such courses are available.

There is a limit on the number of applicants admitted to the major.

NOTE: The lower-division requirement in ICS consists of five courses which must be taken in a certain order and which are prerequisites for upper-division courses. Students who transfer to UCI as juniors and must complete all or part of this sequence will therefore find that it will take longer than two years to complete their degrees.

To ensure admission consideration for the fall quarter, students should be sure to file their application by November 30 of the prior year. The selection criteria include grades, test scores, and other considerations. Note, however, that in cases where the number of incoming freshmen and advanced standing students who elect ICS as a major exceeds the number of positions available, not all applicants will be accommodated.

Alternately, students can come to the campus without declaring a major and take the courses necessary to meet the ICS change-of-major requirements. Once the course work is completed, and the other conditions for changing majors met, students may then apply for a change of major to ICS. Additional information is available from the ICS academic counselors.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

Information and Computer Science Major Requirements

Lower-division (some or all of these are prerequisites for required upper-division ICS courses):

- A. ICS 6A or Mathematics 6A, Mathematics 6B, Mathematics 6C or 3A, Mathematics 2A-B-C.
- B. ICS 21, 22, 23, 51, 52.

Upper-division:

- A. ICS 121, 131, 141, 142, 143, 151, 152, 161, 171.
- B. One intermediate course in each of two areas, selected from ICS 102; 122, 123; 132; 144, 148; ICS 153, Engineering ECE143, ECE151; ICS 162, 163, 164; ICS 172, 173, Engineering ECE136; Engineering ECE104 or ICS 186; ICS184.
- C. Three project courses selected from ICS 105, 125, 126A-B, 127, 135, 145A, 145B, 155A, 155B, 156, 165, 175A, 175B, Engineering ECE151L. NOTE: ICS 127 may not be used to satisfy any part of the project course requirement in conjunction with ICS 126A-B.
- D. Three upper-division mathematics courses selected from the following groups of courses such that at least two of the three courses are selected from the same group: Mathematics 105A-B, 107 (with accompanying laboratories); 120 A-B, 121A-B, 123; 130A-B-C, 131A-B-C, 132A-B-C (with accompanying laboratories); 114A, 140A-B-C-D, 146, 147; 162A-B; 171A-B-C; 150, 151, 152, Philosophy 105A-B-C.

Specializations: Students may elect to complete one or more specializations within the major in Information and Computer Science. Courses taken for a specialization must be taken for a letter grade and may be used to satisfy upper-division requirements for the major. Courses may also be used to satisfy requirements of more than one specialization, subject to the following limitation: four of the courses used to satisfy the requirements for any one specialization may not be used to satisfy the requirements for any other specialization.

One individual study course (ICS 198 or 199) in the area of specialization may be substituted for one designated course (indicated by *) in the specialization requirements, upon prior approval of the ICS Associate Chair for Undergraduate Affairs.

Artificial Intelligence: four courses* selected from ICS 163 or 165, 172-179.

Computer Systems: four courses selected from ICS 123, 144-149, 153-159.

Implementation and Analysis of Algorithms: two courses selected from ICS 163, 164, 165; two courses* selected from ICS 125, 145A, 145B, 156, 175A, 175B.

Information Systems: three courses selected from ICS 102, 105, 125, 132, 135; one course* selected from ICS 123, 137, 153, 175B, 184.

Networks and Distributed Systems: four courses selected from ICS 123, 145B*, 148, 153, 156*.

Software Systems: two courses selected from ICS 102, 105, 122, 123; two software project courses, either ICS 125 and 127* or 126A-B.

Requirements for the Minor

ICS 21, 22, 23; ICS 6A or Mathematics 6A; ICS 51 or 52; two upper-division ICS courses from ICS 100-179, excluding ICS 139.

Honors Program in Information and Computer Science

The honors program in ICS provides an opportunity for selected students majoring in ICS to pursue advanced work in one of the research areas in the Department. Admission to the program is based on a formal application submitted to the Department in the spring. Applications are available each year beginning May 15 and must be submitted by June 15 to ensure consideration.

For an application to be considered, the following conditions must be met (although exceptions may be granted in unusual circumstances):

1. The student must have completed the required lower-division ICS courses and Mathematics 6A-B-C by the end of the spring quarter in which the application is made.
2. The student must have the following grade point averages:
 - a. an overall grade point average of at least 3.2;
 - b. a grade point average of 3.5 or higher in the required lower-division ICS courses;
 - c. a grade point average of 3.5 or higher in Mathematics 6A-B-C.
3. Application must be made in the spring of the student's sophomore year. Certain exceptions are available, for example, for transfer students whose completion of the lower-division courses is delayed.

In selecting students for the honors program, the Department also considers evidence of ability and interest in research. Students admitted to the program participate in the ICS Honors Seminar (ICS H197), which provides an introduction to research areas in the Department, followed by a minimum of two quarters of independent supervised research (ICS H198). Passing these two 198s counts for one of the project courses required for the major, provided that the other project course taken is in a different area. In order for the student to be considered to have successfully completed the honors program, the work must be certified to be of honors quality by the student's advisor and by the program advisor.

THE 3-2 PROGRAM WITH THE GRADUATE SCHOOL OF MANAGEMENT

Outstanding students who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

EDUCATION ABROAD PROGRAM

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Additional information is available in the Center for International Education section.

Graduate Program

The Department offers graduate programs leading to the M.S. and Ph.D. degrees in Information and Computer Science. Enrollments in the M.S. program are being limited to those students with an undergraduate degree in computer science or a closely related field.

Both M.S. and Ph.D. students may work toward a basic degree, or specialize in one of the following concentrations: Artificial Intelligence (AI); Computer Systems and Networks (CSN); Computer Systems Design (CSD); Computing, Organizations, Policy, and Society (CORPS); Software (SW); Algorithms and Data Structures (Theory). The Department is actively developing programs in the areas of computational biology and embedded systems.

MASTER OF SCIENCE PROGRAM

A minimum of 48 units is required for the M.S. degree. Course requirements for the M.S. and the Ph.D. degrees are identical and are determined by the concentration research track. Detailed course requirements are listed in the following pages under each concentration area. Students may select one of two options: Thesis Plan or Comprehensive Examination Plan. The normative time for completion of the M.S. program is two years. All study must be completed within four calendar years from the date of admission.

Plan I: Thesis Plan. The thesis option is available for graduate students who may wish to continue on to a Ph.D. program or those who wish to concentrate on a specific problem. The student completes 48–52 units of course work (as specified under the concentration area) with a grade of B or better and writes a research or project thesis. A committee of three full-time faculty members is appointed to guide development and final approval of the thesis. Seminar courses such as 229, 239, 249, 259, 269, and 279 cannot be applied to the required units.

Plan II: Comprehensive Examination Plan. The student completes 48–52 units (as specified under the concentration area). Each course must be passed with a grade of B or better. Seminar courses such as 229, 239, 249, 259, 269, and 279 cannot be applied to the required units.

DOCTOR OF PHILOSOPHY PROGRAM

The Ph.D. program leads to a concentration in one of the six areas listed above. Additionally, an area of specialization other than one of these concentrations may be chosen with the approval of the graduate advisor.

The program is research oriented and encourages students to work together with faculty to solve advanced problems in computer science. The program is designed for full-time study and can be completed in five to six years, depending upon the focus of research. Students enrolled in the Ph.D. program must maintain satisfactory academic progress.

ADMISSION

Applicants will be evaluated on the basis of their prior academic record. Applicants for the M.S. degree are expected to have a bachelor's degree in computer science or a related field. Those who do not have an undergraduate degree in computer science may take the Computer Science Advanced GRE test and must score in the top 80 percent to demonstrate sufficient background in the field. Ph.D. applicants will be evaluated in their potential for creative research and teaching in Information and Computer Science.

Applicants are expected to have (1) skills in computer programming at least equivalent to those obtained in college-level courses in programming and language development; (2) skills in mathematics equivalent to those obtained in complete college-level courses in logic and set theory, analysis, linear algebra and modern algebra, or probability and statistics; (3) data structures, analysis of algorithms, automata theory or formal languages; and (4) computer architectures.

All applicants are evaluated on the materials submitted: letters of recommendation, official GRE test scores, official college transcripts, and personal statement. For more information, contact the ICS graduate counselor at (949) 824-2277 or send e-mail to gcounsel@ics.uci.edu.

Financial Assistance

Financial assistance is available to Ph.D. graduate students in the form of scholarships, teaching assistantships, and research assistantships. Although assistance varies, it is the Department's goal to support all entering Ph.D. students, subject to availability of funds. International students who apply for teaching assistantships must take the Test of Spoken English (TSE) and earn a minimum score of 50 to be considered for an award.

Departmental financial assistance is not normally available to M.S. students. If funds are available, the Department may award teaching assistantships to these students.

Course Substitutions

A student who has taken relevant graduate courses at UCI or another university may petition to have a specific course certified as equivalent to one which satisfies ICS requirements. The petition should describe the two courses and can be approved either by a committee composed of the student's faculty advisor, the ICS Associate Chair for Graduate Studies, and a faculty member who is in the concentration area in which the course is taught, or by the ICS Graduate Policy Committee.

Teaching Requirements for the Ph.D. Program

All ICS doctoral students are required to participate in teaching activities before being advanced to candidacy. Teaching activities in summer or night school or service at other universities may be accepted in fulfillment of this requirement.

Examinations and Dissertation for the Ph.D. Program

Each doctoral student must present a research talk to a group of faculty and graduate students and pass a comprehensive examination which will be evaluated by the faculty. The comprehensive examination and all course requirements must be satisfied prior to the student's application for advancement to candidacy. Information on the selection of committees, advancement to candidacy, development of a doctoral dissertation, and final examination on the dissertation is available from the ICS Associate Chair for Graduate Studies.

CONCENTRATION IN ARTIFICIAL INTELLIGENCE (AI)

Research in Artificial Intelligence (AI) is aimed at understanding the computational mechanisms that underlie intelligent behavior, and at designing computational systems that exhibit it. The AI group at ICS is involved in research on machine learning and knowledge discovery; deductive and probabilistic reasoning; constraint satisfaction techniques; neural networks and cognitive architectures; sophisticated image and signal processing; scientific reasoning in domains such as molecular biology, medicine, and space science; intelligent web-based agents; and the psychological investigation of human learners. The group is interested in basic research into the fundamental principles of intelligence; the methods by which knowledge is acquired, summarized, organized, and utilized to solve complex problems; the construction of computational artifacts that support algorithmically, cognitively, or conceptually challenging tasks and embody behavior associated with intelligent systems; and applications that confront intelligent systems with real-world tasks. Within the general field of AI, ICS faculty specialize in machine learning, knowledge discovery and data mining, automated reasoning and constraint-based reasoning, brain modeling, and computational biology and medical informatics.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); one course in Special Topics in Information and Computer Science (ICS 280) taught by AI area faculty; Introduction to Artificial Intelligence (ICS 270A); three courses selected from: Machine Learning (ICS 273), Probabilistic Learning (ICS 274), Network-Based Reasoning/Belief Networks (ICS 275B), Neural Networks (ICS 276A), or Representations and Algorithms for Molecular Biology (ICS 277); two additional courses from: Information Retrieval, Filtering, and Classification (ICS 207), Advanced Artificial Intelligence Programming (ICS 270B), Network-based Reasoning/Constraint Networks (ICS 275A), Seminar in Models of the Brain (ICS 276B), Cognitive and Computational Neuroscience (ICS 276C), or Data Mining (ICS 278); and five graduate courses outside of Artificial Intelligence, at least three of which must be within the ICS Department.

Paper Requirement for the Ph.D. Degree

Each student must write two research papers of publishable quality.

CONCENTRATION IN COMPUTER SYSTEMS AND NETWORKS (CSN)

This area of research and study is concerned primarily with the development of systems software, that is, the software infrastructure that makes the development and use of applications possible. This includes compilers, operating systems, networking software, performance tools, and software development environments, which are studied from both theoretical and practical points of view.

The CSN research group is particularly interested in systems software in the context of parallel or decentralized systems, that is, systems having multiple CPUs, including computer networks and both shared- and distributed-memory multiprocessor architectures, which offer great new opportunities in distributed computing and communication as well as performance-oriented scientific computing, but also pose major technological challenges to researchers and developers of parallel/distributed computer systems. The specific topics studied by the faculty members of this concentration area include: design and study of paralleling compilers; design and analysis of high-speed multimedia networks; object-oriented frameworks for distributed systems; approaches to portable and mobile programs; development of coordination paradigms for distributed applications; support for distributed simulations; design and study of extensible and run-time adaptable operating systems and software environments; system support for high-performance scientific computing; and distributed algorithms.

Applicants with a focus on engineering may also refer to the concentrations in Computer Networks and Distributed Computing, and Computer Systems and Software, offered by the Department of Electrical and Computer Engineering.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (200); Advanced Compiler Construction (ICS 211); Computer Systems Architecture (ICS 241); Computer Networks (ICS 243); Software Engineering (ICS 221); Data Structures (261).

Three from the following list: Parallel Computing (ICS 244); High-Performance Architectures and Their Compilers (ICS 245); Computer Systems Modeling and Performance Evaluation (ICS 246); Distributed Computer Systems (ICS 247); Queuing Theory (ICS 248); Fault-Tolerant Computing (ICS 250); Analysis of Algorithms (ICS 263).

Two other ICS courses: these must be regular graduate courses, including those listed above which were not already taken, and excluding 229, 239, 249, 259, 269, 279, 280, 290. One of these

courses may be substituted by an Electrical and Computer Engineering course selected from the following list: Advanced System Software (ECE231); Distributed Computer Systems (ECE252); Real-Time Computer Systems (ECE253); Parallel Database Systems Engineering (ECE257).

Paper Requirement for the Ph.D. Degree

Each student must write two research papers of publishable quality.

CONCENTRATION IN COMPUTER SYSTEMS DESIGN (CSD)

New application areas are placing increasingly challenging demands on existing computer systems. At the same time, advanced technologies are being developed that make the design and manufacturing of computer systems faster and cheaper. The current trend in computerization is toward application-targeted systems that solve specific problems well. The development of such systems requires an understanding of the complex interactions between applications, software, and hardware.

The Computer Systems Design area addresses the various aspects of bridging the gap between the demands of new applications and available technology. It is designed to produce computer scientists with an increased awareness of the demands imposed on computers by the application domains which have traditionally been viewed as extrinsic to computer science. This application sensitivity will give students a unique advantage in the increasingly important area of integrated software/hardware computer and information systems and will prepare them to meet the challenges of real-world problems. Within the general area of computer systems, ICS faculty specialize in hardware/software codesign for embedded systems; CAD tools for VLSI, systems-on-silicon, and novel architectures; broadband, networked, and portable systems; retargetable optimizing compilers; and system-specification and performance-analysis techniques.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); at least three quarters of Seminar in Design Science (ICS 259); five graduate courses outside of Computer Systems Design but within ICS, no more than three of which may be in one area; and five core courses selected from the following: Introduction to Embedded Computing Systems (ICS 212), Software for Embedded Systems (ICS 213), Computer Systems Architecture (ICS 241), Fault-Tolerant Computing (ICS 250), Digital System Verification and Testing (ICS 251), Introduction to Computer Design (ICS 252), Design Description and Modeling (ICS 253), VLSI System Design (ICS 254 or Engineering ECE251), Physical Design Automation (ICS 255 or Engineering ECE238), Design Synthesis (ICS 256), System Tools (ICS 257), Combinatorial Algorithms for Design Synthesis (ICS 258).

Paper Requirement for the Ph.D. Degree

Each student must write two research papers of publishable quality.

CONCENTRATION IN COMPUTING, ORGANIZATIONS, POLICY, AND SOCIETY (CORPS)

UCI is an internationally recognized center for research on the social and managerial dimensions of computerization. One stream of this research examines the impacts and policy issues that surround computerization. A second stream, which is longitudinal and organizational in emphasis, examines the ways in which users develop computing technologies, including workplace negotiations and coalitions. CORPS researchers study these topics in various public and private settings including government agencies, large and small commercial enterprises, and universities.

CORPS has recently added a research focus on computer-supported cooperative work and human-computer interaction. Examples of specific interests are social and behavioral factors affecting the design and adoption of groupware; use of virtual communities, the Internet, and digital libraries; and technical support for organizational learning and memory. Work in these areas consists of both empirical research and the building of prototype systems.

CORPS researchers focus on understanding the “reality” of computerization, in contrast with utopian promises and anti-utopian fears. A large fraction of the research is empirical, and is conducted *in vivo*—in organizations or other social settings where computer-based systems are developed and used routinely. The empirical studies of work organization and organizational control patterns also have an important theoretical dimension. Other theoretical studies conducted by CORPS researchers build upon a broad body of empirical studies of the social dimensions of information technologies.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); Social Analysis of Computing (ICS 230); at least three quarters of Seminar in Research on Social Analysis and Information Systems (ICS 239); four courses chosen from: Human-Computer Interaction (ICS 205), Computer Supported Cooperative Work (ICS 233), Computerization, Work, and Organizations (ICS 234A), Theories of Computerization and Information Systems (ICS 234B), Computing and Cyberspace (ICS 234C), Qualitative Research Methods in Information Systems (ICS 235A) or Social Ecology 217 or Management 290, Quantitative Research Methods in Information Systems (ICS 235B) or Descriptive Multivariate Statistics I and II (ICS 238A and 238B) or Social Science 201A-B; and five or six graduate courses outside of CORPS, only one of which may be ICS 280.

The five or six courses are chosen as follows. A student who does not elect to take an optional minor outside of ICS must take five graduate courses within ICS in at least two areas other than CORPS. A student who elects to take a minor outside of ICS must take three graduate courses within ICS in at least two areas other than CORPS, in addition to three graduate courses outside of ICS. The minor outside of ICS consists of three graduate courses which form a coherent area of study.

Paper Requirement for the Ph.D. Degree

Each student must write a survey paper and a research paper of publishable quality.

CONCENTRATION IN SOFTWARE (SW)

Software has transformed society in dramatic and powerful ways. From the World Wide Web to pilotless vehicles to spreadsheets, software systems inform, control, and enhance daily activities. Software research at UCI is aimed at creating new software technology and solutions, furthering the information revolution. Perspectives of engineering, science, mathematics, and human-computer interaction guide the work. The central goal of all the

research is improvement in software development, evolution, deployment, quality, and cost-effectiveness.

Specific research emphases of the six faculty members in the concentration include: analysis and testing, software understanding, empirically-guided analysis, environments, software architectures, hypermedia, workflow, user interface software, process, formal methods, specification languages, extensible component-based software systems, distributed event-based systems, and programming languages and their implementation. Research projects undertaken by the faculty and graduate students receive financial support from the Defense Advanced Research Projects Agency (DARPA), the National Science Foundation (NSF), the Air Force Office of Scientific Research (AFOSR), and the State of California, among others. A valuable and unusual feature of the concentration is the opportunity to work with the Software group's industrial partners. These companies provide opportunities for internships, support research projects, and provide a test-bed for evaluation of new ideas. Graduates of the program have taken careers in research universities, industrial research laboratories, colleges, and industry.

Background: Students must have basic competency in the following computer science topics: programming language concepts, data structures, analysis of algorithms, automata theory or formal languages, artificial intelligence, computer architecture, and operating systems. The software faculty will evaluate, upon entry to the Ph.D. program, whether a student has satisfied these requirements through courses taken previously (e.g., at the undergraduate level) or through equivalent experience. Satisfaction of any unfulfilled requirements may be achieved through either graduate or undergraduate classes in an individualized program worked out with a software area graduate advisor.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); Software Engineering (ICS 221); Formal Methods in Software Engineering (ICS 222); at least three quarters of Seminar in Software (ICS 229); two courses from: Software Analysis and Testing (ICS 224), Software Processes (ICS 225), Software Measurement (ICS 226), User Interfaces and Software Engineering (ICS 227), Software Environments (ICS 228); two other courses from the Software area (ICS 220–228, including ICS 280s taught by Software area faculty); and four graduate courses outside of Software, drawn from a list maintained by the faculty.

Paper Requirement for the Ph.D. Degree

Each student must write a survey paper with an extensive bibliography and a research paper of publishable quality.

CONCENTRATION IN ALGORITHMS AND DATA STRUCTURES (THEORY)

The goal of research in theoretical computer science is to produce results, supported by rigorous proof, about problems dealing with computers and their applications. The questions to be investigated are often motivated by practical problems, but the goal of understanding the underlying combinatorial properties of the problem is often as important as producing a solution of immediate applicability. The actual problems to be solved are often very complicated, so researchers seek some abstraction that can be rigorously studied. In particular, they often seek to investigate the fundamental combinatorial structure of a problem abstracted away from the original physical setting. For example, the problem of placing a set of files onto as few floppy disks as possible without exceeding their storage capacity is fundamentally the same as the problem of loading a set of items onto as few trucks as possible without exceeding their weight limit. Many problems, from a variety of application areas, fall into the category of efficient algorithm design.

A key property of work in this area is its emphasis on the amount of resources required by a given algorithm; this is called the complexity of the algorithm. The resource most commonly considered is time, but other resources often considered are the amount of memory required and, in the case of parallel computation, the number of processors required. For many problems, an efficient solution has been obtained only after deep insights into the nature of the problem. For many problems, the efficiency of the best solution possible remains unknown.

Research in algorithms and data structures grapples with such questions. It is a young science with an inherently interdisciplinary flavor. Problems to be investigated have come from a variety of sources, such as computer vision, scheduling, resource allocation, scientific computing, image processing, genetics, transportation, and artificial intelligence. Solution methods are brought to bear from areas such as discrete applied mathematics, probability theory, and a rich body of insights developed within theoretical computer science. The goal of the research, as in mathematics, is to produce results supported by rigorous proof; the emphasis on complexity gives this area its unique flavor. Results that first might appear to be only of theoretical value are sometimes of profound relevance to practical problems.

Required Courses

The following courses must be passed with a grade of B or better: Seminar in Research in ICS (ICS 200); Data Structures (ICS 261); Computational Complexity (ICS 262); Analysis of Algorithms (ICS 263); two courses from: Graph Algorithms (ICS 265), Computational Geometry (ICS 266), Special Topics in ICS (ICS 280) taught by Theory faculty; and five graduate courses outside of Theory, at least three of which must be within ICS; if the student has an optional minor, at least two of these courses must be outside the minor.

Paper Requirement for the Ph.D. Degree

Each student must write a survey paper and a research paper of publishable quality.

Courses in Information and Computer Science

BREADTH COURSES FOR NONMAJORS

Nonmajors may also take other ICS courses for which they have the prerequisites.

1A Programming and Problem Solving I (4) F, S, Summer. Concepts and properties of procedures; language and notation for describing procedures; application of a specific procedure-oriented language to solve simple numerical and nonnumerical problems using a computer. Principles for using computers effectively and for clearly conceiving and expressing procedures. Provides an overview of computer science. Designed for non-ICS majors. No credit allowed for ICS 1A after successful completion of ICS 21. Only one course from ICS 1A, 1P, and 11 may be taken for credit. (V)

1B Patterns of Problem Solving (4). Introduction to patterns of reasoning in decision making and problem solving. Logic, probability, and decision-making tools as examples of quantitative and mathematical models. Role of values in problem solving. (V)

1C Networked Information Discovery and Retrieval (4) W. Information resources and communication tools available over the Internet, with emphases on the organization of computer networks and the information they provide, developing effective strategies for search and retrieval, and the synthesis of information obtained from diverse sources. (V)

1D Introduction to Models (4). The nature of models, their limitations, and their improvement. Use and construction of computer-based modeling tools. (V)

1E Brain, Computation, and Thought (4) S. Analysis of neural connections in the brain as electrical circuits to examine their computational properties, providing an elementary understanding of the nature of brain computation and the mental operations it naturally gives rise to. (V)

1F What Can We Compute (4) W. Introduction to problems computers can and cannot solve—and for solvable problems, the time and resources needed. Includes discussion of algorithms and procedures, Turing machines and undecidability, undecidable problems, problem classes, intractable problems. (V)

1P Introduction to Computing (4) W. Computer literacy, including an introduction to computer hardware, capabilities and limits of computers, and impacts of computing; and use of productivity tools, including word processors, spreadsheets, and communication programs. Laboratory exercises give students hands-on experience with productivity tools. No credit allowed for ICS 1P after successful completion of ICS 21. Only one course from ICS 1P, 1A, and 11 may be taken for credit.

LOWER-DIVISION

COURSES FOR MAJORS AND NONMAJORS

6A Discrete Mathematics for Computer Science (4) F, W. Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: combinatorics, mathematical induction, elementary probability, and asymptotic analysis. Prerequisite: high school mathematics through trigonometry. Same as Mathematics 6A. (V)

10 Information: Presentation and Representation (4). Kinds of information, including quantitative, probabilistic, textual, graphic, audio. Locating information, evaluating reliability. Representing information on paper, in computer systems, in other media. Organization into hierarchies, networks, tables. Effectiveness and efficiency of alternative representations and organizations. Measuring information; redundancy, compression. (V)

11 Computer-Based Information Systems (4). The analysis, design, implementation, quality assurance, deployment, and ongoing management of computer-based information systems, and related software, hardware and networking issues; end-user customization of applications and interfaces, and selection of information, via query macro and scripting languages. Only one course from ICS 11, 1A, and 1P may be taken for credit. (V)

21 Introduction to Computer Science I (6) F, W, S. First of a three-quarter introductory course. Introduces fundamental concepts related to computer software design and construction. Develops initial design and programming skills using a high-level programming language (primarily C++/Java). Introduces useful computer-based tools for analysis, expression, discovery. No credit allowed for ICS 1A or 1P after successful completion of ICS 21. (V)

H21 Honors Introduction to Computer Science (6) F. First of a three-quarter introductory sequence. Introduces basic concepts, fundamental laws and principles of software and hardware organization, program construction, applications, and policy and social issues. Develops initial programming skills using a high-level programming language (primarily C/C++/Java). Introduces useful computer-based tools for analyses, expression, and discovery. Prerequisite: enrollment open to ICS majors in the Campuswide Honors Program or by consent of the Department of Information and Computer Science. ICS H21 and ICS 21 may not both be taken for credit. (V)

22 Introduction to Computer Science II (6) W, S. Second of a three-quarter introductory sequence. Abstract behavior of classic data structures (stacks, queues, priority queues, tables, trees), alternative implementations, analysis of time and space efficiency. Recursion. Object-oriented and functional programming. Models of computation. Corequisite or prerequisite: ICS 6A or Mathematics 6A. Prerequisite: ICS 21 with a grade of C or better. (V)

H22 Honors Introduction to Computer Science II (6) W. Second of a three-quarter introductory sequence. Covers in-depth concepts of programming and mathematical tools for analyzing programs. Topics include: combinatorics, program analysis and correctness, advanced structures, system design techniques, and programming paradigms. Corequisite or prerequisite: Mathematics 6A or ICS 6A. Prerequisite: ICS H21 with a grade of B- or better or ICS 21 with a grade of A or better. ICS H22 and ICS 22 may not both be taken for credit. (V)

23 Fundamental Data Structures (4) F, S. Focuses on implementation and mathematical analysis of fundamental data structures and algorithms. Covers storage allocation and memory management techniques. Prerequisites: ICS 22 with a grade of C or better or Engineering ECE40; Mathematics 6A or ICS 6A. Same as ICS 23E. Only one course from ICS 23, 23E, and H23 may be taken for credit. (V)

23E Fundamental Data Structures (4) F, S. Focuses on implementation and mathematical analysis of fundamental data structures and algorithms. Covers storage allocation and memory management techniques. For Computer Engineering majors only. Prerequisites: ICS 22 with a grade of C or better or Engineering ECE40; Mathematics 6A or ICS 6A. Same as ICS 23. Only one course from ICS 23E, 23, and H23 may be taken for credit. (V)

H23 Introduction to Computer Science III (4) S. Third of a three-quarter introductory course. Builds on ICS H22 with respect to mathematical tools and analysis. Focuses on fundamental algorithms in computer science, basic data structures for primary and secondary memory, storage allocation and management techniques, data description, and design techniques. Prerequisites: ICS H22 with a grade of B- or better or ICS 22 with a grade of A or better; Mathematics 6A or ICS 6A. Only one course from ICS H23, 23, and 23E may be taken for credit. (V)

51 Introductory Computer Organization (6) F, S. Multilevel view of system hardware and software. Operation and interconnection of hardware elements. Instruction sets and addressing modes. Virtual memory and operating systems. Laboratory work using low-level programming languages. Prerequisites: ICS 21 with a grade of C or better; Mathematics 6B.

52 Introduction to Software Engineering (6) F, W. Introduction to the concepts, methods, and current practice of software engineering. The study of large-scale software production; software life cycle models as an organizing structure; principles and techniques appropriate for each stage of production. Laboratory work involves a project illustrating these elements. Prerequisite: ICS 23 with a grade of C or better.

54 Programming for Multitasking Operating Systems (4) F. Principles and concepts embodied in modern multitasking operating systems, including shells, filters, pipelines, programmability and scripting, extensibility, concurrent processing, and interprocess communication. Several integral tools and utilities are presented. Unix and C are used to provide concrete examples. Prerequisite: ICS 23 with a grade of C or better. ICS 54 and Engineering ECE40 may not both be taken for credit.

80 Special Topics in Information and Computer Science (2 to 4) W. May be repeated for credit if title or topic varies.

92 Engineering and Computer Science Educational Laboratory (ECSEL) (0) F, W, S. Comprehensive academic support designed primarily for underrepresented or underprepared majors in Engineering, ICS, or selected areas of the physical sciences. Typical program activities: tutoring, study skills, career planning, self-esteem enhancement, library research techniques, graduate study planning, and independent studies. Students may receive a maximum of 12 units of workload credit only. Pass/Not Pass only. Same as Engineering E92.

93 Strategies for Success in ICS (0) F, W. Designed to develop good study skills in technical fields and the participation of students as active learners in their education. Topics include time management, analytical thinking, text analysis, academic survival strategies, and goal setting. Pass/Not Pass only. Two units of workload credit only.

H96 Freshman Honors Seminar (1). Issues and conflicts from the philosophy and history of engineering and science, ethical responsibilities of engineers and scientists, the influence of diverse backgrounds, and the breadth of activities within the engineering and science disciplines. Various faculty participate each week. Pass/Not Pass only. Open only to Information and Computer Science freshmen students accepted into the Campuswide Honors Program. Same as Physical Sciences H96 and Engineering EH96.

UPPER-DIVISION

NOTE: Empirical studies are one method used to advance the state-of-the-art in computer science. As such, participation in experiments is part of the regular structure of ICS 121 and 125, as well as other courses. Students' abilities to achieve their grade in a course will not be affected by their participation in experiments.

102 Requirements Analysis and Engineering (4). Aims to equip students to develop techniques of software-intensive systems through successful requirements analysis techniques and requirements engineering. Students learn systematic process of developing requirements through co-operative problem analysis, representation, and validation. Prerequisites: ICS 121; Mathematics 2A-B-C.

105 Project in Human-Computer Interaction and User Interfaces (4) F. Aims to prepare students to develop user interfaces to software by providing them with a thorough background in human-computer interaction principles. The project includes both development and evaluation of a user interface. Prerequisites: ICS 121, 131, and 141.

121 Software Tools and Methods (4) F, S. Concepts and techniques of constructing software in a systematic fashion, including detailed design techniques, specifications, programming methods, quality-inducing procedures, development tools, team techniques, testing, estimation, and performance improvement. Laboratory work involves exercises to illustrate important concepts, methods, and tools. Prerequisites: ICS 52 with a grade of C or better; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A; satisfactory completion of the lower-division writing requirement.

122 Software Specification and Quality Engineering (4) F. Aims to prepare students to develop high-quality software through successful specification and quality engineering techniques. Students learn what high-quality means, how to plan for and achieve it, and how to measure it. Prerequisites: ICS 121 and 141; Mathematics 2A-B-C.

123 Software Architectures, Distributed Systems, and Interoperability (4) S. Aims to prepare students to engineer well-structured software systems. Students learn a wide range of software architectural styles, architectural platforms that provide standard services to applications, and formal architecture description languages. Prerequisites: ICS 51 with a grade of C or better; ICS 121 and 141; Mathematics 2A-B-C.

125 Project in System Design (4) F, S. Specification, design, construction, testing, and documentation of a complete software system using concepts learned in ICS 52, 121, and 141. Special emphasis on the need for and use of teamwork, careful planning, and other techniques for working with large systems. Prerequisites: ICS 51 with a grade of C or better; ICS 121 and 141; Mathematics 2A-B-C.

126A-B Comprehensive Project in Software System Evolution (4) W, S. Provides students with an industrial-like software development experience. Students undergo the vicissitudes of developing a large-scale software system from several points of view and specify, design, construct, test, document, and evolve a complete software system. Students must enroll in both quarters. In-Progress grade for ICS 126A; final grades for both quarters will be assigned upon completion of 126B. Prerequisites: ICS 51 with a grade of C or better; ICS 121 and 141; Mathematics 2A-B-C.

127 Advanced Project in Software Engineering (4). Students work in teams to specify, design, construct, test, and document a complete software system in a specialized application domain using application/domain-specific techniques. Each offering's topic is announced the preceding spring. Prerequisites: ICS 125 or 126A; Mathematics 2A-B-C.

131 Social Analysis of Computerization (4) F, W, S. Introduction of computerization as a social process. Examines the social opportunities and problems raised by new information technologies, and the consequences of different ways of organizing. Topics include computerization and work life, privacy, virtual communities, productivity paradox, systems risks. Prerequisites: one course (with a grade of C or better) selected from ICS 1A, Engineering 10, Engineering ECE11, ICS 21, or equivalent; upper-division standing; satisfactory completion of the lower-division writing requirement.

132 Organizational Information Systems (4) W. Introduction to role of information systems in organizations, components and structure of organizational information systems, and techniques used in information systems analysis, design, and implementation. Prerequisite: ICS 131.

135 Project in the Social and Organizational Impacts of Computing (4) S. Students undertake projects intended to gather and analyze data from situations in which computers are used, organize and conduct experiments intended to test hypotheses about impacts, and explore the application of concepts learned in ICS 131, 132, and other ICS courses. Prerequisite: ICS 132. Prior course work in research methodology or statistics is recommended.

137 Electronic Publishing and Digital Archives (4). Analytical introduction to electronic publishing and accessing electronic documents through digital archives. Examines how these communication media link authors and readers via diverse mediating institutions and information technologies. Concrete activities may use the World Wide Web and HTML. Prerequisite: ICS 131.

139 Technical Writing and Communication Skills (4) F, W, S. Study and practice of critical and technical writing as it applies to the field of computer science. Each student writes essays of varying lengths, totaling at least 4,000 words. Prerequisite: completion of lower-division writing requirement; upper-division standing; Information and Computer Science majors only.

141 Programming Languages (4) F, W, S. In-depth study of several contemporary programming languages stressing variety in data structures, operations, notation, and control. Examination of different programming paradigms, such as logic programming, functional programming and object-oriented programming; implementation strategies, programming environments, and programming style. Prerequisites: ICS 23 and ICS 51 with grades of C or better.

142 Compilers and Interpreters (4) F. Introduction to the theory of programming language processors covering lexical analysis, syntax analysis, semantic analysis, intermediate representations, code generation, optimization, interpretation, and run-time support. Prerequisite: ICS 141. Prerequisite for Computer Engineering majors only: ECE40.

143 Principles of Operating Systems (4) F. Principles and concepts of process and resource management, especially as seen in operating systems. Processes, memory management, protection, scheduling, file systems, and I/O systems are covered. Concepts illustrated in the context of several well-known systems. Prerequisite: ICS 141. ICS 143 and ECE142 may not both be taken for credit.

144 High-Performance Computers and Program Optimization (4) S. Analyzes the relationship between computer architecture and program optimization. High-performance and parallelizing compilers for RISC, Superscalar, and VLIW architectures are discussed. Prerequisite: ICS 51 with a grade of C or better. Recommended: ICS 142.

145A Language Processor Construction (4) F. Project course which provides working laboratory experience with construction and behavior of compilers and interpreters. Students build actual language processors and perform experiments which reveal their behaviors. Prerequisite: ICS 142.

145B Project in Operating System Organization (4) W. Detailed specification and design of critical components of an actual operating system including a memory manager, a process server, and a file/I/O subsystem. Hardware/software tradeoffs. Emphasis on logical organization of system and communication. Prerequisite: ICS 143.

148 Distributed Computing (4). Introduction to systems implemented within network-based computer architectures. Issues in distributed programming, operating systems, and applications. Specific topics covered include programming constructs, timing/coordination problems, data/service replication, transactions/concurrency control, fault-tolerance, recovery, file systems, security. Prerequisite: ICS 141. Recommended: ICS 153.

151 Digital Logic Design (4) F, W. Boolean algebra. Design/analysis of combinational and sequential systems using SSI/MSI/LSI modules. Number systems. Error detecting and correction codes. Arithmetic algorithms. Hardware/firmware implementation of algorithms. Prerequisites: ICS 23 and 51 with grades of C or better; Mathematics 6A or ICS 6A; Mathematics 6B.

152 Computer Systems Architecture (4) W. Design of computer elements: ALU, control unit, and arithmetic circuits. Memory hierarchy and organization. Caches. Function unit sharing and pipelining. I/O and interrupt processing. RTL and behavioral modeling using hardware description languages. Microprocessor organization and implementation techniques. Prerequisite: ICS 151. ICS 152 and Engineering ECE 132 may not both be taken for credit.

153 Computer Networks (4) F. An introductory course on computer network architectures. Layering approach of communication protocols is introduced, and the function of each layer is explained. Various examples are shown from long-haul networks and local area networks to B-ISDN and high speed networks. Prerequisites: ICS 23 and 51 with grades of C or better; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A.

155A Logic Design Laboratory (4) W. Introduction to standard integrated circuits: gates, flip-flops, shift registers, counters, latches. Construction and debugging techniques. Design of digital systems using LSI and MSI components. Practical use of circuits in a laboratory environment, including implementation of small digital systems such as arithmetic modules, displays, and timers. Prerequisites: ICS 151 or concurrent enrollment; satisfactory completion of the lower-division writing requirement.

155B Computer Design Laboratory (4) S. Design of basic computer components and small complete digital systems. Emphasis on practical use of Computer-Aided Design (CAD) tools, modeling of computer systems, and design practices in a laboratory environment. Prerequisite or corequisite: ICS 151.

156 Advanced Computer Networks (4) S. Fundamental principles in computer networks are applied to obtain practical experience and skills necessary for designing and implementing computer networks, protocols, and network applications. Various network design techniques, simulation techniques, and UNIX network programming are covered. Prerequisite: ICS 153 or equivalent, or consent of instructor.

158 Parallel Architectures and Algorithms (4) W. Parallel processing systems: emphasis on theory and application of arrays, trees, and hypercubes. Computational models and applications: sorting, integer arithmetic, matrix operations, fast Fourier transform, and others. Interconnection networks: framework for the description, analysis, and construction of hypercube-like interconnect. Prerequisite: ICS 152. ICS 161 recommended.

161 Design and Analysis of Algorithms (4) F, W. Time and space complexity of algorithms. Models of computation, techniques for efficient algorithm design, effect of data structure choice on efficiency of an algorithm. Fast algorithms for problems such as sorting, set manipulation, graph problems, matrix multiplication, Fourier transforms, and pattern matching. NP-complete problems. Prerequisites: ICS 23 and 51 with grades of C or better; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A; Mathematics 2A-B-C; satisfactory completion of the lower-division writing requirement. Prerequisite for Computer Engineering majors only: ICS 23E.

162 Formal Languages and Automata (4) W. Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability: Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23 and ICS 51 with grades of C or better; Mathematics 2A-B-C; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A. Same as Linguistics 102.

163 Graph Algorithms (4). Algorithms for solving fundamental problems in graph theory. Graph representations, graph traversal, network flow, connectivity, graph layout, matching problems. Prerequisite: ICS 161.

164 Principles of Computational Geometry (4). Algorithms and data structures for geometric computation and graphics programming. Fundamental problems of computational geometry such as convex hulls, Voronoi diagrams, Delaunay triangulations, polygon partitioning, arrangements, geometric searching, hidden surface elimination, motion planning. Prerequisite: ICS 161.

165 Project in Algorithms and Data Structures (4) S. Design, implementation, execution, and analysis of algorithms for problems such as sorting, searching, data compression, and data encryption. Time-space-structure trade-offs. Prerequisite: ICS 161.

171 Introduction to Artificial Intelligence (4) F, W, S. Different means of representing knowledge and uses of representations in heuristic problem solving. Representations considered include predicate logic, semantic nets, procedural representations, natural language grammars, and search trees. Prerequisites: ICS 52 with a grade of C or better; Mathematics 2A-B-C.

172 Programming Techniques in Artificial Intelligence (4) W. The study of methods for implementing artificial intelligence programs in high-level languages. Exercises on implementation of data structures for representing rules, frames, grammars, networks, and algorithms for search, inference, language processing, and learning. Prerequisite: ICS 171.

173 Neural Networks (4) S. An introduction to the rapidly growing field of neural networks, i.e., algorithms derived from brain circuitry. Models covered include the Hopfield model, delta rule, perceptrons, backpropagation, competitive learning. Mathematical analyses, applications, and biological bases of neural network algorithms. Prerequisites: ICS 52 with a grade of C or better; Mathematics 2A-B-C; Mathematics 6C or 3A.

175A Project in Artificial Intelligence (4) S. Construction of a working artificial intelligence system. Evaluation of capabilities of the system including impact of knowledge representation. Prerequisite: ICS 171.

175B Introduction to Expert Systems (4). Introduction to the methodology of design and implementation of expert systems. Laboratory work uses expert system shells to construct knowledge-based systems. Emphasis on techniques for representing and organizing domain and control knowledge as opposed to the theory and implementation of inference engines. Prerequisite: ICS 171.

180 Special Topics in Information and Computer Science (4) F, W, S. May be repeated for credit if title or topic varies. Prerequisites vary.

184 File and Database Management (4) W. Database system architecture—data structures, storage structures, and data languages. Alternate approaches to database management systems: relational approach, hierarchical approach, network approach. Database security and integrity. Query processing. Prerequisite: ICS 52 with a grade of C or better. Same as Engineering ECE146.

186 Computer Graphics (4) S. Interactive graphics software and hardware. Survey of interactive graphic design systems spanning a large family of disciplines. Each class member will generate an operational program demonstrating interactive graphics as a human-computer communication medium. Prerequisite: ICS 52 with a grade of C or better.

196 Tutoring in ICS (1 to 4) F, W, S. Offers opportunities to tutor both on an individual, as needed basis and as part of regularly scheduled courses. Specific tutoring assignments depend on the courses with which the student is working, as determined by the instructor in charge. In most cases includes time in individual tutoring and a term paper or project. May be taken for credit for a total of eight units. Pass/Not Pass only.

H197 Honors Seminar (2) F. An overview of computer science and selected recent trends in research. Students attend talks on current faculty research, with opportunities for discussion. Prerequisite: participation in the ICS Honors Program or Campuswide Honors Program. Pass/Not Pass only. Formerly ICS 197.

H198 Honors Research (4) F, W, S. Directed independent research in computer science for honors students. Prerequisites: ICS H197; upper-division standing and satisfactory completion of the lower-division writing requirement; participation in the ICS Honors Program or Campuswide Honors Program; consent of instructor.

199 Individual Study (2 to 5) F, W, S

GRADUATE

200 Seminar in Research in ICS (2) F. Graduate orientation program and colloquium series. Includes talks by ICS faculty in all areas about their current research. Satisfactory/Unsatisfactory only. Formerly ICS 202.

205 Human-Computer Interaction (4). The design and evaluation of interfaces to computer systems and applications with special attention to their fit to human cognitive capabilities and organizational practices. Includes coverage of hypermedia, groupware, and other rapidly emerging developments.

206 Knowledge-Based User Interfaces (4). Concepts related to the development of interactive software systems with a focus on knowledge-based tools and human-centered design. Topics span the fields of human-computer interaction, software engineering, and knowledge representation. Prerequisite: ICS 171 or equivalent.

207 Information Retrieval, Filtering, and Classification (4). Algorithms for the storage, retrieval, filtering, and classification of textual and multimedia data. The vector space model, Boolean and probabilistic queries, and relevance feedback. Latent semantic indexing; collaborative filtering; and relationship to machine learning methods. Prerequisites: B.S. degree in computer science, or ICS 161, 171; Mathematics 3A or 6C; and a course in basic probability.

211 Advanced Compiler Construction (4). Advanced study of programming language implementation techniques: optimizations such as common sub-expression elimination, register allocation, and instruction scheduling. Implementation of language features such as type-directed dispatch, garbage collection, dynamic linking, and just-in-time code generation. Prerequisite: ICS 142 or equivalent.

212 Introduction to Embedded Computing Systems (4). Embedded system technologies including processors, DSP, memory, and software. System interfacing basics; communication strategies; sensors and actuators; mobile and wireless technology. Using pre-designed hardware and software components. Design case studies in wireless, multimedia, and/or networking domains. Prerequisites: B.S. degree in computer science; or ICS 51, 152; Mathematics 3A or 6C or ICS 6A; ICS 161.

213 Software for Embedded Systems (4). Embedded computing elements, device interfaces, time-critical IO handling. Embedded software design under size, performance, and reliability constraints. Software timing and functional validation. Programming methods and compilation for embeddable software. Embedded runtime systems. Case studies of real-time software systems. Prerequisites: B.S. degree in computer science; or ICS 51, 152; Mathematics 3A or 6C or ICS 6A; ICS 161.

214 Databases (4). Examines basic principles of data management in both conventional and advanced database systems. Topics include: the relational database model and query languages; the network model; semantic and object-oriented databases; security and integrity; issues in distributed database management. Formerly ICS 211.

221 Software Engineering (4). Study of the concepts, methods, and tools for the analysis, design, construction, and measurement of complex software-intensive systems. Underlying principles emphasized. State-of-the-art software engineering and promising research areas covered, including project management. Formerly ICS 221A.

222 Formal Methods in Software Engineering (4). Examination of formal specification models, including algebraic/axiomatic, state-transition, model-based, operational, and temporal logics, along with their related analysis techniques. Formal models in software development are discussed as are different proof techniques.

224 Software Analysis and Testing (4). Studies techniques for developing confidence in software from traditional testing schemes to integrated, multi-technique analytic approaches. Considers strengths and weaknesses and explores opportunities for synergistic technique application. Emphasis is on approaches integrated into the software process. Formerly ICS 224A.

225 Software Processes (4). Explores vehicles for modeling, coding, and analyzing software processes. Considers integration of software process programming approaches with traditional management issues. Explores the use of software process execution as a vehicle for effective integration of tools into environments.

226 Software Measurement (4). Software measurement provides a foundation for evaluation, analysis, feedback, and improvement in large software systems and processes. Discusses software measurement principles, techniques, systems, and applications. Examines empirical studies and introduces experimental design considerations.

227 User Interfaces and Software Engineering (4). Exploration of current developments in systems and tools for creation and run-time management of graphical user interfaces. Object specification, constraint specification and maintenance, control paradigms, separation of concerns, support infrastructures, and multi-media issues also are discussed.

228 Software Environments (4). Study of the requirements, concepts, and architectures of comprehensive, integrated, software development and maintenance environments. Major topics include process support, object management, communication, interoperability, measurement, analysis, and user interfaces in the environment context.

229 Seminar in Software (2). Current research and research trends in software. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

230 Social Analysis of Computing (4). The social and economic impacts of computing and information technologies on groups, organizations, and society. Topics include computerization and changes in the character of work, social control and privacy, electronic communities, and risks of safety-critical systems to people.

233 Computer-Supported Cooperative Work (4). The role of information systems in supporting work in groups and organizations. Examines various technologies designed to support communication, information sharing, and coordination. Focuses on behavioral and social aspects of designing and using group support technologies.

234A Computerization, Work, and Organizations (4). Selected topics in the influence of computerization and information systems in transforming work and organizations. Theories of organization and organizational change. Processes by which diverse information technologies influence changes in work and organizations over short and long time periods. Prerequisite: ICS 230 or 233.

234B Theories of Computerization and Information Systems (4). Social and economic conceptions of information technology. Macrosocial and economic conditions that foster changes in information technologies. Social construction of information and computer technology in professional worlds. Theories of information technology and large-scale social change. Prerequisite: ICS 230 or 233.

234C Computing and Cyberspace (4). Selected topics in Internet-level computerization and systems, including electronic communities, distributed information services, electronic commerce, and digital libraries. Surveys systems and architectures. Theories of social interaction, computer-mediated communication, and social-technical system design. Examines social studies of cyberspace use and impacts. Prerequisite: ICS 230 or 233.

235A Qualitative Research Methods in Information Systems (4). Introduction to qualitative research methods used to study computerization and information systems, such as open-ended interviewing, participant observation, and ethnography. Studies of the methods in practice through examination of research literature. Prerequisite: ICS 230 or 233.

235B Quantitative Research Methods in Information Systems (4). Quantitative research methods used to study computerization and information systems. Design of instruments, sampling, sample sizes, and data analysis. Validity and reliability. Longitudinal versus cross-sectional designs. Analysis of secondary data. Studies of the methods through examination of research literature. Prerequisites: basic knowledge of elementary statistics; ICS 230 or 233.

238A Descriptive Multivariate Statistics I (4). Mathematical tools to organize and illuminate the multivariate methods. Multiple regression analysis. Multi-dimensional scaling and cluster analysis. Statistical computing via MDS(x), DMDP, and SPSS. Students must enroll in the laboratory section which meets on Wednesdays. Satisfactory/Unsatisfactory grading only. Prerequisite: Social Science 100A-B-C or equivalent. Same as Social Ecology 290A, Social Science 201A, and Management 290X.

238B Descriptive Multivariate Statistics II (4). Presentation of the principle methods of multivariate statistics including criteria for appropriate use and the interpretation of resulting measurements. Computer exercises are used to demonstrate concepts. Prerequisite: ICS 238A. Same as Social Ecology 290B, Social Science 201B, and Management 290Y.

239 Seminar in Research on Social Analysis and Information Systems (2). Current research and research trends in topics covered within computing, organization, policy, and society. Topics may emphasize, but are not limited to, social and organizational analysis pertinent to computerized information systems, Computer Supported Cooperative Work (CSCW), and studies of emerging information technologies. May be repeated for credit.

241 Computer Systems Architecture (4). Study of architectural issues and their relation to technology and software: design of processor, interconnections, and memory hierarchies. Prerequisites: ICS 143 and 152 (or equivalent).

242 Parallel Computer Architecture and Languages (4). Introduction to the principles of parallel processing. Fundamental organizations of multiprocessor/multicomputer architectures and their programmability. Various approaches to developing software for such machines, including explicit language extensions, new programming paradigms and models of computation, and tools for program development.

243 Computer Networks (4). Discussion of various techniques to provide communication among processes in distributed environments. Topics covered include layering protocol architectures, packet switched networks, local area networks, interprocess communication, internetworking, high-speed networks, multi-media networks. Prerequisite: consent of instructor.

244 Parallel Computing (4). Definition of parallel processing systems. Theory and application of arrays, trees, and hypercubes. Computational models, applications: sorting, integer arithmetic, matrix operations, Fast Fourier Transform, and others. Interconnection networks: a framework for the description, analysis, and construction of hypercube-derived networks.

245 High-Performance Architectures and Their Compilers (4). Emphasis on the development of automatic tools (i.e., compilers/environments) for the efficient exploitation of parallel machines, and the trade-offs between hardware and software in the design of supercomputing and high-performance machines.

246 Computer Systems Modeling and Performance Evaluation (4). Performance modeling and evaluation using analytical and simulation techniques. Application to performance analysis of computer systems, networks, and parallel and distributed systems. Prerequisite: consent of instructor.

247 Distributed Computer Systems (4). Design and analysis techniques for distributed systems and their communication architectures. Topics covered include distributed system components, interprocess communications, synchronization techniques, performance and reliability, and hardware-software interface. Prerequisite: consent of instructor.

248 Queuing Theory (4). Elementary queuing models; probability distributions, stochastic processes, work conservation laws, Markovian queues, product form results, embedded Markov chains. Advanced topics. Prerequisite: consent of instructor.

249 Seminar in Parallel Distributed and Network Systems (2). Current research and research trends in parallel distributed and network systems. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

250 Fault-Tolerant Computing (4). Various aspects of fault-tolerant computing systems. Includes hardware and software failures, reliability, mechanism to recover from failures. Prerequisite: consent of instructor. Same as Electrical and Computer Engineering 254.

251 Digital System Verification and Testing (4). Techniques for simulation, verification, and testing of hardware and mixed-mode systems. Fault models, test generation, algorithms, and functional testing. Design for testability. Prerequisite: consent of instructor.

252 Introduction to Computer Design (4). The methodology and use of CAD tools for computer design, accomplished by a lab in which students practice design using commercially available silicon compilers and other tools. Prerequisite: ICS 151 and 152 or equivalent.

253 Design Description and Modeling (4). Introduction to design modeling. Overview of design description languages and demonstration of design modeling at different abstraction levels. Techniques and methodologies for simulating and testing of design. Prerequisites: ICS 151, 152, and 241; or consent of instructor.

254 VLSI System Design (4). Overview of integrated circuit fabrication, circuit simulation, basic device physics, device layout, timing; MOS logic design; layout generation, module generation, techniques for very large scale integrated circuit design. Prerequisite: ICS 151 and 152 or consent of instructor.

255 Physical Design Automation (4). Overview of physical design algorithms for logic and physical partitioning, placement, and floor planning. Routing and layout verification. Prerequisite: ICS 252 and 234; or consent of instructor.

256 Design Synthesis (4). Methods, algorithms, and tools for design synthesis on different levels of design: logic, register-transfer, behavioral, and system. CAD laboratory assignments using design tools for exploration of different synthesis algorithms. Prerequisites: ICS 152 (or 241), or 252, or consent of instructor.

257 System Tools (4). Specification and requirement analysis of integrated systems. Support for early system-design decisions. Estimation and prediction of design metrics. System partitioning, modeling of hardware/software codesign. Synthesis from executable specifications. Prerequisites: ICS 252 and 233; or consent of instructor.

258 Combinatorial Algorithms for Design Synthesis (4). Basic graph partitioning algorithms. Combinatorial optimization techniques. Applications to layout, placement, routing, scheduling, allocation. Prerequisites: ICS 241, 252, 265.

259 Seminar in Design Science (2). Current research and research trends in design science. Forum for presentation and criticism by students of research work in progress. May be repeated for credit.

261 Data Structures (4). An in-depth treatment of data structures and their associated management algorithms including resource complexity analysis. Prerequisite: ICS 23 and 161.

262 Computational Complexity (4). Advanced course in computational models and complexity classes. Covers the fundamentals of Turing Machines, Decidability, and NP-completeness. Includes discussion of more advanced topics including polynomial hierarchy, randomized complexity classes, #P-completeness and hardness of approximation. Prerequisite: ICS 162.

263 Analysis of Algorithms (4). Analysis of correctness and complexity of various efficient algorithms; discussion of problems for which no efficient solutions are known. Prerequisites: ICS 161 and 261.

265 Graph Algorithms (4). Graph definitions, representation methods, graph problems, algorithms, approximation methods, and applications. Prerequisites: ICS 161 and 261.

266 Computational Geometry (4). An overview of some of the basic problems in computational geometry and of some algorithmic and data-structuring techniques appropriate to their solution. Prerequisites: ICS 161 and 261.

269 Seminar in the Theory of Algorithms and Data Structures (2). Current research and research trends in the theory of algorithms and data structures. May be repeated for credit.

270A Introduction to Artificial Intelligence (4). The study of theories and computational models for systems which behave and act in an intelligent manner. Fundamental subdisciplines of artificial intelligence including knowledge representation, search, deduction, planning, probabilistic reasoning, natural language parsing and comprehension, knowledge-based systems, and learning.

270B Advanced Artificial Intelligence Programming (4). Study of a set of common techniques that reappear in many artificial intelligence projects such as planning, natural language processing, learning, expert systems, and model-based reasoning. Prerequisites: ICS 172 and 270A (may be taken concurrently) or consent of instructor.

273 Machine Learning (4). Computational approaches to learning. Covers methods for concept formation, learning search heuristics, language acquisition, and machine discovery, among others. Participants should be familiar with heuristic search techniques and fluent in the LISP programming language. Prerequisite: ICS 270A. Formerly ICS 273A.

274 Probabilistic Learning: Theory and Algorithms (4). A unified probabilistic framework for learning algorithms. Classical pattern recognition algorithms, probabilistic mixture models, kernel methods, hidden Markov models, among others. Multivariate data analysis concepts for classification and clustering. Methodologies such as cross-validation and bootstrap. Prerequisites: basic calculus and linear algebra.

275A Network-Based Reasoning / Constraint Networks (4). Study of the theory and techniques of constraint network model. Covers techniques for solving constraint satisfaction problems: backtracking techniques, consistency algorithms, and structure-based techniques. Tractable subclasses. Extensions into applications such as temporal reasoning, diagnosis, and scheduling. Prerequisite: a basic course in algorithm design and analysis, or consent of instructor.

275B Network-Based Reasoning / Belief Networks (4). Focuses on reasoning with uncertainty using "Bayes Networks" that encode knowledge as probabilistic relations between variables, and the main task is, given some observations, to update the degree of belief in each proposition. Prerequisite: a basic course in probability or consent of instructor.

276A Neural Networks (4). Introduction to concepts of artificial neural networks (ANNs). Architectures of supervised and unsupervised networks. Basic math of learning and performance rules.

276B Seminar in Models of the Brain (4). Basic neural anatomy and physiology. Fundamental cell types and their channel properties. Organization of telencephalic circuitry. Cortico-Hippocampal pathways. Synaptic plasticity: long-term potentiation. Behavioral implications of plasticity, interpretation of lesion experiments, computational network models based on physiology of plasticity.

276C Cognitive and Computational Neuroscience (4). Computational analysis and simulation of physiological rules as sited in anatomical circuitries. Synaptic plasticity in the brain and its behavioral and psychological consequents in learning and memory. Theories of hippocampal function; thalamocortical function and interactions among neocortical layers.

277 Representations and Algorithms for Molecular Biology (4). Introduction to computational methods in molecular biology, aimed at those interested in learning about this interdisciplinary area. Covers computational approaches to understanding and predicting the structure, function, interactions, and evolution of DNA, RNA, proteins, and related molecules and processes. Prerequisite: a basic course in algorithms, or a basic course in molecular biology, or consent of instructor.

278 Data Mining (4). Introduction to the general principles of inferring useful knowledge from large data sets (commonly known as data mining or knowledge discovery). Relevant concepts from statistics, databases and data structures, optimization, artificial intelligence, and visualization are discussed in an integrated manner. Prerequisites: basic courses in algorithm design and analysis; linear algebra; probability and statistics.

279 Seminar in Artificial Intelligence (2). Current research and research trends in artificial intelligence. May be repeated for credit.

280 Special Topics in Information and Computer Science (4) F, W, S

290 Research Seminar (2). Forum for presentation and criticism by students of research work in progress. Presentation of problem areas and related work. Specific goals and progress of research. Satisfactory/Unsatisfactory only.

291 Directed Research (2 to 12)

298 Thesis Supervision (2 to 12). Individual research or investigation conducted in preparation for the dissertation requirements for the Ph.D.

299 Individual Study (2 to 12). Individual research or investigation under the direction of an individual faculty member.

398A Teaching Assistant Training Seminar (2) F. Theories, methods, and resources for teaching computer science at the university level, particularly by teaching assistants. Classroom presentations, working with individuals, grading, motivating students. Participants will give and critique presentations and may be videotaped while teaching. Satisfactory/Unsatisfactory only. Formerly ICS 398.

398B Advanced Teaching Assistant Seminar (2) F. Teaching computer science at the university level, emphasizing issues in teaching an entire course. Course organization, designing examinations and projects, grading, motivating students. Participants will begin to assemble teaching portfolios. Satisfactory/Unsatisfactory only. Prerequisite: ICS 398A or consent of instructor.

399 University Teaching (4). Involves on-the-job experience for Teaching Assistants. Limited to and required of Teaching Assistants.

INTERDISCIPLINARY STUDIES

World Wide Web: <http://www.hnet.uci.edu/IDP/>

UCI offers a variety of formally designated Interdisciplinary Programs (IDPs) which provide students with opportunities to pursue subject areas deriving from the interaction of different disciplines. These programs span the boundaries of traditional academic scholarship. Faculty participation is determined by research and teaching interests and, as such, faculty may be drawn from various departments and schools across the campus.

As described below, undergraduate majors and minors are offered by the IDPs in African-American Studies, Asian American Studies, and Women's Studies, which also offers a graduate emphasis in Feminist Studies. The IDPs in Chicano/Latino Studies, Global Peace and Conflict Studies, History and Philosophy of Science, and Latin American Studies all offer minors. A graduate degree program is offered by the IDP in Transportation Science.

In addition, interdisciplinary minors in Global Sustainability, Native American Studies, and Religious Studies are available.

African-American Studies

204 Humanities Instructional Building; (949) 824-2376
Thelma W. Foote, **Director (Interim)**

Participating Faculty

Lindon W. Barrett, Ph.D. University of Pennsylvania, *Associate Professor of English*
Rae Linda Brown, Ph.D. Yale University, *Associate Professor of Music and Faculty Assistant to the Executive Vice Chancellor*
Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History*
Thelma Foote, Ph.D. Harvard University, *Director (Interim) of African-American Studies and Associate Professor of History and African-American Studies*
Douglas M. Haynes, Ph.D. University of California, Berkeley, *Assistant Professor of History*
Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature*
Ketu H. Katrak, Ph.D. Byrn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature*
Claire Jean Kim, Ph.D. Yale University, *Assistant Professor of Asian American Studies and Political Science*
Steven Mailloux, Ph.D. University of Southern California, *Associate Dean of Humanities, Graduate Study, and Professor of English*
Donald McKayle, *Professor of Dance*
James Newton, B.M. California State University, Los Angeles, *Professor of Music*
Leslie W. Rabine, Ph.D. Stanford University, *Professor of French*
John Carlos Rowe, Ph.D. State University of New York, Buffalo, *Director of the UCI Critical Theory Institute and Professor of English*
Gabriele Schwab, Ph.D. University of Konstanz, *Director of the Critical Theory Institute and Professor of English and Comparative Literature*
Pat Ward-Williams, M.F.A. Maryland Institute College of Art, *Associate Professor of Studio Art*
Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and Associate Professor of English*

African-American Studies is an interdisciplinary program which offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora. The program's curriculum encourages students to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches. Among the topics explored in the course offerings are the process of colonization and the forced migration of African people, the positionality of African people in the racialized symbolic and social orders of the western hemisphere, the rhetoric produced by and about African people,

and the cultural and aesthetic values associated with "blackness" and "Africanness." The IDP offers a major leading to the B.A. degree in African-American Studies and a minor.

Descriptions for courses offered by the departments are available in the academic unit sections of the *Catalogue*.

CAREER OPPORTUNITIES

UCI graduates with a B.A. degree in African-American Studies enhance their chances of success in the job market and in the highly competitive arena of graduate and professional school admissions, especially in the fields of medicine and other health professions, law, and business. Employers and admissions officers understand that many of their employees and graduates will one day work in communities with significant African-American populations, and for this reason they give due consideration to applicants who have in-depth knowledge of African-American culture.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

Program Requirements for the Major

- A. Three-quarter core sequence, African-American Studies 40A, 40B, 40C; and African-American Studies 141.
- B. Any three lower-division courses selected from Asian American Studies, 60A, B, C (Introduction to Asian American Studies I, II, III), Social Science 61, 62, 63 (Introduction to Chicano/Latino Studies I, II, III), Women's Studies 50A (Gender and Feminism in Everyday Life), 50B (Reproducing and Resisting Inequality), 50C (Gender and Popular Culture).
- D. Six courses, five of which must be upper-division, distributed as follows from the lists below: two courses from Historical, Political, and Social Formations; two courses from Discourses; one course from Expressive Forms; and one course from Gender and Sexualities.
- E. Four upper-division electives selected from an approved list available in the program office.
- F. Two years of instruction at the college level in a single language other than English or equivalent.

Historical, Political, and Social Formations: African-American Studies 140 (New World Slave Societies and Their Legacies), 150 (Special Topics in African-American Studies[†]); Anthropology 164A (African Societies), 164K (South Africa); Education 124 (Perspectives on Multicultural Education); History 144A (Early American Cultural and Intellectual History), 144B (Nineteenth-Century American Cultural and Intellectual History), 145 (American Working-Class History), 148A (Law and Minorities in the United States), 148B (Topics in Multicultural U.S. History*), 180 (when topic is Civil War/Reconstruction); Political Science 124A (The Politics of Protest in the U.S.), 154C (Comparative Politics: Four Nations, Three Continents); Psychology and Social Behavior P124D (Human Development in Cross-Cultural Perspective); Social Science 70A (U.S. Ethnic and Racial Cultures), 70C (Comparing Cultures), 170E (Society and Culture), 170F (History and Culture), 172B (Afro-American Culture).

Discourses: African-American Studies 150 (Special Topics in African-American Studies[†]); English and Comparative Literature CL 105 (Multicultural Topics in Comparative Literature*), E 105 (Multicultural Topics in English Literature*); French 120 (Twentieth-Century French Literature*), 125 (African Literature of French

Expression); History 144E (Racial Thought in America); Women's Studies 162 (Racism and Sexism).

Expressive Forms: African-American Studies 150 (Special Topics in African-American Studies*); Art History 133A (Topics in Modern Art*), 165 (Studies in American Art*); Dance 110 (Ethnic Dance*); Film Studies 198 (when topic is: Melodrama: Black/White); Music 41 (Great Composers*), 78A, B (History of Jazz), 145 (Studies in Twentieth-Century Music*); Social Science 70B (Introduction to Expressive Forms in American Society), 70T (The History of Minorities in American Films), 176A (Afro-Latin American Music); Studio Art 100 (Special Topics in Studio Art*), 121 (Issues in Race and Representation*), 123 (Issues in Cultural Display*), 137 (Projects in Autobiography, Personal Narratives, and Community Histories*).

Genders and Sexualities: African-American Studies 150 (Special Topics in African-American Studies*); Women's Studies 163 (Women of Color), 180A (Cross-Cultural Studies of Gender), 181A (Social Psychology of African-American Families).

NOTE: Although some courses may be included in one or more of the lists above as well as in the elective list, they will count only once toward satisfaction of the program requirements.

Students must meet on a quarterly basis with their designated faculty advisor who will review their plan of study.

* When topic is on African-American or African diasporic topics.

† Two quarters, when content is on African-American or African diasporic topics.

‡ When topic is appropriate.

Program Requirements for the Minor

Completion of African-American Studies 40A, 40B, 40C and four courses (16 units) selected from the Historical, Political, and Social Formations; Discourses; Expressive Forms; and Genders and Sexualities lists above or from the elective list available in the program office.

Students select their courses in consultation with their designated faculty advisor. No more than two of these courses may be in the student's major department.

Courses in African-American Studies

LOWER-DIVISION

40A, B, C African American Studies I, II, III (4, 4, 4). Introduction to the main contours of the African-American experience, from the importation of Africans into the Americas to the present. **40A:** Focus on the unique expressions of African-American society and culture. Same as History 15B. **40B:** Development, characteristics, and significant ideas of "race" in America, from colonial times to into the twentieth century. **40C:** African-American culture and identity. (IV, VII-A)

UPPER-DIVISION

140 New World Slave Societies and Their Legacies (4). Provides a comparative examination of New World slave societies in the Americas—Mexico, Brazil, Barbados, South Carolina, Jamaica, Haiti, Cuba, and others. Emergence of racial slavery; resistance to European domination; interpenetration of European, African, and Amerindian cultures; legacies of racial slavery.

141 The Black Protest Tradition (4). History and discourses of the black protest tradition. Traces the emergence of black protest against racial slavery and white supremacy from the early colonial period to the present and the complex elaboration of identity politics within black communities in the twentieth century. Prerequisites: satisfactory completion of the lower-division writing requirement; upper-division standing.

150 Special Topics in African-American Studies (4). Designed to provide students with an opportunity to do advanced work in African-American studies. May be repeated for credit as topics vary.

Asian American Studies

207 Humanities Instructional Building; (949) 824-2746

Ketu H. Katrak, **Director**

Participating Faculty

Yong Chen, Ph.D. Cornell University, *Assistant Professor of History and Asian American Studies*

Dorothy Fujita Rony, Ph.D. Yale University, *Assistant Professor of Asian American Studies and History*

Ketu H. Katrak, Ph.D. Bryn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature*

Claire Jean Kim, Ph.D. Yale University, *Assistant Professor of Asian American Studies and Political Science*

Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology*

John M. Liu, Ph.D. University of California, Los Angeles, *Associate Professor of Social Sciences*

Asian American Studies is an interdisciplinary program which examines the historical and contemporary experiences of Asians after their arrival in the United States. The curriculum seeks to provide an awareness of the history, culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities. Students are invited to participate and partake in broadening their understanding of multicultural perspectives within U.S. society. The IDP offers a major leading to the B.A. degree in Asian American Studies and a minor.

In addition to regular UCI faculty, lecturers who teach on a quarterly basis are an integral part of the Program. A current list of participants is available in the program office.

Scholarship Opportunities. The Ching-Suei Su Endowed Memorial Scholarship is awarded annually to sophomores or juniors who are majoring in Asian American Studies, East Asian Languages and Literatures, or Linguistics (with an emphasis on an East Asian language) who demonstrate academic excellence and campus or community service.

CAREER OPPORTUNITIES

Many career opportunities exist for students who graduate with a B.A. degree in Asian American Studies, such as service with national and international organizations which seek knowledge of American multicultural society in general, and of Asian American peoples and cultures in particular; positions as area specialists with state and federal government agencies; careers in the private sector with corporations or private organizations which have a significant portion of their activities in the U.S. and the Pacific Rim; and positions of service and leadership within Asian American communities. Students may also continue their education and pursue professional or graduate degrees.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

Requirements for the Major

A. Asian American Studies 60A, 60B, 60C, 100A, 100B.

B. Two courses selected from each of the following areas: Humanities/Arts (Asian American Studies 110-129), Social Science/Social Ecology (Asian American Studies 130-149), Asian American Sub-groups (Asian American Studies 151-160), Ethnic/Race/Gender Relations (Asian American Studies 161-170), and History/Cultural/Political Institutions of Asia (Asian American Studies 171-180).

C. Two elective courses selected from Asian American Studies or from the interdepartmental list available from the IDP counselor. Electives may include Independent Studies/Special Studies courses: Asian American Studies 190-199.

Students must meet on a quarterly basis with their designated faculty advisor who will review their plan of study.

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI. Courses taken through the UC Education Abroad Program will be counted toward satisfaction of the residence requirement by student petition and upon prior approval of course content by the Asian American Studies Program Committee.

Requirements for the Minor

Asian American Studies 60A, 60B, 60C, 100B, and four upper-division courses selected from Asian American Studies 100–169, 190–199.

Courses in Asian American Studies

LOWER-DIVISION

S1AB-BC Fundamentals of Vietnamese (7.5-7.5) Summer. First-year Vietnamese in intensified form. Intended for students with little or no knowledge of the Vietnamese language. Emphasis is on mastery of the basic language skills of understanding, speaking, reading, and writing. Prerequisite for S1AB: none; for S1BC: Asian American Studies S1AB or two years of high school Vietnamese or one semester of college-level Vietnamese.

60A Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as History 15C and Social Science 78A. Formerly Humanities 60A. (VII-A)

60B Introduction to Asian American Studies II (4). Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Social Science 78B. Formerly Humanities 60B. (VII-A)

60C Introduction to Asian American Studies III (4). Examines selected substantive, methodological, and/or theoretical issues in Asian American Studies. Possible topics include interracial dating and marriage, electoral politics, educational and occupational achievement, participant community research, uses of oral history, underrepresented Asian American ethnic groups and diasporic studies. Same as Social Science 78C. Formerly Humanities 60C. (VII-A)

UPPER-DIVISION

100A Research Methodologies/Field Research (4). Explores various research methodologies for Asian American Studies combining theoretical knowledge with field research. Goals: conduct field research about immigrants and refugees from Asia. Topics vary: migration and labor, assimilation and cultural preservation, cultural expressions in the diaspora. Prerequisite: satisfactory completion of the lower-division writing requirement.

100B Perspectives on Race and Ethnicity in the United States (4). Examines the debates surrounding the use of race and ethnicity in U.S. scholarship. Discussions focus on differing conceptions of both terms, the changes in relationship between the two concepts since the end of the nineteenth century, and specific theoretical formulations particularly in relation to the experience of Asian Americans. Same as Social Science 178A.

110 Asian American Writers (4). Literary analysis of Asian American writers' representations of issues of identity, class, history among others. Variety of literary forms—novel, poem, drama, essay—included in a study of a variety of Asian American ethnic groups. May be repeated for credit as topics vary. (VII-A)

111 Asian American History (4). Introduction to important themes in the history of people of Asian ancestry in the United States from the nineteenth century to the present. May be repeated for credit as topics vary. (VII-A)

111A Chinatowns in the U.S. (4). Discusses the various communities that Chinese Americans have established in different places and at different times; their significance for Chinese Americans and their prominent place in American racial consciousness. (VII-A)

112 Asian American Art History (4). Investigation of Asian American experience expressed by art and visual culture throughout the twentieth century. Art by Asian Americans of diverse backgrounds as well as the history of cultural visualization of Asian identities in American art/visual culture. May be repeated for credit as topics vary.

114 Asian American Film and Video (4). Topics include histories of Asian American film and video, including documentaries, experimental, short subjects, feature-length independent film, and other forms of cinematic expression. Explores issues of identity (national, racial, gendered, among others). May be repeated for credit as topics vary.

115 Asian American Media and Arts (4). Includes the study of Asian American history and society through the analysis of a variety of media forms such as painting, music, cinema, video, and other artistic representations. May be repeated for credit as topics vary.

131 Asian American Politics (4). Provides various overviews of politics within Asian American communities. May compare with African American and/or Latino politics. May be repeated for credit as topics vary.

141 Asian American Psychology (4). Examines the social and psychological concerns of Asian Americans; e.g., coping with racial prejudice, maintaining bicultural identities, dealing with cross-cultural conflicts in interracial relationships, and trying to reconcile generational differences between immigrant parents and their American-born children. Same as Psychology 174A. (VII-A)

150 Special Topics in Asian American Studies (4). Analyzes a variety of themes in Asian American Studies—identity, history, culture—from various interdisciplinary perspectives in humanities, arts, social sciences. May be repeated for credit as topics vary. Formerly Humanities 160. (VII-A)

151 Asian American Ethnic Groups (4). Topics include study of the history, culture, and social formations of diverse Asian American subgroups such as Pacific Islanders, Hmong, Thai, Indonesian, Indian subcontinental, among others. May be repeated for credit as topics vary. (VII-A)

151A Filipina/Filipino American History Pre-1965 (4). Introduces students to major themes and issues of pre-1965 Filipina/Filipino American history: nationalism, migration, labor, region, colonization, social organizations, and education. (VII-A)

151B Filipina/Filipino American History Post-1965 (4). Explores the history of Filipina/Filipino Americans in the post-1965 era. Examines migration, colonization, labor; investigates community formation focusing on Los Angeles, Hawai'i, and San Diego. Undertakes issues surrounding politics, education, the arts, and identity. (VII-A)

151C The Korean American Experience (4). Explores the factors that have distinctly shaped the Korean American experience, including patterns of racial domination, the profile of immigrant flow, immigrant roles in the urban political economy, politics in Korea, and the role of the church. Same as Social Science 178C. (VII-A)

151D The Vietnamese American Experience (4). Studies the resettlement of Vietnamese in the United States following their exodus from Southeast Asia. Topics discussed include the Vietnam War, the 1975 evacuation, boat and land refugees, the shaping of Vietnamese communities, and Vietnamese American literature. Same as Social Science 178D. (VII-A)

151E The Japanese American Experience (4). Studies the settlement of Japanese in Hawaii and the continental United States since the late nineteenth century. Topics covered include sugar plantations, development of rural Japanese America, World War II internment, post-War community development, and persistence of Japanese American identity. Same as Social Science 178E. (VII-A)

151F South Asian American Experience (4). Examines and compares the experiences of South Asian immigrants in the U.S. over time. Looks at the economic, political, and social positions of the immigrants, with special emphasis on religious changes and the changes in the second and later generations. Same as Anthropology 125Y.

151G Asian Americans and Pacific Islanders (4). Discusses the different histories, cultures, religious practices of Asian Americans and Pacific Islanders. Examines the experiences of indigenous peoples and Asian immigrants in the Pacific and their links to the continental United States. (VII-A)

161 Ethnic and Racial Communities (4). Examines various theoretical analyses of race and ethnicity, particularly as they apply to Asian Americans. Also explores the relationship of Asian Americans to other racialized minorities in the U.S. Same as Social Science 175B. (VII-A)

162 Asian American Women (4). Examines the representations and experiences of Asian American women from diverse perspectives. Explores the commonalities and differences among various groups of Asian American women, with particular focus on history, culture, values, and family roles. Same as Social Science 178B. (VII-A)

163 Asian American Women's Film (4). Explores the social significance of film and video made by Asian American women in relation to issues of race, representation, and social change. These film and video makers use these media to raise complex issues of class, politics, and race interacting with gender. May be repeated for credit as topics vary.

171 Topics in Asian Studies (4). Various surveys of topics focusing on Asia/Asian cultures, arts, histories, social and political institutions. May be repeated for credit as topics vary. (VII-B)

173 Topics in East Asian Studies (4). Analysis of East Asian literary works in translation. Taught in English. May be repeated for credit as topics vary. (VII-B)

197 Field Research: Asian Immigrants and Refugees in Orange County (4). Instruction in field work methodology via research projects involving the local communities of immigrants and refugees from Asia. Open only to School of Social Sciences and Asian American Studies majors. Same as Anthropology 161T. (VII-A)

Minor in Chicano/Latino Studies

383 Social Science Tower; (949) 824-7180

E-mail: clsp@uci.edu

World Wide Web: <http://www.ss.uci.edu/clstudies>

Robert Garfias, Director

Faculty

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish*

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Héctor L. Delgado, Ph.D. University of Michigan, *Assistant Professor of Chicano/Latino Studies and Sociology*

John Dombink, Ph.D. University of California, Berkeley, *Associate Dean of Undergraduate Studies, School of Social Ecology, and Associate Professor of Social Ecology*

Raul Fernández, Ph.D. Claremont Graduate School, *Professor of Social Sciences*

L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*

Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History*

Robert Garfias, Ph.D. University of California, Los Angeles, *Director of Chicano/Latino Studies and Professor of Anthropology*

Gilbert González, Ph.D. University of California, Los Angeles, *Professor of Social Sciences*

Louis F. Mirón, Ph.D. Tulane University, *Chair of the Department of Education and Associate Professor of Education and Social Sciences*

Alejandro Morales, Ph.D. Rutgers University, *Chair of the Department of Spanish and Portuguese and Professor of Spanish*

Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*

Jacobo Sefamí, Ph.D. University of Texas at Austin, *Director of Latin American Studies and Associate Professor of Spanish and Portuguese*

Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*

Luis Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences and Neurology*

The minor in Chicano/Latino Studies is an interdisciplinary curriculum designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, drama, film, music) accomplishments in the Chicano/Latino communities. The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

Requirements for the Minor

Three-quarter core course in Chicano/Latino Studies: Social Science 61, 62, 63 (Introduction to Chicano/Latino Studies I, II, III). The first three quarters are lecture courses open to all students. A fourth quarter core course, Social Science 168 (Chicano/Latino Research Seminar) is approved for upper-division writing credit if completed with a grade of C or better.

Spanish 2A (Intermediate Spanish) or equivalent knowledge of Spanish. Students are encouraged, regardless of their major, to take as many Spanish language courses as their study plan allows.

One course in Chicano/Latino history or culture selected from: Spanish 110C (Chicano History), 142 (Chicano Culture); History 151A, 151B (Chicana/Chicano History), 198 (Directed Group Study, when topic is on Chicano history); Social Science 167 (Chicano/Chicana Labor History), 172D (Chicano Culture), 173F (Chicano History), 173H (History of Chicano Education), 176A (Afro-Latin American Music).

One course in Mexican history selected from: History 161A (Indian and Colonial Societies in Mexico), 161B (Nineteenth-Century Mexico), 161C (Twentieth-Century Mexico), or one course in Mexican literature: Spanish 186 (Selected Topics in Latin American Literature, when topic is Mexican literature).

One course in Chicano/Latino literature selected from: Spanish 140A, 140B (Chicano Literature); Comparative Literature CL 9 (when topic is Chicano/Latino Literature), CL 105 (when topic is Chicano/Latino literature); English E 105 (when topic is Chicano/Latino literature).

Two courses in topics related to Chicano/Latino Studies selected from: Anthropology 134E (Ways of Healing), 138Q (Latino Music: A View of Its Diversity and Strength); 138S (Music of Greater Mexico); Criminology, Law and Society J111 (Latinos and the Law); Education 124 (Perspectives on Multicultural Education); Environmental Analysis and Design E143U (Social Ecology of the Borderlands); Political Science 126A (Mexican-Americans and Politics), 126C (U.S. Immigration Policy), 129 (Special Topics in American Politics and Society, when topic is Chicano/Latino politics), 145B (U.S.-Mexican Relations); Psychology 174F (Chicano/Latino Psychology), 179 (when topic is Chicano Latino Families); Social Science 166 (Latino Social Movements and Organizations), 172D (Chicano Culture), 173G (Film Media and the Latino Community), 173I (Perspectives on the U.S.-Mexican Border), 173K-L (Comparative Latino Populations I, II), 196 (Field Studies in Multicultural Environment; Spanish 160 (Topics in Hispanic Film Studies); or other courses listed by the Chicano/Latino Studies program.

Residence Requirement: Other than the language requirement, a minimum of six courses toward the minor must be completed at UCI.

While students will be responsible for designing their minor according to the above requirements, the curriculum should be planned in consultation with Chicano/Latino Studies Program (CLSP) faculty. Curricula must receive approval from one faculty member in CLSP as well as the Director or designated representative. Students must also file an intent to pursue the minor with the CLSP office.

In addition to satisfying the requirements for the minor, students are encouraged to take advantage of the variety of unique educational opportunities available at UCI. Through the Education Abroad Program (EAP), students receive academic credit while studying at universities in Mexico, Chile, Costa Rica, Brazil, or Spain. Internship opportunities with private and public institutions concerned with the Chicano/Latino communities are available in Orange County, Sacramento, and Washington, D.C. Independent research with faculty on Chicano/Latino issues is also encouraged. Student

research is conducted and given academic credit through independent study or group research courses offered in each academic unit. The Summer University Research Fellowship (SURF), the Summer Academic Enrichment Program (SAEP), and the Pregraduate Mentorship Program (PGMP) are examples of programs at UCI which allow students to work as research assistants with professors.

Minor in Global Peace and Conflict Studies

721 Social Science Tower; (949) 824-6410

Patrick Morgan, **Director**

Faculty

Dennis Aigner, Ph.D. University of California, Berkeley, *Professor of Management and Economics*
 Scott A. Bollens, Ph.D. University of North Carolina, *Chair of the Department of Urban and Regional Planning and Associate Professor of Social Ecology*
 Peter A. Bowler, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design, UC Natural Reserve System Academic Coordinator, and Director of the UCI Arboretum*
 Teresa P. Caldeira, Ph.D. University of California, Berkeley, *Assistant Professor of Anthropology*
 Russell Dalton, Ph.D. University of Michigan, *Professor of Political Science*
 Joseph DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and Management*
 L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Politics and Society*
 Michelle Garfinkel, Ph.D. Brown University, *Associate Professor of Economics*
 Paula Garb, Ph.D., U.S.S.R. Academy of Sciences, *Assistant Adjunct Professor of Social Sciences and Social Ecology and Associate Director of Global Peace and Conflict Studies*
 John Graham, Ph.D. University of California, Berkeley, *Professor of Management*
 Susan Greenhalgh, Ph.D. Columbia University, *Associate Professor of Anthropology*
 Lawrence A. Howard, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*
 Karl Hufbauer, Ph.D. University of California, Berkeley, *Professor of History*
 Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Politics and Society, and Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation*
 Jon Jacobson, Ph.D. University of California, Berkeley, *Professor of History*
 Jon Lawrence, Ph.D. University of Rochester, *Chair of the Department of Physics and Professor of Physics*
 Herbert Lehnert, Ph.D. University of Kiel, *Research Professor of German*
 Guy de Mallac, Ph.D. Cornell University, *Professor Emeritus of Russian*
 Lynn Mally, Ph.D. University of California, Berkeley, *Associate Professor of History*
 Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*
 William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology*
 Richard McCleary, Ph.D. Northwestern University, *Professor of Social Ecology*
 Martin C. McGuire, Ph.D. Harvard University, *Professor of Economics and Management and Heinz Family Chair in the Economics and Public Policy of Peace*
 Calvin McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry, Biological Sciences, Ophthalmology, and Community and Environmental Medicine*
 Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese*
 Patrick Morgan, Ph.D. Yale University, *Director of Global Peace and Conflict Studies, Professor of Political Science, and Thomas T. and Elizabeth Tierney Chair in Peace Studies*
 Keith Nelson, Ph.D. University of California, Berkeley, *Professor of History*
 Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics*
 Margot Norris, Ph.D. State University of New York, Buffalo, *Professor of English and Comparative Literature*
 Richard W. Perry, J.D. Stanford, Ph.D. University of California, Berkeley, *Assistant Professor of Social Ecology*

Frederick Reines, Ph.D. New York University, *UCI Distinguished Professor Emeritus of Physics*
 Shawn Rosenberg, M. Litt. University of Oxford, *Associate Professor of Political Science and Social Psychology*
 F. Sherwood Rowland, Ph.D. University of Chicago, *Research Professor of Chemistry and Earth System Science, and Bren Chair*
 Wayne Sandholtz, Ph.D. University of California, Berkeley, *Associate Professor of Political Science*
 Roland Schinzinger, Ph.D. University of California, Berkeley, *Professor Emeritus of Electrical and Computer Engineering*
 Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature*
 Caesar Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*
 Stergios Skaperdas, Ph.D. The Johns Hopkins University, *Associate Professor of Economics*
 David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Sociology and Social Ecology*
 Etel Solingen, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*
 Alec Stone, Ph.D. University of Washington, *Associate Professor of Political Science*
 Rein Taagepera, Ph.D. University of Delaware, *Professor Emeritus of Political Science*
 John Torpey, Ph.D. University of California, Berkeley, *Assistant Professor of Sociology*
 John M. Whiteley, Ed.D. Harvard University, *Chair (Acting) of the Department of Environmental Analysis and Design and Professor of Social Ecology*
 Murray Wolfson, Ph.D. University of Wisconsin, *Adjunct Professor of Economics*

The minor in Global Peace and Conflict Studies (GPACS) is an interdisciplinary curriculum. The GPACS program addresses international violence, the threat of war, and paths to cooperation in global and regional security. With the end of the Cold War, GPACS has given increased attention to international economic and environmental matters, particularly when they serve as sources of conflict and threats to security. These concerns are addressed in courses offered by the program, by the affiliated GPACS faculty in many departments, and by other faculty members interested in international affairs. Thus, students can meet GPACS requirements by selecting from a wide variety of courses. The minor, and all GPACS courses, are open to all UCI students.

Course descriptions are available in the academic unit sections of the *Catalogue*.

Requirements for the Minor

Three courses: History 11 (Introduction to Peace and Conflict), Political Science 41A (Introduction to International Relations), and either Environmental Analysis and Design E117 (Nuclear Environments), or Political Science 42A (Nuclear Arms and Global Conflicts), or Physics 16 (Physics and Global Issues).

Two relevant upper-division courses: These are examples of courses offered: Anthropology 139 (Special Topics in Cultural and Psychological Anthropology: Conflict Management in Cross-Cultural Perspective); Economics 148A-B (Political Economy of National Defense I, II), 161C (International Trade and Commercial Policy); English and Comparative Literature CL 104 (The Interdisciplinary Course: Modern War in Literature and Art), E 105 (Multi-cultural Topics in English-Language Literature: Imaging War and Peace); Environmental Analysis and Design E113, E114 (Social Ecology of Peace I, II); History 126A, B, C (European International History), 158A (U.S. Foreign Relations Since World War II), Philosophy 132 (Topics in Political and Social Philosophy); Political Science 142D, E, F (U.S. Foreign Policy I, II, III); 143C (Arms Control and International Security), 143D (Global Security and Cooperation), 149 (Special Topics in International Relations: Ethnic and Religious Conflict, Global Environmental Politics), 152D-E (Post-Soviet Politics I, II); Social Science 184D (Global

Peace and Conflict Studies: Current Topics); and Sociology 178 (Sociology of Peace and War).

(With approval of the Global Peace and Conflict Studies faculty, a relevant lower-division course may be substituted for one of the upper-division courses.)

The GPACS Forum: Social Sciences/Humanities/Social Ecology 183A. Students attend forum lectures presented by scholars from a variety of institutions on topics related to peace, conflict, and global cooperation. The course must be taken three times and carries two units of credit, Pass/Not Pass only.

Senior Seminar on Peace and Conflict: Social Sciences/Humanities/Social Ecology 183B-C. Students prepare for a research paper in the first quarter and complete the project in the second quarter, which confers upper-division writing credit if a grade of C or better is received. Each course carries four units of credit.

The GPACS Theme House Discussions

Students are encouraged to participate in the weekly discussions and other events on international peace and conflict held at the GPACS Theme House. Student enroll in the Theme House course (Social Sciences 184D) for two units of credit per quarter.

Minor in the History and Philosophy of Science

220 Humanities Office Building II; (949) 824-6565

Brian Skyrms, **Director**

Participating Faculty

Francisco J. Ayala, Ph.D. Columbia University, *Founding Director of the Bren Fellows Program, Bren Chair, and Professor of Ecology and Evolutionary Biology and of Philosophy*

Jeffrey A. Barrett, Ph.D. Columbia University, *Assistant Professor of Philosophy*

William H. Batchelder, Ph.D. Stanford University, *Professor of Cognitive Sciences*

Bruce M. Bennett, Ph.D. Columbia University, *Professor of Mathematics and Cognitive Sciences*

Paul C. Eklof, Ph.D. Cornell University, *Professor of Mathematics*

Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and Philosophy*

Douglas M. Haynes, Ph.D. University of California, Berkeley, *Assistant Professor of History*

Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and Information and Computer Science*

Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Professor of History*

Mary-Louise Kean, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Cognitive Sciences*

John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and Management*

Rob Kling, Ph.D. Stanford University, *Professor of Information and Computer Science and Management*

Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor of Biological Sciences*

J. Karel Lambert, Ph.D. Michigan State University, *Professor Emeritus of Philosophy*

Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor Emeritus of Biological Sciences*

R. Duncan Luce, Ph.D. Massachusetts Institute of Technology, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor Emeritus of Cognitive Sciences and Economics*

Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and Mathematics*

Robert May, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Philosophy*

Louis Narens, Ph.D. University of California, Los Angeles, *Professor of Cognitive Sciences*

Alan Nelson, Ph.D. University of Illinois at Chicago, *Department Chair and Professor of Philosophy*

Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics*

Robert Newsom, Ph.D. Columbia University, *Professor of English*
Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy*
A. Kimball Romney, Ph.D. Harvard University, *Professor Emeritus of Anthropology*

Michael R. Rose, Ph.D. University of Sussex, *Professor of Biological Sciences*
Jonas Schultz, Ph.D. Columbia University, *Professor of Physics*

Brian Skyrms, Ph.D. University of Pittsburgh, *Director of the Emphasis and Minor in the History and Philosophy of Science and UCI Distinguished Professor of Philosophy and Economics*

Norman M. Weinberger, Ph.D. Case Western Reserve University, *Professor of Biological Sciences and Cognitive Sciences*

Peter Woodruff, Ph.D. University of Pittsburgh, *Professor Emeritus of Philosophy*

The minor in the History and Philosophy of Science is intended for students who wish to study the history of science, the philosophical foundations of scientific inquiry, and the relationship between science and other fields. The history of science explores how science is actually done and how it has influenced history. This may involve tracking down an idea's source or its influences, evaluating the cultural forces at work in the generation of a scientific theory or the reaction of culture to science, or taking a detailed look at the work of a particular scientist or movement within science.

The philosophy of science is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences. Philosophy of science courses cover such topics as the role of logic and language in science and in mathematics, scientific explanation, evidence, and probability. These courses may also cover work that has been done on the philosophical problems in specific sciences—for example, the direction of time in physics, the model of mind in psychology, the structure of evolution theory in biology, and the implications of Gödel's incompleteness theorems for mathematics.

The minor is available to all UCI students. Course descriptions may be found in the academic unit sections of the *Catalogue*.

Requirements for the Minor

Completion of History 60 (Introduction to the History of Science) and Philosophy 40 (Introduction to the Philosophy of Science).

Two courses selected from: Anthropology 171H-I (History of Science I, II); History 135A-F (History of Science and Medicine); Political Science 136B (History of Political Economy); Psychology 129 (when topic is History of Psychology).

Two courses selected from: Biological Sciences 165 (Theoretical Psychobiology); Linguistics 141 (Topics in Philosophy of Language), 143 (Semantics), 152 (Linguistic Theories as Psychological Theories); Philosophy 106 (Topics in Mathematical Logic), 107 (Topics in Philosophical Logic), 108 (Topics in Inductive Logic), 140 (Topics in Philosophy of Science), 141 (Topics in Philosophy of Physics), 142 (Writing/Philosophy of Biology), 143 (Topics in Philosophy of Psychology), 144 (Topics in Philosophy of Social Science), 145 (Topics in Philosophy of Language), 146 (Topics in Philosophy of Logic), 147 (Topics in Philosophy of Mathematics), 148 (Philosophical Foundations of Probability).

Senior Seminar: Completion of Philosophy 149 (Senior Seminar in History and Philosophy of Science).

Minor in Latin American Studies

201 Humanities Instructional Building; (949) 824-7244

Jacobo Sefamí, **Director**

Faculty

Juan Bruce-Novoa, Ph.D. University of Colorado, *Professor of Spanish*
Alison Brysk, Ph.D. Stanford University, *Assistant Professor of Political Science*

Teresa Caldeira, Ph.D. University of California, Berkeley, *Assistant Professor of Anthropology*

Frank Cancian, Ph.D. Harvard University, *Professor of Anthropology*

Leo Chávez, Ph.D. Stanford University, *Chair of the Department of Anthropology and Professor of Anthropology*

Raul Fernandez, Ph.D. Claremont Graduate School, *Professor of Social Sciences*

Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese*

L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*

Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History*

Robert Garfias, Ph.D. University of California, Los Angeles, *Director of Chicano/Latino Studies and Professor of Anthropology*

Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Professor of Spanish*
William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology*

Seymour Menton, Ph.D. New York University, *Research Professor of Spanish and Portuguese*

Alejandro Morales, Ph.D. Rutgers University, *Chair of the Department of Spanish and Portuguese and Professor of Spanish*

Jaime Rodríguez, Ph.D. University of Texas, *Professor of History*

Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*

Armin Schwiegler, Ph.D. University of California, Berkeley, *Professor of Spanish*

Jacobo Sefamí, Ph.D. University of Texas, *Director of Latin American Studies and Associate Professor of Spanish*

Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*

Etel Solingen, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*

Luis Suárez-Villa, Ph.D. Cornell University, *Professor of Social Ecology*

Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History*

Steven Topik, Ph.D. University of Texas, *Department Chair of History and Professor of History*

Roberto Villaverde, Ph.D. University of Illinois, Urbana, *Professor of Civil Engineering*

Juan Villegas, Ph.D. Universidad de Chile, *Research Professor of Spanish*

Douglas R. White, Ph.D. University of Minnesota, *Professor of Anthropology*

The minor in Latin American Studies is an interdisciplinary curriculum designed to provide for an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, social ecology, health, folk medicine, and creative (art, dance, drama, music) accomplishments. The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

Requirements for the Minor

Spanish 2A-B-C (Intermediate Spanish) or Portuguese 140A-B through 145 (three courses, exclusive of those used to meet the minor requirements), or equivalent knowledge of Spanish or Portuguese.

Humanities 100 (Latin America and the Caribbean).

One course in Latin American literature (Spanish-American or Luso-Brazilian) selected from: Comparative Literature CL 103 (when topic is on Latin American literature and history); Spanish 100C (Introduction to Spanish American Literature: Pre-Hispanic to Nineteenth Century), 100D (Introduction to Spanish American Literature: Nineteenth and Twentieth Centuries), 130A (Spanish-

American Prose Fiction 1830–1920), 130B (Spanish-American Prose Fiction 1920–1950), 130C (Spanish-American Prose Fiction 1950 to Present), 131A (Spanish-American Poetry), 131B (Spanish-American National Literature), 131C (Spanish-American Theatre), 150 (Spanish-American Literature in Translation), 160 (Topics in Hispanic Film Studies, when topic is on Latin America), 186 (Selected Topics in Latin American Literature); Portuguese 140A-B (Luso-Brazilian Prose Fiction), 142 (Luso-Brazilian Short Story), 143 (Luso-Brazilian Poetry), 145 (Luso-Brazilian Theatre), 190 (Individual Studies).

One course in Latin American history selected from: History 42A (Latin America: Pre-Columbian Civilizations and European Colonization, 1200–1750), 42B (Latin America: Independence and the Nineteenth Century), 42C (Latin America: Twentieth Century), 161A (Indian and Colonial Societies in Mexico), 161B (Nineteenth-Century Mexico), 161C (Twentieth-Century Mexico), 162 (Brazil), 166 (United States–Latin America Relations), 169 (Topics in Latin American History), 190 (Colloquium, when topic is on Latin America); Spanish 100E (Introduction to Chicano and U.S. Latino Literature).

One course in Latin American social sciences selected from: Anthropology 125A (Economic Anthropology), 125X (Immigration in Comparative Perspective), 162A (Peoples and Cultures of Latin America); Political Science 145A (Central America and U.S. Policy); Social Science 172F (Latin American Culture I).

One course in Chicano studies selected from: Environmental Analysis and Design E143U (Social Ecology of the Borderlands); Political Science 126A (Mexican-Americans and Politics); Spanish 110C (Chicano History), 140A, B (Chicano Literature), 142 (Chicano Culture), 186 (Selected Topics in Latin American Literature, when topic is on Chicano literature); Social Sciences 172D (Chicano Culture).

Four courses in Latin American studies selected from: any of the courses listed above in the literature, history, and social sciences requirements; Spanish 110A (Peninsular Civilization, when topic is on Latin America), 110B (Latin American Civilization); Portuguese 141 (Luso-Brazilian Civilization); Anthropology 121J (Urban Anthropology, when the topic is on Latin American countries); Biological Sciences 199A-B-C (Independent Study in Biological Sciences Research, when topic is medicinal biology and herbs in Mexico).

With the approval of the director, other relevant courses also may satisfy the requirements for the minor.

Residence Requirement for the Minor: Four upper-division courses must be successfully completed at UCI.

Graduate Program in Transportation Science

(949) 824-5989, -8462; Fax (714) 824-8385

Michael McNally, **Director (Acting)**

Faculty

Marlon G. Boarnet, Ph.D. Princeton University, *Assistant Professor of Social Ecology and Economics*

David Brownstone, Ph.D. University of California, Berkeley, *Associate Professor of Economics and Social Ecology*

Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor Emeritus of Social Sciences*

Frank A. Haight, Ph.D. University of New Zealand, *Adjunct Professor of Economics*

R. Jayakrishnan, Ph.D. University of Texas at Austin, *Associate Professor of Civil Engineering*

Charles Lave, Ph.D. Stanford University, *Professor of Economics*

Michael McNally, Ph.D. University of California, Irvine, *Director (Acting) of Transportation Science and Associate Professor of Civil and Environmental Engineering*

Raymond W. Novaco, Ph.D. Indiana University, *Professor of Social Ecology*
 Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil Engineering and Director of the Institute of Transportation Studies*
 Stephen G. Ritchie, Ph.D. Cornell University, *Department Chair and Professor of Civil and Environmental Engineering*
 Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics and Social Ecology*
 Luis Suarez-Villa, Ph.D. Cornell University, *Professor of Social Ecology*

Affiliated Faculty

Randall D. Crane, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Social Ecology and Economics*
 Arthur S. DeVany, Ph.D. University of California, Los Angeles, *Professor of Economics*
 Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and of Management*
 Amihai Glazer, Ph.D. Yale University, *Department Chair and Professor of Economics and Professor of Social Ecology*
 Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*
 Newton Margulies, Ph.D. University of California, Los Angeles, *Professor Emeritus of Management*
 Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science*
 Christian Werner, Ph.D. The Free University of Berlin, *Professor Emeritus of Economics*

The graduate program in Transportation Science is administered by faculty from three academic units: the Department of Civil and Environmental Engineering, the Department of Economics, and the School of Social Ecology. The program is designed to educate students in a broad set of competencies and perspectives that mirror the actual practice of current transportation research. It leads to the M.S. and Ph.D. degrees in Transportation Science.

Admission

Admission is limited to a small number of exceptionally talented, independent, and self-disciplined students. The deadline for application for admission is January 15 for fall quarter. Students are admitted for winter or spring quarters only under exceptional circumstances. Late applications are considered on a space-available basis. All applicants must take the Graduate Record Exam (GRE) prior to the application deadline. Foreign applicants must also submit Test of English as a Foreign Language (TOEFL) scores.

Requirements

All students must complete a core curriculum consisting of eight courses from Civil Engineering, Economics, and Social Ecology plus the graduate colloquium. Students may apply to the Director of Graduate Studies for exemption from specific courses based upon the evidence of prior course work. Students also must successfully complete at least six courses from among the four specialization areas: (1) Methods and Analysis, (2) Transportation Economics, (3) Traffic Analysis, and (4) Planning and Policy Analysis. At least four of these six courses must be from one specialization.

Other requirements include: a replication project, in which students replicate the empirical work of a published paper from a major transportation journal; the qualifying examination, which consists of the oral defense of the student's dissertation proposal; and completion of the dissertation.

Research Facilities

UCI is a major research university and has an excellent library collection, as well as special interlibrary loan arrangements with other University of California libraries including the Transportation Library at Berkeley. Research is coordinated with the Irvine branch of the Institute of Transportation Studies (ITS). About 25 to 30 graduate students are employed as research assistants each year in ITS.

Research covers a broad spectrum of transportation issues. Current funded research projects focus upon: intelligent vehicle highway

systems (IVHS), particularly advanced transportation management systems; planning and analysis of transportation systems; transportation systems operation and control; artificial intelligence applications; transportation engineering; transportation safety; road and congestion pricing; environmental and energy issues and demand for alternative fuel vehicles; public transit operations, transportation-land use interactions, demand for autos, and travel demand.

ITS is part of the University of California Transportation Center, one of ten federally designated centers of excellence for transportation research. The transportation research program at UCI is also supported by the Advanced Transportation Management Systems (ATMS) Laboratories.

The Institute maintains a regular publications series documenting research conducted within its programs and is the editorial headquarters of four international journals: *Transportation Research*, parts A, B, and C, and *Accident Analysis and Prevention*.

Women's Studies

213 Humanities Instructional Building; (949) 824-4234
 Robyn Wiegman, **Director**

Core Faculty

Joan Ariel, M.A. San Francisco State University, M.L.S. University of California, Berkeley, *Lecturer in Women's Studies and Women's Studies Librarian* (gender and the politics of information)
 Lindon Barrett, Ph.D. University of Pennsylvania, *Associate Professor of English* (critical theory, African-American cultural studies)
 Rhona Berenstein, Ph.D. University of California, Los Angeles, *Director of the Program in Film Studies and Associate Professor of Film Studies* (film genres, feminist-film theory, gay and lesbian cinema, history of television)
 Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology* (political economy, development, religion, gender, peasants, African, Muslim societies)
 Ellen Broidy, Ph.D. University of California, Irvine, *Lecturer in Women's Studies and Librarian* (twentieth-century U.S. women's history, women and information technology)
 Kitty C. Calavita, Ph.D. University of Delaware, *Professor of Social Ecology* (white-collar crime, gender and race relations, immigration policy)
 Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture* (modern Korea, post-colonial and colonial discourse, popular culture, anthropology)
 Alice Fahs, Ph.D. New York University, *Assistant Professor of History* (U.S. intellectual/cultural history)
 Thelma Foote, Ph.D. Harvard University, *Director (Interim) of the Program in African-American Studies and Associate Professor of History and African-American Studies* (American history and race relations)
 Elizabeth Guthrie, Ph.D. University of Illinois, *Director of the French Language Program and Lecturer in French* (women, learning, and education; women and language, language teaching, discourse, communication)
 Valerie Jenness, Ph.D. University of California, Santa Barbara, *Assistant Professor of Social Ecology* (deviance and social control, gender and social change)
 David Joselit, Ph.D. Harvard University, *Assistant Professor of Art History* (modern and contemporary art, critical theory, gender studies)
 Laura H. Y. Kang, Ph.D. University of California, Santa Cruz, *Assistant Professor of Women's Studies and Comparative Literature* (Asian American literature and culture, feminist theory, ethnic studies, gender)
 Marcia Klotz, Ph.D. Stanford University, *Assistant Professor of German* (German literature and culture, feminist theory, film, cultural studies, colonial discourse)
 Catherine Lord, M.F.A. State University of New York, Buffalo (Visual Studies Workshop), *Professor of Studio Art* (critical theory, feminism, photography, gay and lesbian studies)
 Robert G. Moeller, Ph.D. University of California, Berkeley, *Professor of History* (modern Germany, European women)
 Nancy A. Naples, Ph.D. City University of New York, *Assistant Professor of Sociology and Women's Studies* (women's political consciousness and activism, feminist theories of the state, women and poverty, sexual violence against women, feminist ethnography)

- Jane O. Newman, Ph.D. Princeton University, *Associate Professor of Comparative Literature* (sixteenth- and seventeenth-century English, French, German, Italian, and neo-Latin literature; feminist theory, new historicism and cultural materialism, genre theory, drama, epic, pastoral, early modern women's history)
- Carrie J. Noland, Ph.D. Harvard University, *Assistant Professor of French* (twentieth-century poetry; World War II and literature of the avant-garde)
- Patrick Sinclair, Ph.D. Northwestern University, *Department Chair of Classics and Associate Professor of Classics* (Roman social history, Latin prose, lexicology)
- John H. Smith, Ph.D. Princeton University, *Associate Professor of German* (eighteenth- and nineteenth-century German literature and intellectual history, literary theory, lesbian and gay studies)
- Sally Stein, Ph.D. Yale University, *Associate Professor of Art History* (history of photography and mass media)
- Heidi Tinsman, Ph.D. Yale University, *Assistant Professor of History* (Latin America)
- Robyn Wiegman, Ph.D. University of Washington, *Director of the Program in Women's Studies and Associate Professor of Women's Studies, African-American Studies, and English* (feminist theory, sexuality studies, American cultural studies, race studies)

Affiliated Faculty

- Marjorie A. Beale, Ph.D. University of California, Berkeley, *Assistant Professor of History*
- Teresa Caldeira, Ph.D. University of California, Berkeley, *Assistant Professor of Anthropology*
- Francesca M. Cancian, Ph.D. Harvard University, *Professor of Sociology*
- Kenneth S. Chew, Ph.D. University of California, Berkeley, *Associate Professor of Social Ecology*
- Michael P. Clark, Ph.D. University of California, Irvine, *Professor of English*
- Lara Denis, Ph.D. Cornell University, *Assistant Professor of Philosophy*
- Ana Paula Ferreira, Ph.D. New York University, *Associate Professor of Portuguese*
- Anne Friedberg, Ph.D. New York University, *Associate Professor of Film Studies*
- Dorothy Fujita Rony, Ph.D. Yale University, *Assistant Professor of Asian American Studies and History*
- Jeff Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History*
- Susan Greenhalgh, Ph.D. Columbia University, *Associate Professor of Anthropology*
- Gail Hart, Ph.D. University of Virginia, *Associate Dean of Humanities for Undergraduate Study and Professor of German*
- Renée Riese Hubert, Ph.D. Columbia University, *Professor Emerita of French and Comparative Literature*
- Ketu Katrak, Ph.D. Bryn Mawr College, *Director and Professor of Asian American Studies and Professor of English and Comparative Literature*
- Claire Jean Kim, Ph.D. Yale University, *Assistant Professor of Asian American Studies and Political Science*
- Susan B. Klein, Ph.D. Cornell University, *Assistant Professor of Japanese*
- Liisa Malkki, Ph.D. Harvard University, *Associate Professor of Anthropology*
- Yong Soon Min, M.F.A. University of California, Berkeley, *Assistant Professor of Studio Art*
- Margot Norris, Ph.D. State University of New York, Buffalo, *Professor of English and Comparative Literature*
- Mark S. Poster, Ph.D. New York University, *Professor of History and of Information and Computer Science*
- Leslie W. Rabine, Ph.D. Stanford University, *Professor of French*
- Connie Samaras, M.F.A. Eastern Michigan University, *Associate Professor of Studio Art*
- Gabriele Schwab, Ph.D. University of Konstanz, *Director of the Critical Theory Institute and Professor of English and Comparative Literature*
- Deidra Sklar, Ph.D. New York University, *Assistant Professor of Dance*
- Alladi Venkatesh, Ph.D. Syracuse University, *Professor of Management*
- Ann Walthall, Ph.D. University of Chicago, *Professor of History and of East Asian Languages and Literatures*
- Gary Watson, Ph.D. Princeton University, *Professor of Philosophy*
- Hu Ying, Ph.D. Princeton University, *Assistant Professor of Chinese*

Women's Studies, like feminism, is a way of asking questions rather than a particular set of answers or conclusions. How does being female affect one's participation in family, literature, history, art, politics, economy, and education? How do language, visual representations, beliefs, and values shape women's and men's status

in society and culture? How does the experience of women differ by race, class, nationality, religion, and sexual preference? The intellectual perspectives provoked by such questions have established Women's Studies as a dynamic and compelling field of study and have spurred the restructuring of curriculum and knowledge across the other disciplines.

The field of women's studies has developed at a phenomenal rate from a handful of student-initiated courses in the early 1970s to more than 600 programs in colleges and universities across the United States offering degrees at the B.A., M.A., and Ph.D. levels. The Program in Women's Studies at UCI was founded in 1975 and has grown significantly since that time. The program offers a major leading to the B.A. degree in Women's Studies, an undergraduate minor, and a graduate emphasis in Feminist Studies.

The undergraduate program in Women's Studies draws upon faculty with expertise in humanities, social sciences, social ecology, and the arts. Through diverse course offerings, the program examines the contributions of women from different backgrounds to culture and society and explores women's and men's lives in the context of changing gender relations. The program emphasizes interdisciplinary, multicultural scholarship and includes course work in feminist theories; the cultural roles of women; the socioeconomics of gender; women's history; women's literature in a cross-cultural frame; women, gender, and sexuality in fine arts and film; women of color; and lesbian and gay studies.

Women's Studies provides a unique intellectual community where faculty and students share a commitment to interactive teaching and learning. Students work closely with faculty and the program's academic coordinator to plan a coherent program of study and to anticipate work toward advanced degrees and a wide variety of career options.

CAREER OPPORTUNITIES

A degree in Women's Studies prepares students for the expanding opportunities available in graduate programs and in numerous careers in both the public and private sectors. As more women work, business and corporations find the need for increased knowledge about women, and the growth of women's organizations and agencies—at the local, national, and global levels—is creating new opportunities for graduates with specializations in Women's Studies. Graduates bring unique skills and knowledge to the professions of law, medicine, social work, teaching, counseling, and to government service, all of which increasingly require expertise on issues concerning women and gender. A background in Women's Studies develops critical and analytical skills which prove valuable in the full range of life choices.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. In addition, the Women's Studies Office provides more specialized career counseling and information on graduate programs in Women's Studies and related fields.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN WOMEN'S STUDIES

University Requirements: See pages 54–58.

Program Requirements for the Major

Completion of 14 Women's Studies courses as specified below.

- Three introductory core courses (Women's Studies 50A, 50B, 50C).
- Three advanced core courses (Women's Studies 139, 160, 197).
- One course selected from Women's Studies 161, 162, or 163.

- D. At least one course selected from each of the following (total of four courses): Women's Studies 170, 171, 174, and 180–186.
- E. Two additional courses selected from Women's Studies 150, 170, 171, 173, 174, 180, 181, 182, 183, 184, 185, 186, 187.
- F. Two years of a language other than English or equivalent competence (two quarters beyond the breadth requirement).

Residence Requirement for the Major: A minimum of five upper-division courses required for the major must be completed successfully at UCI. Courses taken through the UC Education Abroad Program will be counted toward the residence requirement by student petition and upon approval of course content by the Women's Studies Curriculum Committee.

Program Requirements for the Minor

Completion of seven courses including three core courses (Women's Studies 50A, 50B, 50C) and four courses selected from Women's Studies 139, 150, 155, 160, 161, 162, 163, 170, 171, 173, 174, 180, 181, 182, 183, 184, 185, 186, 187.

Residence Requirement for the Minor: A minimum of four upper-division courses required for the minor must be completed successfully at UCI.

GRADUATE EMPHASIS IN FEMINIST STUDIES

The Program in Women's Studies offers an emphasis in Feminist Studies, which is available in conjunction with the Ph.D. programs in the Departments of Anthropology, Art History, East Asian Languages and Literatures, English and Comparative Literature, French and Italian, German, History, Sociology, and Spanish and Portuguese; and with the M.F.A. programs in the Departments of Drama and Studio Art. Satisfactory completion of the emphasis is certified by the Director of Women's Studies and is noted in the student's dossier.

Admission to the Program

Applicants must first be admitted to, or currently enrolled in, one of the participating programs noted above. Applicants must submit to the Women's Studies Graduate Program Committee: (1) an application form listing prior undergraduate and graduate course work related to Feminist Studies, institutions attended, and majors(s); (2) a one- to two-page statement of purpose, including career objectives, areas of interest and research, record of research, teaching, community and/or creative work; and (3) a sample of written work related to Feminist Studies.

The Committee determines admissions, in consultation with the Women's Studies Core Faculty, based upon the extent to which the applicant's research interests relate to Feminist Studies, the applicant's previous course work, and research or other experience related to Feminist or Women's Studies. Lack of prior course work does not preclude admission, so long as a compelling statement of research interests congruent with the graduate emphasis makes the case.

Emphasis Requirements

Minimum course work for the graduate emphasis in Feminist Studies consists of four courses: two core courses, Women's Studies 200A-B, a coherent sequence normally taken in consecutive quarters; and any two courses selected from the list of courses in Feminist Studies approved by the Committee, as long as one of these is a graduate course in the student's own department or area of interest. In keeping with the interdisciplinary focus of this emphasis, it is highly recommended that the other be a course from a discipline outside that department or area. The course requirements for Ph.D. and M.F.A. candidates are the same.

For doctoral students, the qualifying examination and dissertation topic should incorporate gender as a central category of analysis. One member of the candidate's qualifying examination committee

and of the candidate's dissertation committee is normally a member of the Women's Studies Core Faculty. There are no requirements concerning qualifying examinations or theses for M.F.A. students.

Courses in Women's Studies

LOWER-DIVISION

50A Gender and Feminism in Everyday Life (4) F. What is gender? Why does studying it matter? Explores how feminism has understood not only gender as a category of social analysis, but how gender structures personal identities, family, citizenship, work and leisure, social policy, sexuality, and language. (IV, VII-A)

50B Reproducing and Resisting Inequality (4) W. From bedroom to boardroom to voting booth to international division of labor, how are societal institutions and politics "gendered"? Examines relationships of gender, race, ethnicity, class, and region in sexual and reproductive experiences, households, education, work, and politics, including community activism. (IV, VII-A)

50C Gender and Popular Culture (4) S. An investigation of gender, race, and sexuality in film, TV, video, music, and advertising, with attention to the ways that popular culture shapes understandings of technology, national identities, leisure and work, historical memory, international communication, and multicultural representation. (IV, VII-A)

51 Issues in Contemporary Feminism in the United States (4). Introduction to issues related to women and gender in contemporary life in the United States. Explores a variety of topics addressed by feminist scholarship from empirical, theoretical, and analytical perspectives. (VII-A)

UPPER-DIVISION

139 Feminist Theory (4). The treatment of women or women's issues in major schools of thought and/or social and political movements including advocates of women's rights and protagonists in current debates. Students write several essays of varying lengths totaling at least 4,000 words. Prerequisites: Women's Studies 50A, 50B, 50C; Women's Studies majors and minors only; consent of instructor; satisfaction of lower-division writing requirement; upper-division standing. May be repeated for credit as topics vary.

150 Feminist Cultural Studies (4). Investigation of the theories and methods that inform the feminist study of culture. Focuses on the interpretation of the visual arts and literature created by, and predominantly for, women. Prerequisite: Women's Studies 50A, 50B, or 50C. May be repeated for credit as topics vary. (VII-A)

155 Special Topics in Women's Studies (4). Designed to provide students with an opportunity to do advanced work in women's studies. May be repeated for credit as topics vary. Formerly Humanities 155.

160 Gender and the Politics of Information (4) W. Investigates from feminist perspectives the challenges inherent in the "information age" and its embedded gender and political dimensions. Examines the increasingly complex identification, evaluation, and application of information from traditional library sources to the new global information technologies ranging from e-mail to multimedia websites. Prerequisite: Women's Studies 139. (VII-A)

161 Topics in Lesbian and Gay Studies (4). Explores issues in lesbian and gay studies from one or more of the following perspectives: theoretical, historical, literary, legal, economic, political, sociological, and representation in the arts. Prerequisite: Women's Studies 50A, 50B, or 50C. May be repeated for credit as topics vary. (VII-A)

161B Issues in Lesbian and Gay Visual Representation (4). History of lesbian and gay culture in relation to the visual and performing arts; the construction of sexual difference, debates around positive and negative representations, queer activism, and the intersections of sexuality with gender and race. Readings assigned. Prerequisite: Studio Art 10A, B, C or consent of instructor. May be taken for credit twice. Same as Studio Art 122.

162 Racism and Sexism (4). Examines the roles and intersection of racism, sexism, and heterosexism in United States culture and society. Through history and literature, explores the processes of immigration, colonization (of identity, language, and the body), and cultural interaction. Prerequisite: Women's Studies 50A, 50B, or 50C. (VII-A)

163 Women of Color (4). Examines the ways factors of ethnicity, class, gender, sexuality intersect in the lives of women of different ethnic groups in the U.S. (African-American, Asian and Asian American, Chicana/Latina, Native American.) Explores how differences and commonalities impact their current status in U.S. society. Prerequisite: Women's Studies 50A, 50B, or 50C. (VII-A)

170 WOMEN'S STUDIES: LITERATURE AND LANGUAGE

Cross-listed with literature and language courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

170CA Undergraduate Seminars in Literary Theory and Practice (4) F, W, S. Each instructor announces a topic that joins theoretical considerations of contemporary literary study with the practical criticism of individual literary texts. May be repeated for credit as topics vary.

170CB Undergraduate Lectures in Comparative Literature (4) F, W, S, Summer. A series of lectures on and discussions of announced comparative topics in literary criticism, history, genres, modes, major authors. Prerequisites: none for most topics; check descriptions of individual course topics. May be repeated for credit as topics vary. Same as English and Comparative Literature CL103 when topic is appropriate.

170CD The Interdisciplinary Course (4) F, W, S, Summer. Treats interdisciplinary topics of various kinds (e.g., literature and politics, literature and religion, literature and science, literature and other arts). Open to all UCI students. Prerequisites: none for most topics; check with descriptions of individual course topics. May be repeated for credit as topics vary. Same as English and Comparative Literature CL104 when topic is appropriate.

170CE Multicultural Topics in Comparative Literature (4). Treats the literature and culture of one or more minority groups in California and the United States, including African-Americans, Asian Americans, Chicano/ Latinas, and Native Americans, in relation to other national literatures. May be repeated for credit as topics vary. Same as English and Comparative Literature CL 105 when topic is appropriate. (VII-A)

170CF Multicultural Topics in English-Language Literature (4). Treats the literary consequences of relations and conflicts between races, genders, classes, ethnic groups, and other forms of cultural identity prevalent at different moments in history. May be repeated for credit as topics vary. Same as English and Comparative Literature E 105 when topic is appropriate. (VII-A)

170CL Topics in Classical Civilization (4). Subject matter variable. May be repeated for credit as topics vary. Same as Classics 170 when topic is appropriate.

170EC Topics in Chinese Literature and Society (4). Studies in Chinese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topics vary. Same as East Asian Languages and Literatures 110 when topic is appropriate. (VII-B)

170EJ Topics in Japanese Literature and Society (4). Studies in Japanese texts in their social and cultural context(s). Conducted in English. May be taken for credit three times as topics vary. Same as East Asian Languages and Literatures 120 when topic is appropriate. (VII-B)

170FA Topics in French Literature and Culture (4) F, W, S. In English. May be repeated for credit as topics vary. Same as French 150 when topic is appropriate. (VII-B)

170FB Problems in French Culture (4). Prerequisite: French 101A-B-C. May be repeated for credit as topics vary. Same as French 110 when topic is appropriate. (VII-B)

170FC Francophone Literature and Culture (4). Literatures and cultures of the Francophone world. Prerequisite: French 101A-B-C. May be repeated for credit as topics vary. Same as French 127 when topic is appropriate. (VII-B)

170GA Topics in German Literature and Culture 750–1750 (4). Specific course content determined by individual faculty members. Example: Luther and the European Renaissance. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 117 when topic is appropriate. (VII-B)

170GB Studies in the Age of Goethe (4). Individual authors such as Lessing, Goethe, Schiller, Kleist, and Hölderlin, or the drama of the "angry young men" of the German 1770s. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 118 when topic is appropriate. (VII-B)

170GC Studies in Nineteenth-Century German Literature and Culture (4). Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 119 when topic is appropriate. (VII-B)

170GD Studies in Twentieth-Century German Literature and Culture (4). Individual authors such as Thomas Mann, Brecht, and Kafka, or topics addressing questions of genre and/or social-literary problems. Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 120 when topic is appropriate. (VII-B)

170GE Topics in German Literature and Culture (4). Literary and cultural topics not fully contained within the periods listed above, such as "German Comedy" and "Turn-of-the-Century Vienna." Prerequisite: German 101 or consent of instructor. May be repeated for credit as topics vary. Same as German 130 when topic is appropriate.

170GF Writing about Literature and Culture (4). In English. Requires at least 4,000 words of assigned composition based upon readings in Germanic literatures and cultures. Several essays required. Topics vary. German majors given admission priority. Prerequisites: satisfactory completion of the lower-division writing requirement; junior standing or consent of instructor. May be repeated for credit as topics vary. Same as German 139 when topic is appropriate.

170GG Topics in Literary Theory and Criticism (4). In English. Theoretical dimensions of literary criticism and the German philosophical tradition. Topics such as Marxism, Freudian thought, the German Idealistic tradition of aesthetics, Historicism, twentieth-century hermeneutics, Frankfurt School, and *Rezeptionsästhetik* are explored in theoretical, critical, and literary texts. May be repeated for credit as topics vary. Same as German 140 when topic is appropriate.

170GH Germanic Literatures and Cultures (4). In English. Major works of Germanic literature and culture in context. Prerequisite applicable only when offered as 150W: upper-division standing and satisfactory completion of the lower-division writing requirement. May be repeated for credit as topics vary. Same as German 150 when topic is appropriate. (VII-B)

170GJ German Cinema (4). Historical, theoretical, and comparative perspectives on German cinema. Same as German 160 when topic is appropriate. (VII-B)

170PA Masterpieces of Luso-Brazilian Literature (4). In-depth analysis of one period or major author of Portuguese literature or one period or major author of Brazilian literature. Prerequisite: Portuguese 1C or equivalent. May be repeated for credit as topics vary. Same as Portuguese 144 when topic is appropriate.

170SA, SB Chicano Literature (4, 4). Focus on contemporary Chicano literature in relation to Chicana literature, women's literature, American literature, and Latino literature. Prerequisite: Spanish 10A or equivalent; Spanish 10B highly recommended. Same as Spanish 140A, 140B when topic is appropriate. (VII-A)

170SD Selected Topics in Spanish Literature (4). Selection of representative topics in Spanish literature. Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. Same as Spanish 185 when topic is appropriate. (VII-B)

170SE Peninsular Civilization (4). Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. Same as Spanish 110A when topic is appropriate. (VII-B)

170SF Latin American Civilization (4). Prerequisite: Spanish 10A or equivalent. May be repeated for credit as topics vary. Same as Spanish 110B when topic is appropriate. (VII-B)

170TA Undergraduate Seminars in Literary Theory (4) W, S. Each instructor announces a theoretical topic deriving from Criticism 100A and explores it through a number of theoretical and literary texts. Prerequisite: English and Comparative Literature CR 100A. May be repeated for credit as topics vary.

171 WOMEN'S STUDIES: WOMEN IN HISTORY

Cross-listed with History courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

171A, B, C Women and Gender Relations in the United States. An examination of changes in gender relations and in the conditions of women's lives from the 1700s on. Emphasis on race and class, cultural images of women and men, sexuality, economic power, and political and legal status. Same as History 146A, 146B, 146C.

171A: American Women to 1820 (4). (VII-A)

171B: American Women 1820–1980 (4). (VII-A)

171C Topics in Women and Gender Relations in the U.S. (4). May be repeated for credit as topics vary. (VII-A)

171D Colloquium (4). Specialized courses dealing primarily with close reading and analysis of secondary works; required reports and papers (critical essays). Each colloquium reflects the instructor's intellectual interests and is conducted as a discussion group. Prerequisite: Junior/senior standing and history major or consent of instructor. May be repeated for credit when topics vary. Same as History 190 when topic is appropriate.

171E Research Seminar (4). Specialized courses that require analysis of a historical problem through research in primary sources and the preparation of an original research paper. Each research seminar is offered in a quarter following a History 190 colloquium and is related to the colloquium's subject. Prerequisite: History 190 in the preceding quarter; junior or senior standing; and history major or consent of instructor. May be taken for credit a total of six times. Same as History 192 when topic is appropriate.

171F Topics in History of Women in Europe (4). May be repeated for credit as topics vary. Same as History 128. (VII-B)

171G Special Studies in Social History (4). May be repeated for credit when topics vary. Same as History 180 when topic is appropriate.

171H American Working-Class History (4). Traces formation of the American working-class and examines its response to the changing structures of economic/political power determined by nineteenth-century industrial capitalism and twentieth-century imperialism. Issues/intersections of race, culture, and gender are examined. Same as History 145.

173 WOMEN'S STUDIES: PHILOSOPHY

Cross-listed with Philosophy courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

173A Topics in Feminism (4). A study of selected topics in feminist theory and/or gender studies. Same as Philosophy 152. May be repeated for credit as topics vary.

173B Race and Gender (4). Investigation of philosophical issues concerning race and gender, e.g., the grounding of these concepts (is it scientific or social?); race, gender, and individual self-conception; race and ethnicity; "color-blind" society; group solidarity versus racism; affirmative action; multiculturalism. Same as Philosophy 131E. (VII-A)

174 WOMEN'S STUDIES: WOMEN AND THE ARTS

Cross-listed with courses in the arts whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

174A Studies in Film Genre (4). Analytical and theoretical approaches to the serial productions we call "genre" films; the pattern of recognition known as westerns, weepies, musicals, horror films, and others. May be repeated for credit as topics vary. Same as Film Studies 112 when topic is appropriate.

174CA, CB, CC, CD Studies in Modern Art F, W, S. Varying topics within the period 1789 to 1940. Works of art are studied as cultural, social, and political practices. Same as Art History 133A, 133B, 133C, 133D when topic is appropriate. May be repeated for credit as topics vary.

174CA Topics in Modern Art (4). Varies with each offering. Consult the instructor for specific topic.

174CB Realism and Impressionism: 1830–1880 (4).

174CC Symbolism through Cubism: 1880–1920 (4).

174CD Visual Culture between the Two World Wars: 1920–1940 (4).

174D Studies in Contemporary Art (4). Varying topics within the period 1940 to the present. Examples: Abstract Expressionism, Performance Art. Works of art are studied as cultural, social, and political practices. May be repeated for credit as topics vary. Same as Art History 140 when topic is appropriate.

174E Criticism of Art (4). Selected topics discussed on the theoretical and/or practical dimensions of art historical criticism. May be repeated for credit as topics vary. Same as Art History 180 when topic is appropriate.

174H Special Topics in Studio Art (4). Prerequisite: Studio Art 10A, B, C, upper-division standing, or consent of instructor. Same as Studio Art 100 when topic is appropriate. May be taken for credit six times as topics vary.

174I Studio Problems: Methods and Materials (4). An open media discussion and critique course emphasizing the development of working ideas and the execution of projects in all media. Readings assigned as required; field trips, slide and film/video presentations are integral. Prerequisites: two intermediate courses. May be repeated for credit as topics vary. Same as Studio Art 191 when topic is appropriate.

174J Feminist Issues in Studio Art (4). Feminist perspectives and topics in relation to cultural production. Feminist debates on sexuality, perspectives of women of color on race and gender, feminist film criticism, histories of the first and second waves of feminism, histories of feminist art. Prerequisite: Art Studio 10A, B, C or consent of instructor. Same as Studio Art 116.

180 WOMEN'S STUDIES: ANTHROPOLOGY

Cross-listed with Anthropology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

180A Cross-Cultural Studies of Gender (4). Familiarizes students with the diversity of women's experiences around the world. Gender roles and relations are examined within cultural and historical contexts. A central concern is how class, race, and global inequalities interact with women's status. Prerequisite: Anthropology 2A or 2B. Same as Anthropology 121D. (VII-B)

180C Psychological Anthropology (4). Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics; biocultural aspects of child development and attachment; evolutionary models of culture and behavior; politically linked personality; cognitive anthropology; psychology of narrative forms; comparative national character studies. Prerequisite: Anthropology 2A or Psychology 7A or Psychology 9A-B-C. Same as Anthropology 132A and Psychology 173A.

180D Immigration in Comparative Perspective (4). Examines issues related to the migration and settlement of immigrants. Although the focus is on the Mexican migration to the United States, comparisons are also made to immigrant groups from Korea, Japan, Southeast Asia, Central America, the Caribbean, and Europe. Same as Anthropology 125X. (VII-A)

180E Peoples of the Pacific (4). The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. Same as Anthropology 163A. (VII-B)

180F Women and Arabic Society (4). Overview of Arabic history and way of life emphasizing Morocco. Transformation of women's condition during the past half-century. Lecture and seminar format. Same as Anthropology 160M and Political Science 154B. (VII-B)

180G Colonialism and Gender (4). An anthropological enquiry into the ways colonial relations of power have been structured and gendered throughout the world, and to what effect. Examines the social locations of men and women in the everyday exercises of colonial and imperial power. Same as Anthropology 136G.

180H Gender and Cultural Identity (4). Explores how anthropological traditions of studying symbolic classification might be connected with contemporary issues involving the political and cultural classification of people along the crosscutting axes of gender, race, ethnicity, culture, and nationality. Same as Anthropology 136J.

180L The Woman and the Body (4). Probes culture and politics of the female body in late twentieth-century American life. Focusing on "feminine beauty," examines diverse notions of beauty, bodily practices, and body politics embraced by American women of different classes, ethnicities, and sexualities. Same as Anthropology 136K. (VII-A)

180M Women, Race, and Social Movements in Latin America (4). Analyzes the emergence and transformation of social movements in Latin America from the 1980s to the present. Focuses on two groups of protagonists: women (who organized various types of movements), and Black Latin Americans (whose organization has been limited). Same as Anthropology 121E. (VII-B)

181 WOMEN'S STUDIES: COGNITIVE PSYCHOLOGY

Cross-listed with Psychology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

181A Social Psychology of African-American Families (4). Social psychological analysis of African-American families from an Afro-centric perspective with examination of historical and contemporary factors which affect their structure and functioning and the psychosocial development of family members. Issues and challenges in the twenty-first century. Same as Psychology 174B. (VII-A)

182 WOMEN'S STUDIES: ECONOMICS

Cross-listed with Economics courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

183 WOMEN'S STUDIES: SOCIOLOGY

Cross-listed with Sociology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

183A Sociology of Peace and War (4). Describes various commonly accepted but often erroneous notions of the causes and consequences of war and deterrence. Major theories concerning the sources of war in international and intranational social systems. The modes, techniques, and outcomes of efforts to restrict, regulate, and resolve international conflicts. Same as Sociology 178.

183B Community Research (4). Students formulate and carry out a study on intimate relationships and interpersonal networks. Focus on family, friendship, and community and on how people create a supportive network of relations in modern society. Prerequisite: consent of instructor. Same as Sociology 111.

183C Sociology of Gender (4). Explores the complex processes contributing to the social construction of gender and sexuality in the U.S. with particular attention to the intersection of gender, race, ethnicity, sexuality, and class; and evaluates how men and women are differentially constituted in the family, education, work, politics, media, and language. Same as Sociology 161. (VII-A)

184 WOMEN'S STUDIES: POLITICS AND SOCIETY

Cross-listed with Political Science courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

185 WOMEN'S STUDIES: SOCIAL SCIENCES

Cross-listed with Social Sciences courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

185A Chicano/Chicana Labor History (4). Examines origins of Latino/Latina labor from colonial period to present. Emphasis on the issues of race, culture, class, and gender. Focus on processes and institutions including: encomienda, migration, unions, informal economies, Bracero program, domestic work. Same as Social Science 167. (VII-A)

186 WOMEN'S STUDIES: LINGUISTICS

Cross-listed with Linguistics courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

186A Sociolinguistics (4). Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Linguistics 168A and Anthropology 122S.

187 WOMEN'S STUDIES: SOCIAL ECOLOGY

Cross-listed with Social Ecology courses whose topics relate to women and gender or which are taught from a feminist methodological perspective. Consult the Women's Studies Office for information.

187A Work and Family (4). Effects of employment and unemployment on mental health and marital quality; effects of work on parenting and child development; corporate and social policies for "families that work"; young adults' decision-making about work and family. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Psychology and Social Behavior P10P.

187B Development of Gender Differences (4). Examination of research on how sexes differ in physiology, cognitive functioning, personality, and social behavior. Sex-differentiated development from prenatal period through adulthood. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal) and social (familial, cultural) mechanisms. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Psychology and Social Behavior P122D.

187C Impacts of Divorce (4). Examines divorce in historical, economic, and, primarily, psychological contexts, emphasizing recent research pertaining to the impacts of divorce on children, families, and society. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Psychology and Social Behavior P171P.

187D The Family (4). Examination of Western family life from population and life course perspectives. Links between large-scale trends and changes in individual's family and household options. Same as Environmental Analysis and Design E111 and Psychology and Social Behavior P168P.

187E Human Sexuality (4) F. A broad survey of human sexuality encompassing genetic factors, physiological and anatomical development, customary and atypical forms of behavior, reproductive processes, and cultural determinants. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Psychology and Social Behavior P121D.

188 WOMEN'S STUDIES: GENDER AND SCIENCE

188A Human Genetics and Women's Issues (4) F. Survey of human genetics with a focus on diseases and issues with particular relevance to or impact on women. Explores ethical, legal, social, and policy implications and the application of feminist theories to concerns and controversies in human genetics.

WOMEN'S STUDIES: SPECIAL COURSES

197 Senior Seminar in Women's Studies (4) S. Students read advanced scholarship in Women's Studies and complete a major seminar paper. Prerequisite: Women's Studies 139. (VII-A)

198 Directed Group Study (4). Special topics through directed reading. Paper required. Prerequisite: consent of instructor. May be taken for credit three times as topics vary.

199 Directed Research (1 to 4) F, W, S. Directed reading and research in consultation with a faculty member. Substantial written work required. Prerequisite: consent of sponsoring faculty member.

GRADUATE

200A Feminist Knowledge and Social Change (4) F, W, S. An exploration of contemporary feminist debates about Women's Studies as an academic entity, interdisciplinary field, and political practice. May be taken for credit twice.

200B Problems in Feminist Research (4) F, W, S. Proseminar colloquium on analytical approaches to feminist research and/or creative activity in a wide range of disciplines in the humanities, social and behavioral sciences, and the arts. Prerequisite: Women's Studies 200A. May be taken twice for credit as topics vary.

201 Special Topics in Feminist Theory (4) F, W, S. Seminars on various topics in feminist theory. Prerequisite: Women's Studies 200A-B. May be repeated for credit as topics vary.

290 Directed Research (4 to 12) F, W, S. Directed graduate study/research in Women's Studies. May be taken for credit for a total of 24 units.

399 University Teaching (4). Limited to Teaching Assistants. Must be admitted to the graduate emphasis in Feminist Studies. Satisfactory/Unsatisfactory only. May be taken for credit six times.

ADDITIONAL OPPORTUNITIES FOR INTERDISCIPLINARY STUDY

Minor in Global Sustainability

321 Steinhaus Hall; (949) 824-6006; Fax (949) 824-2181

Peter J. Bryant and Peter A. Bowler, Co-directors

Core Faculty

Peter A. Bowler, Ph.D. University of California, Irvine, *Associate Adjunct Professor of Ecology and Evolutionary Biology and of Environmental Analysis and Design, UC Natural Reserve System Academic Coordinator, and Director of the UCI Arboretum*

Peter J. Bryant, Ph.D. University of Sussex, *Director of the Developmental Biology Center and Professor of Biological Sciences*

Michael Burton, Ph.D. Stanford University, *Professor of Anthropology*

William S. Reeceburgh, Ph.D. The Johns Hopkins University, *Professor of Earth System Science*

Susan E. Trumbore, Ph.D. Columbia University, *Associate Professor of Earth System Science*

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

As a result of population growth and the pursuit of higher standards of living, humanity has initiated many global trends that cannot be sustained indefinitely. Some of these trends are physico-chemical in nature, such as the rapid depletion of fossil fuels and the increasing pollution of our environment, including the accumulation of ozone-depleting chemicals with consequent increase of ultraviolet radiation at the earth's surface, and the buildup of carbon dioxide that is almost certainly causing global warming. Other trends are biological ones including the degradation of agricultural land, the destruction of many kinds of wildlife habitat with associated high rates of species extinction, and the depletion of wildlife populations by over-exploitation. Global changes are also taking place in the human situation including loss of cultural diversity, a growing income gap between rich and poor nations leading to deepening poverty and additional pressure for biological resource exploitation, accelerating urbanization with associated social problems, and regional population and economic imbalances leading to escalating political tensions and potential for conflict. This program examines the causes of, and interrelationships between, these problems and considers new approaches to solving them. Its goal is to provide broad, interdisciplinary training that will allow students to better understand and effectively deal with the serious environmental problems that we will face in the twenty-first century.

The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

REQUIREMENTS FOR THE MINOR

Completion of an introductory sequence of three core courses:

Earth System Science 10 (The Physical Environment), Biological Sciences 65 (Biological Conservation), and Anthropology 20A (People, Cultures, and Environmental Sustainability; same as Environmental Analysis and Design E20).

Three relevant elective courses (12 units): One elective course must be taken in each of the following three disciplines, and at least two of these must be upper division. Students may select from the following list and must have their choices approved by a panel of participating faculty:

Biological Sciences: 55 (Introduction to Ecology; same as Environmental Analysis and Design E6), 94 (Diversity of Life), 96 (Ecology), 118 (Microbial Ecology of Natural and Polluted Waters), 150 (Conservation Biology), 175 (Restoration Ecology), 178 (Ocean Ecology), 179 (Limnology and Freshwater Biology),

181 (Conservation in the American West), 186 (Population and Community Ecology).

Physical Sciences/Engineering: Earth System Science 20E (The Atmosphere), 20F (Oceanography); Engineering 20 (Energy and Society); Civil and Environmental Engineering CEE125 (Transportation Engineering), CEE126 (Transportation Systems Analysis and Design), CEE127 (Traffic Engineering); Physics 16 (Physics and Global Issues), 20C (Observational Astronomy).

Social Sciences/Social Ecology: Anthropology 125A (Economic Anthropology), 125B (Ecological Anthropology); Environmental Analysis and Design E3 (Human Environments), E5 (Introduction to Environmental Quality and Health), E8 (Introduction to Environmental Analysis and Design), E15 (Native American Religions and the Environmental Ethic), E105U (Environmental Law), E106 (Human Ecology), E146 (Dynamics of Human Populations), E154 (Environmental Ethics and the American Lands); Economics 145E (Economics of the Environment); Political Science 149 (when topic is Global Environmental Politics); Social Science 172E (Native American Culture); Sociology 44 (Populations).

Senior Seminar on Global Sustainability I, II, III: During their final year in this program, students complete Biological Sciences 191A-B-C (same as Earth System Science 190A-B-C and Social Ecology 186A-B-C) which includes a seminar, directed study, and independent research in a relevant area. This work forms the basis for a senior research paper which is completed and presented near the end of spring quarter in a colloquium.

Minor in Native American Studies

Participating Faculty

Richard Perry, J.D. Stanford University, *Assistant Professor of Social Ecology*

Jaime E. Rodríguez, Ph.D. University of Texas, *Professor of History*

Gabriele Schwab, Ph.D. University of Konstanz, *Professor of English and Comparative Literature*

Tanis Thorne, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of History and Social Ecology*

Steven C. Topik, Ph.D. University of Texas, *Chair of the Department of History and Professor of History*

The minor in Native American Studies is an interdisciplinary, inter-school program which focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis. Study in the minor is enriched by the research and teaching interests of faculty from different departments.

The minor is open to all UCI students. Advising information is available from the undergraduate counseling offices in the Schools of Humanities, Social Ecology, and Social Sciences and from the IDP counselor.

Course descriptions are available in the academic unit sections.

Requirements for the Minor

Core courses: Environmental Analysis and Design E15 (Native American Religions and the Environmental Ethic); History 15A (Native American History); and Sociology 65 (Cultures in Collision: Indian-White Relations Since Columbus; same as Anthropology 85A).

Four upper-division courses selected from: Anthropology 121D (Cross-Cultural Studies of Gender, same as Women's Studies 180A), 135A (Religion and Social Order), 162A (Peoples and Cultures of Latin America); Art History 175 (Studies in Native and Tribal Art); Education 124 (Perspectives on Multicultural Education); History 161A (Indian and Colonial Societies in Mexico); Philosophy 131E (Race and Gender, same as Women's Studies 173B); Social Science 172E (Native American Culture), 175B (Ethnic and Racial

Communities); Women's Studies 162 (Racism and Sexism), 163 (Women of Color).

Students may also select from the following courses when the topics presented relate to Native American Studies: Comparative Literature CL 105 (Multicultural Topics in Comparative Literature); English E 105 (Multicultural Topics in English-Language Literature); Sociology 149 (Special Topics: Structures), 169 (Special Topics: Age, Gender, Race, and Ethnicity).

Minor in Religious Studies

320 Humanities Office Building: (949) 824-3841

Daniel J. Schroeter, **Director**

Stephen A. Barney, Ph.D. Harvard University, *Professor of English*

Linda Freeman Bauer, Ph.D. Institute of Fine Arts, New York University, *Professor of Art History*

Luci Berkowitz, Ph.D. The Ohio State University, *Research Professor of Classics*

Victoria Bernal, Ph.D. Northwestern University, *Associate Professor of Anthropology*

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Professor of History*

Steven D. Carter, Ph.D. University of California, Berkeley, *Chair of the Department of East Asian Languages and Literatures and Professor of Japanese*

Yong Chen, Ph.D. Cornell University, *Assistant Professor of History and Asian American Studies*

Chungmoo Choi, Ph.D. Indiana University, *Associate Professor of Korean Culture*

Peter Clecak, Ph.D. Stanford University, *Professor of Social Ecology*

Mary Corey, M.A. University of California, Riverside, *Certified Professional Labanotator, Department Chair and Associate Professor of Dance*

Edward Fowler, Ph.D. University of California, Berkeley, *Associate Professor of Japanese*

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics*

Michael A. Fuller, Ph.D. Yale University, *Associate Professor of Chinese*

Alexander Gelley, Ph.D. Yale University, *Director of the Emphasis in Critical Theory and Professor of Comparative Literature*

James B. Given, Ph.D., Stanford University, *Professor of History*

Anna Gonosová, Ph.D. Harvard University, *Associate Professor of Art History*

Lamar M. Hill, Ph.D. University of London, *Professor of History*

Judy C. Ho, Ph.D. Yale University, *Associate Professor of Art History*

Susan B. Klein, Ph.D. Cornell University, *Assistant Professor of Japanese*

Richard W. F. Kroll, Ph.D. University of California, Los Angeles, *Associate Professor of English*

Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology*

Julia Reinhard Lupton, Ph.D. Yale University, *Associate Professor of Comparative Literature*

Steven Mailloux, Ph.D., University of Southern California, *Associate Dean of Humanities, Graduate Study, and Professor of English*

Liisa Malkki, Ph.D. Harvard University, *Associate Professor of Anthropology*

Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Social Ecology*

Margaret M. Miles, Ph.D. Princeton University, *Associate Professor of Art History*

Alan Nelson, Ph.D. University of Illinois at Chicago, *Department Chair and Professor of Philosophy*

Keith L. Nelson, Ph.D. University of California, Berkeley, *Professor of History*

Maria C. Pantelia, Ph.D. Ohio State University, *Associate Professor of Classics and Assistant Director, Thesaurus Linguae Graecae*

Terence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy*

Nelson C. Pike, Ph.D. Harvard University, *Professor Emeritus of Philosophy*

Kenneth L. Pomeranz, Ph.D. Yale University, *Associate Professor of History and East Asian Languages and Literatures*

Daniel J. Schroeter, Ph.D. University of Manchester, *Director of Religious Studies, Associate Professor of History, and Teller Family Chair in Jewish History*

Martin Schwab, Ph.D., University of Bielefeld, *Associate Professor of Comparative Literature and Philosophy*

Deane H. Shapiro, Jr., Ph.D. Stanford University, *Professor Emeritus of Psychiatry and Human Behavior in Residence*

Victoria Silver, Ph.D. University of California, Los Angeles, *Associate Professor of English*

John H. Smith, Ph.D. Princeton University, *Associate Professor of German*

Daniel Stokols, Ph.D. University of North Carolina, *Dean of the School of Social Ecology and Professor of Social Ecology*

Ulrike Strasser, Ph.D. University of Minnesota, *Assistant Professor of History*

Timothy Tackett, Ph.D. Stanford University, *Professor of History*

Roger N. Walsh, M.B.B.S., Ph.D. University of Queensland (Australia), *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*

Religious Studies is an interdisciplinary minor that focuses on the comparative study of religions in various cultural settings around the world. The curriculum seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society through study in the Schools of Humanities, Social Sciences, Social Ecology, and the Arts.

The minor is open to all UCI students. Course descriptions are available in the academic unit sections of the *Catalogue*.

Requirements for the Minor

Three Core courses: Humanities 5A, 5B, 5C (World Religions I, II, III). The first quarter is an introduction to the history, doctrine, culture, and writing of Judaism, Christianity, and Islam. The second quarter is an introduction to various religious traditions in selected areas of the world, including India, East Asia, Africa, the Americas, or elsewhere. The third quarter examines aspects of religious expression, including symbolization of the sacred, collective religious behavior, and religious dissent.

Four-upper division courses, two of which must be outside of the student's major. At least one of these courses should focus on a primarily Asian religion, and at least one should focus on Judaism, Christianity, or Islam. Students select their courses, in consultation with the Religious Studies faculty, from a quarterly list which is available in the School of Humanities Undergraduate Studies Office.

The following courses are representative of those available: Anthropology 135H (Religion in South Asia); Art History 112 (Studies in Early Christian and Byzantine Art), 152 (Studies in Chinese Art and Archaeology); Classics 165 (New Testament Literature); East Asian 120 (when topic is Religion in Japanese Literature); English and Comparative Literature CL 103 (when topics are Jews and Muslims in Renaissance, Bible and Interpretation); History 110D (Topics in Medieval Europe: Heresy), 130B (Modern Jewish History), 135B (Science and Religion); Philosophy 123 (Topics in Philosophy of Religion); Women's Studies 150 (Feminist Cultural Studies: Feminism and Religion).

With approval of the Religious Studies faculty, relevant lower-division courses may be substituted for an upper-division course. The following are courses that could apply: Dance 90A (Dance History); Philosophy 11 (History of Medieval Philosophy); Sociology 56 (Society and Religion), 59 (when topic is Religion, Women, Society).

A Two-Quarter Senior Seminar in Religious Studies: Humanities 105 A-B, which includes the completion of a senior paper.

GRADUATE SCHOOL OF MANAGEMENT

David H. Blake, *Dean*

220 Graduate School of Management
Graduate and Undergraduate Counseling: (949) 824-5232
Fax: (949) 824-2235
E-mail: gsm-mba@uci.edu
World Wide Web: <http://www.gsm.uci.edu/>

Faculty

- Dennis J. Aigner, Ph.D. University of California, Berkeley, *Professor of Management and Economics* (applied econometrics, statistics, operations research)
- Yannis Bakos, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Management and of Information and Computer Science* (information system architectures, competitive information systems, information technology and industrial organization)
- Michael W. Berns, Ph.D. Cornell University, *Professor of Surgery, Cell Biology, Ophthalmology, Radiology, and Management, and Arnold and Mabel Beckman Chair in Laser Biomedicine*
- David H. Blake, Ph.D. Rutgers-The State University of New Jersey, *Dean of the Graduate School of Management and Professor of Management* (international business, business strategy, leadership)
- George W. Brown, Ph.D. Princeton University, *Professor Emeritus of Management* (mathematical statistics, game theory, dynamic decision processes, operations research, computer design, operation, applications, information networks)
- Thomas C. Buchmueller, Ph.D. University of Wisconsin, Madison, *Assistant Professor of Management and Economics* (economics of health care)
- Nai-Fu Chen, Ph.D. University of California, Berkeley; Ph.D. University of California, Los Angeles, *Professor of Management* (financial investments, numerical analysis of systems of algebraic and differential equations, contingent claims)
- Soo Hong Chew, Ph.D. University of British Columbia, *Professor of Economics and Management* (economics of information and uncertainty, experimental economics)
- Imran S. Currim, Ph.D. Stanford University, *Professor of Management and Graduate School of Management Associate Dean of the Ph.D. Program* (marketing management, modeling, research, strategy, new products)
- Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and Management* (planning, land use and environmental law, use of social science in policy making, legal control of corporate behavior)
- Marta M. Elvira, Ph.D. University of California, Berkeley, *Assistant Professor of Management* (organizational reward structures, strategic human resources, international management, comparative institutional analysis, organizational diversity)
- Henry Fagin, M.S. Columbia University, *Professor Emeritus of Management* (societal context of organizations)
- Paul J. Feldstein, Ph.D. University of Chicago, *Professor of Management and Social Ecology, and Robert Gumbiner Chair in Health Care Management* (economics of health care)
- Mary C. Gilly, Ph.D. University of Houston, *UCI Associate Dean of Graduate Studies and Associate Professor of Management* (marketing management, marketing for nonprofit organizations, consumer behavior, services marketing)
- Dan Givoly, Ph.D. New York University, *Acting Professor of Management* (effects of financial disclosure on stock prices, quality and information content of accounting numbers)
- John Graham, Ph.D. University of California, Berkeley, *Professor of Management* (international marketing, management and strategy, international business negotiations, managing firms in volatile environments)
- Vijay Gurbaxani, Ph.D. University of Rochester, *Professor of Management and of Information and Computer Science and Graduate School of Management Associate Dean of Academic Degree Programs* (information technology and business strategy; economics of information systems management; impact of information technology on organizations and market structure)
- Robert A. Haugen, Ph.D. University of Illinois, *Professor of Management* (corporate finance and investments)
- Joanna L. Ho, Ph.D. University of Texas at Austin, *Associate Professor of Management* (human information processing systems, behavioral issues in auditing and accounting)
- Philippe Jorion, Ph.D. University of Chicago, *Professor of Management and Graduate School of Management Associate Dean of Executive Programs* (international finance)
- L. Robin Keller, Ph.D. University of California, Los Angeles, *Associate Professor of Management* (decision analysis, risk analysis, problem structuring, management science)
- John Leslie King, Ph.D. University of California, Irvine, *Professor of Information and Computer Science and of Management* (computer technology, management and economics of computing, management information systems)
- Rob Kling, Ph.D. Stanford University, *Professor of Information and Computer Science and Management* (social analysis of computing, computer technology and public policy, sociology of computing)
- Kenneth L. Kraemer, Ph.D. University of Southern California, *Professor of Management and of Information and Computer Science, Director of the Center for Research on Information Technology and Organizations, and Graduate School of Management Associate Dean of Research* (organizational impacts of computing, management of computing, information technology and public policy)
- Newton Margulies, Ph.D. University of California, Los Angeles, *Professor Emeritus of Management* (organizational behavior, organizational change and development, analysis of team functioning, organizational behavior in health care organizations)
- Joseph W. McGuire, Ph.D. Columbia University, *Professor Emeritus of Management* (business strategy, entrepreneurship, organizational economics)
- Martin C. McGuire, Ph.D. Harvard University, *Professor of Economics and Management, and Clifford and Elaine Heinz Chair in the Economics and Public Policy of Peace* (economic theory of group formation and behavior, economic models of international conflict, interactions between trading partnerships and military alliances in the structure of international relations)
- Richard B. McKenzie, Ph.D. Virginia Polytechnic Institute and State University, *Professor of Management and Economics and Walter B. Gerken Chair in Enterprise and Society* (applied microeconomics and public sector economics)
- Alexander Mood, Ph.D. Princeton University, *Professor Emeritus of Management*
- Barrie R. Nault, Ph.D. University of British Columbia, *Associate Professor of Management* (management information systems)
- Peter Navarro, Ph.D. Harvard University, *Associate Professor of Management and Social Ecology* (electric utilities regulation, growth management, industrial policy, public policy)
- Paul Olk, Ph.D. University of Pennsylvania, The Wharton School, *Assistant Professor of Management* (organization theory, strategic alliances, international management)
- Jone Pearce, Ph.D. Yale University, *Professor of Management* (organizational behavior, human resources management, organizational transformation in formerly communist countries, voluntary associations)
- Cornelia Pechmann, Ph.D. Vanderbilt University, *Associate Professor of Management* (consumer behavior, advertising strategy, health care marketing, evaluation research)
- Lyman W. Porter, Ph.D. Yale University, *Professor Emeritus of Management and Faculty Assistant to the Executive Vice Chancellor* (organizational behavior, management education, personnel management)
- Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management and Social Ecology* (business and government, cultural diversity, gender and management)
- Carlton H. Scott, Ph.D. The University of New South Wales, *Professor of Management* (operations research, production management, total quality management, statistics)
- Kut C. So, Ph.D. Stanford University, *Professor of Management* (design of production and inventory systems, optimization of queuing systems, operations research)
- Jing-Sheng Song, Ph.D. Columbia University, *Associate Professor of Management* (operations research, operations management)

- Neal M. Stoughton, Ph.D. Stanford University, *Associate Professor of Management* (mathematical and game theoretic models of corporate finance, futures markets, options markets, economics of information, agency theory)
- Eli Talmor, Ph.D. University of North Carolina at Chapel Hill, *Professor of Management* (corporate finance, taxation, financial markets)
- Robert J. Town, Ph.D. University of Wisconsin-Madison, *Assistant Professor of Management and Economics* (industrial organization, health economics, applied econometrics)
- Rajeev Tyagi, Ph.D. University of Pennsylvania, *Assistant Professor of Management* (new product introductions)
- Alladi Venkatesh, Ph.D. Syracuse University, *Professor of Management* (market segmentation, sociology of consumption, marketing theory, and macromarketing)
- James S. Wallace, Ph.D. University of Washington, *Assistant Professor of Management* (managerial and financial accounting, economics-based tax, capital markets)
- Margarethe F. Wiersema, Ph.D. University of Michigan, *Associate Professor of Management* (strategic management, corporate restructuring, core competencies, executive succession)
- William F. Wright, Ph.D. University of California, Berkeley, *Associate Professor of Management* (behavioral decision making and auditing/ accounting decisions, nature of expert judgments, artificial intelligence/ expert systems)

OVERVIEW

The Graduate School of Management (GSM) offers an undergraduate minor in Management and graduate study leading to the M.B.A. (Master of Business Administration), and to the Ph.D. degree in Management. The undergraduate minor is designed for those who wish to gain some insight into issues of modern management, as well as those who anticipate future graduate work in Management. The Master's degree is professional in nature and is intended to provide future managers with a firm foundation in the basic disciplines and in management tools and techniques; the Ph.D. in Management is for those who wish to pursue a career in scholarly research.

Educational Objectives

Three basic premises underlie the School's philosophy of graduate education. First, there are significant phenomena and problems common to business, educational, and governmental organizations; second, a common set of disciplines, concepts, techniques, and technologies exist which are appropriate to a wide range of organizational or scholarly roles; third, many administrators in the future will work in more than one of the three arenas during their careers.

Regardless of the content of particular courses, it is expected that all degree candidates will be exposed to and have the ability to use the following:

General Knowledge. The broad context of organizations and management; the late twentieth and the early twenty-first century (significant trends, conditions, and problems); history of science, scientific inquiry, and the philosophy of science; economic, political, and social analysis.

A Global Perspective. An in-depth knowledge of how to manage companies in the global environment of the future, how business is done in the major economic centers throughout the world, and ways in which cultural and historical factors influence business transactions.

Conceptual and Empirical Knowledge of Organizations. Basic concepts of management; the structure and functions of organizations, including comparative analysis and interorganizational relations; levels and units of decision making; individual behavior and group norms; operating environments of organizations.

Specific Knowledge of Particular Arenas of Administration. In-depth study of specific institutional environments for administrative

practice, such as governmental and business organizations, and other types of organizations.

Mathematics and Statistics. As tools of precise reasoning, as languages which will tend more and more to dominate professional and scholarly literature, and above all, as foundations for relevant quantitative methods.

Technical Bases of Management. Decision processes; operations research; systems and policy analysis; budgeting and accounting techniques; human resources policies; techniques for measuring and affecting attitudes and behavior; research design and strategies.

Information Technology. How technology affects organizations and markets, and how to use information to create new strategic options and gain a lasting competitive advantage.

General Skills. Political skills, effective management of interpersonal relations, leadership strategies and tactics, and competence in oral, graphic, and written expression.

Professional Orientation. Identification of factors, values, and policies which might bear on successful, responsible, and intellectually honest performance of organizational roles. Recognition of the administrator's potential contributions to society and of ethical and moral problems which arise from social research and the management of human enterprises.

General Admission Requirements

Evaluation of the applicant's file for admission to the Master's and Ph.D. degree programs will consist of an integrated assessment of all materials (test scores, transcripts of previous academic work, statement of purpose, and letters of recommendation). The University admission standard of a 3.0 or better undergraduate grade point average (on a 4.0 scale) is required. The minimum TOEFL (Test of English as a Foreign Language) score acceptable for study at GSM is 570 (600 for executive degree programs).

Requests for application material should be addressed to the University of California, Irvine, Graduate School of Management, Admissions Office, 220 Graduate School of Management, Irvine, CA 92697-3125; e-mail: gsm-mba@uci.edu; World Wide Web: <http://www.gsm.uci.edu/>.

Doctor of Philosophy in Management

GSM admits students for the Ph.D. in the fall quarter only. The deadline for application is February 1. The Ph.D. program requires a commitment to full-time study. In addition to the other requirements, Ph.D. applicants are encouraged to submit a previously prepared paper (research report, Master's thesis, essay, case study) which may be indicative generally of the applicant's interests and capabilities.

GSM offers the Ph.D. in Management to students with backgrounds in a variety of disciplines. While a master's degree is preferred, students may be admitted to the doctoral program directly from the baccalaureate degree. There are many appropriate undergraduate majors, including (but not limited to) psychology, political science, business or public administration, mathematics, computer sciences, economics, sociology, and so forth. Students with academic strengths in disciplines not usually considered as precursors for management (e.g., natural sciences, humanities, and the arts) are encouraged to apply. The Ph.D. program is designed to prepare students for academic careers in a number of the fields of management, e.g., organizational behavior, operations and decision technologies, management information systems, finance, accounting, marketing, and strategy/policy. Requirements of the Ph.D. program include a broad knowledge of core management disciplines. In addition, the Ph.D. student must qualify as a skilled researcher and must complete a dissertation demonstrating these skills. There are no foreign language requirements in the GSM Ph.D. program.

The Ph.D. program is divided into two phases: qualification and dissertation. In the qualification phase the student prepares for dissertation research in an area of specialization. This phase is completed when an oral qualifying examination is passed and the candidacy committee recommends advancement to candidacy for the Ph.D. The dissertation phase involves a significant original research project which demonstrates the Ph.D. student's creativity and ability to launch and sustain a career of research. Students are expected to complete the Ph.D. in four to five years.

Requests for information should be addressed to the University of California, Irvine, Graduate School of Management, Doctoral Program Admissions Office, 418 Graduate School of Management, Irvine, CA 92697-3125; e-mail: gsmphd@uci.edu; World Wide Web: <http://www.gsm.uci.edu/doctoral/>.

Master's Degree Programs

GSM offers a variety of programs leading to the M.B.A. (Master of Business Administration) degree. These include a two-year, full-time M.B.A. program, and three part-time M.B.A. programs: a 21-month Executive M.B.A. program, a two-year Health Care Executive M.B.A. program, and a three-year Fully Employed M.B.A. program.

M.B.A. PROGRAM

GSM admits students to the two-year, full-time M.B.A. Program in the fall quarter. Students from a variety of undergraduate disciplines, including liberal arts, social sciences, physical or biological sciences, computer science, and engineering, are encouraged to apply. The deadline for completion of all phases of the application procedure is May 1. In addition to the general University rules governing admission to graduate study, GSM normally requires the following:

1. Completion of the Graduate Management Admission Test (GMAT).
2. Completion of a course in both introductory calculus and statistics with probability with a grade of B or better. Undergraduate courses in the social sciences (e.g., economics, psychology, sociology), information and computer sciences, and accounting are strongly recommended. Students also are encouraged to undertake intensive course work in the culture, history, geography, economy, politics, and language of specific foreign countries.

The evaluation of an applicant's file for admission consists of an integrated assessment of all materials submitted including test scores, transcripts of previous academic work, statements on application forms, and letters of recommendation. Above and beyond these factors, substantive work experience is given serious consideration in the evaluation process.

The full-time M.B.A. program requires a minimum of 23 quarter courses (92 units) with a minimum grade point average of 3.0 in the Core and overall. The curriculum consists of courses divided into two groups designed to achieve specific educational objectives. The courses are divided as follows: 12 required Common Core Courses and 11 elective courses which students select to emphasize career goals and educational interests. A thesis is not required.

Required Course Work. Common Core Courses, each of which is four units, are: Management of Complex Organizations, Statistics for Management, Management Science or Operations Management, Organizational Analysis for Management, Financial and Managerial Accounting for Management, Microeconomics, Macroeconomics for Management or Government and Public Policy, Information Technology for Management, Marketing for Management, Managerial Finance, Business Strategy.

International Requirement. Students must fulfill the international requirement in one of the following ways; completion of a GSM international elective in a functional area; participation in a GSM

international exchange program; or completion of an upper-division or graduate international course offered by a University of California school, with the approval of the GSM Associate Dean.

Electives. Eleven electives are required. The major emphasis in the elective courses is to develop additional depth in a discipline or interdisciplinary area or specialized competence in the use of a particular set of technical tools and methods. Students select their electives in light of their educational and career goals and interests.

The 3-2 Program for Undergraduates

In addition to the full-time Master's program for students who have already received a bachelor's degree, outstanding UCI undergraduate students may apply to enter a cooperative 3-2 Program with GSM and most other campus units. Acceptance into the 3-2 Program constitutes advanced admission to the graduate program. Such students complete their undergraduate major requirements by the end of their junior year. During their senior year, they take graduate courses in GSM. These courses are used to satisfy their undergraduate unit requirements, and at the same time apply toward their graduate degree. Successful completion of the requirements in the program normally leads to the bachelor's degree in the cooperating discipline after the fourth year, and the M.B.A. degree after the fifth year. Students should consult with their academic counselor in their major School for further information about completing undergraduate requirements in three years. Students contemplating entering such a program should contact the Graduate School of Management prior to, or early in, the start of their junior year for the purpose of program consultation.

NOTE: With the exception of 3-2 students, no undergraduates will be enrolled in GSM graduate-level courses.

Special Opportunities

UCI offers students an opportunity to pursue both the M.D. degree and the M.B.A. degree. This opportunity is beneficial for individuals who seek a career as a physician with major responsibility for administration and management in health care organizations. Contact the College of Medicine Admissions Office at (949) 824-5388 for information.

Within the M.B.A. program, GSM recently created a specialized track and curriculum in Information Technology that provides students with sophisticated, state-of-the-art knowledge and practical experience in this rapidly evolving arena. Students in the IT track take the customary M.B.A. core courses, augmented by a set of IT application courses in various functional areas. In addition, many of the electives are specialized courses that reflect the changing nature of organizational management. Representative electives are: Network and Electronic Commerce, Management of Information Systems, Information Technology—Under the Hood, Information and Managerial Decision Making, Database Marketing, Marketing on the Internet, and Change Management. Additional activities designed to supplement this innovative curriculum include seminars given by industry leaders and relevant internships.

Because space in the IT track is limited, students are advised to note their interest on the application when they first apply to the M.B.A. program. In addition to the standard admissions criteria, the Admissions Committee is particularly interested in how prospective candidates envision the current role and future potential of information technology in business.

The Graduate School of Management offers course work in Health Care Management within the M.B.A. program. The courses provide training not only in health care and related issues, but also expose students to professionals in the areas of management, finance, marketing, and strategic planning. Skills in these areas are critical to the success of health care organizations in the late 1990s and beyond.

In today's interconnected global business world, it has become increasingly important for management students to learn to operate in an international environment. M.B.A. students in the full-time program can gain first-hand knowledge of the culture and management practices of other industrialized countries by participating in an academic exchange with universities located abroad. This experience, combined with GSM course work in international management, prepares students for the demands and complexities of the growing global economic environment. Currently, GSM has exchange relationships with the ESSEC Graduate School of Management, Cergy-Pontoise, France; Katholieke University, Leuven, Belgium; Tsinghua University, Beijing, China; Budapest University of Economic Sciences (BUES), Budapest, Hungary; Vienna University of Economics and Business Administration, Vienna, Austria; ITAM (Instituto Tecnológico Autónomo de México), Mexico; ITESM (The Monterrey Institute of Technology and Higher Education), Monterrey, Mexico; Bocconi University, Milan, Italy; and Hong Kong University of Science and Technology, Kowloon, Hong Kong.

To complement the academic curriculum, a Consulting Practicum course provides practical application and work experience to selected GSM Master's students. The Consulting Practicum provides students with an opportunity to put into practice concepts, skills, and tools acquired in other parts of the GSM program. Seminar sessions augment internship experiences with analyses of relevant administrative issues.

Opportunities for students to take part in ongoing research exist through the Center for Research on Information Technology and Organizations (CRITO). CRITO faculty associates are recognized internationally for their excellence in the study of information technology as it applies to complex organizations. This tradition of excellence has been established by faculty from the Graduate School of Management, the Department of Information and Computer Science, and the School of Social Sciences. These associates have collaborated since 1974 on theoretical and empirical research projects studying a broad array of questions about the relationship between information technology and organizational structure, society, political behavior, productivity, and performance. Research conducted through CRITO focuses on the management, use, and impact of information technology in the emerging global, competitive marketplace and the policy issues raised by such use. CRITO facilitates a match between the technical and organizational dimensions and between academic researchers and information technology professionals, and also assists organizations in exploiting the potential offered by information technology. CRITO's goals are to conduct theoretical and empirical research, bring multiple intellectual perspectives and methods to bear on interdisciplinary research, and facilitate the collaboration of faculty, students, and the professional community utilizing the expertise, facilities, and activities provided by CRITO. Qualified GSM students are encouraged to participate in the various CRITO research activities and to avail themselves of this unique opportunity to interact with scholars from allied disciplines and to study in-depth the effects of the information technology revolution.

M.B.A. Career Services

The M.B.A. Career Services Office, located within the School, was established to serve the unique placement needs of M.B.A. students and alumni. It has two main functions: (1) attracting a variety of organizations to interview and hire graduates and (2) counseling students in career opportunities and the techniques necessary to conduct effective job searches, not only for their first jobs but throughout their careers. The relatively small size of the M.B.A. program allows considerable interaction between the Career Services Office and students.

EXECUTIVE M.B.A. PROGRAM

The Executive M.B.A. (EMBA) Program presents a challenging 21-month course of study specifically designed for working professionals and managers with a minimum of eight years of work experience. Students meet on alternate Fridays and Saturdays at the Graduate School of Management. Class size allows students the opportunity to actively participate in class discussions and interact closely with their peers. Information technology is an integral part of the program, and students are provided with notebook computers for instruction in GSM electronic classrooms.

The program offers an applications-oriented curriculum with an international focus designed to give the working professional contemporary management tools for successfully doing business on a national and international level. Students participate in an in-depth, week-long international seminar abroad. The added dimension of overseas study provides them with first-hand knowledge of the challenges inherent in doing business on a global scale, and brings them in direct contact with global markets.

Further information may be obtained by contacting the University of California, Irvine, Director of the Executive M.B.A. Program, 202 Graduate School of Management, Irvine, CA 92697-3125; telephone (949) 824-5374; World Wide Web: <http://www.gsm.uci.edu/>.

HEALTH CARE EXECUTIVE M.B.A. PROGRAM

The Health Care Executive M.B.A. Program is a two-year program designed for professionals and managers with experience in the health care industry. Classes are held once a month on a Thursday evening beginning at 5 p.m. and continuing until noon on Sunday. During these sessions, program faculty and students stay in a residential facility located close to the UCI campus. In addition, there are three short residential courses which address specific issues and topics while developing team-building skills.

The curriculum is a carefully structured program that assures each student exposure to the full range of disciplines which are essential components of a management education. The core and elective courses are specifically customized for application to a health care professional's daily challenges. Distinguished speakers from the industry are an integral part of the program. Notebook computers and all course-specific software are provided for instructional purposes.

Further information may be obtained by contacting the University of California, Irvine, Director of the Health Care Executive M.B.A. Program, 202 Graduate School of Management, Irvine, CA 92697-3125; telephone (949) 824-5374; World Wide Web: <http://www.gsm.uci.edu/>.

FULLY EMPLOYED M.B.A. PROGRAM

The Fully Employed M.B.A. (FEMBA) Program gives emerging managers an opportunity to earn an M.B.A. degree with minimal disruption to their professional lives. Students attend classes each week on Thursday evenings and a half day on Saturdays during the three-year program.

The 92-unit program consists of both core courses and electives, allowing students to establish a solid foundation of traditional business skills and then customize their education based on personal interests and goals. The curriculum provides constant interaction between information presented in the classroom and what is being used on the job, reinforcing and enhancing the student's learning experience. An international requirement is included.

In addition to classroom work, students attend three residential sessions including one abroad focusing on global markets. In this concentrated setting, students and faculty have an opportunity to explore in depth a variety of business challenges and how those challenges can best be met using contemporary management tools. Notebook computers are provided.

Further information may be obtained by contacting the University of California, Irvine, Fully Employed M.B.A. Program, Graduate School of Management, Irvine, CA 92697-3125; telephone (949) 824-5374; World Wide Web: <http://www.gsm.uci.edu/>.

Undergraduate Minor in Management

The GSM faculty, and the Dean of Undergraduate Studies, offer an undergraduate minor in Management. The minor consists of seven courses: one lower-division introductory course and six upper-division courses.

In establishing the GSM undergraduate minor in Management, the faculty anticipated three types of students to be drawn to courses in administration: (1) students who wish to learn about the management of organizations as a way of preparing for a career in business, (2) students preparing for careers in other fields that require some knowledge of management, and (3) students who expect to go on to graduate work in management who wish early guidance and undergraduate work appropriate to this career objective.

Students are eligible to apply for the minor in Management if they have completed all prerequisite courses (including Management 5) with a grade no lower than C (2.0) and have upper-division standing. Completion of the prerequisite courses does not guarantee admission to the minor in Management. Admission is on a competitive basis and students must submit an application, transcripts, and a statement of purpose. Applications are accepted on a quarterly basis. Interested students are encouraged to obtain further information from the GSM Student Affairs Office, 220 Graduate School of Management; telephone (949) 824-5232; e-mail: dcpatric@uci.edu; World Wide Web: <http://www.gsm.uci.edu/>.

Prerequisite Courses

The following are prerequisites for enrolling in the upper-division undergraduate minor courses: Management 5; Economics 20A and 20C; Mathematics 2A; and one course or one sequence selected from Anthropology 10A-B-C, Civil and Environmental Engineering CEE105, Economics 10A-B-C, Mathematics 7, Mathematics 131A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Ecology 166A-B-C, Social Sciences 10A-B-C, or Sociology 10A-B-C.

Transfer students should check with their college counselor for established equivalencies for these prerequisite courses.

Requirements for the Undergraduate Minor

Management 5, 160 or 188, 181, 183, 185, 186, and 187.

With GSM faculty approval, a student may substitute a maximum of one course.

Courses in Management

UNDERGRADUATE

5 Managing in Contemporary Organizations (4) F, W, S, Summer. Equips students with working knowledge of several major subject areas within the context of business and society studies. Topics include: role of management in organizations, corporate social responsibility and responsiveness, ethics and values in business, government regulation, and international business.

160 Introduction to Business and Government (4). Introduces undergraduate students to the study of public administration. Designed for those expecting to take further courses in the field or considering a public service career. Prerequisites: Management 5 and upper-division standing.

181 Managing Organizational Behavior (4). Basic theory and concepts which provide the manager with tools for understanding behavior of people in organizations. Areas such as individual, group, and organizational determinants. Prerequisites: Management 5 and upper-division standing.

183 Quantitative Methods for Management (4). Basic processes and tools of managerial decision making. Identification of objectives, controllable and noncontrollable variables, phases of decision making, role of computers, quantitative tools for managerial decision making. Prerequisites: Management 5 and upper-division standing, and a basic course in statistics with probability.

185 Introduction to Financial Accounting (4). Acquisition, reporting, and use of financial information in a business organization. Emphasis on use of information generated by the accounting system for decision making, planning, and control. Public sector analogies considered wherever possible. Prerequisites: Management 5 and upper-division standing.

186 Introduction to Managerial Finance (4). Basics of financial administration. Capital budgeting, cost of capital, cash budgeting, working capital management, and long-term sources of funds. Provides a basic understanding of issues and techniques involved in financial decision making. Prerequisites: Management 5 and 185; upper-division standing.

187 Introduction to Marketing (4). Basic marketing concepts; discussion of the role marketing plays in modern society. Topics: industrial and consumer marketing, promotion, distribution, and pricing theory. Prerequisites: Management 5 and upper-division standing.

188 Introduction to Management Information Systems (4). Provides exposure to the major features and issues relating to the deployment, use, and impact of information technology within public and private organizations. Topics include selection and feasibility assessment of information technology (IT), and application of IT to business and design and implementation of IT. Open only to students enrolled in the minor in Management.

190 Special Topics in Management (4). Special topics courses are offered from time to time, but not on a regular basis. Prerequisites vary. May be repeated for credit as topics vary.

198A-B-C Administrative Internship (4-4-4). Selected undergraduates participate as interns in three-quarter seminar. Students serve as managers within administrative units on campus with course work complementing the intern experience. Topics include: management ethics, study of non- and for-profit institutions, and changing nature of the work force.

199 Independent Study (1 to 4). Individual study under the direction of a selected faculty member. Prerequisite: consent of instructor. May be repeated for credit.

FULL-TIME M.B.A. PROGRAM

200 Management of Complex Organizations (4). Focuses on the nature and functions of the managerial job in the context of the internal and external environments of complex organizations. Introduces students to the uses of managerial tools in organizational problem solving. Satisfactory/Unsatisfactory only.

201A Statistics for Management (4). Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting. Prerequisite: basic statistics with probability.

201B Management Science (4). Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation. Prerequisite: basic course in calculus and algebra. Management 201A recommended.

202 Organizational Analysis for Management (4). Focuses on human behavior in organizations. Topics include motivation and leadership, power and influence, group dynamics, and intergroup relations. Applications of job and organizational design, organizational development, and human resources management techniques are examined.

203A Financial Accounting for Management (4). Nature and purpose of accounting, principal accounting instruments, and valuation problems.

203B Managerial Accounting for Management (4). Focuses on the needs of the manager rather than the needs of stockholders and others. Introduces the concepts and tools of internal reporting. Emphasis on use of internal accounting reports and analyses for decision making. Prerequisite: Management 203A.

204A Microeconomics for Management (4). Economic analysis of individual decision units. Topics: introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs. A knowledge of algebra and elementary calculus is assumed. Prerequisites: calculus and linear algebra.

204B Macroeconomics for Management (4). Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Application of classical, Keynesian, and other models of fiscal and monetary policy. Prerequisites: calculus and linear algebra; Management 204A.

205 Principles of Marketing for Management (4). Introduction to the field of marketing. Objectives include: developing familiarity with terms, techniques, and institutions in a marketing environment; acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

206 Business and Government (4). Political analysis related to management of organizations. Topics: political environment of management, concepts and processes central to political analysis, bureaucratic politics, politics and the manager.

207 Information Technology for Management (4). Focuses on the links between business strategy and information technology, the organizational implications of the technology, and how to successfully incorporate information technology into organizations.

208 Operations Management (4). Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management. Prerequisites: Management 201A and 201B.

209A Managerial Finance (4). Analysis of main decision areas of financial management. Topics include present value, capital budgeting, risk and return, cost of capital, capital structure, and mergers. Prerequisites: Management 201A, 203A, 204A.

210 Business Strategy (4). Primarily a lecture-case (implemented through discussion) course. Focuses upon the decision-making processes of company managers. Draws upon a wide variety of fields: marketing, finance, production, personnel, organization. Prerequisites: Management 205, 208, 209A.

ELECTIVES

209B Investments (4). Foundations of investment management. Utility theory, asset pricing theory, factor models, performance assessment, option pricing theory, and mergers. Prerequisite: Management 209A. Formerly Management 243.

214 Entrepreneurship (4). Examines the talents, experience, knowledge, and other resources needed to start a successful growing enterprise. Looks into the way in which businesses are started and the way that they grow.

224 Seminar in Human Resources Management (4). Basic topics in personnel and human resources management, including personnel systems, underlying assumptions and values expressed by human resources policies, staffing organizations, training and development, and performance appraisal systems. Prerequisites: Management 200, 202.

225 Advanced Micro-Organizational Behavior (4). Seminar, three hours. Recent developments in the areas of motivation, leadership, power and influence, communication, and group and intergroup relations are explored. Current research and theory are applied to the practical problems of behavior in organizations. Prerequisites: Management 200, 202.

227 Doctoral Seminar in Organizational Behavior (4). Seminar, three hours. Examines recent research and literature in the field of organizational behavior. Open only to advanced Ph.D. students in organizational behavior and related areas.

228 International Management (4). Examines managerial behavior within a cross-cultural framework. The primary emphasis concerns developing a better understanding of the interrelationship between culture and management in companies around the world. Takes a comparative perspective, looking for similarities and differences across countries. Formerly offered as Management 290.

231A-B-C Financial Reporting Standards (4-4-4). Standards required of public and business organizations when preparing financial reports in accordance with APB, FASB, and SEC rules, and the effects such rules may have on individual organizations or societal sectors. Prerequisites: 231A: Management 203A; 231B: Management 203A and 231A; 231C: Management 203A and 231B.

232 Federal Taxation (4) S. Methods of researching federal laws governing income taxation of individuals and corporations, and provisions for a tax-exempt status. Prerequisite: Management 203A.

233 Financial Auditing (4). Concepts and techniques of organizational auditing as an extension of financial audit methodology. How organizational auditing improves goal attainment by providing reliable information on the effectiveness and efficiency of organizational activities. Public and private organization cases evaluated via organizational auditing. Prerequisite: Management 203A.

234 Financial Statement Analysis (4). How accounting information may be used for financial analysis and decision making. Accounting measures are used to access economic characteristics of business organizations such as profitability and debt repayment ability. Prerequisite: Management 203A.

235 Advanced Managerial Accounting (4). Design of cost information and systems used to plan and control organizational activities; procedures used to account for unit, process, and program costs; cybernetic evaluation of costing procedures; cost estimation, analysis, and accounting via computers. Prerequisites: Management 203A, 203B.

242 Portfolio Management (4). Advanced portfolio decision-making. Topics include index models, portfolio performance measures, bond portfolio management and interest immunization, stock market anomalies and market efficiency. Prerequisites: Management 201B, 209B.

243 Bonds and Fixed Income (4). Shows how to value instruments in the fixed-income market. Includes term structure modeling, bond portfolio dedication, and indexing. Also covers corporate bonds, mortgage-backed securities, and other interest rate derivatives. Prerequisite: Management 209B.

244 Multinational Finance (4). Focuses on financial issues facing multinational corporations, the most important of which is the management of foreign exchange risk. Other topics covered are investments and financing decisions in international capital markets. Prerequisites: Management 201B, 204B, 209A, 209B, or consent of instructor.

245 Financial Institutions (4). Focuses on financial intermediaries, particularly commercial banks. Explains the risks faced by banks in the lending process, off-balance sheet banking, securitization, deposit insurance, bank regulation, and the future of the financial services industry. Prerequisites: 201B, 204B, 209A, 209B.

248 Creating Wealth (4). Explores the creative decisions facing financial managers in the modern corporate environment. Situations studied include making strategic acquisitions, leveraged buyouts, competitive bidding, corporate restructuring, and other methods of shareholder value enhancement. Prerequisite: Management 209B.

249 Derivatives (4). Derivatives are securities, such as futures, forwards, swaps, and options, that are traded in relation to more basic underlying instruments, such as stocks, bonds, commodities, and currencies. Shows how to price derivatives and use them for hedging, speculating, and controlling financial risks. Prerequisites: Management 201B, 204B, 209A, 209B.

251 Consumer Behavior (4). Examines consumer decision making process with emphasis on application of concepts and research findings from behavioral sciences to solution of marketing problems. Includes models of consumer decision making, consumer information processing, theories of attitude and attitude change, attribution theory, mass communication effects, and sociological influences on consumer decision making. Prerequisite: Management 205.

252A Marketing Research (4). Methods of measuring, examining, and predicting factors that affect the marketing process. Various aspects of the research process examined, including problem formulation, research design, data collection methods, sampling, statistical analysis, and methodological considerations. Prerequisites: Management 201A, 205. Formerly Management 252.

253 Seminar in Advertising (4). Addresses the business of advertising. Topics include: media decisions, the creative process, advertising research, industrial advertising, the role of the agency, and advertising campaigns and presentations. Prerequisite: Management 205.

254 Services Marketing (4). Examines how service organizations differ in many important respects from manufacturing businesses, requiring a distinctive approach to marketing strategy, development, and execution. Considers private, public, and not-for-profit service organizations. Prerequisite: Management 205.

255 International Marketing (4). Provides an understanding of the problems and perspectives of marketing across national boundaries, and develops the analytical ability for structuring and controlling marketing programs related to overseas business. Prerequisite: Management 205.

260 Seminar on the Regulatory Process (4). Multidisciplinary investigation of the regulatory process. Topics include analysis of objectives of regulation; legal overview of the process in administrative law; and organizational and historical overviews. Examples include economic and environmental regulation. Formerly Management 286. Same as Social Ecology U254.

262 Managing Nonprofit Organizations (4). Designed for students interested in the management of nonprofit organizations. Examines similarities and differences between for-profit and nonprofit organizations, major management issues specifically associated with nonprofits, and exposes students to career opportunities in the nonprofit sector.

263 Managing Cultural Diversity (4). Provides students with an opportunity to examine their own feelings, attitudes, and behavior about people who are different from them, and how these feelings could affect their ability to manage effectively in an increasingly diverse work environment.

265 Issues in Financing Health Services (4). The equity and efficiency of government policies to redistribute medical services. Economic justifications for government intervention are discussed together with appropriate taxation and expenditure policies. Specific policies analyzed include Medicare, long-term care, and mandated employer coverage.

266 Economics of Health Care Services (4). The organization and delivery of medical care services in the United States. The performance of this sector is analyzed using microeconomic analysis; the criterion of economic efficiency is used to evaluate both current and proposed public policies.

271 System Analysis and Design (4). Understanding of development process for computer-based information processing systems. Beginning stages of development process, including analysis of current system, definition of new system, documentation of the information requirement, and basic and advanced systems analysis methods and techniques. Prerequisite: Management 207.

272 Decision Support Systems (4). Seminar, three hours. Introduction to the concept of Decision Support Systems (DSS). Explores prevailing concepts through the development of topical projects related to the technology and use of DSS in organizations. Prerequisite: Management 207.

274 Database Management Systems (4). Presentation of generalized systems designed to manage the data resources of organizations. Topics include data structures, file processing and access methods, network, hierarchical and relational data models. Hands-on experience with a relational database management system. Prerequisite: Management 207.

275 Strategic Management Information Systems (4). Focuses on the economic and competitive implications of strategic information systems. Topics include the increasing importance of end-user and departmental computing, the rapid pace of change in the telecommunications environment, and the involvement of line managers in the information systems design. Prerequisite: Management 207.

276 Business Telecommunications (4). Modern technologies for computer networking provide new options for the management, acquisition, processing, and dissemination of information. These same technologies also create requirements for new organizational forms, management skills. Provides an overview of computer networking technology. Prerequisite: Management 207.

277 Information Technology, Management, and Organizations (4). Addresses issues arising from the use of information technology in organizations: technological trends and basic economic theory, how information technology transforms firms, role of information technology in determining market structure and firm boundaries, new types of organizational forms, i.e., "networked corporation." Prerequisite: Management 207.

280 Forecasting (4). Basic theory and techniques used to forecast future activities in technological, economic, social, and political arenas. Impact of forecasting on managerial decision making. Prerequisite: Management 201A.

281 Mathematical Programming (4). Formulation, solution, and analysis of linear and nonlinear programming models and network flow models. Applications of these models to analyze complex manufacturing and service systems are included. Software packages and modeling languages such as AMPL are introduced.

282 Stochastic Models (4). Introduction to stochastic modeling, with orientation toward applications of stochastic models to analyze systems under uncertainty. Topics include inventory, queueing, reliability, sequential decision processes, dynamic programming. Prerequisite: Management 201A recommended.

283 Decision Analysis (4). Models of preferences and uncertainty; exercises in creative problem solving. The assessment and use of preference models and subjective probabilities for private, public, and not-for-profit decision making.

284 Simulation (4). Applications of computer models to mimic the behavior of stochastic systems in manufacturing and service industries. Topics include principles and design of simulations, statistical analysis of the output of simulations. Simulation languages and software packages are introduced. Prerequisite: Management 201A.

285 Production and Inventory Management (4). In-depth analysis of production planning and inventory management. Use of mathematical models to develop support systems to manage production and inventory decisions. Topics include facilities design, aggregate production planning, inventory control, operations scheduling, logistics management. Prerequisite: Management 201B.

286 Quality Management (4). A systematic approach to the understanding of the strategic importance of effective quality management. Concepts behind the quality control and assurance methods and total quality management are addressed. Prerequisite: Management 201A.

287 Project Management (4). Examines the fundamental components of project management and its role in the modern corporation. Emphasis is on how to initiate, implement, control, and terminate a project. Use of computer package for project management.

288 Advanced Topics in Operations Management (4). Delves more deeply into topics that are currently influencing advances in practice of operations management in both manufacturing and service industries. Topics include modeling and analysis of manufacturing systems, yield management, and workforce scheduling. Appropriate applications in Southern California included. Prerequisite: consent of instructor.

289 Field Studies in Operations Management (4). Participation in a small group project sponsored by local companies in Southern California. Involves the applications of various concepts taught in operations management and related areas to address real issues faced by the sponsoring companies. Prerequisite: consent of instructor.

290 Special Topic Seminars (4) F, W, S. Seminar, three hours. Each quarter a number of special topic seminars are offered in the 290 series. These seminars are not sequential and may be repeated for credit providing the topic varies. Examples of possible topics include Communication in Organizations, Power and Authority in Organizations, Health Care Administration, Real Estate Development. May be repeated for credit as topics vary.

291 Legal Environment of Business (4). Nature, historical background, and practical operation of the American legal system and its impact on policy making and administration in large organizations. Constitutional and political relationships which define and limit operation of systems. Formerly Management 280.

292 Business Law (4). Detailed study from a business viewpoint of contract theories, assignments, delegation of duties, third-party beneficiary contracts, defenses to consensual contracts, types of conditions, methods of excusing conditions, remedies, and types of damages. Prerequisite: Management 291. Formerly Management 281.

293 Selected Legal Topics (4). Selected legal issues in formation, operation, and dissolution of corporations, partnerships, and sole proprietorships; emphasis on advantages and disadvantages of each in terms of taxation, finance, obligations to third parties, and operating problems. Formerly Management 282.

295 Special Laboratory Seminars (2-4). Each quarter a number of special topic seminars are offered in the 295 series. Seminars are five-week long practical applications (laboratories) attached to particular required core courses. Examples of possible topics include Strategy IT Laboratory, Accounting IT Laboratory.

297A Doctoral Proseminar (0). Analysis of the central theories and theoretical controversies in the field of management. Examination of the formal education for managerial careers and exploration of issues relating to professional careers in research and scholarship in the field of management. Satisfactory/Unsatisfactory only.

297B Doctoral Seminar in Research Methods (4). Provides a first exposure to some fundamental issues in the conduct of research and development of the domain of knowledge relevant to their fields. Satisfactory/Unsatisfactory only.

297C Doctoral Seminar in Statistical Analysis (4). Emphasizes techniques for the testing of hypotheses derived from organizational theory (or social science theories in general); touches lightly on traditional business statistics used in organizations. Satisfactory/Unsatisfactory only.

297E Doctoral Seminar in Research Methods (4). Provides foundation in research design and methodology. Topics include statistical analysis, philosophy of science, and experimental design. Prerequisites: Management 297A-B-C.

297G University Teaching (4). Designed to prepare students for teaching career; incorporates seminars addressing topics of classroom dynamics, syllabus preparation, teaching techniques; establishes mentor relationship with faculty member in student's teaching area, provides classroom experience and includes option of videotape analysis of teaching style.

298 Consulting Practicum (4). Provides students with an opportunity to put into practice concepts, skills, and tools acquired in other parts of the GSM program. Seminar sessions augment internship experiences with analyses of relevant administrative issues. Satisfactory/Unsatisfactory only. Open only to second-year M.B.A. students.

299 Individual Directed Study (2 to 12). Individual study under the direction of a selected faculty member. Prerequisite: determined by instructor.

EXECUTIVE M.B.A. PROGRAM

Admission to the Executive M.B.A. Program is a prerequisite for enrollment in the following courses.

EP200 Management of Complex Organizations (7). Introduction to the process of managing. Helps students acquire a more global understanding of the managerial task and become acquainted with the tasks and attitudes which are important characteristics of the profession. Designed also to reorient students to the academic environment. Satisfactory/Unsatisfactory only.

EP201A Statistics for Management (5). Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

EP201B Management Science/Operations Research (5). Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

EP202 Organizational Behavior for Management (5). Focuses on human behavior in organizations. Topics include motivation and leadership, power and influence, group dynamics and intergroup relations. Applications of job and organizational design, organizational development, and human resources management techniques are examined.

EP203A Financial Accounting for Management (5). Nature and purpose of accounting, principal accounting instruments, and valuation problems. Satisfactory/Unsatisfactory only.

EP203B Managerial Accounting for Management (2.5). Focuses on the needs of the manager rather than the needs of stockholders and others. Introduces the concepts and tools of internal reporting. Emphasis on use of internal accounting reports and analyses for decision-making. Satisfactory/Unsatisfactory only.

EP204A Microeconomics for Management (5). Economic analysis of individual decision units. Topics include introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs.

EP204B Macroeconomics for Management (5). Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Application of classical, Keynesian, and other models of fiscal and monetary policy.

EP205 Principles of Marketing for Management (5). Introduction to the field of marketing. Objectives include developing familiarity with terms, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

EP206 Government and Public Policy (5). Political analysis as related to management of organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

EP207 Information Technology for Management (5). Focuses on the links between business strategy and information technology. The organizational implications of the technology, and how to successfully incorporate information technology into organizations.

EP209A Managerial Finance I (2.5). Analysis of main decision areas of financial management. Topics include present value, capital budgeting, capital market efficiency, risk and return, long-term financing alternatives, cost of capital, capital structure, and mergers.

EP209B Investments (5). Foundations of investment management. Utility and asset pricing theory, factor models, performance assessment, option pricing theory and mergers.

EP210 Business Strategy (5). Primarily a lecture-case study (implemented through discussion) course. Focuses upon the decision-making processes of company managers. Draws upon a wide variety of fields: marketing, finance, production, personnel, organization.

EP290A-H Special Topics (2 to 5). May be repeated for credit as topic varies.

EP295 Global Business (8). Emphasizes and reinforces international perspectives contained in the Executive M.B.A. program curriculum by providing a week-long intensive seminar abroad in the second year. Scholars and business people from the host country instruct students in specially designed class sessions and company visits. Satisfactory/Unsatisfactory only.

EP299 Individual Study (1 to 8). Individual study under the direction of a selected faculty member. May be repeated for credit as topics vary.

HEALTH CARE EXECUTIVE M.B.A. PROGRAM

Admission to the Health Care Executive M.B.A. Program is a prerequisite for enrollment in the following courses.

HC200 Management of Complex Organizations (7). Introduction to the process of managing in health care organizations. Helps students acquire a more global understanding of the managerial task and become acquainted with the tasks and attitudes which are important characteristics of the profession. Designed also to reorient students to the academic environment. Satisfactory/Unsatisfactory only.

HC201A Statistics for Management (5). Methods of statistical inference, emphasizing applications to administrative and management health care decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

HC201B Management Science/Operations Management (5). Introduction to management science tools for aiding health care managerial decision making, with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

HC202 Organizational Behavior for Management (5). Focuses on human behavior in health care organizations. Topics include motivation and leadership, power and influence, group dynamics and intergroup relations. Applications of job and organizational design, organizational development, and human resources management techniques are examined.

HC203A Financial Accounting for Management (3.7). Nature and purpose of accounting, principal accounting instruments, and valuation problems as they apply to health care organizations.

HC203B Managerial Accounting for Management (3.8). Focuses on the needs of the manager rather than the needs of stockholders and others in a health care organization. Introduces the concepts and tools of internal reporting. Emphasis on use of internal accounting reports and analyses for decision-making.

HC204A Microeconomics for Management (5). Economic analysis of individual decision units in health care organizations. Topics include introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs.

HC204B Macroeconomics for Management (2.5). Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Application of classical, Keynesian, and other models to fiscal and monetary policy as they relate to health care organizations.

HC205 Principles of Marketing for Management (5). Introduction to the field of health care marketing. Objectives include developing familiarity with terms, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

HC206 Government and Public Policy (2.5). Political analysis as related to management of health care organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

HC207 Information Technology for Management (5). Focuses on the links between business strategy and information technology. The organizational implications of the technology, and how to successfully incorporate information technology into organizations.

HC209A Managerial Finance (5). Analysis of main decision areas of financial management in health care organizations. Topics include present value, capital budgeting, capital market efficiency, risk and return, long-term financing alternatives, cost of capital, capital structure, dividend policy, and mergers.

HC209B Investments (2.5). Foundations of investment management. Utility and asset pricing theory, factor models, performance assessment, option pricing theory, and mergers.

HC210 Business Strategy (5). Primarily a lecture-case (implemented through discussion) course. Focuses upon the decision-making processes of health care managers. Draws upon a wide variety of fields: marketing, finance, production, personnel, organization.

HC290 Special Topics (2 to 5). May be repeated for credit as topic varies.

HC295 Federal Policy in Health Care (7). National/international one-week residential course. Exploring political analysis as related to management of health care organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager. Satisfactory/Unsatisfactory only.

HC296 Executive Leadership (7). Focuses on the conceptual, practical, and personal dimensions of executive leadership in health care. Past and current leadership theories are addressed. Individual personal assessment and diagnosis.

HC299 Individual Study (1 to 8). Individual study under the direction of a selected faculty member. May be repeated for credit as topics vary.

FULLY EMPLOYED M.B.A. PROGRAM

Admission to the Fully Employed M.B.A. Program is a prerequisite for enrollment in the following courses.

FE201A Statistics for Management (4). Methods of statistical inference, emphasizing applications to administrative and management decision problems. Topics: classical estimation and hypothesis testing, regression, correlation, analysis of variance, decision analysis, and forecasting.

FE201B Management Science for Management (4). Introduction to management science tools for aiding managerial decision making with emphasis on model applicability, formulation, and interpretation. Use of computer laboratory's management science software packages. Topics: mathematical programming, stochastic processes, queueing systems, simulation.

FE202 Organizational Behavior for Management (4). Focuses on human behavior in organizations. Topics include motivation and leadership, power and influence, group dynamics and intergroup relations. Applications of job and organizational design, organizational development, and human resources management techniques are examined.

FE203A Financial Accounting for Management (4). Nature and purpose of accounting, principal accounting instruments, and valuation problems.

FE203B Managerial Accounting for Management (4). Focuses on the needs of the manager rather than the needs of stockholders and others. Introduces the concepts and tools of internal reporting. Emphasis on use of internal accounting reports and analyses for decision-making.

FE204A Microeconomics for Management (4). Economic analysis of individual decision units. Topics include introduction to demand and supply curves, production functions, cost curves, equilibrium of the firm, perfect competition, monopoly, imperfect competition, demand and supply of inputs.

FE204B Macroeconomics for Management (4). Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Application of classical, Keynesian, and other models to fiscal and monetary policy.

FE205A Principles of Marketing for Management (4). Introduction to the field of marketing. Objectives include developing familiarity with terms, techniques, and institutions in marketing environments, acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

FE206 Government and Public Policy (4). Political analysis as related to management of organizations. Topics include political environment of management, concepts, and processes central to political analysis, bureaucratic politics, politics, and the manager.

FE207 Information Technology for Management (4). Focuses on the links between business strategy and information technology. The organizational implications of the technology, and how to successfully incorporate information technology into organizations.

FE208 Operations Management (4). Introduction to strategic and tactical issues in production and operations management. A blend of quantitative and qualitative considerations. Topics: product planning, process design, capacity management, production planning, inventory control, distribution management, just-in-time manufacturing, quality management.

FE209A Managerial Finance (4). Analysis of main decision areas of financial management. Topics include present value, capital budgeting, capital market efficiency, risk and return, long-term financing alternatives, cost of capital, capital structure, and mergers.

FE210 Business Strategy (4). Primarily a lecture-case (implemented through discussion) course. Focuses upon the decision-making processes of company managers. Draws upon a wide variety of fields: marketing, finance, production, personnel, organization.

FE290A-H Special Topics (2 to 5). May be repeated for credit as topic varies.

FE295 Global Business (8). Emphasizes and reinforces international perspectives contained in the FEMBA curriculum by providing a week-long intensive seminar abroad in the second year. Scholars and business people from the host country instruct FEMBA students in specially designed class sessions and company visits. Satisfactory/Unsatisfactory only.

FE296 Executive Leadership (6). Focuses on the conceptual, practical, and personal dimensions of executive leadership. Past and current leadership theories are addressed. Individual personal assessment and diagnosis. Satisfactory/Unsatisfactory only.

FE299 Individual Directed Study (1 to 8). Individual study under the direction of a selected faculty member.

SCHOOL OF PHYSICAL SCIENCES

180 Physical Sciences I
Academic Counseling: (949) 824-6507
World Wide Web: <http://www.physsci.uci.edu/>

The School of Physical Sciences offers both professional training and general education in the Departments of Chemistry, Earth System Science, Mathematics, and Physics and Astronomy. The faculty, active in research and graduate education, are at the same time vitally concerned with undergraduate teaching. Curricula of the School are designed to meet the needs of a wide variety of students ranging from those with little technical background who seek insight into the activities and accomplishments of physical scientists to those seeking a comprehensive understanding that will prepare them for creative research in physical science.

Over the course of the past century and a half, physics, chemistry, and mathematics have evolved into interdependent but separate intellectual disciplines. This development is reflected in the departmental structure of the School of Physical Sciences. In the same period, these fundamental disciplines have moved into domains of abstraction unimagined by early scientists. This trend to abstraction with its concomitant increase in understanding of the physical universe provides the major challenge to the student of the physical sciences. Mathematics, physics, and chemistry, while providing the foundation of the technology that dominates contemporary civilization, underlie to an ever-increasing extent the new developments in the biological and social sciences. Earth system science is grounded in the traditional physical sciences while breaking new paths in the quantitative study of changes in the global environment.

DEGREES

Chemistry	B.S., M.S., Ph.D.
Earth System Science	M.S., Ph.D.
Mathematics	B.S., M.S., Ph.D.
Physics	B.S., M.S., Ph.D.

Honors

Criteria used by the School of Physical Sciences in selecting candidates for honors at graduation are as follows: Approximately 1 percent will be awarded *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. Honors are awarded on the basis of a student's performance in research, cumulative grade point average, and performance in upper-division courses in the major. A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Other important factors are considered (see page 51). The School of Physical Sciences also grants special honors to students who have distinguished themselves by their work in their major subject.

Undergraduate Programs

Each department offers courses that are of value to nonmajors and majors in the sciences. The programs for majors are designed to meet the needs of students planning careers in business or industry, of students planning advanced professional study, and of students planning graduate work that continues their major interest. Introductory courses in chemistry, mathematics, and physics meet the needs of students majoring in the sciences, mathematics, and engineering and are also appropriate for students in other disciplines who seek a rigorous introduction to the physical sciences. In addition, a number of courses within the School have few or no prerequisites and are directed particularly toward students majoring in areas remote from the sciences.

PLANNING A PROGRAM OF STUDY

Students who choose a major in the School of Physical Sciences have a variety of academic advising and counseling resources available to them. In addition to faculty advisors, there is a Chief Academic Advisor in each department who is responsible for interpreting degree requirements, reviewing student petitions, and assisting with special advising problems. An academic advising and counseling staff, employed in the Associate Dean's Office, is available to serve a broad range of student advising needs. In consultation with their faculty advisor or an academic counselor, students should plan a course of study leading to a major in one of the departments of the School. In carrying out this major, students may often concentrate very heavily in a second department within the School or in some other school. Occasionally students choose to pursue a double major. Permission to do so may be sought by a petition submitted to the Office of the Associate Dean of Physical Sciences.

All initial courses of study for majors include mathematics through calculus, and calculus is a prerequisite for much of the upper-division work in each major. A student interested in any of the physical sciences should continue mathematical training beyond these prerequisite courses. Furthermore, students interested in either physics or chemistry usually will include work in both of these subjects in their undergraduate careers.

Students in the physical sciences are urged to acquire a working knowledge of computer programming at an early stage of their University studies. This can be accomplished by taking Information and Computer Science 21, Engineering E10, CEE10, MAE10, ECE11, or Physics 9.

CAREER OPPORTUNITIES

The majority of graduates continue their education beyond the Bachelor's degree level. Many pursue advanced academic degrees in preparation for careers in scientific or medical research, engineering, or postsecondary education. Some students enter professional school in areas such as medicine, dentistry, law, or business administration. Students who choose not to continue their studies beyond the baccalaureate level most frequently find employment in private business or industry. In addition to technical areas directly related to their major fields of study, students often enter careers in less obviously related fields such as computing, systems analysis, engineering, journalism, marketing, or sales.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. See the Career Center section for additional information.

SPECIAL PROGRAMS

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. See the Center for International Education section for additional information.

3-2 Program

Chemistry, Physics, or Mathematics majors who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for further information.

Interdisciplinary Minors

These interdisciplinary minors are available to all UCI undergraduates. A brief description follows; detailed information is included in the Interdisciplinary Studies section of the *Catalogue*.

The minor in Global Peace and Conflict Studies addresses international violence, the threat of war, paths to cooperation in global and regional security, and international economic and environmental matters.

The minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements: Refer to individual departments.

Graduate Programs

A program of course work and research leading to the M.S. and Ph.D. degrees is offered in the Departments of Chemistry, Earth System Science, Mathematics, and Physics and Astronomy.

DEPARTMENT OF CHEMISTRY

518 Physical Sciences I; (949) 824-6018

A. Richard Chamberlin, **Department Chair**

Faculty

V. Ara Apkarian, Ph.D. Northwestern University, *Professor of Chemistry* (chemical physics)
 Thorsten Benter, Ph.D. University of Kiel, *Assistant Professor of Chemistry* (atmospheric, physical, and analytical chemistry)
 David A. Brant, Ph.D. University of Wisconsin, *Professor of Chemistry* (physical chemistry of biological macromolecules)
 A. Richard Chamberlin, Ph.D. University of California, San Diego, *Department Chair and Professor of Chemistry* (organic synthesis and bioorganic chemistry)
 Ralph J. Cicerone, Ph.D. University of Illinois, *Chancellor, Professor of Earth System Science and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric chemistry)
 Robert J. Doedens, Ph.D. University of Wisconsin, *Associate Dean of the School of Physical Sciences and Professor of Chemistry* (structural inorganic chemistry)
 Nancy M. Doherty, Ph.D. California Institute of Technology, *Associate Professor of Chemistry* (inorganic and organometallic chemistry)
 William J. Evans, Ph.D. University of California, Los Angeles, *Professor of Chemistry* (synthetic inorganic and organometallic chemistry)
 Patrick Farmer, Ph.D. Texas A & M University, *Assistant Professor of Chemistry* (inorganic chemistry)
 Frank J. Feher, Ph.D. University of Rochester, *Vice Chair of the Department and Professor of Chemistry* (organometallic and inorganic chemistry)
 Barbara J. Finlayson-Pitts, Ph.D. University of California, Riverside, *Professor of Chemistry* (atmospheric, physical, and analytical chemistry)
 Fillmore Freeman, Ph.D. Michigan State University, *Professor of Chemistry* (organic chemistry)
 R. Benny Gerber, Ph.D. Oxford University, *Professor of Chemistry* (theoretical chemistry and chemical physics)
 Christopher Grayce, Ph.D. University of California, Berkeley, *Assistant Professor of Chemistry* (theoretical chemistry)
 Vincent P. Guinn, Ph.D. Harvard University, *Professor Emeritus of Chemistry*
 Warren J. Hehre, Ph.D. Carnegie-Mellon University, *Professor Emeritus of Chemistry* (theoretical chemistry)

John C. Hemminger, Ph.D. Harvard University, *Professor of Chemistry* (surface chemistry and physics)
 Bo Hong, Ph.D. Texas A & M University, *Assistant Professor of Chemistry* (inorganic chemistry)
 Kenneth C. Janda, Ph.D. Harvard University, *Professor of Chemistry* (chemical physics and spectroscopy)
 Jhong K. Kim, Ph.D. University of California, Santa Cruz, *Lecturer in Chemistry* (organic chemistry)
 Craig C. Martens, Ph.D. Cornell University, *Vice Chair of the Department and Professor of Chemistry* (theoretical chemistry)
 Robert T. McIver, Jr., Ph.D. Stanford University, *Professor of Chemistry* (physical and analytical chemistry)
 George E. Miller, D. Phil. Oxford University, *Senior Lecturer Emeritus in Chemistry and Reactor Supervisor* (radioanalytical chemistry and chemical education)
 Harold W. Moore, Ph.D. University of Illinois, *Research Professor of Chemistry* (organic chemistry and rational drug design)
 James S. Nowick, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Chemistry* (organic and bioorganic chemistry)
 Larry E. Overman, Ph.D. University of Wisconsin, *Distinguished Professor of Chemistry* (organic chemistry)
 Reginald M. Penner, Ph.D. Texas A & M University, *Associate Professor of Chemistry* (analytical chemistry)
 Peter M. Rentzepis, Ph.D. Cambridge University, *Professor of Chemistry and UC Presidential Chair* (physical chemistry and picosecond spectroscopy)
 Patricia J. Rogers, Ph.D. University of California, Irvine, *Lecturer in Chemistry* (chemical kinetics)
 F. Sherwood Rowland, Ph.D. University of Chicago, *Research Professor of Chemistry and Earth System Science, and Bren Chair* (atmospheric chemistry and radiochemistry)
 Scott D. Rychnovsky, Ph.D. Columbia University, *Professor of Chemistry* (organic chemistry)
 A. J. Shaka, Ph.D. Oxford University, *Professor of Chemistry* (physical chemistry)
 Kenneth J. Shea, Ph.D. Pennsylvania State University, *Professor of Chemistry* (organic chemistry and polymer chemistry)
 Mare Taagepera, Ph.D. University of Pennsylvania, *Senior Lecturer Emerita in Chemistry* (physical organic chemistry and chemical education)
 Douglas J. Tobias, Ph.D. Carnegie Mellon University, *Assistant Professor of Chemistry* (computational biophysical chemistry)
 Darin W. Toohey, Ph.D. Harvard University, *Associate Professor of Earth System Science and Chemistry* (physical and atmospheric chemistry)
 David L. Van Vranken, Ph.D. Stanford University, *Assistant Professor of Chemistry* (organic chemistry)
 Keith A. Woerpel, Ph.D. Harvard University, *Assistant Professor of Chemistry* (organic and organometallic chemistry)
 Max Wolfsberg, Ph.D. Washington University, *Professor Emeritus of Chemistry* (theoretical chemistry)

Undergraduate Program

The major in Chemistry is elected by students planning careers in the chemical sciences and frequently also by those whose interests lie in biology, medicine, earth sciences, secondary education, business, and law. The curriculum of the Department is designed to satisfy the diverse needs of these students and others who may have occasion to study chemistry. The year course Chemistry 1A-B-C is prerequisite to all study in the Department at more advanced levels. The subject matter of this course serves also as a thorough introduction to the varied aspects of modern chemistry for students who do not wish to pursue their studies beyond the introductory level.

In order to enroll in Chemistry 1A, students must pass the Chemistry Placement Examination, which is given in late spring, summer, and during Orientation Week prior to the beginning of fall quarter. A preparatory course, Chemistry 1P, is offered in summer and fall for those who do not pass the Chemistry Placement Examination or who need additional preparation prior to entering Chemistry 1A. A grade of C or better in Chemistry 1P automatically qualifies the student for Chemistry 1A.

Completion of a one-year sequence in organic chemistry, either Chemistry 51A-B-C or 52A-B-C, is required for Chemistry majors and for students of the life sciences. Certain advanced courses required of Chemistry majors may also be of interest to others.

The undergraduate program of the Chemistry Department emphasizes close contact with research. Chemistry majors are urged to engage in research or independent study under the direction of a faculty member. A handout describing the procedures for arranging an undergraduate research opportunity is available from the Chemistry Undergraduate Affairs Office, 248/250 Physical Sciences I.

Much of the important chemical literature is being and has been printed in foreign languages, principally German, Russian, Japanese, and French. Reading competence in one or more of these languages is desirable, and many graduate schools require the demonstration of such competence as a prerequisite for an advanced degree. Chemistry majors are encouraged to acquire this competence.

Chemistry majors who are interested in teaching chemistry at the secondary level are urged to contact the UCI Department of Education. A two-year post-baccalaureate program leading to the M.S. in Chemistry and a California Secondary Teaching Credential is described in the Chemistry Graduate Program section. Chemistry majors who plan subsequent study in medical, dental, or other professional schools should request information concerning admission requirements directly from the schools which they seek to enter. Counseling about preparation for a career in the health sciences is provided by the health science advisors in the School of Biological Sciences. Those intending to pursue graduate studies in chemistry should discuss their plans with a faculty member no later than the fall quarter of their senior year.

Admission to the Major

Students may be admitted to the Chemistry major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of general chemistry with laboratory and one year of approved calculus.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: None.

Departmental Requirements

Basic Requirements: Mathematics 2A-B-C, Physics 5A-B-C and 5LB-LC, Chemistry 1A-B-C (or Chemistry H2A-2B-2C) and 1LB-LC, Chemistry 52A-B-C and 52LA-LB-LC (or Chemistry 51A-B-C and 51LA-LB-LC), Chemistry 107 and 107L, Chemistry 131A-B-C or 130 A-B-C, Chemistry 151 and 151L.

Electives: Four courses chosen from the elective list below. These must include at least two courses offered by the Chemistry Department (Chemistry 180/H180 may be counted no more than once, and Chemistry 139, 192, 194, and 199 may not be counted) and at least one of the laboratory courses in the following laboratory course group: Chemistry 152, 153, 156, 160, 170, Physics 120, 121, Engineering ChE120LA, ChE120LB.

Elective List: Chemistry 125, 127, 135, 136, 137, and all Chemistry courses numbered 152-249; Biological Sciences 98 (Biochemistry), 99 (Molecular Biology); Earth System Science 101A-B (Earth Systems I-II); Physics 111A-B (Classical Mechanics),

112A-B (Electromagnetic Theory), 113A-B-C (Quantum Physics), 115A (Statistical Physics), 115B (Thermodynamics), 120 (Electronics for Scientists), 121 (Advanced Laboratory), 132 (Nuclear Physics), 133 (Condensed Matter Physics), 134 (Modern Optics); Engineering ChE120A (Momentum Transfer), ChE120LA (Chemical Engineering Laboratory I), ChE120B (Heat and Mass Transfer), ChE120LB (Chemical Engineering Laboratory II), ChE122 (Separation Processes), ChE160 (Reaction Kinetics and Reactor Design), ChE162 (Chemical Engineering Design), ChE163 (Chemical Process Control), ChE165 (Introduction to Biochemical Engineering), CEE164 (Chemistry for Environmental Engineering), CEE165 (Physical-Chemical Processes), CEE166 (Microbial Processes).

Scientific Breadth Requirements: A total of six additional four- or five-unit courses chosen from the offerings of the Departments of Earth System Science, Mathematics, Physics and Astronomy, and Information and Computer Science, and the Schools of Biological Sciences and Engineering, excluding the following: Earth System Science 20E, F, H90, Mathematics H90, Physics 1, Physics 3A-B-C, Physics H90, and courses which are designed primarily for upper-division writing or tutoring credit. No more than two quarters of the requirement may be met with independent study or research courses. (These may be taken on a Pass/Not Pass basis subject to the usual restrictions on Pass/Not Pass enrollment.)

HONORS PROGRAM IN CHEMISTRY

The Honors Program in Chemistry is a research-based program offered to selected Chemistry majors during their final year. Applicants to the program must have completed their junior year with a grade point average of at least 3.3 overall and in their Chemistry courses. They must also have demonstrated the potential of carrying out research of honors quality, as judged by the Chemistry faculty member who will supervise their research. Students in this program enroll in Honors Research in Chemistry (Chemistry H180A-B-C) throughout their senior year and submit a formal thesis late in the spring quarter. They also enroll in the Honors Seminar in Chemistry (Chemistry H181), in which they receive instruction in scientific writing and present a formal research seminar. Successful completion of Chemistry H181 satisfies the UCI upper-division writing requirement.

Students who complete these requirements, whose grade point average remains above the 3.3 standard, and whose research is judged to be of honors quality will graduate with Departmental Honors in Chemistry.

The Department also offers an Honors General Chemistry sequence, H2A-B-C. This course in general chemistry is designed for members of the Campuswide Honors Program (CHP) and other highly qualified students. It covers the same material as Chemistry 1A-B-C, but in greater depth.

Additional information is available from the Chemistry Undergraduate Affairs Office.

PLANNING A PROGRAM OF STUDY

The departmental requirements leave the student a great deal of latitude in choice of courses; the student can choose to pursue interests ranging from biochemistry on the one hand to chemical physics on the other. Many of the basic requirements above coincide with those of the School of Biological Sciences. For this reason a double major in Chemistry and Biological Sciences is popular and requires little extra course work. The Department is approved by the American Chemical Society to offer an undergraduate degree certified by the Society as suitable background for a career in chemistry or for graduate study in chemistry. While it is not mandatory, it is desirable for students to pursue a course of study that the Department judges to merit a certified degree. Specifically, the following courses must be included in the program of study: two courses from Mathematics 2D-F, 3A, 3D; Chemistry 152 and 153; at least one advanced laboratory course from Chemistry 156, 160, 170, and 180. These courses must be taken for a letter grade.

Students should consult with their academic advisors on courses of study. A Chemistry major normally takes Chemistry 1A-B-C and 1LB-LC, Mathematics 2A-B-C, and required writing courses during the freshman year. The sophomore year should include Chemistry 52A-B-C and 52LA-LB-LC (or 51A-B-C and 51LA-LB-LC); the Physics 5A-B-C and 5LB-LC sequences should be completed no later than the fall quarter of the junior year. The balance of the freshman and sophomore program can be chosen at the student's discretion with consideration given to progress toward completion of the UCI breadth requirement and the Chemistry Department scientific breadth requirement.

In the junior year all Chemistry majors should enroll in a year sequence of physical chemistry and in Chemistry 151 (fall), 107 (winter), and 107L (spring). Chemistry 130A-B-C and 131A-B-C are equivalent courses in physical chemistry. They have the same prerequisites and expect the same level of chemical and mathematical rigor. Both are acceptable to satisfy the physical chemistry requirement for the major. Chemistry 131A-B-C develops the topic beginning from a molecular or microscopic point of view and proceeds to the macroscopic description of matter; applications may address primarily gas phase systems. Chemistry 130A-B-C, on the other hand, commences with the macroscopic description; this approach may be of particular interest for applications of physical chemistry in biology, materials science, and engineering. Students should choose between the two courses on the basis of their interests. Because of significant differences in the sequence of topics, students starting in one series may not switch to the other in subsequent quarters.

During the junior and senior years the Chemistry Department electives requirement should be fulfilled, as should other University and departmental requirements.

Sample programs for Chemistry majors, American Chemical Society-certified Chemistry majors, and Chemistry-Biological Sciences double majors are shown in the accompanying charts. Sample programs for Chemistry majors wishing to emphasize chemical physics, computational or theoretical chemistry, chemical synthesis and reactivity, materials or polymer science, or public school science teaching in their undergraduate programs are available from the Chemistry Undergraduate Affairs Office, 248/250 Physical Sciences I.

Sample Program — Chemistry Majors*

Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (Writing)	Breadth (Writing)	Breadth/Elective
Breadth	Breadth	Breadth
Sophomore		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Elective	Physics 5A	Physics 5B, 5LB
Breadth	Breadth	Breadth
Science Breadth (Math)	Science Breadth (Math)	Science Breadth (Math)
Junior		
Chem. 131A (130A)	Chem. 131B (130B)	Chem. 131C (130C)
Chemistry 151, 151L	Chemistry 107	Chemistry 107L
Physics 5C, 5LC	Chemistry Elective	Chemistry Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Chemistry Elective	Chemistry Elective	Chemistry Elective
Breadth (Writing)	Breadth	Breadth
Science Breadth	Science Breadth	Science Breadth
Elective	Elective	Elective

* For American Chemical Society certification include two courses selected from Mathematics 2D–2F, 3A, and 3D for scientific breadth; include Chemistry 152 and 153 plus at least one course selected from Chemistry 156, 160, 170, and 180 among the Chemistry electives.

Sample Program — Chemistry-Biological Sciences Double Majors*

Items in parentheses are recommended choices or alternatives.

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Mathematics 2A	Mathematics 2B	Mathematics 2C
Breadth (writing)	Breadth	Bio. Sci. 96
Breadth/Elective	Bio. Sci. 94	Breadth/Elective
Sophomore		
Chem. 52A, 52LA (51A, 51LA)	Chem. 52B, 52LB (51B, 51LB)	Chem. 52C, 52LC (51C, 51LC)
Bio. Sci. 97	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Bio. Sci. 98	Bio. Sci. 99
Breadth/Elective		
Junior		
Chemistry 151, 151L	Chemistry 107	Chemistry 107L
Physics 5C, 5LC	Bio. Sci. Core	Bio. Sci. Core
Bio. Sci. Core	Bio. Sci. 100L	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Chem. 130A (131A)	Chem. 130B (131B)	Chem. 130C (131C)
Bio. Sci. Satellite or Lab	Chemistry Elective	Chemistry Elective
Bio. Sci. Satellite or Lab	Bio. Sci. Satellite or Lab	Bio. Sci. Satellite or Lab
Breadth/Elective	Breadth/Elective	Breadth/Elective

Graduate Program

The Department offers graduate programs leading to the M.S. and Ph.D. degrees in Chemistry. The Ph.D. degree is granted in recognition of breadth and depth of knowledge of the facts and theories of modern chemistry and an ability to carry out independent chemical research demonstrated through submission of an acceptable doctoral dissertation. The M.S. degree may be earned either through submission of an acceptable Master's thesis (Plan I) or through an

approved program of graduate course work (Plan II). A Master's degree is not a prerequisite for admission to the Ph.D. program.

Upon entering the graduate programs, all students are required to take a series of Area Examinations which test the students' competence in the general areas of chemistry (e.g., organic, physical, inorganic) at the undergraduate level. The Area Examinations are designed to ensure a proper fundamental level of preparation for graduate study and are used as a guide in choosing the appropriate program of course work for each entering student.

Students in the Ph.D. and M.S. Plan I (Thesis) programs are required to complete a minimum of seven approved courses (or 28 units), including six graduate-level courses (or 24 units), in chemistry. The M.S. Plan II (Course Work) program requires that the student complete 10 graduate-level chemistry courses (or 40 units). Graduate students are expected to attain grades of B or better to remain in good academic standing.

Progress toward the Ph.D. degree during the first year is assessed by a written examination administered after completion of the first year of study. This examination covers either research accomplishments during the first year or comprehensive knowledge acquired in course work. The time and content of the examination depends upon the student's specific area of interest.

Training in teaching is an integral part of each graduate program, and all graduate degree candidates are expected to participate in the teaching program for at least four quarters during their graduate career.

Participants in the Ph.D. program take an oral examination for formal Advancement to Candidacy. This examination normally comes in a student's second or third graduate year and consists of an oral defense before a faculty committee of the student's dissertation research project, and an original research proposition conceived, developed, and documented by the student. The committee may examine the student at this time on any subject it deems relevant to the independent pursuit of chemical research.

The most important component of the Ph.D. program is the doctoral dissertation, which must describe the results of original research performed by the student under the supervision of a faculty member of the Department. The criterion for acceptability of the dissertation is that its contents be of a quality suitable for publication in a scientific journal of high editorial standards. Each Ph.D. candidate is expected to present the work described in the completed dissertation in a seminar before the Department, following which the candidate will be examined in public on the contents of the dissertation by a committee of the faculty. A Master's thesis presented in partial fulfillment of the requirements for the M.S. under Plan I must also describe the results of a student's original research performed under the direction of a faculty member. However, no public oral defense of the Master's thesis is required.

Residency requirements specify a minimum of six quarters in residence at UCI for Ph.D. candidates and three quarters for M.S. candidates.

CONCENTRATION IN CHEMICAL AND MATERIALS PHYSICS

This is an interdisciplinary program between condensed matter physics and physical chemistry which is designed to eliminate the barrier between these two disciplines. Students with B.S. degrees in Physics, Chemistry, or Materials Science and Engineering, are encouraged to apply to the program. The goal of the concentration in Chemical and Materials Physics (ChAMP) is to provide students with a broad interdisciplinary education in the applied physical sciences that emphasizes modern laboratory and computational skills. The program accepts students for both the master's and the Ph.D. degrees. Upon admission to the program, students are assigned two

faculty advisors, one from the Department of Physics and Astronomy, and one from the Department of Chemistry, to provide guidance on curriculum and career planning.

The curriculum for the master's program includes a summer session to assimilate students with different undergraduate backgrounds; formal shop, laboratory, and computational courses; a sequence on current topics to bridge the gap between fundamental principles and applied technology; and a course to develop communication skills. The core courses are: Chemistry 206, 213, 226, 228, 230, 231A-B-C, 232A-B-C, 236, 266; Physics 213C, 229A-B, 273. In addition to the core, M.S. students complete four electives approved by the student's Advisory Committee and a master's thesis. The Master's program prepares students to compete for high-tech jobs or to begin research leading to a Ph.D.

Successful completion of the M.S. degree requirements qualifies students for the Ph.D. program. A candidacy examination consisting of an original research proposal and a research progress report is expected to be completed within a year of starting the Ph.D. program.

CONCENTRATION IN PROTEIN ENGINEERING SCIENCE

Several faculty in the Department of Chemistry, in conjunction with faculty in the School of Biological Sciences and the School of Engineering, participate in the joint graduate program in Protein Engineering. This interdisciplinary graduate program offers students the opportunity to work with faculty in any of the participating academic units; take course work in the areas of protein structure, function, and molecular biology; and earn the Ph.D. in Chemistry, Biological Sciences, or Engineering with a concentration in Protein Engineering Science. Additional information is available in the School of Biological Sciences section of the *Catalogue* and through the graduate program in Protein Engineering office in the Biological Sciences Administration Building.

MASTER OF SCIENCE IN CHEMISTRY WITH A TEACHING CREDENTIAL

In cooperation with the UCI Department of Education, the Chemistry Department sponsors a coordinated two-year program leading to the M.S. degree in Chemistry and the California Single Subject Teaching Credential. The M.S. degree may be obtained under either Plan I or Plan II described below. Prospective graduate students interested in this program should so indicate on their graduate application and should request a detailed description of the program from the Chemistry Department Graduate Affairs Office or the Department of Education.

The following lists specify requirements for each of the graduate programs offered by the Department of Chemistry.

MASTER OF SCIENCE IN CHEMISTRY PLAN I (Thesis Plan)

Completion of the Area Examination requirement.

Completion of a minimum of seven approved courses (or 28 units), including six graduate-level courses (or 24 units) in chemistry (as specified by the Department and excluding Chemistry 280, 290, 291, and 399) with maintenance of an average grade of B or better in all course work undertaken.

Completion of the teaching requirement.

Completion of three quarters in residence at UCI.

Submission of an acceptable Master's thesis.

MASTER OF SCIENCE IN CHEMISTRY PLAN II (Course Work Plan)

Completion of the Area Examination requirement.

Completion of 10 graduate-level courses (or 40 units) in chemistry (excluding Chemistry 290, 291, and 399 and counting Chemistry 280 no more than once) with an average grade of B or better.

Maintenance of an average grade of B or better in all course work undertaken.

Completion of the teaching requirement.

Completion of three quarters in residence at UCI.

DOCTOR OF PHILOSOPHY IN CHEMISTRY

Completion of the Area Examination requirement.

Completion of a minimum of seven approved courses (or 28 units), including six graduate-level courses (or 24 units) in chemistry (as specified by the Department and excluding Chemistry 280, 290, 291, and 399) with maintenance of an average grade of B or better in all course work undertaken.

Completion of the Cumulative Examination requirement.

Completion of the Oral Examination requirement for Advancement to Candidacy.

Completion of the teaching requirement.

Completion of six quarters in residence at UCI.

Submission of an acceptable doctoral dissertation.

Courses in Chemistry

LOWER-DIVISION

NOTE: Enrollment in lower-division Chemistry courses may be subject to pre-testing or other limitations. See the *Catalogue* Placement Testing section and the quarterly *Schedule of Classes* for information.

1A-B-C General Chemistry (4-4-4); 1A (F, W, Summer), 1B (W, S), 1C (S, Summer, F). Lecture, three hours; discussion, one hour. Stoichiometry, properties of gases, liquids, solids, and solutions; chemical equilibrium, chemical thermodynamics; atomic and molecular structure; chemical kinetics, periodic properties and descriptive chemistry of the elements. Corequisite: concurrent enrollment in the corresponding laboratory courses. Prerequisite for Chemistry 1A: high school chemistry and one of the following: a passing score on the UCI Chemistry Placement Examination or a grade of C or better in Chemistry 1P; for Chemistry 1B and 1C, a grade of C- or better in all previous courses in the sequence. Chemistry 1A-B-C and Chemistry H2A-B-C may not both be taken for credit. (II)

NOTE: The Chemistry Placement Examination, which is to be taken prior to enrollment in Chemistry 1A, assesses the student's preparation for General Chemistry. Students enrolled in the W-S-Summer/F sequence of Chemistry 1A-B-C must complete Chemistry 1C in the Summer Session to be eligible to enroll in Chemistry 51A or 52A in the subsequent fall quarter.

1LA General Chemistry Laboratory for Engineering Majors (1) F, W. Laboratory, four hours. Training and experience in basic laboratory techniques through experiments related to lecture topics in Chemistry 1A. Prerequisite: concurrent enrollment or successful completion of Chemistry 1A. NOTE: Chemistry 1LA is open to Engineering majors only. The Chemistry 1LA-LB sequence satisfies all requirements met by Chemistry 1LB-1LC for non-Engineering majors. It is recommended that students complete Chemistry 1LA-1LB and the corresponding Chemistry 1 segment within the same academic year. (II)

1LB-1LC General Chemistry Laboratory (2-2); 1LB (W, S), 1LC (S, Summer, F). Laboratory, four hours. Training and experience in basic laboratory techniques through experiments related to lecture topics in Chemistry 1A-B-C. Corequisite for Chemistry 1LB and 1LC: concurrent enrollment in the corresponding segment of Chemistry 1. Prerequisite for Chemistry 1LB: passing grade in Chemistry 1A. Prerequisite for Chemistry 1LC: passing grades in Chemistry 1B and 1LB. (II)

1P Preparation for General Chemistry (4) F, Summer. Lecture, three hours; quiz, two hours. Units of measurement, dimensional analysis, significant figures; elementary concepts of volume, mass, force, pressure, energy,

density, temperature, heat, work; fundamentals of atomic and molecular structure; the mole concept; stoichiometry; properties of the states of matter; gas laws; solutions, concentrations.

NOTE: Chemistry 1P satisfies no requirements other than contribution to the 180 units required for graduation. Designed for students who need additional help prior to enrollment in General Chemistry.

H2A-B-C Honors General Chemistry (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Covers the same material as Chemistry 1A-B-C but in greater depth. Additional topics included as time permits. Chemistry H2A-B-C satisfies the same requirements and prerequisites as Chemistry 1A-B-C; corresponding segments may not both be taken for credit. Corequisite: concurrent enrollment in the corresponding quarter of Chemistry 1LB or 1LC. Prerequisite for H2A: membership in the Campuswide Honors Program, or a score of 4 or 5 on the Chemistry Advanced Placement Examination, or a score of 700 or better on the SAT II in Chemistry, or a qualifying score on the UCI Chemistry Placement Examination, or consent of instructor. Prerequisite for H2B-H2C: grade of B or better in preceding course in series. (II)

51A-B-C Organic Chemistry (4-4-4); 51A (F, W, Summer), 51B (W, S, Summer), 51C (S, Summer, F). Lecture, three hours; discussion, one hour. Fundamental concepts relating to carbon compounds with emphasis on structural theory and the nature of chemical bonding, stereochemistry, reaction mechanisms, and spectroscopic, physical, and chemical properties of the principal classes of carbon compounds. Corequisite for 51A-B: concurrent enrollment in the corresponding segment of Chemistry 51L. Prerequisites for 51A: Chemistry 1A-B-C and 1LB-1LC. Prerequisites for 51B and 51C: a grade of C- or better in previous quarter of sequence. Chemistry 51A-B-C and Chemistry 52A-B-C may not both be taken for credit.

NOTE: Priority for enrollment in the Chemistry 51A-B-C sequence offered in W-S-Summer/F is given to students who successfully complete Chemistry 1C in the preceding fall quarter.

51LA-LB-LC Organic Chemistry Laboratory (2-2-2); 51LA (F, W, Summer), 51LB (W, S, Summer), 51LC (S, F). Laboratory, four hours. Modern techniques of organic chemistry, using selected experiments to illustrate topics introduced in Chemistry 51A-B-C. Corequisite for 51LA-LB-LC: concurrent enrollment in the corresponding segment of Chemistry 51. Prerequisites for 51LB: passing grades in Chemistry 51A and 51LA. Prerequisites for 51LC: passing grades in Chemistry 51B and 51LB.

NOTE: Chemistry 52A-B-C and 52LA-LB-LC satisfy the same requirements and prerequisites as Chemistry 51A-B-C and 51LA-LB-LC; corresponding segments may not both be taken for credit.

52A-B-C Organic Chemistry for Chemistry Majors (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Fundamental concepts of the chemistry of carbon compounds. Structural, physical, and chemical properties of the principal classes of carbon compounds. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 52L. Prerequisites: open to Chemistry majors only or consent of instructor. Prerequisites for 52A: Chemistry 1A-B-C and 1LB-LC. Prerequisites for 52B and 52C: a grade of C- or better in previous quarter of sequence. Chemistry 51A-B-C and Chemistry 52A-B-C may not both be taken for credit.

52LA-LB-LC Organic Chemistry Laboratory for Chemistry Majors (2-2-2) F, W, S. Laboratory, six hours; lecture, one hour. Fundamental techniques of modern experimental organic chemistry. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 52. Prerequisite for 52LB and 52LC: passing grade in previous quarter of sequence.

H90 The Idiom and Practice of Science (4) F, W, S. Lecture, three hours; discussion, two hours. A series of fundamental and applied scientific problems are addressed, illustrating the pervasive role of mathematical analysis. Topics may include thermodynamics, chemical equilibria, acid-base chemistry, kinetics, states of matter, electronic structure of atoms and the periodic table, chemical bonding, spectroscopy, and topics from organic, atmospheric, and biochemistry. Open only to members of the Campuswide Honors Program or consent of instructor. Formerly Chemistry H90A. (II)

UPPER-DIVISION

107 Inorganic Chemistry I (4) W. Lecture, three hours; discussion, one hour. Introduction to modern inorganic chemistry. Principles of structure, bonding, and chemical reactivity with application to compounds of the main group and transition elements, including organometallic chemistry. Prerequisites: Chemistry 1A-B-C, 51A-B-C or 52A-B-C.

107L Inorganic Chemistry Laboratory (3) S. Laboratory, seven hours. Modern techniques of inorganic and organometallic chemistry including experience with glove box, Schlenk line, and vacuum line methods. Prerequisite: Chemistry 107.

114 Science Education Teacher Apprentice Field Experience (4-4) F, W, S. Students assist public school classroom teachers in laboratory demonstrations and experiments, tutoring individuals or small groups. Same as Education 114. NOTE: this course satisfies no requirements other than contribution to the 180 units required for graduation.

125 Advanced Organic Chemistry (4) F. Lecture, three hours; discussion, one hour. Rapid-paced comprehensive treatment of organic chemistry, reinforcing the fundamental concepts introduced in the Chemistry 51A-B-C and 52A-B-C series. Focuses on molecular structure, reactivity, stability, and the scope and mechanisms of organic reactions. Topics include: structure and bonding; theoretical organic chemistry; acidity and basicity; reactive intermediates; pericyclic reactions; stereochemistry; organic synthesis; natural products; organic photochemistry. Prerequisites: Chemistry 51A-B-C or 52A-B-C.

127 Inorganic Chemistry II (4) S. Lecture, three hours; discussion, one hour. Advanced treatment of selected fundamental topics in inorganic chemistry, building on material presented in Chemistry 107. Molecular symmetry with applications to electronic structure and spectroscopy. Reaction kinetics and mechanisms; inorganic synthesis and catalysis; bioinorganic chemistry. Prerequisite: Chemistry 107.

NOTE: Chemistry 130A-B-C and 131A-B-C are parallel courses in physical chemistry; both are acceptable to satisfy the physical chemistry requirements for the major. Because of significant differences in course content, students starting in one series may not switch to the other in subsequent quarters.

130A-B-C Physical Chemistry: Biological and Materials Applications. Lecture, three hours; discussion, one hour.

130A Chemical Thermodynamics (4) F. Principles of chemical and heterogeneous equilibrium. Multiple chemical equilibrium, electrochemical equilibria, and equilibria at phase boundaries. Corequisite: Physics 5C. Prerequisites: Chemistry 1A-B-C; Physics 5A-B; Mathematics 2A-B-C.

130B Quantum Chemistry, Spectroscopy, and Bonding (4) W. Fundamentals of molecular quantum mechanics. Development of the principles of rotational, vibrational, electronic, and magnetic resonance spectroscopy. Chemical bonding. Applications to biological and condensed phase systems. Prerequisite: Chemistry 130A.

130C Structure, Statistical Mechanics, and Chemical Dynamics (4) S. Kinetic theory and statistical mechanics with applications to gases, macromolecules, and condensed phases. Transport phenomena. Chemical kinetics. Prerequisite: Chemistry 130B.

131A-B-C Physical Chemistry: A Molecular Approach. Lecture, three hours; discussion, one hour.

131A Quantum Principles (4) F. Principles of quantum chemistry with applications to nuclear motions and the electronic structure of the hydrogen atom. Corequisite: Physics 5C. Prerequisites: Chemistry 1A-B-C, Physics 5A-B, Mathematics 2A-B-C.

131B Molecular Structure and Elementary Statistical Mechanics (4) W. Multielectron atoms, molecules, and the chemical bond. Boltzmann statistics with applications to dilute gases. Prerequisite: Chemistry 131A.

131C Thermodynamics and Chemical Dynamics (4) S. Energy, entropy, and the thermodynamic potentials. Chemical equilibrium. Chemical kinetics. Prerequisite: Chemistry 131B.

135 Methods of Molecular Structure Determination (4) F. Lecture, three hours; discussion, one hour. Prerequisites: Chemistry 130A-B-C or 131A-B-C. Determination of molecular structure using spectroscopic, diffraction, and scattering techniques.

136 The Molecular Structure and Properties of Materials (4) F. Lecture, three hours; discussion, one hour. Development of the molecular basis for the properties of solid materials. Discussion of the interrelationship between molecular structure and properties such as optical behavior, conductivity, superconductivity, and magnetism. The properties of surfaces of materials are contrasted to bulk properties. Prerequisites: Chemistry 130A-B-C or 131A-B-C.

137 Computational Chemistry (4) S. Lecture, three hours; discussion, one hour; laboratory, three hours. Short introduction to programming languages and to representative algorithms employed in chemical research. Students have the opportunity to devise and employ their own codes and also to employ codes which are widely used in various fields of chemistry. Prerequisites:

Chemistry 51A-B-C or 52A-B-C, Chemistry 130A-B or 131A-B, experience in computer programming.

139 Technical Writing and Communication Skills (4) F, W, S. Lecture, three hours. Workshop in writing technical reports, journal articles, proposals. Oral presentations. Communicating with the public. May not be used in satisfaction of any School or departmental requirement. Prerequisites: upper-division standing; satisfaction of the lower-division writing requirement. Open to Chemistry majors only. Same as Mathematics 190 and Physics 129.

151 Quantitative Analytical Chemistry (4) F. Lecture, three hours; discussion, one hour. Theoretical aspects of methods in analytical chemistry. Topics include statistical treatment of data and the fundamental chemistry which underlies methods of chemical analysis. Corequisite: Chemistry 151L. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 51A-B-C and 51LA-LB-LC or 52A-B-C and 52LA-LB-LC.

151L Quantitative Analytical Chemistry Laboratory (2) F. Laboratory, six hours. Practical aspects of important methods in analytical chemistry. Laboratory analysis of standard samples. Laboratory experiments include methods of gravimetry, titrimetry, chromatography and other separation methods, spectrochemical and electrochemical measurements. The use of computer programs for the reduction of data from laboratory experiments is encouraged. Corequisite: Chemistry 151. Prerequisites: Chemistry 1A-B-C, 1LB-LC; 51A-B-C and 51LA-LB-LC or 52A-B-C and 52LA-LB-LC.

152 Advanced Analytical Chemistry (5) W. Lecture, three hours; discussion, one hour; laboratory, seven hours. In-depth treatment of most modern instrumental methods for quantitative analysis of real samples and basic principles of instrument design. Laboratory experiments in the use of electronic test equipment, microprocessor programming; interfacing and use of techniques such as absorption, emission, and luminescence spectrophotometry, polarography, gas and liquid chromatography, magnetic resonance, neutron activation analysis, and mass spectrometry. Prerequisite: Chemistry 151.

153 Physical Chemistry Laboratory (4) S. Prelaboratory lecture, three hours; laboratory, nine hours. Laboratory exercises emphasize quantitative characterization of chemical substances and chemical processes. Experiments in chemical thermodynamics, atomic and molecular spectroscopy, chemical kinetics, and various methods of molecular structure determination. Corequisite: Chemistry 130C or 131C. Prerequisites: Chemistry 151, 151L, and Chemistry 130A-B or 131A-B.

156 Advanced Laboratory in Chemistry of Materials (4) S. Lecture, two hours; laboratory, eight hours. Synthesis and characterization of organic and inorganic materials. Synthesis of linear and network organic polymers, magnetic oxides, thin film metals, non-stoichiometric materials. Characterization includes surface area and pore size distribution, magnetic susceptibility, X-ray fluorescence, neutron activation analysis, gel permeation chromatography. Prerequisite: Chemistry 107, Chemistry 130A-B or 131A-B.

160 Organic Synthesis Laboratory (4) W. Lecture, two hours; discussion, one hour; laboratory, eight hours. Modern experimental techniques in organic synthesis including experience with thin-layer chromatography, liquid chromatography, and gas chromatography. Modern methods of structure elucidation including FT NMR are employed in the characterization of products. Prerequisite: Chemistry 125.

170 Radioisotope Techniques (4) W. Lecture, three hours; laboratory, four to six hours. Basic theory and practice of production, separation, safe handling, counting, applications of radioactive isotopes with emphasis on applications in chemistry, biology, and medicine. Prerequisite: Chemistry 151, 151L.

180 Undergraduate Research (4-4-4) F, W, S. The student wishing to engage in research for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of 10 to 15 hours per week is expected, and a written research report is required at the end of each quarter of enrollment. Prerequisite: consent of a faculty sponsor.

H180A-B-C Honors Research in Chemistry (4-4-4) F, W, S. Undergraduate honors research in Chemistry. A student time commitment of 10-15 hours per week is required. Corequisite for H180C: Chemistry H181. Prerequisites: consent of instructor; open to participants in the Chemistry Honors program and to Chemistry majors participating in the Campuswide Honors Program.

H181 Honors Seminar in Chemistry (2) S. Students receive guidance in the preparation of oral and written research presentations. A written thesis is prepared and a formal research seminar is presented. Corequisite: Chemistry H180C. Prerequisites: successful completion of Chemistry H180A-B; satisfactory completion of the lower-division writing requirement. Open only to students in the Chemistry Honors Program and Chemistry majors who are participating in the Campuswide Honors Program.

192 Tutoring in Chemistry (2) F, W, S. Enrollment limited to participants in the Chemistry Peer Tutoring Program. Prerequisite: consent of instructor. May be taken for a total of 18 units of which the first eight may be taken for a letter grade. The remaining 10 units must be taken Pass/Not Pass only. NOTE: No more than eight units may be counted toward the 180 units required for graduation. Satisfies no degree requirement other than contribution to the 180-unit total.

199 Independent Study in Chemistry (1 to 4 per quarter). The student wishing to engage in independent study for credit should arrange with a member of the faculty to sponsor and supervise such work. A student time commitment of three to four hours per week per unit is expected, and a written report on the independent study is required at the end of each quarter of enrollment. Prerequisite: consent of instructor.

GRADUATE

201 Organic Reaction Mechanisms I (4). Lecture, three hours; discussion, one hour. Advanced treatment of basic mechanistic principles of modern organic chemistry. Topics include molecular orbital theory, orbital symmetry control of organic reactions, aromaticity, carbonium ion chemistry, free radical chemistry, the chemistry of carbenes and carbanions, photochemistry, electrophilic substitutions, aromatic chemistry. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

202 Organic Reaction Mechanisms II (4). Lecture, three hours; discussion, one hour. Topics include more in-depth treatment of mechanistic concepts, kinetics, conformational analysis, computational methods, stereoelectronics, and both solution and enzymatic catalysis. Prerequisite: Chemistry 201.

203 Organic Spectroscopy (4). Lecture, three hours; discussion, one hour. Modern methods used in structure determination of organic molecules. Topics include mass spectrometry; ultraviolet, chiroptical, infrared, and nuclear magnetic resonance spectroscopy. Prerequisite: Chemistry 51A-B-C or 52A-B-C.

204 Organic Synthesis I (4). Lecture, three hours; discussion, one hour. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis is on carbon-carbon bond forming methodology. Topics include carbonyl annulations, cycloadditions, sigmatropic rearrangements, and organometallic methods. Corequisite: concurrent enrollment in Chemistry 202.

205 Organic Synthesis II (4). Lecture, three hours; discussion, one hour. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis this quarter is on natural product total synthesis and retrosynthetic (antithetic) analysis. Prerequisite: Chemistry 204.

206 Laboratory Skills (4 to 6). Lecture, three hours; laboratory, six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Same as Physics 206.

207 Chemistry for Physicists (4). Lecture, three hours; discussion, one hour. Introduction to fundamental concepts in molecular structure and reactivity: theory of bonding, valence and molecular orbitals; structure and reactivity in inorganic chemistry, elements in molecular group theory, nomenclature in organic chemistry; and survey of macromolecules. Same as Physics 207.

213 Chemical Kinetics (4) S. Lecture, three hours; discussion, one hour. Surveys gas phase and organic reaction mechanisms and their relationship to kinetic rate laws; treats the basic theory of elementary reaction rates. A brief presentation of modern cross-sectional kinetics is included. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

215 Inorganic Chemistry I (4). Lecture, three hours; discussion, one hour. Principles of modern inorganic chemistry with applications to chemical systems of current interest. Inorganic phenomena are organized into general patterns which rationalize observed structures, stabilities, and physical properties. Prerequisites: Chemistry 107 and 130A-B-C or 131A-B-C or equivalent.

216 Organometallic Chemistry (4). Lecture, three hours; discussion, one hour. Synthesis and reactivity of organometallic complexes with an emphasis on mechanisms. Topics include bonding and fluxional properties; metal-carbon single and multiple bonds; metal π -complexes. Applications to homogeneous catalysis and organic synthesis are incorporated throughout the course. Prerequisite: Chemistry 107 or 215.

217 Physical Inorganic Chemistry (4). Lecture, three hours; discussion, one hour. General principles of the spectroscopy and magnetism of inorganic compounds. Characterization of inorganic complexes by infrared, near-infrared, visible, ultraviolet, NMR, EPR, EXAFS, and Mossbauer spectroscopies. Some necessary group theory developed. Prerequisite: Chemistry 215 or consent of instructor.

218 Metallobiochemistry (4). Lecture, three hours; discussion, one hour. A review of the biochemistry of metallic elements emphasizing: methods for studying metals in biological systems; the chemical basis for nature's exploitation of specific elements; structures of active sites; mechanisms; solid-state structures and devices; metals in medicine. Prerequisite: Chemistry 130A-B-C or equivalent.

220 Bioorganic Chemistry (4). Lecture, three hours; discussion, one hour. Structure and function of biologically important macromolecules. Introduction to nucleic acids, protein structure, principles of molecular recognition, enzyme function, modeling, and engineering. Prerequisite: Chemistry 51A-B-C or 52A-B-C or equivalent.

222 Natural Products (4) F. Lecture, three hours; discussion, one hour. Fundamentals of natural products chemistry are surveyed. Topics include classification schemes, biosynthesis, isolation and characterization, drug development from natural products, and chemical synthesis.

225 Polymer Chemistry (4). Lecture, three hours; discussion, one hour. Synthesis and reactions of polymers. Thermodynamics and kinetics of polymerization. Physical characterization of synthetic and natural macromolecules. Prerequisites: Chemistry 51A-B-C or 52A-B-C; 130A-B-C or 131A-B-C or equivalent.

226 Materials Science of Polymers (4). Lecture, three hours; discussion, one hour. A study of the structural, conformational, statistical, and statistical thermodynamic bases underlying the viscous, elastic, glassy, and crystalline behavior of polymers in materials applications. Prerequisites: undergraduate courses in organic chemistry, statistical thermodynamics, and mechanics; consent of instructor.

227 Molecular Modeling (4). Laboratory, four hours. Concepts of molecular mechanics and electronic structure theory, and applications to practical chemical questions. Topics include prediction of conformational preference, reactivity, and selectivity. A hands-on course with numerous worked problems and examples using graphics workstations. Prerequisite: consent of instructor.

228 Electromagnetism (4). Lecture, three hours; discussion, one hour. Maxwell's equations, electrodynamics, electromagnetic waves and radiation, wave propagation in media, interference and quantum optics, coherent and incoherent radiation, with practical applications in interferometry, lasers, waveguides, and optical instrumentation. Prerequisite: consent of instructor. Same as Physics 228.

229A-B Computational Methods (4). Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Same as Physics 229A-B.

230 Classical Mechanics and Electromagnetic Theory (4). Lecture, three hours; discussion, one hour. The fundamentals of classical mechanics and electromagnetic theory are developed with specific application to molecular systems. Newtonian, Lagrangian, and Hamiltonian mechanics are developed. Boundary value problems in electrostatics are investigated. Multipole expansion and macroscopic media are discussed from a molecular viewpoint. Prerequisite: Chemistry 131A-B-C or equivalent.

231A-B-C Quantum Mechanics and Spectroscopy. Lecture, three hours; discussion, one hour.

231A Time Independent Quantum Mechanics (4) F. Fundamentals of quantum mechanics. Applications of quantum mechanics to problems in atomic systems are considered. Prerequisites: Chemistry 131A-B-C or equivalent.

231B Time Dependent Quantum Mechanics (4) W. Formal development of time-dependent quantum mechanics. Approximation methods in time-dependent quantum mechanics. Classical and quantum scattering theory. Prerequisite: Chemistry 231A.

231C Molecular Spectroscopy (4) S. Theory and techniques of spectroscopy as used for the study of molecular properties. Conventional spectroscopic methods and coherent time-domain spectroscopies are covered. Prerequisite: Chemistry 231B.

232A Thermodynamics and Introduction to Statistical Mechanics (4) F. Lecture, three hours; discussion, one hour. A detailed discussion from an advanced point of view of the principles of classical thermodynamics. The fundamentals of statistical mechanics. Topics include an introduction to ensemble theory, Boltzmann statistics, classical statistical mechanics, and the statistical mechanics of ideal gas systems. Prerequisite: Chemistry 130A-B-C or 131A-B-C or equivalent.

232B Advanced Topics in Statistical Mechanics (4) W. Continued discussion of the principles of statistical mechanics. Applications to topics of chemical interest including imperfect gases, liquids, solutions, and crystals. Modern techniques such as the use of autocorrelation function methods. Prerequisite: Chemistry 232A or equivalent.

232C Non-Equilibrium Statistical Mechanics (4). Lecture, three hours; discussion, one hour. Phenomenology of material processes, including: kinetic theories of transport and continuum, linear response theory, critical phenomena of phase transition, self-assembly, and nucleation. Prerequisite: consent of instructor.

233 Nuclear and Radiochemistry (4). Lecture, three hours. Advanced treatment (beyond that in Chemistry 170) of nuclear structure, nuclear reactions, and radioactive-decay processes. Introduction to nuclear activation analysis, isotope effects, radiation chemistry, hot-atom chemistry, nuclear age-dating methods, nuclear reactors, and nuclear power. Prerequisite: Chemistry 170 or equivalent or consent of the instructor.

234 Advanced Chemical Kinetics (4). Topics and format vary. Prerequisite: Chemistry 213 or consent of the instructor.

235 Molecular Quantum Mechanics (4) W. Lecture, three hours; discussion, one hour. Application of quantum mechanics to calculation of molecular properties. Electronic structure of molecules. Prerequisite: Chemistry 231A or equivalent.

236 Concepts in Solid State (4). Lecture, four hours; discussion, one hour. Concepts in electronic structure and vibrational properties of solids are outlined, and chemical applications discussed. Topics include: energy bands of insulators, metals, semiconductors. Thermal properties. Phonon processes.

241 Current Issues Related to Tropospheric and Stratospheric Processes (4) S. Examination of current issues related to the atmosphere, including energy usage; toxicology; effects on humans, forest, plants, and ecosystems; particulate matter (PM₁₀); combustion; modeling and meteorology; airborne toxic chemicals and risk assessment; application of science to development of public policies. Prerequisite: One course selected from Chemistry 245, Earth System Science 202, Engineering MAE164, Engineering MAE261, or consent of instructor. Same as Engineering MAE 260.

243 Advanced Instrumental Analysis (4) W. Theory and applications of modern advanced instrumental methods of analysis. Includes data acquisition, storage, retrieval and analysis; Fourier transform methods; vacuum technologies, magnetic sector, quadrupole, and ion trap mass spectrometry; surface science spectroscopic methods; lasers and optics. Prerequisites: Chemistry 152 and Chemistry 130A-B-C or 131A-B-C.

245 Atmospheric Chemistry of the Natural and Polluted Troposphere (4) F. Lecture, three hours; discussion, one hour. Kinetics, mechanisms, and photochemistry of tropospheric reactions in the gas, liquid, and solid phases, and methods of analysis. Chemistry of photochemical oxidant formation and acid deposition, and applications to control strategies. Chemistry of toxic chemicals and indoor air pollution. Prerequisites: Chemistry 130A-B-C or 131A-B-C and Chemistry 151 and 151L or equivalent.

251 Special Topics in Organic Chemistry (1 to 4). Advanced topics in organic chemistry. Prerequisite: consent of the instructor.

252 Special Topics in Physical Chemistry (1 to 4). Advanced topics in physical chemistry. Prerequisite: consent of the instructor.

253 Special Topics in Inorganic Chemistry (1 to 4). Advanced topics in inorganic chemistry. Prerequisite: Chemistry 215 or consent of the instructor.

261 Biomolecular Structure (4). Lecture, three hours. Inter- and intramolecular interactions which govern biomolecular structure and organization, and theory of cooperative binding and conformation change in biological systems. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent. Same as Physiology and Biophysics 261.

262 Biopolymers in Solution (4). Lecture, three hours. Electronic, chiroptical, and magnetic resonance spectroscopy as applied to studies of biological molecules and macromolecules. Theoretical and practical aspects of sedimentation equilibrium and transport in the study of biological macromolecules. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

266 Current Topics in Chemical and Materials Physics (4). Lecture, three hours; discussion, one hour. The subjects covered vary from year to year. Connection between fundamental principles and implementations in practice in science, industry, and technology. Prerequisite: consent of instructor. Same as Physics 266.

271 Structural X-ray Crystallography (4). Lecture, three hours; discussion, one hour. The principles and practice of the determination of structures by single crystal x-ray diffraction techniques. Crystal symmetry, diffraction, structure solution and refinement. Opportunities for hands-on experience in structure determination. Prerequisite: Chemistry 130A-B-C or Chemistry 131A-B-C or equivalent.

272 Industrial Chemistry (4). Lecture, three hours; discussion, one hour. Scientific, economic, and environmental aspects of the top 50 industrially produced chemicals, including how they are obtained and used, present and future sources of energy and raw materials, and the effects of chemical manufacturing on the price structure of our economy. Prerequisite: consent of instructor.

280 Research (2 to 12) F, W, S. Supervised original research toward the preparation of a Ph.D. dissertation or M.S. thesis. Prerequisite: consent of the instructor.

290 Seminar (1-1-1) F, W, S. Weekly seminars and discussions on general and varied topics of current interest in chemistry. Prerequisite: graduate standing.

291 Research Seminar (4). Detailed discussion of research problems of current interest in the Department. Format, content, and frequency of the course are variable. Prerequisite: consent of instructor.

292 Graduate Symposium (2) F. Students present public seminars on literature-based research topics in contemporary chemistry. Topics to be chosen by student and approved by instructor. Satisfactory/Unsatisfactory only.

299 Independent Study (1 to 4) F, W, S. Prerequisite: consent of instructor.

399 University Teaching (1 to 4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF EARTH SYSTEM SCIENCE

220 Physical Sciences I; (949) 824-8794
Ellen R. M. Druffel, *Chair*

Faculty

Ralph J. Cicerone, Ph.D. University of Illinois, *Chancellor, Professor of Earth System Science and Chemistry, and Daniel G. Aldrich Jr. Chair* (atmospheric chemistry)

Ellen R. M. Druffel, Ph.D. University of California, San Diego, *Department Chair and Professor of Earth System Science* (geochemistry)

Sarah Gille, Ph.D. Massachusetts Institute of Technology-Woods Hole Oceanographic Institute Joint Program, *Assistant Professor of Earth System Science* (oceanography)

Michael L. Goulden, Ph.D. Stanford University, *Assistant Professor of Earth System Science* (biosphere-atmosphere exchange, physiological ecology)

Gudrun Magnusdottir, Ph.D. Colorado State University, *Assistant Professor of Earth System Science* (atmospheric dynamics)

Michael Prather, Ph.D. Yale University, *Professor of Earth System Science* (mathematical modeling of atmospheric chemistry and radiation)

William S. Reece, Ph.D. The Johns Hopkins University, *Professor of Earth System Science* (geochemistry and biogeochemistry)

Darin W. Toohey, Ph.D. Harvard University, *Associate Professor of Earth System Science and Chemistry* (atmospheric chemistry and reaction kinetics)

Susan E. Trumbore, Ph.D. Columbia University, *Associate Professor of Earth System Science* (geochemistry and biogeochemistry)

Affiliated Faculty

Carl A. Friehe, Ph.D. Stanford University, *Professor of Mechanical and Aerospace Engineering and of Earth System Science* (fluid mechanics, turbulence, micrometeorology, instrumentation)

F. Sherwood Rowland, Ph.D. University of Chicago, *Research Professor of Chemistry and Earth System Science, and Bren Chair* (atmospheric chemistry and radiochemistry)

The goal of the Department of Earth System Science is to increase the scientific understanding of the Earth as a coupled system of atmosphere, ocean, and land. Undergraduate course offerings are designed to educate both science and non-science majors in the physical, chemical, and biological principles underlying global environmental problems. The Department offers graduate programs leading to M.S. and Ph.D. degrees in Earth System Science. Graduate study emphasizes laboratory, field, and modeling studies of global change in the environment from the perspective of physical, chemical, and biological processes occurring in and linkages among the atmosphere, the ocean, and terrestrial systems. Students are admitted to the Ph.D. program only; the Master's degree is awarded upon progress to the Ph.D.

Applicants to the Earth System Science Ph.D. program should have a broad quantitative scientific background, with an undergraduate degree in natural science or related fields such as applied mathematics and engineering. Undergraduate preparation should involve mathematics including differential equations, a year-long sequence of physics and of chemistry, and courses in general biology, ecology, or geology. Entering graduate students plan their courses and research with the help of the Earth System Science Advisory Committee of academic and research faculty.

To complete the course requirements for the Ph.D. program, a minimum of 10 approved graduate-level courses, including the core curriculum, must be completed with an average grade of B or better. All courses must be approved by the student's Advisory Committee. The core curriculum consists of: Earth System Science 201A-B-C (Earth Systems), 202 (*The Principles of Atmospheric Chemistry*), one quarter of 210 (*Geoscience Modeling*) or 212 (*Atmospheric Dynamics*), and at least one quarter of either 231 (*Topics in Biogeochemistry*) or 233 (*Topics in Climate Dynamics*). These courses are described below. Students are also expected to participate in the Earth System Science seminar. Additionally, students are required to complete a teaching assistant training program and, if opportunities are available, to serve as a teaching assistant.

Academic Senate regulations specify a minimum period of residence of six quarters for Ph.D. candidates. Enrollment in a minimum of 12 units of graduate/upper-division course work per quarter is required. Registration in every regular academic session is necessary until all requirements for the degree have been completed, unless a formal Leave of Absence is granted by the Office of Graduate Studies. All Ph.D. requirements must be completed within 15 quarters in residence, excluding summer quarters. Exceptions must be put to a vote of the Earth System Science faculty.

A single departmental Qualifying Examination for all eligible Earth System Science students is administered each spring quarter. This examination determines the student's readiness to begin research for the dissertation and should be taken following completion of the core course work, no later than the end of the spring quarter of the second year. The Qualifying Examination consists of both written and oral parts. The written portion of the examination emphasizes breadth, general knowledge, and the ability to integrate and use information covered in the core curriculum and other course work. The oral examination provides an opportunity to clarify questions arising from the student's performance on the written examination.

Following completion of the Qualifying Examination, those students who receive a recommendation to continue Ph.D. work will pursue research on a potential dissertation topic and then take the Advancement to Candidacy Examination. This oral examination is given by a faculty committee, including extra-departmental faculty. Concurrent with this examination, the Ph.D. candidates present a research seminar to the entire Earth System Science Department outlining their proposed dissertation work.

A dissertation based on original research and demonstrating critical judgment, intellectual synthesis, creativity, and clarity in written communication is required for the Ph.D. degree. The dissertation must summarize the results of original research performed by the student under the supervision of a faculty member of the Department. The criterion of acceptability of a dissertation is that its contents be judged by the committee as suitable for publication in a peer-reviewed scientific journal of high editorial standards. The dissertation may be a compilation of published papers or manuscripts accepted for publication, so long as a major proportion of the material has been produced independently by the candidate. The format and content are approved by the Dissertation Committee, and University requirements for style, format, and appearance are met.

The Master's degree is awarded only to students admitted to the Ph.D. program who have completed a total of 10 courses, met the three-quarter residency requirement, and completed the Qualifying Examination.

A summary of the requirements follows.

DOCTOR OF PHILOSOPHY IN EARTH SYSTEM SCIENCE

1. Completion of course work (10 courses, including core courses)
2. Six quarters in residence at UCI
3. Completion of the teaching and seminar requirements
4. Completion of the Qualifying Examination, with recommendation to continue for the Ph.D.
5. Pass the Advancement to Candidacy Examination
6. Presentation of an open research seminar
7. Submission of an acceptable doctoral dissertation and formal defense

MASTER OF SCIENCE IN EARTH SYSTEM SCIENCE

1. Completion of course work (10 courses, including core courses)
2. Three quarters in residence at UCI
3. Completion of the teaching and seminar requirements
4. Completion of the Qualifying Examination

Courses in Earth System Science

UNDERGRADUATE

Lower-division undergraduate course offerings emphasize an understanding of the basic science involved in global change of the Earth's atmosphere, oceans, and biosphere and soils. Any three courses selected from Earth System Science 10, 14, 15, 20E, 20F, Physics 18, 20A, 20B, 20C, and 20D will satisfy the natural sciences breadth requirement. Lower-division Earth System Science courses also are core or elective courses in the interdisciplinary minor in Global Sustainability; see the Interdisciplinary Studies section of this *Catalogue* for information.

Upper-division courses are particularly appropriate as electives for students majoring in the physical or biological sciences, or engineering, with an interest in applying physics, chemistry, and biology to study the Earth's atmosphere, oceans, biosphere, and climate.

Lower-Division

10 The Physical Environment (4) F. Covers the origin and evolution of the Earth, its atmosphere, and oceans, from the perspective of biogeochemical cycles, energy use, and human impacts on the Earth system. (II)

14 Geology (4) W. Basic geologic principles; teaches students how to interpret earth history from landforms and the rock record, understand volcano and earthquake risks, and recognize the distribution of resources. The geologic time scale, fossil record, and major events in earth history are explored. (II)

15 Atmospheric Pollution, Ozone, and Climate (4) S. Air pollution occurs on global, continental, and urban scales. We pollute the atmosphere in different ways. Its consequences on the quality of the air we breathe, health of our ecosystems, ozone layer depletion, and changes in our climate are studied. (II)

20E The Atmosphere (4) W. The composition and circulation of the atmosphere with a focus on explaining the fundamentals of weather and climate. Topics include solar and terrestrial radiation, clouds, and weather patterns. (II)

20F Oceanography (4) S. Examines circulation of the world oceans and ocean chemistry as it relates to river, hydrothermal vent, and atmospheric inputs. Geological features, the wide variety of biological organisms, and global climate changes, such as greenhouse warming, are also studied. (II)

H90 The Idiom and Practice of Science (4). A series of fundamental and applied scientific problems are addressed, illustrating the pervasive role of mathematical analysis. Topics may include energy utilization, the climate system, the "greenhouse effect," ozone depletion and air pollution, ecological consequences of water pollution, nutrient cycles. Open only to members of the Campuswide Honors Program or consent of instructor. (II)

Upper-Division

101A-B-C Earth Systems (4-4-4) F, W, S. Introduction to the fundamental processes controlling cycling of the elements C, N, O, H, P, and S on the global scale, focusing on exchanges between atmosphere, ocean and the terrestrial reservoirs, climate interactions, and the influence of human activities. Prerequisites: Mathematics 2A-B-C and Chemistry 1A-B-C. Concurrent with Earth System Science 201A-B-C.

112 Atmosphere Dynamics (4) S. Basic fluid dynamical processes that determine the large-scale flow of the atmosphere. Interactions between density stratification and effects of earth's rotation act to trigger atmospheric phenomena such as the typical low pressure system. Concepts include forces, potential vorticity, and waves. Prerequisite: Mathematics 3D. Concurrent with Earth System Science 212.

162 Engineering Meteorology (4) W. Fundamentals and aspects of atmospheric sciences important to engineering and environmental problems. Basic physics and thermodynamics of the atmosphere; dispersion of pollutants. A design problem is included. Prerequisites: Engineering MAE91 or E101 or CEE91 or ChE60; Engineering MAE130A or CEE170A or ChE120A or consent of instructor. Same as Engineering MAE162.

190A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 190A-B, grade for sequence given upon completion of 190C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B and Social Ecology 186A-B.

190C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Earth System Science 190A-B and satisfaction of the lower-division writing requirement. Same as Biological Sciences 191C and Social Ecology 186C.

199 Undergraduate Research (2 to 4) F, W, S. For junior and senior undergraduates, preferably with majors in science or engineering. Interested students should arrange with a member of the Earth System Science faculty to supervise and support a research project. A written summary is required at the end of each quarter. Prerequisite: consent of instructor.

GRADUATE

201A-B-C Earth Systems (4-4-4) F, W, S. Introduction to the fundamental processes controlling cycling of the elements C, N, O, H, P, and S on the global scale, focusing on exchanges between atmosphere, ocean and terrestrial reservoirs, climate interactions, and the influence of human activities. Prerequisite: graduate standing. Concurrent with Earth System Science 101A-B-C.

202 The Principles of Atmospheric Chemistry (4) W. Overview of major forces controlling the chemical composition of Earth's atmosphere with emphasis on the role of the biosphere and the changes induced by human activities. Topics covered include urban pollution, acid rain, stratospheric ozone depletion, and climate change. Prerequisite: Earth System Science 201A.

210 Geoscience Modeling (4) F. The use of numerical calculations to analyze geophysical data or build models, focusing on numerical accuracy, classic foibles, functional fits, ordinary differential equations, time series, eigenvalue analysis, and the formulation of coupled Earth system models.

212 Atmosphere Dynamics (4) S. Basic fluid dynamical processes that determine the large-scale flow of the atmosphere. Interactions between density stratification and effects of earth's rotation act to trigger atmospheric phenomena such as the typical low pressure system. Concepts include forces, potential vorticity, and waves. Concurrent with Earth System Science 112.

231A-B-C Topics in Biogeochemistry (4-4-4). Each quarter is devoted to in-depth analysis of a subarea in biogeochemistry which is undergoing rapid development. May be repeated for credit as topics vary.

233A-B-C Topics in Climate Dynamics (4-4-4). Each quarter is devoted to in-depth analysis of an important and rapidly developing area in the field of climate dynamics. May be repeated for credit as topics vary.

280 Research (2 to 12) F, W, S. Supervised original research in areas of Earth System Science. Prerequisite: consent of instructor. May be repeated for credit.

290 Seminar (1) F, W, S. Weekly seminars and discussions on topics of general and current interest in Earth System Science. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing. May be repeated for credit as topics vary.

291 Research Seminar (1 to 4) F, W, S. Detailed discussions of ongoing research in Earth System Science. Format, content, and frequency of the course are variable. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

399 University Teaching (1 to 4) F, W, S. Required of and limited to teaching assistants. Satisfactory/Unsatisfactory grading only. May be repeated for credit.

DEPARTMENT OF MATHEMATICS

420 Physical Sciences I; (949) 824-5503
Abel Klein, **Department Chair**

Faculty

- Takeo Akasaki, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (ring theory)
Bruce M. Bennett, Ph.D. Columbia University, *Professor of Mathematics and of Cognitive Sciences* (algebraic geometry, theory of perception)
Frank B. Cannonito, Ph.D. Adelphi University, *Professor Emeritus of Mathematics* (group theory)
Larry Chrystal, M.A. University of California, Irvine, *Lecturer in Mathematics*
Donald Darling, Ph.D. California Institute of Technology, *Professor Emeritus of Mathematics*
Panagiota Daskalopoulos, Ph.D. University of Chicago, *Assistant Professor of Mathematics* (partial differential equations, harmonic analysis, geometric analysis)
Rui J. P. de Figueiredo, Ph.D. Harvard University, *Professor of Electrical and Computer Engineering and of Mathematics*
William F. Donoghue, Jr., Ph.D. University of Wisconsin, *Professor Emeritus of Mathematics* (classical function theory)
Paul C. Eklof, Ph.D. Cornell University, *Professor of Mathematics* (logic and algebra)
Mark Finkelstein, Ph.D. Stanford University, *Associate Professor of Mathematics* (analysis)
Matthew D. Foreman, Ph.D. University of California, Berkeley, *Professor of Mathematics and of Philosophy* (logic)
Michael D. Fried, Ph.D. University of Michigan, *Professor of Mathematics* (arithmetic geometry, complex variables)
Michael J. Holst, Ph.D. University of Illinois, Urbana-Champaign, *Assistant Professor of Mathematics* (numerical analysis, applied mathematics, approximation theory)
Svetlana Jitomirskaya, Ph.D. Moscow State University, *Associate Professor of Mathematics* (mathematical physics)
Richard K. Jureg, Ph.D. University of Minnesota, *Professor Emeritus of Mathematics* (analysis, differential equations)
Gerhard K. Kalisch, Ph.D. University of Chicago, *Professor Emeritus of Mathematics* (functional analysis)
Ludmil Katzarkov, Ph.D. University of Pennsylvania, *Assistant Professor of Mathematics* (algebraic geometry, representation theory)

- Abel Klein, Ph.D. Massachusetts Institute of Technology, *Department Chair and Professor of Mathematics* (mathematical physics)
- Peter Li, Ph.D. University of California, Berkeley, *Professor of Mathematics* (differential geometry)
- Song-Ying Li, Ph.D. University of Pittsburgh, *Assistant Professor of Mathematics* (harmonic analysis, several complex variables)
- Penelope Maddy, Ph.D. Princeton University, *Professor of Philosophy and of Mathematics* (logic, philosophy, and foundations of mathematics)
- George S. McCarty, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (algebraic topology)
- David L. Rector, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Mathematics* (algebraic topology, computer algebra)
- Robert C. Reilly, Ph.D. University of California, Berkeley, *Department Vice Chair for Administration and Undergraduate Studies and Associate Professor of Mathematics* (differential geometry)
- Bernard Russo, Ph.D. University of California, Los Angeles, *Department Vice Chair for Graduate Studies and Professor of Mathematics* (functional analysis)
- Martin Schechter, Ph.D. New York University, *Professor of Mathematics* (partial differential equations, functional analysis)
- Stephen Scheinberg, Ph.D. Princeton University; M.D. University of California, Irvine, *Professor of Mathematics* (analysis)
- Senya Shlosman, Ph.D. Kiev University, *Professor of Mathematics* (probability, mathematical physics)
- William H. Smoke, Ph.D. University of California, Berkeley, *Professor Emeritus of Mathematics* (homological algebra)
- Ronald J. Stern, Ph.D. University of California, Los Angeles, *Professor of Mathematics* (geometry and topology)
- Edriss S. Titi, Ph.D. Indiana University, *Professor of Mathematics and of Mechanical and Aerospace Engineering* (partial differential equations, nonlinear analysis)
- Howard G. Tucker, Ph.D. University of California, Berkeley, *Professor of Mathematics* (probability and statistics)
- Daqing Wan, Ph.D. University of Washington, *Associate Professor of Mathematics* (number theory, algebraic geometry)
- Frederic Yui-Ming Wan, Ph.D. Massachusetts Institute of Technology, *Vice Chancellor for Research and Dean of Graduate Studies, and Professor of Mathematics and Mechanical and Aerospace Engineering* (applied mathematics)
- Richard A. Wentworth, Ph.D. Columbia University, *Associate Professor of Mathematics* (complex geometry, gauge theory, low-dimensional topology)
- Robert W. West, Ph.D. University of Michigan, *Professor Emeritus of Mathematics* (algebraic topology)
- Joel J. Westman, Ph.D. University of California, Los Angeles, *Professor Emeritus of Mathematics* (analysis)
- Robert J. Whitley, Ph.D. New Mexico State University, *Professor of Mathematics* (analysis)
- Janet L. Williams, Ph.D. Brandeis University, *Professor Emerita of Mathematics* (probability and statistics)
- James J. Yeh, Ph.D. University of Minnesota, *Professor of Mathematics* (real and stochastic analysis)
- Weian Zheng, Ph.D. Université de Strasbourg, *Associate Professor of Mathematics* (probability)

The Department of Mathematics is engaged in teaching and fundamental research in a wide variety of basic mathematical disciplines, and offers undergraduate and graduate students the opportunity to fashion a thorough program of study leading to professional competence in mathematical research, or in an area of application.

The curriculum in mathematics includes opportunities for supervised individual study and research, and is augmented by seminars and colloquia. It is designed to be compatible with curricular structures at other collegiate institutions in California in order to enable students transferring to UCI to continue their programs of mathematics study.

Undergraduate Program

The Department offers a major in Mathematics, a specialization in Statistics, a specialization in Mathematics for High School Teaching, and a minor in Mathematics.

Undergraduate mathematics courses are of several kinds: courses preparatory to advanced work in mathematics, the exact sciences, and engineering; courses for students of the social and biological sciences; and courses for liberal arts students and those planning to enter the teaching field.

Admission to the Major

Students may be admitted to the Mathematics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the required course work of one year of approved calculus.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements (for all Mathematics majors except those in the Teaching specialization)

Lower-Division Requirements:

- A. Mathematics 2A-B-C-D-E; 3A; 2F or 3D (with 3D recommended).
- B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering CEE10, Engineering ECE11, Engineering MAE10, or Physics 9.
- C. Physics 5A-B-C or Chemistry 1A-B-C. (This also satisfies UCI breadth requirement category II if taken with the accompanying laboratories.)

Upper-Division Requirements: Most of the upper-division Mathematics courses are organized into a series of Core Areas. The Core Areas are: Numerical Analysis (courses numbered 100–109); Applied Mathematics (110–119); Algebra (120–129); Probability and Statistics (130–139); Analysis (140–149); Logic (150–159); and Geometry/Topology (160–169). There are also non-Core-Area courses (170–199). Students are required to complete 15 upper-division one-quarter lecture courses in Mathematics (with associated laboratories when applicable) as follows:

- A. Mathematics 120A, 121A
- B. Mathematics 140A-B
- C. A third lecture course from the Algebra Core Area (120–129)
- D. A third lecture course from the Analysis Core Area (140–149)
- E. One additional lecture course from either the Algebra or the Analysis Core Area
- F. Two lecture courses from a third Core Area
- G. One lecture course from a fourth Core Area
- H. Five additional lecture courses in Mathematics chosen from the Core Areas or from courses numbered 170–189

NOTE:

1. Under some circumstances (e.g., double majors), students with prior approval from the Mathematics Department Undergraduate Advisor may substitute appropriate upper-division courses from another department for up to three of the five courses for requirement H.
2. Mathematics courses numbered 190–199 may not be used to fulfill the course requirements for the major.

3. Undergraduates who wish to enroll in graduate Mathematics courses should obtain the prior approval of the Mathematics Department Undergraduate Advisor.

Mathematics Major with Specialization in Statistics

Satisfaction of all the requirements for the Mathematics major above; in fulfilling requirements F and H, students must include the following courses: Mathematics 131A-B-C, 132A-B-C (plus the associated laboratories), and one additional course approved in advance by the Mathematics Department Undergraduate Advisor.

Departmental Requirements for the Mathematics Major with a Specialization in Mathematics for High School Teaching

Admission to this specialization requires approval in advance by the Mathematics Department. The admission process, which includes an interview with the Department's Undergraduate Advisor and its Tutor Supervisor, should be completed no later than the end of the student's junior year.

Lower-Division Requirements:

- A. Mathematics 2A-B-C-D; 3A; 6A; 2F or 3D (with 3D recommended); 13.
- B. Computing skills attained through either Information and Computer Science 21, Engineering E10, Engineering CEE10, Engineering ECE11, Engineering MAE10, or Physics 9.
- C. Physics 5A-B-C and 5LB-LC, or Chemistry 1A-B-C and 1LB-LC. (This also satisfies UCI breadth requirement category II.)

In addition, students must satisfy an extra science requirement by taking three additional approved science lecture courses, including any accompanying laboratories. The following courses are approved:

- (P) Physics 5D-E and 5LD-LE, plus one quarter of Physics 20A, 20B, 20C, or 20D (for students taking Physics 5A-B-C); or
- (C) Chemistry 51A-B and 51LA-LB, plus one quarter of Earth System Science 10, 14, 15, 20E, or 20F (for students taking Chemistry 1A-B-C).

Although (P) and (C) are the "preferred" ways to satisfy the extra science requirement, students can request approval to substitute other suitable science courses, including certain upper-division Mathematics courses. Such approval is not automatic and should be obtained from the Mathematics Department Undergraduate Advisor before students take the courses.

Upper-Division Requirements:

- A. Mathematics 120A-B; 121A; either 121B or 124; 140A-B; 131A and 131LA; 150; 180; 182; 184; one more upper-division Mathematics lecture course numbered 100-189, plus any accompanying laboratory.
- B. One quarter of Education 100 and two quarters of Mathematics 192.

Requirements for the Minor

One course selected from Mathematics 13, 120A, or 140A, plus six additional upper-division lecture courses in Mathematics (plus the associated laboratories, where applicable) numbered 100-169. (NOTE: Nearly all upper-division courses in Mathematics have Mathematics 2A-B-C as prerequisites, and many courses have additional prerequisites such as Mathematics 2D, 2E, 2F, 3A, and/or 3D.)

Sample Program — Mathematics Major Interested in Pure Mathematics or Preparing for Graduate Study in Mathematics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2C
Breadth/Elective	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 3A	Math. 2D	Math. 2E
Physics 5C, 5LC	Math. 3D	Math. 13
Breadth/Elective	ICS 21	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 120B	Math. 121B
Math. 140A	Math. 121A	Math. 140C
Breadth/Elective	Math. 140B	Math. 146
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 140D	Math. 151	Math. 141A
Math. 150	Math. 162A	Math. 152
Breadth/Elective	Breadth/Elective	Math. 162B
Breadth/Elective	Breadth/Elective	Breadth/Elective

PLANNING A PROGRAM OF STUDY

There is a variety of career patterns the UCI Mathematics major may select. In many instances, a double major (in Mathematics and an appropriate related field) provides the strongest preparation for the career desired.

Assistance in planning a program of study is available from faculty advisors and the Mathematics Department Undergraduate Advisor.

Sample Program — Mathematics Major Interested in Applied Mathematics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2C
Breadth/Elective	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2D	Math. 2E	Math. 3D
Physics 5C, 5LC	Math. 3A	Math. 13
ICS 21	Physics 5D, 5LD	Physics 5E, 5LE
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 121A	Math. 121B
Math. 140A	Math. 140B	Math. 140C
Breadth/Elective	Math. 171A	Math. 171B
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 107, 107L
Math. 114A	Math. 112A	Math. 112B
Math. 140D	Math. 114B	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Mathematics Major Specializing in Statistics

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2C
Breadth/Elective	Physics 5A	Physics 5B, 5LB
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 3A	Math. 2D	Math. 2E
Physics 5C, 5LC	Math. 3D	Math. 13
Breadth/Elective	ICS 21	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 121A	Math. 121B
Math. 132A	Math. 132B, 132LB	Math. 132C, 132LC
Math. 140A	Math. 140B	Math. 140C
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 105A, 105LA	Math. 105B, 105LB	Math. 131C, 131LC
Math. 131A, 131LA	Math. 131B, 131LB	Math. 146
Breadth/Elective	Breadth/Elective	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective

Sample Program — Mathematics Major Specializing in Mathematics for High School Teaching

FALL	WINTER	SPRING
Freshman		
Math. 2A	Math. 2B	Math. 2C
Physics 20A	Physics 5A	Physics 5B, 5LB
Breadth/Elective	ICS 21	Breadth/Elective
Breadth/Elective	Breadth/Elective	Breadth/Elective
Sophomore		
Math. 2D	Math. 3A	Math. 3D
Math. 6A	Physics 5D, 5LD	Math. 13
Physics 5C, 5LC	Breadth/Elective	Physics 5E, 5LE
Breadth/Elective	Breadth/Elective	Breadth/Elective
Junior		
Math. 120A	Math. 120B	Math. 121A
Math. 140A	Math. 140B	Math. 124
Math. 192	Math. 192	Education 100
Breadth/Elective	Breadth/Elective	Breadth/Elective
Senior		
Math. 131A, 131LA	Math. 151 or	Math. 182
Math. 150	131B, 131LB	Math. 184
Breadth/Elective	Math. 180	Breadth/Elective
Elective	Breadth/Elective	Elective
	Elective	

Graduate Program

Graduate courses are designed to meet the needs of students doing graduate work in mathematics and in those disciplines that require graduate-level mathematics for their study. Among the fields covered are analysis, algebra, functional analysis, geometry and topology, probability and statistics, ordinary and partial differential equations, and mathematical logic.

In addition to formal courses, there are seminars for advanced study toward the Ph.D. in various fields of mathematics. Topics will vary from year to year. Each seminar is conducted by a staff member specializing in the subject studied. Enrollment will be subject to the approval of the instructor in charge.

MASTER OF SCIENCE IN MATHEMATICS

The Department offers three pathways which lead to the Master of Science in Mathematics degree: Pure Mathematics, Applied Mathematics, and the Master of Science with a Teaching Credential. The first two programs are described below; the third is described in the next section.

The Master's program serves a dual purpose. For some students it will be a terminal program of mathematics education; for others it will lead to study and research at the doctoral level. To earn the Master of Science degree, the student must satisfy course, language, and residency requirements, and pass a comprehensive examination administered by the Graduate Studies Committee of the Department.

There are two areas of concentration: Pure Mathematics and Applied Mathematics. Each concentration requires the satisfactory completion of 12 upper-division or graduate lecture courses; this includes a core of nine courses (36 units), in each of which the student must earn a grade of B (3.0) or better, and three elective courses (9 to 12 units). At least eight of these courses must be at the graduate level (200-series courses). The specific requirements are described below. A grade point average of at least B (3.0) is required for all courses applicable to the M.S. degree. The student's selection of alternative or elective courses must be approved by the Graduate Studies Committee.

The nine required core courses for the Pure Mathematics concentration are Mathematics 210A-B-C, 220A-B-C, and 230A-B-C. The student must complete three additional approved courses.

The nine required core courses for the Applied Mathematics concentration are Mathematics 210A-B-C, 220A-B-C, and the A-B-C sequence of one of the following: Mathematics 201, 292, 295, or Physics 212. The student must complete three additional approved courses; these may be selected from the preceding list.

In order to satisfy the Comprehensive Examination requirement in the regular Master's program in Mathematics, a student in either the Pure Mathematics concentration or the Applied Mathematics concentration must pass two of the three written Area Examinations (see the Ph.D. program below) at the Master's level or better.

Students must satisfy the language requirement by demonstrating reading proficiency in French, German, or Russian.

The residency requirement ordinarily is satisfied by full-time enrollment for three quarters immediately preceding the award of the M.S. degree. When appropriate, a leave of absence may be granted between matriculation and the final quarters of study.

Master of Science in Mathematics with a Teaching Credential

In cooperation with the UCI Department of Education, the Department of Mathematics sponsors a coordinated two-year program leading to the M.S. degree in Mathematics and the California Single Subject Teaching Credential. In this program the M.S. degree can be obtained under one of two plans: either Plan I (Thesis) or Plan II (Comprehensive Examination). Prospective graduate students interested in this program should so indicate on their applications and should request a detailed description of the program from the Department of Mathematics or the Department of Education.

DOCTOR OF PHILOSOPHY IN MATHEMATICS

A student seeking the Ph.D. in Mathematics must demonstrate mastery in the three basic areas of Real Analysis, Complex Analysis, and Algebra, by (a) passing Mathematics 210A-B-C, 220A-B-C, and 230A-B-C (or approved equivalents) with a grade of B or better; and (b) passing three written Area Examinations, one for each of these basic areas, at the Ph.D. level. The Area Examinations, which include both undergraduate and graduate material, are normally given twice each year, just before the start of the fall and

winter quarters. All students seeking the Ph.D. degree must successfully complete these examinations within two years of entering the graduate program; students admitted to the Ph.D. program with a Master's degree in mathematics from another institution must successfully complete at least one of these examinations within one year (and complete the rest within two years).

The Department also requires the following for advancement to candidacy for the Ph.D. degree: satisfactory performance at the post-Master's level in nine approved one-quarter graduate lecture courses, which must *exclude* Mathematics 201, 202, 204, 210, 220, 230, 298, 299, and 399; satisfactory performance in one language examination (French, German, or Russian); and satisfactory performance in the oral qualifying examination.

The oral qualifying examination is conducted by a candidacy committee, appointed by Department on behalf of the Dean of Graduate Studies and the Graduate Council, including at least one member of the faculty outside of the Mathematics Department.

After the student meets the requirements, the Graduate Studies Committee recommends to the Dean of Graduate Studies the advancement to candidacy for the Ph.D. degree.

Teaching experience and training is an integral part of the Ph.D. program. All doctoral students are expected to participate in the teaching program of the Department.

The candidate must demonstrate independent, creative research in mathematics by writing and defending a dissertation that makes a new and valuable contribution to mathematics in the candidate's area of concentration. Following advancement to candidacy, a doctoral committee, appointed by the Department Chair on behalf of the Dean of Graduate Studies and the Graduate Council, guides and supervises the candidate's research, study, and writing of the dissertation; conducts an oral defense of the dissertation; and recommends that the Ph.D. be conferred upon approval of the doctoral dissertation.

Courses in Mathematics

LOWER-DIVISION

1 Pre-Calculus (4). Lecture, three hours; discussion, two hours. Preparation for calculus and other mathematics courses. Basic equations and inequalities, linear and quadratic functions, and systems of simultaneous equations. Exponentials, logarithms, trigonometry, polynomials, and rational functions. Satisfies no requirements other than contribution to the 180 units required for graduation. Mathematics 1 and 1B may not both be taken for credit.

1A-B Pre-Calculus. Lecture, three hours; discussion, two hours. Mathematics 1A and 1B are equivalent to Mathematics 1 and may not be taken if the student has passed Mathematics 1.

1A (0) F, W. Basic equations and inequalities, linear and quadratic functions, and systems of simultaneous equations. Four units of workload credit only.

1B (4) F, W, S. Preparation for calculus and other mathematics courses. Exponentials, logarithms, trigonometry, polynomials, and rational functions. Satisfies no requirements other than contribution to the 180 units required for graduation. Prerequisite: Mathematics 1A, satisfactory performance on the algebra or pre-calculus placement examinations offered periodically by the Mathematics Department, or consent of instructor. Mathematics 1B and 1 may not both be taken for credit.

2A-B-C Calculus and Analytic Geometry. Lecture, three hours; discussion, two hours.

2A Calculus (4) F, W, S, Summer. Introduction to derivatives, calculation of derivatives of algebraic functions, and applications of derivatives (approximations, curve plotting, related rates, maxima and minima). Indefinite integrals. Fundamental theorem of calculus. Differentiation and integration of sines and cosines. Prerequisite: pass the UCI Precalculus test, or get a grade of C (2.0) or better in Mathematics 1 or 1B at UCI, no more than one year before the start of the quarter in which Mathematics 2A will be taken. (V)

2B Calculus (4) F, W, S, Summer. Definite integrals, their applications (areas, volumes, etc.), and methods of integration. Logarithmic and exponential functions. Polar coordinates. Prerequisite: Mathematics 2A. (V)

2C Infinite Series and Three-Dimensional Geometry (4) F, W, S, Summer. Sequences, infinite series, and Taylor series. Lines and planes in space; vectors; parametric curves and surfaces in space; cylindrical and spherical coordinates. Other topics as time permits. Prerequisite: Mathematics 2B. (V)

2D-E Calculus in Two- and Three-Dimensions. Lecture, three hours; discussion, two hours.

2D (4) F, W, Summer. Differential and integral calculus of real-valued functions of several real variables, including applications. Prerequisites: Mathematics 2A-B-C. Mathematics 2D and Physical Sciences 50B may not both be taken for credit.

2E (4) W, S. The differential and integral calculus of vector-valued functions. Implicit and inverse function theorems. Line and surface integrals, divergence and curl, theorems of Green, Gauss, and Stokes. Prerequisites: Mathematics 2D; Mathematics 3A or 6C.

2F Applied Vector Calculus and Differential Equations (4) S. Lecture, three hours; discussion, two hours. Classical vector analysis, including the theorems of Green, Gauss, and Stokes. N -th order linear equations; linear systems of differential equations with constant coefficients; Laplace transforms; nonlinear differential equations. Applications. Prerequisites: Mathematics 2A-B-C, 2D, 3A. Only one course from Mathematics 2F, Mathematics 3D, and Physical Sciences 50C may be taken for credit.

3A Introduction to Linear Algebra (4) F, W, S, Summer. Lecture, three hours; discussion, two hours. Vectors, matrices, linear transformations, dot products, determinants, systems of linear equations, vector spaces, subspaces, dimension. Prerequisites: Mathematics 2A-B-C. Only one course from Mathematics 3A, Mathematics 6C, and Physical Sciences 50A may be taken for credit.

3D Elementary Differential Equations (4) W, S. Lecture, three hours; discussion, two hours. Linear differential equations, variation of parameters, constant coefficient cookbook, systems of equations, Laplace transforms, series solutions. Further topics as time permits. Prerequisites: Mathematics 2A-B-C; Mathematics 3A or 6C. Only one course from Mathematics 3D, Mathematics 2F, and Physical Sciences 50C may be taken for credit.

6A Discrete Mathematics for Computer Science (4). Lecture, three hours; discussion, two hours. Covers essential tools from discrete mathematics used in computer science with an emphasis on the process of abstracting computational problems and analyzing them mathematically. Topics include: combinatorics, mathematical induction, elementary probability, and asymptotic analysis. Prerequisite: high school mathematics through trigonometry. Same as Information and Computer Science 6A. (V)

6B Boolean Algebra and Logic (4). Lecture, three hours; discussion, two hours. Boolean algebra, finite state machines, formal languages, formal logic. Prerequisite: high school mathematics through trigonometry. (V)

6C Linear Algebra (4). Lecture, three hours; discussion, two hours. Linear equations, vector spaces and subspaces, linear functions and matrices, linear codes, determinants, scalar products. Prerequisite: high school mathematics through trigonometry. Only one course from Mathematics 6C, Mathematics 3A, and Physical Sciences 50A may be taken for credit. (V)

7 Basic Statistics (4) F, W, S, Summer. Lecture, three hours; discussion, two hours. Basic inferential statistics including confidence intervals and hypothesis testing on means and proportions, t -distribution, Chi Square, regression and correlation. F -distribution and nonparametric statistics included if time permits. (V)

13 Introduction to Abstract Mathematics (4) F, S. Lecture, three hours; discussion, two hours. The style of precise definition and rigorous proof which is characteristic of modern mathematics. Topics include set theory, equivalence relations, proof by mathematical induction, and number theory. Students construct original proofs to statements. Strongly recommended for freshman and sophomore Mathematics majors as preparation for upper-division courses such as Mathematics 120 and 140. (V)

H90 The Idiom and Practice of Science (4). Lecture, three hours; discussion, two hours. Introduction to mathematical methodology and rigor. Students expected to follow elementary mathematical arguments and construct simple proofs. Topics may include game theory; mathematical treatment of the infinite; mathematics in politics and social sciences; cryptography and algebra; fractals. Open only to members of the Campuswide Honors Program. Formerly Mathematics H90A. (II)

UPPER-DIVISION

NOTE: Some of the upper-division courses listed below have one or two hours of discussion weekly in addition to the lectures. Students should refer to the quarterly *Schedule of Classes* for specific information.

105A-B Numerical Analysis (4-4) F, W. Lecture, three hours. Introduction to the theory and practice of numerical computation. **105A:** Floating point arithmetic, roundoff; solving transcendental equations; quadrature; linear systems, eigenvalues, power method. Corequisite: Mathematics 105LA if offered. Prerequisite or corequisite: Mathematics 3A or 6C. Prerequisites: Mathematics 2A-B-C; some acquaintance with computer programming. Only one course from Mathematics 105A, Engineering CEE185, and Engineering MAE185 may be taken for credit. **105B:** Lagrange interpolation, finite differences, splines, Padé approximations; Gaussian quadrature; Fourier series and transforms. Corequisite: Mathematics 105LB if offered. Prerequisite: Mathematics 105A.

105LA-LB Numerical Analysis Laboratory (2-2) F, W. Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 105A-B. Corequisite: concurrent enrollment in Mathematics 105A-B.

107 Numerical Differential Equations (4) S. Lecture, three hours. Theory and applications of numerical methods to initial and boundary-value problems for ordinary and partial differential equations. Corequisite: concurrent enrollment in Mathematics 107L if offered. Prerequisites: Mathematics 2F or 3D; 105A-B.

107L Numerical Differential Equations Laboratory (2) S. Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 107. Corequisite: concurrent enrollment in Mathematics 107.

112A-B-C Mathematical Methods for Engineering and Science (4-4-4). Lecture, three hours; discussion, one hour. Introduction to classical applied mathematics for students of engineering and the physical sciences. **112A:** Fourier series and classical partial differential equations (wave, heat, Laplace equations); orthogonal expansions and Sturm-Liouville theory. **112B:** Ordinary differential equations and special functions; stability theory; applications. **112C:** Partial differential equations, calculus of variations. Prerequisites: for 112A: Mathematics 3D (or 2F), and Mathematics 114A (or Mathematics 147 or Engineering ECE180); for 112B: Mathematics 112A or 146; for 112C: Mathematics 112B. Mathematics 112A and Mathematics 146 may not both be taken for credit.

114A-B Applied Complex Analysis (4-4). Lecture, three hours. Introduction to complex functions and their applications to engineering and science.

114A: Complex numbers, elementary functions; analytic functions; complex integration; power series; residue theory; conformal maps; applications.

114B: Applications to potential theory, flows; heat; Laplace transforms; asymptotic expansions. Prerequisites: for 114A: Mathematics 2D; Mathematics 2E, and 3D or 2F recommended. For 114B: Mathematics 114A or 147. Only one course from Mathematics 114A, Mathematics 147, and Engineering ECE180 may be taken for credit.

118A-B-C Differential Equations (4-4-4). Lecture, three hours. Introductory theoretical course in ordinary and/or partial differential equations. Existence and uniqueness of solutions, methods of solution, the geometry of solutions. Prerequisites: Mathematics 2D; 3A or 6C; and either 2F or 3D, the latter being strongly recommended.

120A Introduction to Abstract Algebra: Groups (4) F. Lecture, three hours; discussion, two hours. Axioms for group theory; permutation groups, matrix groups. Isomorphisms, homomorphisms, quotient groups. Basic structure theorems through Sylow theorems. Special emphasis on students doing proofs. Prerequisite: Mathematics 3A or 6C; Mathematics 13 is strongly recommended.

120B Introduction to Abstract Algebra: Rings and Fields (4) W. Lecture, three hours; discussion, two hours. Basic properties of rings; ideals, quotient rings; polynomial and matrix rings. Elements of field theory. Prerequisite: Mathematics 120A.

121A-B Linear Algebra (4-4) W, S. Lecture, three hours; discussion, two hours. Introduction to modern abstract linear algebra. Special emphasis on students doing proofs. **121A:** Vector spaces, linear independence, bases, dimension. Linear transformations and their matrix representations. Theory of determinants. **121B:** Canonical forms; inner products; similarity of matrices. Prerequisites: Mathematics 3A or 6C; Mathematics 13 strongly recommended; prior or concurrent enrollment in Mathematics 120A recommended.

123 Coding Theory (4). Lecture, three hours. Hamming codes, BCH codes, Reed-Solomon codes, codes on curves. Polynomial rings over finite fields. Prerequisites: Mathematics 120A, 121A.

124 Algebra and Some Famous Impossibilities (4). Lecture, three hours. Proof of the impossibility of certain ruler-and-compass constructions (squaring the circle; trisecting angles); nonexistence of analogs to the "quadratic formula" for polynomial equations of degree 5 or higher. The necessary algebra introduced as needed. Prerequisite: Mathematics 3A or 6C. Mathematics 120A or 121A recommended.

130A-B-C Probability and Stochastic Processes (4-4-4) F, W, S. Lecture, three hours. Introductory course emphasizing applications. **130A:** Probability, with focus on continuous distributions. **130B:** Distributions of sums and limit theorems. **130C:** Markov chains and stochastic processes. Prerequisites: Mathematics 2A-B-C.

131A-B-C Mathematical Statistics (4-4-4) F, W, S. Lecture, three hours. Introduction to data analysis. Probability distributions, random variables, moments, estimation. Hypothesis testing and confidence intervals. Random simulations. Simple linear regression. Corequisite: concurrent enrollment in Mathematics 131LA-LB-LC. Prerequisites: Mathematics 2A-B-C; Mathematics 2D recommended.

131LA-LB-LC Mathematical Statistics Laboratory (1-1-1) F, W, S. Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 131A-B-C. Special emphasis on data analysis and using existing computer programs. Corequisite: concurrent enrollment in Mathematics 131A-B-C.

132A-B-C Discrete Probability and Mathematical Theory of Sample Surveys (4-4-4) F, W, S. Lecture, three hours; discussion (132A only), two hours.

132A: Introduction to discrete probability with focus on those topics required for sample survey theory, especially the case of equally likely events. Random variables. Expectation, moments of random variables, covariance and correlation. Conditional expectation. Limit theorems. Prerequisite: Mathematics 2A-B-C.

132B-C: Sample selection, stratification, cluster sampling, double-sampling procedures, optimal allocation, probability-proportional-to-size sampling. Applications to problems in economics, business, public health, agriculture, and the social sciences. Corequisite: concurrent enrollment in 132LB-LC. Prerequisites: for 132B: Mathematics 132A; for 132C: Mathematics 132B.

132LB-LC Sample Surveys Laboratory (1-1) W, S. Laboratory, two hours. Provides practical experience to complement the theory developed in Mathematics 132. Corequisite: concurrent enrollment in Mathematics 132B-C.

140A-B-C-D Elementary Analysis (4-4-4-4) F, W, S, F. Lecture, three hours; discussion, two hours. **140A-B:** Introduction to real analysis, including: the real number system, convergence of sequences, infinite series, differentiation and integration, and sequences of functions. Students are expected to do proofs. Prerequisites: Mathematics 2C and 2D; Mathematics 13 is strongly recommended. **140C:** Rigorous treatment of multivariable differential calculus. Jacobians, Inverse and Implicit Function theorems. Prerequisites: some background in linear algebra (Mathematics 3A, 6C, or 2F), and 140B. **140D:** Rigorous treatment of multivariable integral calculus. Multiple integrals in \mathbb{R}^n ; iterated integrals and Fubini's theorem; change-of-variables theorem; differential forms and Stokes' theorem. Prerequisite: Mathematics 2E and 140C.

141A-B Introduction to Topology. Lecture, three hours. Strongly recommended for students planning to take graduate courses in mathematics.

141A Metric Spaces (4). Elements of naive set theory and the basic properties of metric spaces. Prerequisite: Mathematics 140A.

141B Point Set Topology (4). Introduction to topological spaces and topological properties. Prerequisite: Mathematics 141A or consent of instructor.

145 Topics in Analysis (4). Lecture, three hours. Topics not usually covered in Elementary Analysis, e.g., Fourier series, the calculus of variations, operational analysis, integral equations. Prerequisites: Mathematics 140A-B or consent of instructor. May be repeated for credit as topics vary.

146 Fourier Analysis (4) S. Lecture, three hours. Rigorous introduction to the theory of Fourier series and orthogonal expansions; applications to partial differential equations such as vibrating strings. Prerequisites: Mathematics 140A-B; 2F or 3D. Mathematics 146 and Mathematics 112A may not both be taken for credit.

147 Complex Analysis (4). Lecture, three hours. Rigorous treatment of basic complex analysis: analytic functions, Cauchy integral theory, power series, residue calculus. Students are expected to do proofs. Prerequisites: Mathematics 140A-B. Only one course from Mathematics 114A, Mathematics 147, and Engineering ECE180 may be taken for credit.

150 Introduction to Mathematical Logic (4) F. Lecture, three hours. First-order logic through the Completeness Theorem for predicate logic. Prerequisite: consent of instructor. Mathematics 150 and Philosophy 105B may not both be taken for credit.

151 Set Theory (4) W. Lecture, three hours. Axiomatic development; infinite sets; cardinal and ordinal numbers. Prerequisite: Mathematics 150. Mathematics 151 and Philosophy 105A may not both be taken for credit.

152 Computability (4) S. Lecture, three hours. Computable functions; undecidability; Goedel's Incompleteness Theorem. Prerequisite: Mathematics 150. Mathematics 152 and Philosophy 105C may not both be taken for credit.

162A-B Introduction to Differential Geometry (4-4) W, S. Lecture, three hours. Applications of advanced calculus and linear algebra to the geometry of curves and surfaces in space. Prerequisites: Mathematics 2D-E and 3A.

171A-B-C Mathematical Methods in Operations Research. Lecture, three hours.

171A Linear Programming (4). Simplex algorithm, duality, optimization in networks. Prerequisite: Mathematics 3A or 6C.

171B Nonlinear Programming (4). Conditions for optimality, quadratic and convex programming, geometric programming, search methods. Prerequisites: Mathematics 2D and 171A.

171C Integer and Dynamic Programming (4). Multistage decision models, applications. Prerequisites: Mathematics 171B and consent of instructor.

180 Introduction to Number Theory (4). Lecture, three hours. The ring of integers. Divisibility. Prime numbers and factorization. Number-theoretic functions such as the Moebius function and the Euler function. Congruences, Moebius inversion, perfect numbers, diophantine equations, quadratic residues. Other topics as time permits. Prerequisite: Mathematics 2A-B-C.

182 Modern Geometry (4). Lecture, three hours; discussion, one hour. Euclidean geometry; Hilbert's axioms; absolute geometry; hyperbolic geometry; the Poincare models; geometric transformations. Prerequisites: Mathematics 2A-B-C-D, 3A, 120A.

184 History of Mathematics (4). Lecture, three hours; discussion, one hour. Topics vary from year to year. Some possible topics: mathematics in ancient times; the development of modern analysis; the evolution of geometric ideas. Students are assigned individual topics for term papers. Prerequisite: Mathematics 2A-B-C-D, 3A, 2F or 3D, 120A, 140A.

185 Foundations of Logic Programming (4). Lecture, three hours. Horn clause logic, models, the term algebra, unification, automatic theorem proving by SLD resolution, basic technique of logic programming, completeness theorems, effect of the cut and occurs-check. Programming examples in PROLOG. Prerequisites: a three-quarter series selected from Mathematics 150, 151, 152; 120A, 121A-B; 120A-B, 121A; or consent of instructor. Programming experience required.

186 Foundations of Functional Programming (4). Lecture, three hours. Recursive functions, typed and untyped lambda-calculus, basic technique of functional programming, models, fixed point and recursion, incompleteness theorem, automatic type inference. Programming examples in SCHEME (LISP) and ML. Prerequisites: a three-quarter series selected from Mathematics 120A, 121A-B; 120A-B, 121A; 150, 151, 152; or consent of instructor. Programming experience required.

187 Foundations of Algebraic Specification (4). Lecture, three hours. Algebraic structures: groups, rings, formal logics, quotients, free structures, generators and relations, multi-sorted algebra. Elements of category theory: categories and functions, examples from algebra and formal logic, initial and final objects. Applications to initial semantics. Programming examples in OBJ3. Prerequisites: a three-quarter series selected from Mathematics 120A, 121A-B; 120A-B, 121A; 150, 151, 152; or consent of instructor.

190 Technical Writing and Communication Skills (4) F, W, S. Lecture, three hours. Workshop in writing technical reports, journal articles, proposals. Oral presentations. Communicating with the public. May not be used in satisfaction of any School or departmental requirement. Prerequisites: upper-division standing; satisfaction of the lower-division writing requirement. Open to Mathematics majors only. Same as Chemistry 139 and Physics 129.

192 Tutoring in Mathematics (2). Enrollment limited to upper-division Mathematics majors participating in the Department's Tutoring Program. Admission requires approval of Department Tutor Supervisor. For students *not* in the Department's specialization in Mathematics for High School Teaching, this course satisfies no requirements other than contribution to the 180 units required for graduation. Pass/Not Pass only. Prerequisites: Mathematics 2A-B-C-D, 3A, 2F or 3D, 120A or 140A.

199A-B-C Special Studies in Mathematics (4-4-4) F, W, S. Supervised reading. For outstanding undergraduate mathematics majors in supervised but independent reading or research of mathematical topics. Prerequisite: consent of Department. NOTE: Cannot normally be used to satisfy departmental requirements.

GRADUATE

201A Theory of Mathematical Statistics (4) F. Lecture, three hours. Review of probability and sampling distributions. Point and interval estimation, sufficient statistics, hypothesis testing, analysis of categorical data, the multivariate normal distribution, sequential analysis. Prerequisites: Mathematics 120A, 130A, 133A-B, and 121A-B or consent of instructor. Corequisite: concurrent enrollment in Mathematics 201LA.

201B Linear Regression Analysis (4) W. Lecture, three hours. The normal linear regression model, confidence ellipsoids for regression coefficient vectors, the F-test and its applications to one- and two-way analysis of variance, analysis of covariance and a test for independence, simultaneous confidence intervals. Prerequisite: Mathematics 201A. Corequisite: concurrent enrollment in Mathematics 201LB.

201C Experimental Design (4) S. Lecture, three hours. Analysis of variance for the linear regression and other models, Latin squares, incomplete blocks, nested designs, random effects model, randomization models, confounding. Prerequisite: Mathematics 201B. Corequisite: concurrent enrollment in Mathematics 201LC.

201LA-LB-LC Graduate Statistics Laboratory (2-2-2) F, W, S. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 201A, 201B, 201C. Oral and written reports, practice in professional consulting, development of statistical computing expertise. Corequisites: concurrent enrollment in corresponding segment of Mathematics 201A, 201B, 201C.

202 Nonparametric Statistical Inference (4) F. Lecture, three hours. Standard nonparametric tests for comparison of two or more treatments, tests for randomness and independence. Corequisites: Mathematics 201A and concurrent enrollment in 202L.

202L Nonparametric Statistics Laboratory (2) F. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 202. Oral and written reports, practice in professional consulting, development of statistical computing expertise. Corequisite: concurrent enrollment in Mathematics 202.

203A-B-C Topics in Mathematical Statistics (4-4-4) F, W, S. Lecture, three hours. Topics include survival analysis, risk theory, discriminant analysis, time-series analysis, statistical decision theory, or sequential analysis. Prerequisites: Mathematics 201A-B-C.

204A-B Multivariate Statistical Analysis (4-4) W, S. Lecture, three hours. The Wishart distribution, Hotelling's T^2 -test and its applications, growth curves, multivariate analysis of variance, discriminant analysis, principal components, and canonical correlations. Prerequisite: Mathematics 201A. Corequisites: Mathematics 201B and concurrent enrollment in 204LA-LB.

204LA-LB Multivariate Statistics Laboratory (2-2) W, S. Laboratory, two hours. Applications to concrete problems of the theory developed in Mathematics 204A-B. Oral and written reports, practice in professional consulting, development of statistical computing expertise. Corequisite: concurrent enrollment in corresponding segment of Mathematics 204A-B.

208 General Topology (4) F. Lecture, three hours. Fundamental notions of topology necessary for successful graduate study. Connectedness, compactness, separation axioms, convergence. Other topics as time permits. Strongly recommended for all graduate students. Prerequisites: Mathematics 140A-B and either 140C or 141A.

210A-B-C Real Analysis (4-4-4) F, W, S. Lecture, three hours. Measure theory, Lebesgue integral, L_p spaces. Radon-Nikodym theorem, differentiation, metric spaces, Banach spaces, Daniell integral. Prerequisites: Mathematics 140A-B-C or equivalent or consent of instructor.

211A-B-C Topics in Real Analysis (4-4-4). Lecture, three hours. A continuation of Mathematics 210A-B-C; topics selected by instructor.

216A-B-C Observer Theory (4-4-4) F, W, S. Lecture, three hours. Provides framework for mathematical analysis of perception/cognition and its relation to the physical world. Permits a unified treatment of perceptual and physical interactions and lays the foundation for a nondualistic, nonreductionistic science. Mathematical aspects include a study of Markovian dynamic systems. Prerequisite: graduate standing or consent of instructor. Same as Psychology 233A-B-C.

218A-B Introduction to Manifolds and Geometry (4-4) W, S. Lecture, three hours. Homotopy; the fundamental group and covering spaces; simplicial complexes; topological and differentiable manifolds; differential forms; Stokes' theorem. Prerequisite: Mathematics 141B or 208 or consent of instructor.

220A-B-C Analytic Function Theory (4-4-4) F, W, S. Lecture, three hours. Standard theorems about analytic functions. Harmonic functions. Normal families. Conformal mapping. Prerequisites: Mathematics 140A-B-C or equivalent or consent of instructor.

221A-B Several Complex Variables (4-4). Lecture, three hours. Introduction to the study of holomorphic functions in several complex variables. Topics include: Automorphism group of a domain, Bergman kernel function, boundary behavior of Poisson integrals, pluriharmonic functions, Hardy and Bergman spaces, Mobius invariant function spaces, subharmonicity, convexity. Prerequisites: Mathematics 210, 220, and 260.

230A-B-C Algebra (4-4-4) F, W, S. Lecture, three hours. Elements of the theories of groups, rings, fields, modules. Galois theory. Modules over principal ideal domains. Artinian, Noetherian, and semisimple rings and modules. Prerequisites: Mathematics 120A and 121A-B or equivalent, or consent of instructor.

234A-B-C Topics in Algebra (4-4-4). Lecture, three hours. Group theory, homological algebra, and other selected topics. Prerequisites: Mathematics 230A-B-C or consent of instructor.

237A-B Homological Algebra (4-4). Lecture, three hours. Categories and functors, including the category of modules over a (possibly noncommutative) ring; direct sums and products, direct and projective limits, tensor products and Hom; image, kernel, complexes, homology and exact sequences. Applications. Prerequisites: Mathematics 230A-B-C or consent of instructor.

240A-B-C Differential Geometry (4-4-4). Lecture, three hours. Differential manifolds, differential forms, integrations, introduction to Lie groups, connections, Riemannian manifolds, curvature and topology, calculus of variations in the large, immersions and imbeddings. Prerequisites: Mathematics 141A-B or consent of instructor.

245A-B-C Topics in Differential Geometry (4-4-4). Lecture, three hours. Continuation of Mathematics 240A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 240A-B-C or consent of instructor. May be repeated for credit as topics vary.

250A-B-C Algebraic Topology (4-4-4). Lecture, three hours. Topics vary with instructor. Prerequisites: Mathematics 230A and 141A-B, or equivalent, or consent of instructor.

255A-B-C Topics in Algebraic Topology (4-4-4). Lecture, three hours. Continuation of Mathematics 250A-B-C. Topics to be determined by the instructor. Prerequisite: 250A-B-C or consent of instructor. May be repeated for credit as topics vary.

260A-B-C Functional Analysis (4-4-4). Lecture, three hours. Elements of Banach space theory, operator theory, Banach algebra theory including structure theory of commutative algebras and spectral theory in Hilbert space. Prerequisites: Mathematics 210A-B-C and 220A-B-C or consent of instructor.

261A-B-C Operator Theory (4-4-4). Lecture, three hours. Elements of topological linear spaces, Hilbert spaces, spectral theorems and multiplicity theory, rings of operators, representation of groups and rings. Prerequisites: Mathematics 210A-B-C or consent of instructor.

268A-B-C Topics in Functional Analysis (4-4-4). Lecture, three hours. Selected topics such as spectral theory, abstract harmonic analysis, Banach algebras, operator algebras. Prerequisite: consent of instructor.

270A-B-C Probability (4-4-4). Lecture, three hours. Probability spaces, distribution and characteristic functions. Strong limit theorems. Limit distributions for sums of independent random variables. Conditional expectation and martingale theory. Stochastic processes. Prerequisites: Mathematics 130A-B-C and 210A-B-C or consent of instructor.

271A-B-C Stochastic Processes (4-4-4). Lecture, three hours. Processes with independent increments, Wiener and Gaussian processes, function space integrals, stationary processes, Markov processes. Prerequisites: Mathematics 210A-B-C or consent of instructor.

274 Topics in Probability (4-4-4). Lecture, three hours. Selected topics, such as theory of stochastic processes, martingale theory, stochastic integrals, stochastic differential equations. Prerequisites: Mathematics 270A-B-C or consent of instructor. May be repeated for credit as topics vary.

277A-B-C Topics in Mathematical Physics (4-4-4). Lecture, three hours. Topics to be determined by the instructor. Prerequisite: consent of instructor. May be repeated for credit as topics vary.

280A-B-C Mathematical Logic (4-4-4). Lecture, three hours. Prerequisite: consent of instructor.

285A-B-C Topics in Mathematical Logic (4-4-4). Lecture, three hours. Continuation of Mathematics 280A-B-C. Topics to be conducted by the instructor. Prerequisite: Mathematics 280A-B-C or consent of instructor. May be repeated for credit as topics vary.

292A-B-C Applied Mathematics (4-4-4) F, W, S. Lecture, three hours. Mathematical techniques and methods applied to specific questions in physics, chemistry, and engineering. Background material in science and mathematics introduced as needed. Prerequisites: Mathematics 140A-B-C or consent of instructor. May be repeated for credit.

294A, B, C Applied Nonlinear Analysis (4, 4, 4). Lecture, three hours. Methods for nonlinear problems in mathematics, science, and engineering. Includes perturbation techniques, variational methods, bifurcation, degree theory, Newton's methods, implicit functions, minimax theorems, optimal control. Background material presented as needed. Each quarter may be taken independently. Prerequisite: Mathematics 210A or consent of instructor.

295A-B-C Partial Differential Equations (4-4-4). Lecture, three hours. Local and global theory of partial differential equations: analytic, geometric, and functional analytic methods. Prerequisites: Mathematics 210A-B-C or equivalent or consent of instructor.

296 Topics in Partial Differential Equations (4). Lecture, three hours. Continuation of Mathematics 295A-B-C. Topics to be determined by the instructor. Prerequisites: Mathematics 295A-B-C or consent of instructor. May be repeated for credit as topics vary.

297 Mathematics Colloquium (1). Weekly colloquia on topics of current interest in mathematics. Satisfactory/Unsatisfactory Only. May be repeated for credit.

298A-B-C Seminar (1 to 3) F, W, S. Seminars organized for detailed discussion of research problems of current interest in the Department. The format, content, frequency, and course value are variable. Prerequisite: consent of the Department. May be repeated for credit.

299A-B-C Supervised Reading and Research (2 to 12) F, W, S. May be repeated for credit.

399 University Teaching (1 to 4) F, W, S. Limited to Teaching Assistants. Does not satisfy any requirements for the Master's degree. Satisfactory/Unsatisfactory Only. May be repeated for credit.

PHYSICAL SCIENCES COURSE SEQUENCE

Physical Sciences 50A-B-C is an interdisciplinary sequence developed by the Departments of Mathematics and Physics and Astronomy to meet the second-year curricular needs of Physics majors. The courses focus specifically on the mathematical topics needed to succeed in upper-division physics. In addition, the inclusion of Mathematics in the sophomore sequence facilitates geometrical understanding of mathematical concepts and promotes the development of computational skills.

50A-B-C Mathematical Methods in the Physical Sciences (4-4-4) F, W, S. **50A:** Mathematica; complex numbers; linear algebra. **50B:** Partial differentiation; multiple integrals; vector analysis; curvilinear coordinates. **50C:** Probability; Fourier series; ordinary differential equations. Prerequisite for 50A: Mathematics 2C. Only one course from Physical Sciences 50A, Mathematics 3A, and Mathematics 6C may be taken for credit. Physical Sciences 50B and Mathematics 2D may not both be taken for credit. Only one course from Physical Sciences 50C, Mathematics 2F, and Mathematics 3D may be taken for credit.

DEPARTMENT OF PHYSICS AND ASTRONOMY

4129 Frederick Reines Hall; (949) 824-6911

Jon M. Lawrence, **Department Chair**

Faculty

Myron Bander, Ph.D. Columbia University, *Professor of Physics* (elementary particle theory)
 Steven Barwick, Ph.D. University of California, Berkeley, *Associate Professor of Physics* (experimental high-energy particle astrophysics)
 Gregory A. Benford, Ph.D. University of California, San Diego, *Professor of Physics* (plasma physics and astrophysics)
 Walter E. Bron, Ph.D. Columbia University, *Professor of Physics* (experimental condensed matter physics, laser science)
 Gary A. Chanan, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental astrophysics)
 Liu Chen, Ph.D. University of California, Berkeley, *Professor of Physics* (theoretical plasma physics)
 Michael B. Dennin, Ph.D. University of California, Santa Barbara, *Assistant Professor of Physics* (experimental condensed matter physics)
 Igor Dzyaloshinskii, Ph.D. Institute for Physical Problems (U.S.S.R.), *Professor of Physics* (condensed matter theory)
 Rognvald Garden, Ph.D. University of Edinburgh (Scotland), *Associate Professor of Physics* (experimental astrophysics)
 Todd J. Haines, Ph.D. University of California, Irvine, *Adjunct Professor of Physics* (experimental particle astrophysics)
 Herbert W. Hamber, Ph.D. University of California, Santa Barbara, *Professor of Physics* (elementary particle theory)
 William W. Heidbrink, Ph.D. Princeton University, *Professor of Physics* (experimental plasma physics)
 Herbert Hopster, Ph.D. University of Aachen (Federal Republic of Germany), *Professor of Physics* (experimental surface physics)
 Andrew Lankford, Ph.D. Yale University, *Professor of Physics* (experimental particle physics)
 Jon M. Lawrence, Ph.D. University of Rochester, *Department Chair and Professor of Physics* (experimental condensed matter physics)
 Mark A. Mandelkern, Ph.D. University of California, Berkeley; M.D. University of Miami, *Professor of Physics* (experimental particle physics and medical physics)
 Alexei A. Maradudin, Ph.D. University of Bristol (England), *Professor of Physics* (condensed matter theory)
 Meinhard E. Mayer, Ph.D. Parhon University (Romania), *Professor Emeritus of Physics* (mathematical physics)
 Roger D. McWilliams, Ph.D. Princeton University, *Professor of Physics* (experimental plasma physics)
 Douglas L. Mills, Ph.D. University of California, Berkeley, *Professor of Physics* (condensed matter theory)
 William R. Molzon, Ph.D. University of Chicago, *Professor of Physics* (experimental particle physics)
 Orhan Nalcioğlu, Ph.D. University of Oregon, *Professor of Radiological Sciences, Medicine, Electrical and Computer Engineering, and Physics*

Riley Newman, Ph.D. University of California, Berkeley, *Professor of Physics* (experimental particle physics and gravitational physics)
 Lewis Nosenow, Ph.D. University of Chicago, *Professor of Physics* (condensed matter theory)
 William H. Parker, Ph.D. University of Pennsylvania, *Associate Executive Vice Chancellor and Professor of Physics* (experimental condensed matter physics)
 Frederick Reines, Ph.D. New York University, *UCI Distinguished Professor Emeritus of Physics* (experimental particle physics)
 John Rosendahl, M.S. University of California, Irvine, *Lecturer in Physics*
 Norman Rostoker, D.Sc. Carnegie Institute of Technology, *Professor Emeritus of Physics* (plasma physics)
 Steven P. Ruden, Ph.D. University of California, Santa Cruz, *Associate Professor of Physics* (theoretical astrophysics)
 James E. Rutledge, Ph.D. University of Illinois, *Professor of Physics* (experimental condensed matter physics)
 Nathan Rynn, Ph.D. Stanford University, *Professor Emeritus of Physics* (plasma physics)
 Jonas Schultz, Ph.D. Columbia University, *Professor of Physics* (experimental particle physics)
 Gordon L. Shaw, Ph.D. Cornell University, *Professor Emeritus of Physics* (elementary particle theory)
 Dennis J. Silverman, Ph.D. Stanford University, *Professor of Physics* (elementary particle theory)
 Tammy Smecker-Hane, Ph.D. The Johns Hopkins University, *Assistant Professor of Physics* (theoretical and experimental astrophysics)
 Henry W. Sobel, Ph.D. Case Institute of Technology, *Professor of Physics in Residence* (experimental particle physics)
 Peter Taborek, Ph.D. California Institute of Technology, *Professor of Physics* (experimental condensed matter physics)
 Virginia L. Trimble, Ph.D. California Institute of Technology, *Professor of Physics* (theoretical astronomy) (on leave F)
 Gerard Van Hoven, Ph.D. Stanford University, *Professor Emeritus of Physics* (plasma physics and astrophysics)
 Richard F. Wallis, Ph.D. Catholic University of America, *Professor Emeritus of Physics* (condensed matter theory)
 Steven White, Ph.D. Cornell University, *Associate Professor of Physics* (condensed matter theory)
 Gaurang B. Yodh, Ph.D. University of Chicago, *Professor of Physics* (experimental particle physics)
 Clare Yu, Ph.D. Princeton University, *Associate Professor of Physics* (condensed matter theory)

Physics is that branch of science concerned with the study of natural phenomena at the fundamental level. Physicists study the smallest particles of matter (quarks and leptons), nuclei, and atoms; the fundamental forces; the properties of solids, liquids, gases, and plasmas; the behavior of matter on the grand scale in stars and galaxies; and even the origin and fate of the universe. Other disciplines such as chemistry, biology, medicine, and engineering often build upon the foundations laid by physics.

The Department of Physics and Astronomy offers courses for students of various interests, from those in the humanities and social sciences, to those in biological sciences, and to those in physics, engineering, and other sciences. Faculty members are conducting active research in several forefront areas of physical research, and there is student access to specialized research areas such as elementary particles, plasma physics, astrophysics, and condensed matter at both advanced and undergraduate course levels. The faculty is vigorous, innovative, and engaged in everything from the traditional activities of research, education, and university service to community action, literature, and national policy making, to mention a few examples. The Department encourages student-faculty interaction.

Undergraduate Program

The goal of the undergraduate major in Physics is to develop expert problem solvers with a broad understanding of physical principles. The program is flexible and prepares students for careers in industrial research, applications programming, education, law, or business, as well as for graduate study in astronomy, biomedical physics, engineering, or physics. Annual mandatory meetings with faculty advisors assist students in selecting a program that matches their aptitudes and interests. Students complete either one of the standard tracks (such as the tracks for future Ph.D. physicists or for computational physicists), or one of the formal concentrations or specializations (in Applied Physics, Biomedical Physics, and Astrophysics).

The four lower-division sequences in physics are distinguished by their intended audience, their mathematical prerequisites, and the extent to which they offer preparation for more advanced courses. These aspects of the beginning courses are summarized as follows:

Physics 3: *Intended audience:* Premedical students, Biological Sciences majors. *Prerequisites:* algebra and trigonometry; concurrent enrollment in Mathematics 2A. *Preparation for advanced courses:* Physics 5C with permission.

Physics 5: *Intended audience:* Chemistry, Mathematics, and Engineering majors. *Prerequisites:* Mathematics 2A (Calculus); Physics 1 or passing score on physics placement test. *Preparation for advanced courses:* upper-division courses in physics with permission.

Physics 7: *Intended audience:* Physics majors. *Prerequisite:* concurrent enrollment in Mathematics 2. *Preparation for advanced courses:* Physics 51A.

Physics 16–24: *Intended audience:* Nonscience majors. *Prerequisites:* none. *Preparation for Advanced courses:* none.

Admission to the Major

Students may be admitted to the Physics major upon entering the University as freshmen, via change of major, and as transfer students from other colleges and universities. Information about change of major policies is available in the Physical Sciences Student Affairs Office. For transfer student admission, preference will be given to junior-level applicants with the highest grades overall, and who have satisfactorily completed the following required courses: one year of approved calculus and one year of calculus-based physics with laboratory.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: None.

Departmental Requirements

Physics 7A-B-C-D with laboratory courses 7LA-LB-LC; Mathematics 2A-B-C; Physical Sciences 50A-B-C; Physics 51A-B; Physics 52A-B-C; Physics 53 (or another programming course); Physics 111A-B, 112A-B, 113A, 115A, 121, and 125A; Physics 196C or H196C or 197; and six additional coherently related four-unit courses. (The six coherently related courses are normally satisfied by concentrations, specializations, and tracks.)

Requirements for the Concentration in Applied Physics

The six additional coherently related courses required for the major must be in engineering and be approved by the Department of Physics and Astronomy.

Requirements for the Concentration in Biomedical Physics

In place of the six coherently related courses, students complete Biological Sciences 94, 97, 98, and 99; Chemistry 1A-B-C, 1LB-LC, 51A-B, 51LA-LB (or 52A-B and 52LA-LB).

Requirements for the Specialization in Astrophysics

Complete all the requirements of the Physics degree *plus* the three astrophysics courses (Physics 137, 144, 145) and any two of the four special topics courses (Physics 132, 134, 135, 136).

Honors Program in Physics

The Honors Program in Physics provides an opportunity for selected students majoring in Physics to pursue advanced work in one of the research areas of the Department. Admission to the program is based on an application normally submitted by the sixth week of the spring quarter of the junior year. Applicants must have an overall grade point average of at least 3.4 and a grade point average in physics courses of 3.5 or better. (Exceptions to these procedures and standards may be granted in unusual circumstances.) In selecting students for the program, the Department considers evidence of ability and interest in research.

Students admitted to the program participate in a year-long course, Physics H196A-B-C, which includes two quarters of research and a final quarter in which a written thesis is submitted. If this work and the student's final GPA are deemed of honors quality by the program advisor, the student then graduates with Departmental Honors in Physics.

PLANNING A PROGRAM OF STUDY

Physics 3 is a one-year course suitable for premedical students, students majoring in Biological Sciences, and nonscience majors. It surveys most of the important branches of physics. Laboratory work accompanies the course. Nonscience majors with some mathematical skill may wish to consider Physics 3 as an alternative to Physics 16 through 24.

A student who decides to major in Physics after completing Physics 3 with a grade of A or B may, with the consent of the Department, enroll in Physics 5C. The biological sciences physics requirements may be met with Physics 3A-B-C or 5A-B-C.

Physics 1 (or a satisfactory examination score as explained in the Physics 5A course description) is a prerequisite for the Physics 5 sequence and offers a review of math and problem-solving techniques in the context of introducing physics.

Physics 5 is an intensive five-quarter course for students in chemistry, engineering, and other areas who are interested in a careful quantitative approach to the subject. Laboratory work accompanies the course. Students expecting to enroll in the entire five-quarter sequence of Physics 5 should enroll in Mathematics 2D concurrently with Physics 5C. Students planning to enroll in only three quarters of Physics 5 need not enroll in Mathematics 2D. Note that Physics 5A-B-C-D-E must be taken and passed in sequential order.

Physics 7 is an intensive four-quarter introduction to macroscopic physics for Physics majors.

Physics courses numbered between 16 and 24 are general education courses intended for nonscience majors. The content and format of Physics 21 through 24 will vary from year to year.

The introduction to mathematical methods (Physical Sciences 50A-B-C), microscopic physics (Physics 51A-B), and experimental physics (Physics 52A-B-C) are normally taken in the sophomore year.

Courses numbered 111 and above are for Physics majors and other qualified students. Courses numbered between 111 and 115 emphasize the mathematical and theoretical structures that have unified our understanding of nature. It should be noted that multi-quarter courses such as 111A-B must be taken and passed in sequential order. Any student who is so inclined may take more than the minimum one quarter of advanced laboratory work. Courses numbered between 132 and 149 introduce active subdisciplines in current research. Independent research (195, 196) is strongly encouraged. Physics 196C, H196C, and 197 stress the written and verbal communication of research findings.

Transfer students are specifically advised to seek individual consultation with a member of the Physics and Astronomy faculty before deciding on a program of courses.

Every Physics major should avoid overspecialization and wisely use undergraduate years to explore some areas remote from physics. Introductory courses in biology and chemistry are recommended options.

Note that alternatives to Physics major requirements can be approved upon petition to the Department and the Office of the Associate Dean. Furthermore, exceptionally prepared students are allowed to enroll in graduate-level courses; to do so requires the approval of the Physics and Astronomy Department Undergraduate Committee.

Sample Program — Physics Core Curriculum

FALL	WINTER	SPRING
Freshman		
Mathematics 2A Physics 7A, 7LA	Mathematics 2B Physics 7B, 7LB	Mathematics 2C Physics 7C, 7LC
Sophomore		
Physical Sciences 50A Physics 7D Physics 52A	Physical Sciences 50B Physics 51A Physics 52B	Physical Sciences 50C Physics 51B Physics 52C
Junior		
Physics 111A Physics 112A Physics 53	Physics 111B Physics 112B	Physics 113A Physics 115A
Senior		
Physics 125A	Physics 121	Physics 197

For a student planning graduate study in physics, additional courses in advanced physics are strongly recommended.

Sample Program — Physics Graduate School Track

FALL	WINTER	SPRING
Senior		
Physics 113B Physics Elective	Physics 113C Physics 125B	Physics 115B Physics Elective

Students who wish to focus their studies on computational physics take introductory courses in computer science (Information and Computer Science 21, 22, 23), courses in numerical analysis (Mathematics 105A, 105B, 107), and an advanced course in computational physics (Physics 131).

Students who are preparing for careers as high school physics teachers take additional science courses in astronomy, biology, and chemistry and participate as apprentices in high school science classes (Chemistry 114).

The Applied Physics concentration within the Physics undergraduate degree program is designed to provide appropriate education to students who anticipate a career in industrial or technological research. It combines the fundamental knowledge of physical processes obtained from physics courses with the technical knowledge obtained from engineering courses. In addition to the basic courses in physics, a student is required to complete six courses in the School of Engineering approved by the Physics and Astronomy Department. Examples of appropriate courses include Engineering ECE70, ECE113A and 113LA, ECE113B and 113LB, ECE113C and 113LC, ECE114A, ECE114B, ECE176, ECE178, MAE120, MAE135, and MAE147. Upon completion of the Applied Physics concentration, the student will receive a B.S. degree in Physics.

Sample Program — Applied Physics

FALL	WINTER	SPRING
Junior		
	Engr. ECE70A	Engr. ECE70B, 70LB
Senior		
Engr. ECE113A, LA	Engr. ECE113B, LB Engr. ECE178, 178L	Engr. ECE133C, LC

The Biomedical Physics concentration is designed for the student who anticipates a career in physics applied to biology and medicine, such as health physics or radiological physics, or who intends to work in a scholarly field which deals with the physical aspects of biology or medicine, such as molecular biology or physiology. Completion of requirements for the Physics major is required as are nine quarters of basic courses in biology and chemistry. Students who wish to follow the Biomedical Physics concentration are advised to seek guidance early in their college careers. The requirements are such that coordination of a program in the first and second years is essential.

Sample Program — Biomedical Physics

FALL	WINTER	SPRING
Freshman		
Chemistry 1A	Chemistry 1B, 1LB	Chemistry 1C, 1LC
Sophomore		
Chemistry 51A, 51LA	Chemistry 51B, 51LB	
Junior		
	Bio. Sci. 94	
Senior		
Bio. Sci. 97	Bio. Sci. 98	Bio. Sci. 99

The Astrophysics specialization is primarily for students planning graduate work in astronomy or astrophysics. It also is a suitable focus for students who do not plan to pursue a graduate degree but anticipate a career in science journalism, teaching, science administration, or public relations. The course work includes that of the standard Physics major plus three courses in astrophysics (Physics 137, 144, 145) and two courses in related branches of physics (selected from Physics 132, 134, 135, and 136).

Sample Program — Astrophysics

FALL	WINTER	SPRING
Junior		
	Physics 144 or 145	Physics 137
Senior		
Physics 113B Physics 135	Physics 144 or 145 Physics 125B	Physics 115B Physics 136

Graduate Program

The Department offers the M.S. and Ph.D. degrees in Physics. These degrees are awarded in recognition of demonstrated knowledge of the basic facts and theories of physics and of a demonstrated capacity for independent research. Active programs of research are underway in high-energy physics, condensed matter physics, low-temperature physics, plasma physics, gravitational physics, and astrophysics.

In general, graduate study in the physics Ph.D. program is expected to be a full-time activity. Other proposed arrangements should be approved by the Graduate Committee. Completion of the Ph.D. typically requires six years of full-time study. Students may pursue the M.S. degree on either a full-time or part-time basis.

Complementing the formal courses, the Department offers regular colloquia and informal seminars. Graduate students are members of an intellectual community and are expected to participate fully in departmental activities. Attendance at colloquia is considered an essential part of graduate study. In addition, there are regular weekly research seminars in condensed matter, high-energy, and plasma physics, and astrophysics.

Sources of support available to graduate students include teaching assistantships, research assistantships, and fellowships. Students planning to pursue graduate work in Physics should obtain a copy of the Department's graduate brochure.

Students admitted into the graduate program in Physics and Astronomy may elect to pursue the M.S. or Ph.D. degree with a concentration in Chemical and Materials Physics, as described below.

MASTER OF SCIENCE IN PHYSICS

The requirements for the M.S. degree are (1) at least three quarters of residence; (2) mastery of graduate course material, which must be demonstrated by passing, with a grade of B or better, a minimum of eight quarter courses including Physics 211, 213A-B, 215A, 223, and at least one other course numbered between 200 and 259; and (3) either Option A, a research project and written thesis, or Option B, a comprehensive written examination.

A typical program of study for the M.S. degree consists of the following nine courses: Physics 211 (Classical Mechanics), 213A-B (Electromagnetic Theory), 215A (Quantum Mechanics), 223 (Numerical Methods), 224 (Phenomenology), 206 (Laboratory Skills) for experimentalists or 212 (Mathematical Physics) for theorists, plus two electives chosen from Physics 215B or undergraduate upper-division courses in related areas.

(The requirements for the M.S. degree with a concentration in Chemical and Materials Physics differ from these, as outlined below.)

DOCTOR OF PHILOSOPHY IN PHYSICS

The principal requirements for the Ph.D. degree are a minimum of six quarters of residence, passage of a written and a two-part oral examination, and successful completion and defense of a dissertation reporting results of original research. In addition, the Ph.D. candidate must complete certain graduate course requirements. There is no foreign language requirement.

Course Requirements. Students are required to exhibit mastery of the basic sequences—Classical Mechanics, Electromagnetic Theory, Quantum Mechanics, and Statistical Physics. A minimum of 12 quarter courses including 211, 213A-B, 214A, 215A-B, 223, and at least three other courses numbered between 200 and 259, must be passed with a grade of B or better. Students are strongly encouraged to take Physics 211, 213A-B, 214A, 215A-B, 223, and 206 (for experimentalists) or 212 (for theorists) in their first year of study. It is expected that students, having selected a research

specialty, will ordinarily take the core course in that subject (236A-B-C, 237A-B-C, 238A-B-C, or 239A-B-C) in their second year of study.

(The requirements for the Ph.D. degree with a concentration in Chemical and Materials Physics differ from these, as outlined below.)

Qualifying Examination. For advancement to Ph.D. candidacy, a student must pass a qualifying examination consisting of a written part and two oral parts. The written part, covering a broad range of fundamentals of physics at the advanced undergraduate and graduate levels, is normally taken in the fall following the student's first year. The first oral examination is administered along with the written examination. All members of the first oral committee will be from the Department of Physics and Astronomy. A second attempt at this set of examinations will be permitted if the first is not successful. A third attempt will be permitted only in extraordinary circumstances.

The second part of the oral examination will be taken approximately one year after successful completion of the written examination and the first oral. The candidacy committee that administers the second oral examination will contain one or two faculty members from outside the Department. The second oral will cover material principally related to the broad and general features of the student's dissertation area.

Teaching Program. Experience in teaching is an integral part of the graduate program, and all graduate students are expected to participate in the teaching program for at least three quarters during their graduate careers. All new teaching assistants are required to enroll in Physics 269.

Dissertation. A dissertation summarizing the results of original research performed by the student under the supervision of a doctoral committee, appointed by the Department Chair on behalf of the Dean of Graduate Studies and the Graduate Council, will be required for the Ph.D. degree. A criterion for the acceptability of a dissertation by the Department is that it be suitable for publication in a scientific journal. The dissertation must not have been submitted to any other institution prior to its submission to the UCI Physics and Astronomy Department.

Defense of Dissertation. Upon completion of the dissertation, the student will take an oral examination, open to the public, before the doctoral committee.

CONCENTRATION IN CHEMICAL AND MATERIALS PHYSICS

This is an interdisciplinary program between condensed matter physics and physical chemistry which is designed to eliminate the barrier between these two disciplines. Students with B.S. degrees in Physics, Chemistry, or Materials Science and Engineering, are encouraged to apply to the program. The goal of the concentration in Chemical and Materials Physics (ChAMP) is to provide students with a broad interdisciplinary education in the applied physical sciences that emphasizes modern laboratory and computational skills. The program accepts students for both the master's and the Ph.D. degrees. Upon admission to the program, students are assigned two faculty advisors, one from the Department of Physics and Astronomy, and one from the Department of Chemistry, to provide guidance on curriculum and career planning.

The curriculum for the master's program includes a summer session to assimilate students with different undergraduate backgrounds; formal shop, laboratory, and computational courses; a sequence on current topics to bridge the gap between fundamental principles

and applied technology; and a course to develop communication skills. The core courses are: Physics 206, 207, 213C, 226, 228, 229A-B, 266, 273; Chemistry 213, 231A-B-C, 232A-B-C, 236. In addition to the core, M.S. students complete four electives approved by the student's Advisory Committee and a master's thesis. The Master's program prepares students to compete for high-tech jobs or to begin research leading to a Ph.D.

Successful completion of the M.S. degree requirements qualifies students for the Ph.D. program. A candidacy examination consisting of an original research proposal and a research progress report is expected to be completed within a year of starting the Ph.D. program.

Courses in Physics

LOWER-DIVISION

1 Preparation for Physics (4) F. Lecture, three hours; discussion, one hour. Mathematical review, introduction to calculus and vectors, and the uses of these techniques in physics. Physical units. Corequisite: Mathematics 1B or 2A. Physics 1 and Physics 7A may not both be taken for credit.

3A-B-C Basic Physics (4-4-4) F, W, S, Summer. Lecture, three hours; discussion, one hour. **3A:** Vectors; motion, force, and energy. **3B:** Heat; electricity and magnetism. **3C:** Fluids; waves and sound; optics; quantum ideas; atomic and nuclear physics; relativity. Prerequisite or corequisite: Mathematics 2A-B. (II)

3LB-LC Basic Physics Laboratory (1.5-1.5); 3LB (W, Summer), 3LC (S, Summer, F). Laboratory accompanying Physics 3B-C, three hours. **3LB:** Practical applications of electronics and classical physics to biology. Goals include skill to use oscilloscope and other basic instrumentation. **3LC:** Practical applications of physics to medical imaging. Topics include optics, radioactivity, and acoustics. Physics 3LC formerly 3LA. (II)

5A-B-C-D-E Fundamental Physics (4-4-4-4-4) W, S, F, W, S; 5A-B-C (Summer). Lecture, three hours; discussion, one hour. **5A:** Newtonian mechanics, kinematics, and dynamics of motion. Facility in calculus is assumed. Prerequisites: Physics 1 or satisfactory score on Physics Placement Examination; Mathematics 2A. Corequisite: Mathematics 2B. **5B:** equilibrium mechanics; fluids and elasticity; oscillations and waves. Corequisite: Mathematics 2C. **5C:** electrostatics, magnetostatics, currents and fields, circuit elements, Maxwell's equations. Prerequisites: Mathematics 2A-B-C. **5D:** electromagnetic radiation; interference, diffraction; quantum mechanics; atomic physics. **5E:** thermodynamics and kinetic theory, relativity. Concurrent enrollment in Physics 5L is required each quarter (laboratory requirement may be waived by consent of instructor). Students may not receive credit for both sections of the following pairs of courses: Physics 5A and Physics 7B; Physics 5B and Physics 7C; Physics 5C and Physics 7D; Physics 5D and Physics 51A; Physics 5E and Physics 51B. (Physics 5A-B-C: II)

5LB-LC-LD-LE Fundamental Physics Laboratory (1.5-1.5-1.5-1.5) S, F, W, S; 5LB (Summer). Laboratory accompanying Physics 5B-C (or H6B-C) and 5D-E, three hours. **5LB:** Introduction to mechanics and error analysis. Topics include momentum and energy conservation, rotational dynamics, and oscillations. **5LC:** Introduction to electrical circuits, stressing the skilled use of the oscilloscope and other basic instrumentation. Topics include Ohm's Law resonant circuits, and Faraday's Law. **5LD:** Introduction to optics. Topics include geometric optics, electromagnetic wave propagation, and spectroscopy. **5LE:** Introduction to modern physics. Topics include energy quantization, radioactivity, thermal effects, and superconductivity. Students may not receive credit for both sections of the following pairs of courses: Physics 5LC and Physics 52B; Physics 5LD and Physics 52A; Physics 5LE and Physics 52C. (Physics 5LB-LC: II)

7A-B-C-D Classical Physics (4-4-4-4) F, W, S, F. Lecture, three hours; discussion, one hour. **7A:** Units; vectors; motion; force. **7B:** Energy; momentum; rotation; gravity. **7C:** Fluids; oscillations; waves; optics. **7D:** Electricity and magnetism. Corequisites for 7A-B-C: corresponding quarters of Physics 7LA-LB-LC and Mathematics 2A-B-C; prerequisite for 7D: Mathematics 2C. Students may not receive credit for both sections of the following pairs of courses: Physics 7A and Physics 1; Physics 7B and Physics 5A; Physics 7C and Physics 5B; Physics 7D and Physics 5C. (II)

7LA-LB-LC Classical Physics Laboratory (1-1-1) F, W, S. Laboratory, two hours. Experiments related to lecture topics in Physics 7A-B-C. Corequisite: corresponding quarter of Physics 7A-B-C.

9 Introduction to Computers in Physics (4) S. An introduction to computers, operating systems, and structured programming. In-depth training in Fortran and an introduction to symbolic computation using Mathematica. Elementary numerical methods applied to physics problems. Corequisite: Mathematics 3D.

COURSES FOR NON-MAJORS

Course numbers between 16 and 24 are assigned to courses especially designed for students majoring in programs other than the physical sciences.

16 Physics and Global Issues (4). Lecture, three hours. Introduction to the physics underlying the issues of war and peace, energy, and the environment. Topics include: nuclear and non-nuclear weapons, delivery systems, and arms control; energy sources (fossil fuels, nuclear reactors) and related environmental problems (reactor safety, waste management, global warming, ozone depletion). Primarily for non-Physics majors. Prerequisites: Physics 17A-B or Physics 3A-B. (II)

17A-B Conceptual Physics (4-4) F, W. Lecture, three hours. Introduces the nonscience student to important ideas of physics with an emphasis on the human and historical developments. Topics include Newtonian mechanics and the revolutions of relativity and quantum mechanics. Experimental necessity for these and their philosophical implications. No mathematics background required, but high school algebra recommended. Not open to students majoring in the Schools of Physical Sciences or Engineering, or to students with credit for any portion of Physics 3A-B-C, Physics 5A-B-C-D-E, or equivalent. (II)

18 How Things Work (4) S. Lecture, three hours. Survey of the physical basis of modern technology, with an emphasis on electronics and materials. Topics include power generation and distribution, communication (radio, TV, telephone, computers, tape recorders, CD players), imaging (optics, x-rays, MRI), and modern materials (alloys, semiconductors, superconductors, polymers, ceramics, liquid crystals). (II)

20 Physical Science of the Earth and Cosmos. Introduction to the physical environment. The formation, structure, and evolution of the Earth, planets, stars, galaxies, and the universe as a whole. The natural sciences breadth requirement is satisfied by any three courses from Physics 20A, 20B, 20C, 20D, and Earth System Science 20E-F. Open to non-Physics majors only.

20A Introduction to Astronomy (4) F, S. History of astronomy. Underlying physics. Objects in the solar system and how they are studied. Properties of stars: their formation, structure, and evolution. Pulsars and black holes. Galaxies and quasars. (II)

20B Cosmology: Man's Place in the Universe (4) W. "Cook's Tour" of the universe. Ancient world models. Evidence for universal expansion; the size and age of the universe and how it all began. The long-range future and how to decide the right model. Anthropic principle. (II)

20C Observational Astronomy (4). Lecture, three hours; discussion, one hour. Fundamental observational techniques used in astronomy, including the analysis and interpretation of images and spectra that allow students to determine orbits of planets and moon, time evolution of supernovae, ages of star clusters, Hubble's Law. Naked-eye observations of the night sky. Observations of stars and galaxies with the UCI 24-inch telescope. Current events in observational astronomy. Prerequisites: Physics 20A, 20B. (II)

20D Space Science (4) S. Motions of planets, satellites, and rockets. Propulsion mechanisms and space flight. The solar radiation field and its influence on planets. The interplanetary medium, solar wind, and solar-terrestrial relations. (II)

21-24 Special Topics in Physics (4). Lecture, three hours. Topics of special interest varying from year to year. Past topics have included super-cold, Newton, physics via demonstration, the physics of music, and Rainbows and Things. May be repeated for credit if topic varies.

51A-B Modern Physics (4-4) W, S. Lecture, three hours; discussion, one hour. **51A:** Wave-particle duality; quantum mechanics; special relativity; statistical mechanics. Prerequisites: Physics 7D and Mathematics 2C. **51B:** Atoms; molecules; solids, nuclei; elementary particles. Students may not receive credit for both sections of the following pairs of courses: Physics 51A and Physics 5D; Physics 51B and Physics 5E.

52A-B-C Fundamentals of Experimental Physics (2-2-2) F, W, S. Laboratory, four hours. **52A:** Optics: lenses, mirrors, polarization, lasers, optical fibers, interference, spectra. Prerequisite: Physics 7C. **52B:** Circuits: oscilloscope, meters, DC and AC circuits. Prerequisite: Physics 7D. **52C:** Error analysis: random and systematic errors, curve fitting; nuclear counting; quantum experiments. Prerequisite: Physics 51A. Students may not receive credit for both sections of the following pairs of courses: Physics 52A and Physics 5LD; Physics 52B and Physics 5LC; Physics 52C and Physics 5LE.

53 Introduction to C and Numerical Analysis (4) F. Introduction to structured programming; in-depth training in C. Elementary numerical methods applied to physics problems. Prerequisites: Physics 50A-B-C, or Mathematics 3A and either Mathematics 3D or 2F.

H90 The Idiom and Practice of Science (4) W. Lecture, three hours; discussion, two hours. A series of fundamental and applied scientific problems of social relevance. Possible topics include Newton's Laws, calculus, earthquake physics, and radiation. Open only to members of the Campuswide Honors Program. Formerly Physics H90A. (II)

UPPER-DIVISION

111A-B-C Classical Mechanics (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Ordinary differential equations, one-dimensional motion, oscillations, and Fourier analysis; three-dimensional motion, non-inertial coordinates, conservation laws, and Lagrangian and Hamiltonian dynamics; tensors; rigid body motion, and relativity. Prerequisites for 111A: Mathematics 2D, 3A, and 3D, Physics 5D and 9. For 111B: Physics 111A and 112A. For 111C: Physics 111B.

112A-B-C Electromagnetic Theory (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Vector analysis, curvilinear coordinates, electric, magnetic, and gravitational fields and potentials; partial differential equations, separation of variables, and electrodynamics; mechanical and electromagnetic waves and radiation. Prerequisites for 112A: Mathematics 2D, 3A, and 3D, Physics 5C and 9. For 112B: Physics 111A and 112A. For 112C: Physics 111B and 112B.

113A-B-C Quantum Physics (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Inadequacy of classical physics; time independent and time dependent Schrodinger equation; systems in one, two, and three dimensions; matrices; Hermitian operators; symmetries; angular momentum; perturbation theory; scattering theory; applications to atomic structure; emphasis on phenomenology. Prerequisites: Physics 111A-B-C and 112A-B-C or equivalent.

115A Statistical Physics (4). Lecture, three hours. Microscopic theory of temperature, heat, and entropy; kinetic theory; multicomponent systems; quantum statistics. Prerequisites: Physics 5E and 111A. Formerly Physics 115.

115B Thermodynamics (4). Lecture, three hours. Macroscopic theory of temperature, heat, and entropy; mathematical relationships of thermodynamics; heat engines; phase transitions. Prerequisite: Physics 115A. Formerly Physics 116.

120 Electronics for Scientists (4) F, W. Lecture, two hours; laboratory, four hours. Applications of modern semiconductor devices to physical instrumentation. Characteristics of semiconductor devices, integrated circuits, analog and digital circuits. Prerequisite: Physics 5E or consent of instructor.

121 Advanced Laboratory (4) F, W, S. Lecture, one hour; laboratory, eight hours. Experiments in atomic, condensed matter, nuclear, particle, and plasma physics. Introduction to instrumentation and a first experience in the research laboratory. Corequisite: Physics 113A. Prerequisite: Physics 112A. May be taken for credit three times.

125A Mathematical Physics (4) F. Lecture, three hours; discussion, one hour. Complex functions, calculus of variations, integral equations. Prerequisites: Physics 111C and 112B. Formerly Physics 125.

128 Seminar in Conceptual Physics (1) S. Discussion of physics as an interrelated discipline; practice in oral presentation of ideas and problems. Prerequisite: Physics 5A-B-C-D-E or consent of instructor. Pass/Not Pass Only. May be taken for credit two times.

129 Technical Writing and Communication Skills (4) F, W, S. Lecture, four hours. Workshop in writing technical reports, journal articles, proposals. Oral presentations. Communicating with the public. May not be used in satisfaction of any School or departmental requirement. Prerequisite: upper-division standing; satisfaction of the lower-division writing requirement. Open to Physics majors only. Same as Chemistry 139 and Mathematics 190.

131 Special Topics in Computational Physics (4). Lecture, three hours. Modern symbolic and numerical techniques on state-of-the-art computers for solving problems in classical and quantum mechanics, fluids, electromagnetism, and mathematical physics. Prerequisite: Physics 9; prerequisite or corequisite: 111A-B. Physics 113A recommended. May be repeated for credit as topic varies. Concurrent with Physics 231. Formerly Physics 131A.

CAPSTONE SEMINARS

132 Introduction to Nuclear Physics (4). Lecture, three hours. Nucleons and nuclear structure, radioactivity, neutron-proton scattering, the deuteron, nuclear reactions. Prerequisite: Physics 113A.

133 Introduction to Condensed Matter Physics (4) S. Lecture, three hours. Phenomena of solids and their interpretation in terms of quantum theory. Prerequisites: Physics 113B and 115.

134 Introduction to Modern Optics (4) W. Lecture, three hours. Interaction of radiation with matter; lasers; nonlinear optics; optical properties of solids; absorption and scattering of light; modern spectroscopic techniques. Prerequisites: Physics 112C and 113A.

135 Introduction to Plasma Physics (4) F. Lecture, three hours. Ionization and discharge mechanisms; microscopic motions and kinetic equations; macroscopic fluid theories; electrodynamics of plasma; waves and instabilities; examples of laboratory and cosmic phenomena. Corequisite: Physics 112B. Prerequisite: Physics 112A.

136 Introduction to Particle Physics (4) S. Lecture, three hours. Experimental techniques and theoretical concepts of high-energy phenomena: accelerators and detectors; classification of particles and interactions; particle properties; symmetries and mass multiplets; production and decay mechanisms. Prerequisite: Physics 113B.

137 Introduction to Cosmology (4) S. Lecture, three hours. Structure and evolution of galaxies, general relativistic models of the universe, observational tests of cosmological models, early phases of the universe, unconventional cosmologies. Prerequisite: Physics 111B.

144 Stellar Astrophysics (4) W of odd years. Lecture, three hours. Stars: their structure and evolution; physical state of the interior; the Hertzsprung-Russell diagram, stellar classification, and physical principles responsible for the classification; star formation; nuclear burning; giant and dwarf stars; neutron stars and black holes. Prerequisite: Physics 5E or consent of instructor.

145 High-Energy Astrophysics (4) W of even years. Lecture, three hours. Production of radiation by high-energy particles, white dwarfs, neutron stars, and black holes. Evolution of galactic nuclei, radio galaxies, quasars, and pulsars. Cosmic rays and the cosmic background radiation. Prerequisite: Physics 5E or consent of instructor.

147 Physics Principles in Biology and Medicine. Physical principles in biology and medicine with examples from physiology and medical diagnostics and therapeutics. Prerequisites: basic physics with calculus; Physics 5E or equivalent. Physics 147 and Radiological Sciences 201A-B may not both be taken for credit.

147A-B (4-4). A: Principles of imaging. **B:** Ionizing radiation, radiology and nuclear medicine, magnetism and MRI, acoustics and ultrasound. Prerequisite for 147B: Physics 147A.

147C (4). Biophysics of light, thermal and microwave radiations, hydrodynamics, bioelectricity, biomagnetism and electrophysiology.

RESEARCH

195 Undergraduate Research (4). Open to seniors and occasionally to juniors with consent of the Department. Pass/Not Pass Only.

196A-B-C Thesis in Physics (4-4-4) F, W, S. Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Corequisite: Physics 113A. Prerequisite: consent of instructor; prerequisite for 196C: satisfactory completion of the lower-division writing requirement. Physics 196A-B-C and H196A-B-C may not both be taken for credit. Physics 196C and 197 may not both be taken for credit.

H196A-B-C Honors Thesis in Physics (4-4-4) S. Independent research conducted under the guidance of a faculty member. Students' research results are discussed in oral presentations, and a written proposal, progress report, and thesis are submitted. Prerequisite for H196C: satisfactory completion of the lower-division writing requirement. Open only to participants in the Honors Program in Physics and to Physics majors participating in the Campuswide Honors Program. Physics H196A-B-C and 196A-B-C may not both be taken for credit. Physics H196C and 197 may not both be taken for credit. Formerly Physics H195, H196.

197 Research Writing for Physics Majors (4) S. Students perform a research project under the guidance of a faculty member. Written and oral proposals, a progress report, and written and oral final reports are completed. Prerequisites: Physics 111A-B, 112A-B, 113A, 115A, and satisfactory completion of the lower-division writing requirement. Only one course from Physics 197, 196C, and H196C may be taken for credit.

199 Readings on Special Topics (4). With consent of the Department. Pass/Not Pass Only.

GRADUATE

206 Laboratory Skills (4 to 6). Lecture, three hours; laboratory, six to ten hours. Introduces students to a variety of practical laboratory techniques, including lock-in, boxcar, coincidence counting, noise filtering, PID control, properties of common transducers, computer interfacing to instruments, vacuum technology, laboratory safety, basic mechanical design, and shop skills. Prerequisite: consent of instructor. Same as Chemistry 206.

207 Chemistry for Physicists (4). Lecture, three hours.; discussion, one hour. Introduction to fundamental concepts in molecular structure and reactivity: theory of bonding, valence and molecular orbitals; structure and reactivity in inorganic chemistry, elements in molecular group theory, nomenclature in organic chemistry; and survey of macromolecules. Same as Chemistry 207.

211 Classical Mechanics (4) F. Lecture, three hours. Variational principles, Lagrange's equations; applications to two body problems, small oscillation theory, and other phenomena. Hamilton's equations. Hamilton-Jacobi theory. Canonical transformations.

212A-B-C Mathematical Physics (4-4-4) S, F. Lecture, three hours. Ordinary differential and partial differential equations; complex variables and special functions; matrices, eigenvalues and eigenvectors; numerical methods; perturbation theory; integral equations; calculus of variations; elements of group theory. *Physics 212C not offered 1998-99.*

213A-B Electromagnetic Theory (4-4) W, S. Lecture, three hours. Electrostatics; magnetostatics; relativity; classical electron theory; fields in vacuum and matter; retardation; radiation and absorption; dispersion; propagation of light; diffraction; geometric optics; theories of the electric and magnetic properties of materials; scattering.

213C Modern Optics (4) F. Lecture, three hours. Modern optics, linear and non-linear. Waves in dispersive media, weak non-linearities, higher order interactions, light scattering, strong non-linearities, laser radiation. Prerequisites: Physics 213A-B.

214A-B Statistical Physics (4-4) F, W. Lecture, three hours. **214A:** Maxwell-Boltzmann, Bose-Einstein, Fermi-Dirac statistics; ideal and imperfect gases; thermodynamic properties of solids; transport theory. **214B:** Phase transitions; critical phenomena; cooperative phenomena; fluctuations.

214C Many Body Theory (4). Application of field theory methods, perturbative and non-perturbative to many particle systems; second quantization, Feynman diagrams, linear response theory, and functional integral methods applied to the ground state and at finite temperature. Prerequisites: Physics 214A-B.

215A-B-C Quantum Mechanics (4-4-4) F, W, S. Lecture, three hours. **215A:** Foundations; Dirac notation; basic operators and their eigenstates; perturbation theory; spin. **215B:** Atomic physics; scattering theory, formal collision theory; semi-classical radiation theory; many body systems. **215C:** Quantization of the electromagnetic field; relativistic quantum mechanics; second quantization.

222 Hydrodynamics (4). Lecture, three hours. Hydrodynamics of a perfect fluid; two-dimensional problems, motion of an incompressible viscous fluid; Navier-Stokes equations; viscous fluids in rotation; motion in three dimensions; introduction to motion of a compressible fluid.

223 Numerical Methods (4). Lecture, three hours; laboratory, one hour. Introduction to theory and practice of modern numerical methods. Techniques are drawn from topics such as solution of differential equations, Monte Carlo methods, Fast Fourier transforms, and evaluation of special functions.

224 Phenomenology of Physics (4). Lecture, three hours; discussion, one hour. Introduction to physical phenomenology intended to complement the more formal traditional physics curriculum, with topics drawn from atomic and nuclear physics, condensed matter, particle physics, plasma physics, and astrophysics.

228 Electromagnetism (4). Lecture, three hours; discussion, one hour. Maxwell's equations, electrodynamics, electromagnetic waves and radiation, wave propagation in media, interference and quantum optics, coherent and incoherent radiation, with practical applications in interferometry, lasers, waveguides, and optical instrumentation. Prerequisite: consent of instructor. Same as Chemistry 228.

229A-B Computational Methods (4). Lecture, three hours; laboratory, six hours. Mathematical and numerical analysis using Mathematica and C programming, as applied to problems in physical science. Prerequisite: consent of instructor. Same as Chemistry 229A-B.

231 Special Topics in Computational Physics (4). Lecture, three hours. Modern symbolic and numerical techniques on state-of-the-art computers for solving problems in classical and quantum mechanics, fluids, electromagnetism, and mathematical physics. Concurrent with Physics 131. May be repeated for credit as topic varies. Formerly Physics 231A.

232A-B Applications of Group Theory (4-4). Lecture, three hours. The role of symmetry in physical problems. **232A:** finite groups; **232B:** continuous groups. 232B can be taken without 232A. Abstract group theory and theory of group representations. Perturbation theory, selection rules, crystal tensors, molecular vibrations, Jahn-Teller theorem, directed valence, time reversal symmetry, double groups, crystal field splittings of atomic levels. Continuous groups and particle physics. Full rotation group, Clebsch-Gordon coefficients, the Wigner-Eckart theorem, Racah coefficients, the Lorentz group, unitary groups.

235A-B Advanced Quantum Mechanics (4-4) F, W. Lecture, three hours. Fall: Lagrangian formalism, second quantization, interacting fields, perturbation theory. Winter: Feynman graph techniques, renormalization, symmetries, PCT theorem, connection between spin and statistics.

236A-B-C Astrophysics (4-4-4) F, W, S. Lecture, three hours. Theoretical background and survey of astrophysical research. **236A:** Fundamentals of astrophysics; overview, radiation mechanisms, plasma and magnetic effects. **236B:** Stellar and related astrophysics; stellar structure and evolution, white dwarfs, neutron stars, supernovae, supernova remnants. **236C:** Nonstellar astrophysics; quasars; blackholes, cosmic rays, cosmology.

237A-B-C Elementary Particle Theory (4-4-4) F, W, S. Lecture, three hours. Background and current topics in elementary particle theory including weak interactions, unified gauge theory of weak and electromagnetic interactions, quark-parton model of small distance structure, quark model of hadron spectroscopy, charmed particles, new quarks and leptons, and an introduction to quantum chromodynamics. May be repeated for credit.

238A-B-C Condensed Matter Physics (4-4-4) F, W, S. Lecture, three hours. Bonding in solids; crystal symmetry and group theory, elastic properties of crystals; lattice vibrations, interaction of radiation with matter; cohesion of solids; the electron gas; electron energy bands in solids; ferromagnetism; transport theory; semiconductors and superconductors; many-body perturbation theory.

239A-B-C-D Plasma Physics (4-4-4-4) F, W, S, F. Lecture, three hours. The properties of plasmas, with major emphasis on fully ionized gases. Introduction to modern theoretical treatments. Applications to problems such as controlled thermonuclear fusion, propulsion, energy conversion, astrophysics, and the space sciences. **239A:** Introduction, magnetohydrodynamics, equilibrium, and stability. **239B:** Theory of cold plasma waves, thermal effects. **239C:** The Vlasov equation, microinstabilities and transport, plasma turbulence. **239D:** Multiple wave interactions, quasi-linear theory, nonlinear plasma theory. Series begins in fall of even-numbered years.

246 Special Topics in Astrophysics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of astrophysics that is undergoing rapid development. Prerequisites: Physics 236A-B-C or consent of instructor. May be repeated for credit.

247 Special Topics in High-Energy Physics (4) F, W, S. Lecture, three hours. Current topics in high-energy physics. Includes topics from accelerator and non-accelerator-based research fields. May be repeated for credit.

248 Special Topics in Condensed Matter Physics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of condensed matter physics that is undergoing rapid development. May be repeated for credit.

249 Special Topics in Plasma Physics (4) F, W, S. Lecture, three hours. Outlines and emphasizes a subarea of plasma physics that is undergoing rapid development. Satisfactory/Unsatisfactory only. Prerequisites: Physics 239A-B-C or the equivalent. May be repeated for credit.

255 General Relativity (4). Lecture, three hours. An introduction to Einstein's theory of gravitation. Tensor analysis, Einstein's field equations, astronomical tests of Einstein's theory, gravitational waves.

260-299: SEMINARS AND RESEARCH

These courses are designed to acquaint students with the basic concepts and methods underlying current research activity in selected branches of physics.

260A-B-C Seminar in Condensed Matter Physics (4-4-4) F, W, S. Seminar designed to acquaint students with recent advances in solid state physics. Lecturers from the Physics Department (both faculty and graduate students), other UCI departments, and other institutions. May be repeated for credit. Prerequisite: consent of instructor.

261A-B-C Seminar in Plasma Physics (4-4-4) F, W, S. Advanced topics in plasma physics: wave propagation, nonlinear effects, kinetic theory and turbulence, stability problems, transport coefficients, containment, and diagnostics. Applications to controlled fusion and astrophysics. Prerequisite: Physics 239A-B-C-D or equivalent.

263A-B-C Seminar in High-Energy Physics (4-4-4) F, W, S. Discussion of advanced topics and reports of current research results in theoretical and experimental high energy physics and cosmic rays. May be repeated for credit. Prerequisite: consent of instructor.

264 Seminar in Conceptual Physics (1) S. Discussion of physics as an interrelated discipline, practice in oral presentation of ideas and problems. Required of all graduate students who have not passed the Ph.D. qualifying examination.

265A-B-C Seminar in Astrophysics (4-4-4) F, W, S. Acquaints students with current research in astrophysics. Lectures from the Department of Physics and from other institutions. May be repeated for credit.

266 Current Topics in Chemical and Materials Physics (4). Lecture, three hours; discussion, one hour. The subjects covered vary from year to year. Connection between fundamental principles and implementations in practice in science, industry, and technology. Prerequisite: consent of instructor. Same as Chemistry 266.

267A-B-C Current Problems in High-Energy Physics (4-4-4) F, W, S. Lecture, three hours. Presentation and discussion of current research and theory in high energy physics. Lectures given by staff and students. May be repeated for credit.

269 Seminar in Teaching Physics (1) F. Lecture techniques; teaching problem-solving skills; group learning; practicum. Required of all new Teaching Assistants.

273 Technical Communication Skills (2). Lecture, one hour; discussion, three hours. Development of effective communication skills, oral and written presentations, through examples and practice. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor.

295 Experimental Research (4 to 12). With the approval of a faculty member, a student may pursue a research program in experimental physics. Typical areas include astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

296 Theoretical Research (4 to 12). With approval of a faculty member, a student may pursue a research program in theoretical physics. Typical areas include astrophysics, condensed matter physics, elementary particle physics, and plasma physics.

298 Physics Colloquium (0). Seminar held each week, in which a current research topic is explored. Frequently, off-campus researchers are invited to present the seminar, and on occasion a faculty member or researcher from the Department will speak.

299 Reading of Special Topic (4 to 12). With special consent from a faculty member who will agree to supervise the program, a student may receive course credit for individual study of some area of physics.

399 University Teaching (1 to 4) F, W, S. Required of and limited to Teaching Assistants.

SCHOOL OF SOCIAL ECOLOGY

Daniel Stokols, **Dean**

163 Social Ecology

Undergraduate Counseling: (949) 824-6861

Graduate Counseling: (949) 824-5917

World Wide Web: <http://www.socecol.uci.edu/~socecol/>

Faculty

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K. Alison Clarke-Stewart, Ph.D. Yale University, *Professor of Social Ecology* (development in early childhood and the effects of variation in the social environment)

Peter Clecak, Ph.D. Stanford University, *Professor of Social Ecology*

Ross F. Conner, Ph.D. Northwestern University, *Associate Professor of Social Ecology* (evaluation research and social psychology, health promotion)

Randall Crane, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Social Ecology and Economics* (urban planning, public policy)

Thomas J. Crawford, Ph.D. Harvard University, *Associate Dean of Graduate Studies, School of Social Ecology, and Senior Lecturer Emeritus in Social Ecology* (attitude theory and social problems research)

Kristen Day, Ph.D. University of Wisconsin, Milwaukee, *Assistant Professor of Social Ecology* (urban issues in environment-behavior studies)

Ralph Delfino, M.D. University of Chicago, *Assistant Clinical Professor of Medicine and Social Ecology*

Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Professor of Social Ecology and of Management* (planning, land use and environmental law, use of social science in policy making, legal control of corporate behavior)

Peter Ditto, Ph.D. Princeton University, *Assistant Professor of Social Ecology* (psychological reactions to medical diagnoses, end-of-life medical decision making, the role of motivation and emotion in information processing)

John D. Dombrink, Ph.D. University of California, Berkeley, *Associate Dean of Undergraduate Studies, School of Social Ecology, and Associate Professor of Social Ecology* (crime and criminal justice, deviance and social control)

C. David Dooley, Ph.D. University of California, Los Angeles, *Professor of Social Ecology* (community psychology, epidemiology, economic change)

Jonathon E. Ericson, Ph.D. University of California, Los Angeles, *Professor of Social Ecology* (environmental health science; archaeological chemistry)

Paul J. Feldstein, Ph.D. University of Chicago, *Professor of Management and Social Ecology, and Robert Gumbiner Chair in Health Care Management* (economics of health care)

Paula Garb, Ph.D., U.S.S.R. Academy of Sciences, *Assistant Adjunct Professor of Social Sciences and Social Ecology*

Gilbert L. Geis, Ph.D. University of Wisconsin, *Professor Emeritus of Social Ecology* (crime and criminal justice)

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Ellen Greenberger, Ph.D. Harvard University, *Professor of Social Ecology* (developmental psychology, adolescence and social institutions, work and the family, social policy)

F. Allan Hubbell, M.D., M.S.P.H. Baylor University College of Medicine, *Chief (Acting) of Primary Care and Professor of Medicine (General Internal Medicine and Primary Care) and of Social Ecology*

Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Politics and Society, and Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation* (public policy, U.S.-Mexico relations, environmental resource management)

Larry Jamner, Ph.D. State University of New York at Stony Brook, *Associate Professor of Social Ecology* (health psychology, psychophysiology, algology)

Paul D. Jesilow, Ph.D. University of California, Irvine, *Associate Professor of Social Ecology* (crime and criminal justice)

Valerie Jenness, Ph.D. University of California, Santa Barbara, *Assistant Professor of Social Ecology* (links between divorce and social control, especially law, gender, and social change and social movements)

Michael T. Kleinman, Ph.D. New York University, *Adjunct Professor of Community and Environmental Medicine and Social Ecology*

Richard Leo, University of California, Berkeley, *Assistant Professor of Social Ecology* (sociology and history of American police interrogation practices, social psychology of false confessions to police, causes and consequences of miscarriage of justice in American criminal justice system)

Linda J. Levine, Ph.D. University of Chicago, *Assistant Professor of Social Ecology* (relations between cognitive and emotional development, how emotions influence attention and memory, the development of children's strategies for coping with negative emotions)

Salvatore R. Maddi, Ph.D. Harvard University, *Professor of Social Ecology* (personality, psychopathology, health psychology, creativity)

Sanjoy Mazumdar, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Social Ecology* (environmental studies and design, organizational analysis, management and planning, and social and behavioral aspects of architecture)

Richard McCleary, Ph.D. Northwestern University, *Professor of Social Ecology* (criminal justice, research methodology, statistics)

Shari McMahan, Ph.D. University of California, Irvine, *Adjunct Assistant Professor of Social Ecology* (environmental health, risk communication, health promotion)

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Oladele Ogunseitan, Ph.D. University of Tennessee, *Assistant Professor of Social Ecology* (environmental health, microbiology, molecular ecology, environmental biotechnology, applied microbiology)

- Betty H. Olson, Ph.D. University of California, Berkeley, *Professor of Social Ecology and Community and Environmental Medicine* (aquatic microbiology, environmental health and molecular biology, water resources)
- Richard Perry, J.D. Stanford University, Ph.D. University of California, Berkeley, *Assistant Professor of Social Ecology* (language and law, legal theory, law and society, linguistics)
- Joan Petersilia, Ph.D. University of California, Irvine, *Professor of Social Ecology* (program evaluation, public policy, juvenile justice)
- Henry N. Pontell, Ph.D. State University of New York, Stony Brook, *Chair of the Department of Criminology, Law and Society and Professor of Social Ecology* (criminal justice, sociology of law, medical sociology)
- JoAnn Prause, Ph.D. University of California, Irvine, *Lecturer in Social Ecology* (statistics, quantitative epidemiology, employment typology)
- Karen S. Rook, Ph.D. University of California, Los Angeles, *Professor of Social Ecology* (gerontology, social support systems, subjective well-being and health)
- Judy B. Rosener, Ph.D. Claremont Graduate School, *Senior Lecturer in Management and Social Ecology* (business and government, cultural diversity, gender and management)
- Danching Ruan, Ph.D. Columbia University, *Assistant Professor of Social Ecology* (sociology of gender, family relationships, social stratification and mental health)
- Roxane Cohen Silver, Ph.D. Northwestern University, *Associate Professor of Social Ecology* (stress and coping, social psychology, health psychology)
- Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics and Social Ecology*
- David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Sociology and Social Ecology* (urbanization, comparative historical sociology, political sociology, world-system analysis)
- Sharon Stern, Ph.D. University of Utah, *Lecturer in Social Ecology* (water pollution and treatment, environmental pollution remediation, conservation biology, health and policy)
- Daniel Stokols, Ph.D. University of North Carolina, *Dean of the School of Social Ecology and Professor of Social Ecology* (health impacts of environmental stressors, environmental design and social behavior)
- Luis Suarez-Villa, Ph.D. Cornell University, *Professor of Social Ecology* (planning and public policy, regional science, technological change and regional development)
- Lois Takahashi, Ph.D. University of Southern California, *Assistant Professor of Social Ecology* (social planning, urban and regional planning, homelessness, community attitudes, planning theory)
- Tammy Tengs, Sc.D. Harvard University, *Assistant Professor of Social Ecology* (health policy and management, decision science, policy and planning in public health)
- William C. Thompson, Ph.D. Stanford University, J.D. University of California, Berkeley, *Professor of Social Ecology* (psychology and law, criminal justice, human judgment and decision making, use of social science in appellate litigation)
- Tanis Thorne, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of History and Social Ecology*
- Elaine Vaughan, Ph.D. Stanford University, *Associate Professor of Social Ecology* (environmental assessment, risk perceptions, research methodology, social psychology)
- Bryan Vila, Ph.D. University of California, Davis, *Associate Professor of Social Ecology* (criminological theory, evolution of culture, human ecology, public policy analysis)
- Carol K. Whalen, Ph.D. University of California, Los Angeles, *Chair of the Department of Psychology and Social Behavior and Professor of Social Ecology and of Psychiatry and Human Behavior* (developmental psychopathology, childhood behavior disorders, child therapies, health psychology)
- John M. Whiteley, Ed.D. Harvard University, *Chair (Acting) of the Department of Environmental Analysis and Design and Professor of Social Ecology* (moral development, late adolescent to early adult development, social ecology of peace)

OVERVIEW

The School of Social Ecology is an interdisciplinary academic unit spanning the environmental, legal, behavioral, and health sciences. The School is comprised of the Departments of Criminology, Law and Society; Environmental Analysis and Design; Psychology and Social Behavior; and Urban and Regional Planning. It more than 50 full-time faculty, 1,570 undergraduate majors, and 130 graduate

students. Social ecology applies scientific methods to the study of a wide range of recurring social and environmental problems. Among issues of long-standing interest in the School are crime and justice in society, social influences on human development over the life cycle, and effects of the physical environment on health and behavior. The School maintains a central interest in human adaptation and a special, but not exclusive, interest in the study of events in the natural settings in which they occur.

The faculty is *multidisciplinary*. It includes psychologists with a variety of specialties (e.g., developmental, clinical, social, and environmental psychology), sociologists, program evaluators, criminologists, lawyers, urban and regional planners, environmental health scientists, and environmental design specialists. Faculty members conduct research and teach courses that integrate concepts and perspectives of several disciplines. This focus arises from commitment to the view that the analysis of complex societal problems requires *interdisciplinary* efforts (i.e., the joining of talents by people with different intellectual backgrounds). A number of faculty members are involved in interventions directed toward improving the way groups of individuals, institutions, and communities function; a number of others are involved in interventions aimed at improving the quality and control of the environment.

Research Facilities

The Social Ecology Buildings I and II feature many facilities for experimental research, including wet laboratories for research and teaching in the environmental health sciences; behavioral assessment laboratories for research in human development, social relations, and legal studies; and an environmental simulation laboratory for studying the effects of environmental conditions. The wet laboratories are used for studying air and water pollution. The behavioral assessment laboratories are used for studying social phenomena such as parent-child interaction, cooperation among children, hyperactivity, social support processes, and mock jury discussions. The environmental simulation laboratory permits full-scale, realistic simulations of interior environments such as offices, classrooms, and apartments. Within these settings, physical conditions (e.g., ambient lighting and color patterns, music and noise, spatial arrangements and physical density) and social processes (e.g., group communication patterns) can be varied experimentally so that researchers can assess the separate and joint effects of these conditions and processes upon occupants' performance and well-being.

Degrees

Applied Ecology*	B.S.
Criminology, Law and Society	B.A., Ph.D.
Environmental Analysis and Design	B.A.
Environmental Health Science and Policy	M.S., Ph.D.
Health Psychology	Ph.D.
Human Development	Ph.D.
Psychology and Social Behavior	B.A.
Social Ecology	B.A., M.A., Ph.D.
Urban and Regional Planning	M.U.R.P., Ph.D.

*Offered jointly with the School of Biological Sciences

Honors

Honors at graduation will be awarded to about 12 percent of the graduating seniors. Eligibility for such honors will be on the basis of grade point average. A minimum overall GPA of 3.5 is required. A general criterion is that students must have completed at least 72 units in residence at a University of California campus. Final decisions concerning the awards of *summa cum laude*, *magna cum laude*, and *cum laude* are the responsibility of a committee chaired by the Associate Dean for Undergraduate Studies. Other important factors are considered (see page 51).

Undergraduate Program

The School of Social Ecology offers either a general interdisciplinary degree in Social Ecology or a more focused experience through degree programs in Applied Ecology, Criminology, Law and Society; Environmental Analysis and Design; and Psychology and Social Behavior.

Continuing-Student Applicants. Due to the high demand for admission to the School of Social Ecology, not all eligible continuing-student applicants may be accommodated at the time they may wish to change or declare a major within the School. Interested students should apply during the first three weeks of the spring quarter in the Social Ecology Undergraduate Counseling Office.

Continuing-student applicants must meet the following criteria to be considered for admission into the School of Social Ecology.

General Social Ecology major; Criminology, Law and Society major; and Environmental Analysis and Design major: (a) completion of the Subject A requirement; (b) completion of two of the Social Ecology lower-division core courses, one of which must be in the major of your choice, with a minimum grade of a C in both courses (see School Requirements); (c) an overall minimum 2.3 GPA.

Psychology and Social Behavior major: (a) completion of the Subject A requirement; (b) completion of two of the Social Ecology lower-division courses, one of which must be Psychology and Social Behavior P9, Introduction to Human Behavior, with a minimum grade of a C in both courses (see School Requirements); (c) an overall minimum 3.0 GPA.

Applied Ecology major: (a) completion of the Subject A requirement; (b) completion of two courses selected from Environmental Analysis and Design E5 or E8, Chemistry 1A-B-C, Biological Sciences core curriculum, with a grade of a C or better in both courses.

Selection criteria are subject to change. Students should consult with the Social Ecology Undergraduate Counseling Office for current information.

HONORS PROGRAM IN SOCIAL ECOLOGY

The Social Ecology Honors Program provides the opportunity for selected School of Social Ecology students to pursue advanced independent study. Admission to the program is based on formal application normally submitted in the spring quarter of the junior year. In order to be considered, a student must have satisfied the following requirements: completion of all lower-division Social Ecology courses required for the major; completion of at least five upper-division Social Ecology courses with a grade point average of at least 3.5 in these courses; and achievement of an overall grade point average at UCI of at least 3.2. Invitation to the program is based upon evidence of the student's ability, interest in research, and proposed thesis project. Successful completion of the program requires two quarters of supervised, independent work on a thesis research project (Social Ecology H190A-B) and written and oral presentation of an honors thesis (Social Ecology H190W).

CAREER OPPORTUNITIES

Graduates of the School of Social Ecology bring a distinctive cross-disciplinary perspective to the job market. The School provides a solid foundation for those students who seek jobs in planning departments, mental health settings, educational institutions, and a variety of community and governmental agencies. Many Social Ecology students find that their interdisciplinary training is also useful for careers in management.

The School also provides sound preparation for students who wish to apply to graduate and professional schools of law, administration, public health, social welfare, psychology, sociology, criminology, and urban planning.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. Additional information is available in the Career Center section.

FIELD STUDY

An important aspect of the undergraduate program is its field study requirement for majors. Field study is designed to provide students with an opportunity to examine social-environmental problems as they occur in community settings; to evaluate the merit of ideas presented in the classroom; and to conduct naturalistic observations and investigations at field sites. Under the supervision of a Social Ecology faculty sponsor, students have the opportunity to test their skills in the community, to evaluate procedures and problem-solving strategies used in the work place, and to observe the links between community practices and academic ideas and issues.

The settings provided for field study include a wide range of problem-oriented institutions and agencies in both the private and the public sector (e.g., Orange County Public Defender's Office; Irvine Medical Center; California Coastal Commission; American Red Cross; primary and secondary schools; Fairview Development Center; planning, legal, and design corporations). Students must select a placement site from those listed and approved by the School of Social Ecology. Unlisted or inappropriate placements, as well as those that could give the appearance of nepotism or preferential treatment, will not be approved. Departmental approval for field study will be determined by the Field Study Coordinator.

Field study is open *only* to upper-division School of Social Ecology students who are in good academic standing and have completed all prerequisite course work. All field studies are taken on a Pass/Not Pass grading basis. Further information, including field study sign-up procedures and prerequisites, must be obtained from the Social Ecology Undergraduate Counseling Office.

Planning a Program of Study

Because there are many alternative ways to plan a program, some of which may require careful attention to specific major requirements, students should consult with the Undergraduate Counseling Office, 163 Social Ecology Building, to design an appropriate program of study.

Students who elect one of the majors in the School of Social Ecology in their freshman year might begin by taking the introductory courses required by their major. It is a good idea to take these courses early because they include fundamental concepts that are widely applicable in more advanced courses. In addition, the lower-division writing requirement of the breadth requirement (category I) should be completed during the first year. In the sophomore year, the student might complete three courses toward the breadth requirement, four courses in their major, and four electives. Students who are planning to go on to graduate school can use their freshman and sophomore years to advantage by taking courses in theory, research methods, statistics, and other areas important to graduate study. In the junior and senior years, the student should take courses in the major area and should create an individualized program of study through a combination of courses and course modules which fall in an area of interest. Particular attention should be paid to planning a program of study that will ensure that major requirements are met prior to graduation.

Requirements for the Bachelor's Degree

University Requirements: See pages 54–58.

School Requirements

Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, Social Ecology 10, 13, 194, 195 (four units), and one additional upper-division course (four units) chosen from any department in the School of Social Ecology *or* an additional four units of Social Ecology 195. (Social Ecology 198 and 199 may not be used to fulfill this requirement.)

Breadth Requirement Limitation: With the exception of categories I, V, and VII, a student in any School of Social Ecology major may count toward breadth no more than three courses offered by the School of Social Ecology.

Departmental Requirements: Refer to individual departments.

Grade Requirement

A minimum grade average of at least C (2.0) is required: (1) overall, (2) in all courses required for the major program, including the School requirements, and (3) in the upper-division courses required for the major.

Double Majors

In order to double major within the School of Social Ecology the following conditions must be met: (1) neither major program may be the general Social Ecology major, and (2) major requirements must be met for both majors without any overlap of upper-division courses.

Additional Curricular Options

Students in the School of Social Ecology may combine their course work with the following University programs and should consult an academic counselor for further information.

EDUCATION

Students who plan to obtain a teaching credential or a higher degree in the field of education should consult with counselors in the UCI Department of Education early in their college career. Students completing a degree program in the School of Social Ecology may qualify for a waiver of the Single Subject Credential Examination. For additional information about teaching credentials, refer to the Department of Education section.

THE 3-2 PROGRAM WITH THE GRADUATE SCHOOL OF MANAGEMENT

Outstanding students in the School of Social Ecology who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

EDUCATION ABROAD PROGRAM

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges in countries throughout the world. Additional information is available in the Center for International Education section.

INTERDISCIPLINARY MINORS

These minors are available to all UCI students. Detailed information may be found in the Interdisciplinary Studies section of the *Catalogue*.

Minor in Global Peace and Conflict Studies

The minor in Global Peace and Conflict Studies is an interdisciplinary curriculum which addresses international violence, the threat of war, paths to cooperation in global and regional security, and international economic and environmental matters.

Minor in Global Sustainability

The interdisciplinary minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

Minor in Native American Studies

The minor in Native American Studies is an interdisciplinary, inter-school program which focuses on history, culture, religion, and the environment.

Undergraduate Major in Social Ecology

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN SOCIAL ECOLOGY

University Requirements: See pages 54–58.

School Requirements: See this page.

Requirements for the Major

Ten upper-division courses (numbered 100–193), selected from the Departments of Criminology, Law and Society; Environmental Analysis and Design; and Psychology and Social Behavior.

Course prerequisites established by the individual departments must be satisfied. Students may, by petition, count one Social Ecology 199 course and graduate courses (numbered 200–290) toward the upper-division requirement.

Courses in Social Ecology

LOWER-DIVISION

10 Research Design (4). Lecture, three hours. An introduction to the logic behind and methods of designing research studies and experiments in Social Ecology. Statistical reasoning discussed to the extent necessary for relevant data analyses. Social Ecology 10 and Sociology 110 may not both be taken for credit. (III)

13 Statistical Analysis in Social Ecology (4). Lecture, three hours. Introduction to the techniques of statistical analysis in Social Ecology. Topics include probability, statistical inference, significance testing, univariate descriptive statistics, and multivariate analysis from an interdisciplinary perspective. Prerequisite: Social Ecology 10; may be taken concurrently. Restricted to majors only. Social Ecology 13 and Social Science 10A-B-C may not both be taken for credit.

H20A-B-C Honors: Critical Issues in the Social Sciences (6-6-6). Lecture, three hours; seminar, two hours. Major themes, methods, and works in the social sciences from an interdisciplinary perspective. Each quarter focuses on a different topic. Weekly small seminars emphasizing the development of the skills of critical thinking and quantitative analysis through regular written work are integral to the course. Prerequisite: restricted to members of the Campuswide Honors Program. Same as Social Sciences H1E-F-G. (III)

UPPER-DIVISION

100 Special Topics in Social Ecology (4). Lecture, three hours (or variable). Special topics courses are offered from time to time, but not on a regular basis. Course content varies with interests of the instructor. Prerequisite: consent of instructor. May be repeated for credit.

166A-B-C Foundations of Applied Statistics I, II, III (4-4-4). Lecture, four hours; laboratory, three hours. **166A-B:** Descriptive statistical concepts and techniques most widely used in social science research. Weekly laboratories employ computer graphics to investigate concepts. 166A: Pass/Not Pass only. Prerequisite for 166B: Social Ecology 166A. **166C:** Classical statistical inference, limited to simple random sampling or simple randomization designs. Characteristics of sampling distributions; bias, standard error, mathematical

models, estimation, hypothesis testing. Prerequisite: Social Ecology 166B. Same as Social Sciences 100A-B-C. (V)

166E Introduction to Statistical Computing (4). Lecture, two hours; laboratory, two hours. Enables the student to utilize the analysis routines available within the Statistical Package for the Social Sciences (SPSS). Methods of data management and interpretation of computer output are presented. Pass/Not Pass only. Corequisite: Social Ecology 166B. Prerequisite: Social Ecology 166A. Same as Social Sciences 101E.

183A Global Peace and Conflict Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to global peace and conflict studies. Pass/Not Pass only. May be taken for credit four times. Same as Humanities 183A and Social Science 183A.

183B Senior Seminar on Peace and Conflict (4). Designed for seniors (juniors may also enroll) who are pursuing the Global Peace and Conflict Studies (GPACS) minor and/or International Studies major. Provides a forum in which students will mature as independent researchers and gain fundamental knowledge of contemporary global issues and scholarly approaches to the field. Same as Humanities 183B and Social Science 183B. Formerly Social Ecology 185B. (VII-B)

183C Senior Seminar on Peace and Conflict (4). Continuation of Social Ecology 183B. Students write a senior research paper under the direction of a faculty member, and analyze GPACS forum presentations. Designed for seniors (juniors may also enroll) who are pursuing the Global Peace and Conflict Studies minor and/or International Studies major. Prerequisite: Social Ecology 183B. Same as Humanities 183C and Social Science 183C. Formerly Social Ecology 185C.

186A-B Senior Seminar on Global Sustainability I, II (2-2) F, W. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations. **A:** Prepare bibliography. **B:** Prepare research proposal. In-progress grading for 186A-B, grade for sequence given upon completion of 186C. Prerequisites: senior standing, Biological Sciences 65, Environmental Analysis and Design E20, and Earth System Science 10. Same as Biological Sciences 191A-B and Earth System Science 190A-B.

186C Writing/Senior Seminar on Global Sustainability III (4) S. Students attend weekly seminar to discuss current issues in global sustainability. Weekly attendance at Global Sustainability Forum also is required. Seminar utilized to analyze forum presentations and to prepare senior research paper. Prepare/write research paper under the direction of a faculty member. Prerequisites: Social Ecology 186A-B and satisfaction of the lower-division writing requirement. Same as Biological Sciences 191C and Earth System Science 190C.

187 Ideology and Contemporary Social Problems (4). Examines the concept of ideology from the Enlightenment to the present, tracing it from Marx to such contemporary thinkers as R. Williams and D. Bell. The concept and "social criticism" discourse are illustrated through discussions of socialism, communism, fascism, liberalism, conservatism, capitalism.

188 Global Issues and International Perspectives (2). Primarily for students planning to study abroad. Weekly guest lectures, giving global perspectives on culture, politics, economics, women's roles, environmental issues, language, and history. In discussion sections participants study the particular area to which they are going, and learn how to conduct themselves while there. Pass/Not Pass only. Same as Social Sciences 188.

H190A-B Honors Research (4-4). Seminar, three hours. Independent work on an individual research project in addition to participation in a mini symposium in which faculty discuss their ongoing research. Students prepare a written proposal for a research project. **H190A:** Letter grade and Pass/Not Pass. **H190B:** Pass/Not Pass only. Prerequisites: acceptance into the Honors Program; junior or senior standing.

H190W Honors Seminar and Thesis (4). Seminar, three hours. Students write up their honors research project (H190A-B) and prepare an oral report which is presented at the honors seminar. Prerequisites: acceptance into the honors program; junior or senior standing.

192 Seminar on the Social Ecology Perspective (4). Broad overview of social ecology as a paradigm for research and community problem solving. Core conceptual and methodological themes that are inherent in the social ecological perspective including homeostasis and duration-amplification, interdependencies of human environments, scope and validity of research and community interventions. Prerequisite: senior standing; consent of instructor.

194 Naturalistic Field Research (4). Lecture, three hours. Introduction to alternative models of experiential learning and to various methods of observation, assessment, and evaluation. Introduction to the nature of organizations and ethical issues that emerge from research and intervention in natural settings. Must be taken prior to Social Ecology 195. Enrollment in discussion section is required. Prerequisite: Social Ecology 10; satisfactory completion of the lower-division writing requirement; restricted to Social Ecology majors.

195 Field Study (2 to 4) F, W, S. Prerequisites: Social Ecology 194; junior standing; restricted to Social Ecology majors. May be repeated for credit. Pass/Not Pass only.

198 Directed Studies (2 to 4) F, W, S. Prerequisite: consent of instructor. Pass/Not Pass only.

199 Special Studies (2 to 4) F, W, S. Prerequisites: consent of instructor and junior or senior status.

Undergraduate Major in Applied Ecology

163 Social Ecology; (949) 824-6861

101 Biological Sciences Administration; (949) 824-5318

The School of Social Ecology and the School of Biological Sciences offer a program of undergraduate instruction leading to a B.S. degree in Applied Ecology. The interdisciplinary curriculum furnishes a strong undergraduate foundation for students interested in advanced study in environmental planning and resource management.

An Applied Ecology major receives the basic science training of a Biological Sciences major and utilizes these skills in a core of environmentally based courses taught in Social Ecology. Social Ecology brings to this major a unique combination of courses in Environmental Quality and Health, Planning and Public Policy, and Law and Society. This combination, together with a strong biology background contributed by the School of Biological Sciences and a general science background contributed by the School of Physical Sciences, enables students selecting this major to pursue interdisciplinary learning experiences which are difficult to achieve within traditional disciplines. The first three years of the major are very structured, leaving the last year open for students to specialize in an area of their choice.

Transfer Applicants: See page 41.

PLANNING A PROGRAM OF STUDY

It is important that students take the required science courses early, in order that the science background may be utilized in the Social Ecology courses. There are many required courses, and the student must plan carefully. For initial academic advising, students should consult the Social Ecology Counseling Office or the Biological Sciences Student Affairs Office. Faculty academic advisors may be either Social Ecology or Biological Sciences faculty members.

CAREERS IN APPLIED ECOLOGY

Careers in the fields of environmental and resource management and planning are particularly suited to an Applied Ecology background. Many graduates hold technical or administrative positions in, for example, the United States Environmental Protection Agency; or in California's Regional Water Quality Control Board, Air Resources Board, Department of Fish and Game, and Department of Health and Human Services; or in various county and city agencies. A variety of firms in the private sector employ Applied Ecology graduates to prepare environmental impact reports, laboratory analyses, and planning studies. Industrial health professionals are in demand to help determine the safety of workplace environments for the labor force. The Applied Ecology major also provides a strong academic foundation for graduate or professional study in areas such as conservation and natural resources, environmental health science, microbiology, public health, law, medicine, planning, and administration.

The Applied Ecology major provides students with a comprehensive treatment of basic ecological principles and their relevance to human needs. As an alternate pathway, students with an engineering perspective are encouraged to explore the program options in Environmental Engineering offered by the School of Engineering.

REQUIREMENTS FOR THE BACHELOR'S DEGREE IN APPLIED ECOLOGY

University Requirements: See pages 54–58.

Requirements for the Major

General: Information and Computer Science 1A or 21; Mathematics 2A, 2B, and either 2C or 7; Chemistry 1A-B-C, 1LB-LC, 51A-B-C, and 51LA-LB; Physics 3A-B-C, 3LB-LC or 5A-B-C, 5LB-LC; Biological Sciences 94, 96, 97, 98, 99, 100L, and either 108 or 109; Environmental Analysis and Design E1 or E5, and E8, E103, E180, and E180L; Economics 1.

Laboratory Courses: Two courses from the following: Biological Sciences 111L, 112L, 113L, 114L, 116L, 122L, 129L; Environmental Analysis and Design E142L, E160L, E164L, E173L.

Research or Field Study: Either eight units of Biological Sciences 199, Environmental Analysis and Design E197, or Social Ecology 199 (research), or Social Ecology 194 plus four units of Social Ecology 195 (field study).

Applied Ecology Elective Areas: A minimum of three courses selected from the following list. Students should note that some courses have prerequisites.

Environmental Biotechnology: Biological Sciences 122, 123, 129, 137A, 137B, 189; Environmental Analysis and Design E105U, E160, E178; Chemical and Biochemical Engineering ChE165, ChE170; Civil Engineering CEE166.

Environmental Health Science: Biological Sciences 122, 143; Environmental Analysis and Design E106, E146, E162, E164, E169A, E169B, E175, E176, E177A, E177B, E178.

Environmental Law, Planning, and Public Policy: Environmental Analysis and Design E101, E102U, E105U, E106, E107U, E108U, E109U, E112, E116, E131U, E141, E143U, E145, E146, E147U, E148U, E149U, E150U, E151U, E153, E154, E155U, E156U, E157U, E159U, E162, E169A, E169B, E174.

Resource Management-Terrestrial Environments: Biological Sciences 174, 181, 186; Environmental Analysis and Design E105U, E142, E145, E154, E164, E169A, E169B, E174, E178.

Water Pollution Control and Management: Biological Sciences 122, 127, 178, 189; Environmental Analysis and Design E105U, E145, E155U, E160, E162, E164, E168, E169A, E169B, E173, E178.

DEPARTMENT OF CRIMINOLOGY, LAW AND SOCIETY

Henry N. Pontell, **Department Chair**

The Department of Criminology, Law and Society focuses, first, on the manifestations of criminal behavior and the methods for controlling that behavior, and second, on the relationships and interactions between social processes and legal systems. Basic courses present overviews of American legal systems with particular emphasis on criminal and juvenile justice, the forms of criminal behavior, the role of law in understanding social and psychological phenomena, and the applications of sociological theory in understanding law and legal systems. Subsequent course work provides understanding of the theoretical structures used to explain criminal behavior, the effects of crimes from the perspectives of victims, the operations of systems of justice and their underlying institutions,

the goals of governmental regulation and the methods used to achieve those goals, and more advanced issues in the interactions of law and such fields as psychology, sociology, and planning. In addition, substantive areas of law, such as criminal, environmental, and family law, are introduced. The undergraduate program leads to a B.A. degree in Criminology, Law and Society.

Students are provided with opportunities to become acquainted with the varieties of behavior that society chooses to control or regulate, the methods and institutions used to achieve that control or regulation, and the approaches aimed specifically at altering unacceptable behavior. In addition, there is provision for students to use their increasing knowledge of the law, its procedures, and institutions to enhance their understanding of the social sciences.

The course of study provides excellent preparation for law school and for graduate study in sociology, criminology, and criminal justice. Careers for students who terminate their University education at the baccalaureate level may be developed through placements in criminal justice and regulatory agencies, in organizations determining public policy, and in programs that deliver services to people who have difficulties with some aspect of the legal system.

Students are strongly encouraged to select electives in a variety of departments. Courses in areas such as Psychology, Sociology, Economics, and Political Science can provide a further context for the understanding of crime, law, and criminal justice, while courses in areas such as art history, theater, and music can enhance the quality of the student's entire life.

Field study placements are available in police departments, public defenders' offices, probation and parole agencies, the Orange County District Attorney's Office, the State juvenile detention system, the Orange County Victim/Witness Assistance Program, juvenile shelters, legislative offices, and in private legal firms.

Information on the graduate program begins on page 319.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 307.

Departmental Requirements

Ten courses (40 units) as specified below:

- A. Three upper-division required courses (12 units); students must select one course from each of the following three groups: Criminology, Law and Society (1) J101, J102, J103; (2) J104, J105, J106; and (3) J107, J108, J109.
- B. Seven upper-division elective courses (28 units) numbered J101–J185, selected in any combination from the four areas of study within the major: Law and Society, Law and Legal Procedure, Crime and Delinquency, and Legal Institutions of Social Control. (Courses taken to satisfy requirement A above may not also be used to satisfy requirement B.)

Criminology, Law and Society Minor Requirements

Nine courses (36 units): Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, and six upper-division Criminology, Law and Society courses selected from J100–J193.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

Courses in Criminology, Law and Society

LOWER-DIVISION

J7 Introduction to Criminology, Law and Society (4). Lecture, three hours. Examines the major biological, sociological, and psychological explanations for crime and links them historically with prevailing systems of punishment. From classical criminology to positivism, investigates the evolution of criminological theories, their cultural and historical contexts, and their strengths and weaknesses. (III)

UPPER-DIVISION

J100 Special Topics in Criminology, Law and Society (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Criminology, Law and Society J7 and, in some cases, consent of instructor. May be repeated for credit as topics vary.

J101 Civil Legal System (4). Lecture, three hours. Provides an overview of the American civil legal system and of certain fundamental legal concepts as well as an introduction to legal research. Reading, briefing and debating judicial opinions, legal research, and writing an appellate legal brief. Prerequisite: Criminology, Law and Society J7.

J102 Constitutional Law (4). Lecture, three hours. Addresses the areas of freedom of speech, freedom of religion, the right to privacy, and discrimination. Specific issues include racial and gender bias, abortion, symbolic speech, freedom of the media, defamation, advocacy of violence, and obscenity. Prerequisite: Criminology, Law and Society J7. Criminology, Law and Society J102 and Political Science 171D may not both be taken for credit.

J103 American Socio-Legal Theory (4). Lecture, three hours. Evolution of American legal theory from nineteenth century to present in historical context of other human sciences; emphasizes shifting relation between legitimacy of legal decisions and legal system's relative autonomy; social science research use within legal system.

J104 Sociology of Law (4). Lecture, three hours. Examines law creation and law enforcement in their social and political context. Discusses the major theories of law and the modern state, and presents case studies in order to evaluate the strengths and weaknesses of these theoretical perspectives.

J105 Psychology and the Law (4). Lecture, three hours. Psychological assumptions of American legal system and mental health aspects of provision of criminal justice services. Civil commitment, insanity defense, competence to stand trial, jury selection, eye-witness identification. Use of police, courts, correctional institutions in prevention of behavior disorder. Prerequisite: Criminology, Law and Society J7 or J101. Same as Psychology and Social Behavior P164S.

J106 Introduction to the Comparative Study of Legal Culture (4). Lecture, three hours. Traces the anthropological and comparative cultural study of law from the nineteenth century to the present; briefly surveys the diversity of recorded legal cultures and critically examines key concepts which have been used to describe and classify them.

J107 Deviance (4). Lecture, three hours. Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Same as Sociology 156 and Psychology 178D.

J108 Criminological Theory (4). Lecture, three hours. Explores the question of crime causation from a number of theoretical perspectives in the social sciences. Schools of thought examined include utilitarianism, positivism, human ecology, social structural approaches, social process (learning) theories, labeling, and radical-critical (political) perspectives. Prerequisite: Criminology, Law and Society J7.

J109 Legal Sanctions and Social Control (4). Lecture, three hours. Examination of criminal sanctions as mechanisms of social control. Includes the nature, function, and organization of courts as sanction generating institutions, and problems associated with punishing white-collar and corporate illegalities.

J111 Latinos and the Law (4). Lecture, three hours; discussion, one hour. Examines a range of theoretical, empirical and policy approaches to legal issues affecting the Latino population, with emphasis on California. Discusses topics concerning the purpose of law, the creation of law, and the enforcement of law.

J114 Organized Crime and American Society (4). Lecture, three hours. Examination of the phenomenon of American organized crime from a sociological perspective. Explanation of methods by which organized crime is tolerated at various levels of society. Emphasis on ways in which "underworld" interests interact with legitimate economic and political institutions.

J115 Federal Law Enforcement (4). Lecture, three hours. The peculiar legal, organizational concerns of the federal system of law enforcement and some of the crimes it is uniquely designed to address—white-collar crime, drug trafficking, racketeering, public corruption. Roles, responsibilities of the FBI, DEA, Customs, other policing agencies. Prerequisites: Criminology, Law and Society J7.

J116 Gender and Social Control (4). Lecture, three hours. Investigates how gender and social control interface such that each determines and reflects the other. Examines how the social world is organized around sex, sexuality, masculinities, femininities. Processes that regulate and channel social life, desire, conduct, differential allocation of social status.

J120 Law and Inequality (4). Lecture, three hours. Various aspects of the law as related to three specific areas of inequality: immigration and immigrants, race, and gender. The role of law as a tool of social reform and limitations of the legal system historically in resolving inequality issues.

J123 Family Law (4). Lecture, three hours. Examines legal issues surrounding marriage, cohabitation, divorce, child custody and support, adoption, and the rights of parents and children in the family context. The findings of social science research are used to illuminate the legal issues. Prerequisite: Criminology, Law and Society J7 or J101. Same as Psychology and Social Behavior P169P.

J124 Social Ecology of Child Abuse and Neglect (4). Lecture, three hours. Emphasizes integration of psychological, social, and cultural factors for understanding the etiology of child maltreatment. Prediction, treatment, prevention, and policy issues also are covered. Same as Psychology and Social Behavior P172P.

J125 Crime and Public Policy (4). Lecture, three hours. Increase students' understanding of crime, violence, and the criminal justice system; assess students' state of knowledge on current key policy issues, examine/discuss policy-making and the use of empirical information in current U.S. policy debates. Prerequisite: Criminology, Law and Society J7.

J126 Drugs, Crime, and Social Control (4). Lecture, three hours. Drug abuse in the U.S.; the psychopharmacology of various drugs; biological, psychological, and sociological explanations for drug abuse. Policy issues are discussed; students will develop and defend a set of strategies for limiting harm done by drugs and drug laws.

J127 Hate Crimes (4). Lecture, three hours. Examines the causes, manifestations, and consequences of hate crimes and the larger social context within which they occur. The politics and dynamics of intergroup violence born of bigotry and manifested as discrimination; social policy designed to control bias-motivated violence.

J128 Environmental Law (4). Lecture, three hours. Environmental law as combination of traditional legal principles and newly created statutes, rules, and decisions applied to environmental protection. Investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws utilized. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E105U.

J132 Juvenile Delinquency (4). Lecture, three hours. Patterns of delinquent behavior, theories that explain behavior, current research aimed at enhancing exploratory power. Attempts to prevent and control delinquency are put in historical perspective. Development of the current juvenile justice system and evolution of modern juvenile law. Prerequisite: Criminology, Law and Society J7.

J134 Victimless Crimes (4). Lecture, three hours. Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality.

J137 Criminal Procedure (4). Lecture, three hours. Examines the law governing arrests (with and without a warrant); police detention; search and seizure; interrogation; use of informers, eavesdropping, wiretapping; examination and identification of suspects. Pretrial motions such as speedy trial and discovery of evidence may be covered. Prerequisite: Criminology, Law and Society J7.

J138 Victims of Crime (4). Lecture, three hours. Examines the impact of crime upon a variety of victims, e.g., victims of child and spousal abuse, burglary, arson, robbery, and rape. Considers such topics as victim compensation, victim-offender relationships, and the secondary victimization process.

J140 Prisons, Punishment, and Corrections (4). Lecture, three hours. A review of how the U.S. punishes and rehabilitates convicted law violators. The conflicts among the major purposes of sentencing—rehabilitation, deterrence, incapacitation—are discussed, as well as the effects of different sanctions on public safety, offender rehabilitation, and justice system costs.

J141 Seminar in Criminal Justice (4). Seminar, three hours. Selected topics in the field of criminal justice. Issues vary with the interests of the instructor and students, and include such topics as violent crime, political crimes, police discretion, and civil rights of prison inmates.

J142 White-Collar Crime (4) W. Lecture, three hours. Examines criminal activity in business and corporate enterprise, organizations, and the professions. Theories regarding the causes and control of white-collar and corporate crime are covered as well as the numerous definitions of these terms.

J143 Theories of Punishment (4). Lecture, three hours. Survey of the various schools of thought regarding formal punishment theory. The purposes of legal sanctions are examined, including those of deterrence, rehabilitation, retribution, and incapacitation. Considers problems in realizing formal goals of punishment in practice.

J144 Criminal Law (4). Lecture, three hours. The substantive nature of criminal law as opposed to criminal procedure which is concerned with how law is enforced. Considers offenses against: the person; habitation and occupancy; property. Includes laws of: homicide, assault, battery; burglary, arson; larceny, robbery, forgery, counterfeiting.

J145 Government Crime (4). Lecture, three hours. Examines the legal, organizational, and political issues involved in the generation and control of government lawlessness. Readings present historical and theoretical perspectives in the abuse of government authority and the ability of the legal system to control such behavior.

J146 Social Control of Violence (4). Lecture, three hours. Studies the police as controllers of violence, as users of violence, and as victims of violence. Prerequisite: Criminology, Law and Society J7.

J147 Law and Social Change (4). Lecture, three hours. Explores the relationship of law to its social setting by considering both law as a product of social change and law as a source or medium of change.

J150 The Legal Profession (4). Lecture, three hours. Role of the legal profession in modern society, the diverse professional roles lawyers play, the American legal profession compared with that of other societies. "Litigation explosion," ethical problems, interactions between lawyers and other professionals, training and socialization of new lawyers.

J151 Miscarriages of Justice (4). Lecture, three hours. Systematically describes, explains, and analyzes the causes and consequences of the wrongful accusation, prosecution, incarceration, and sometimes even execution, of the innocent in the American criminal justice system.

J152 Interrogation, Confession, and the Law (4). Lecture, three hours. In-depth examination of the social psychology of police interrogation in America, the evolution of American interrogation practices from the nineteenth century to the present, impact of law on police behavior and ideology, causes and consequences of false confessions, possibilities of reform.

J164 Social Control of Delinquency (4). Lecture, three hours. Assumes familiarity with theories of juvenile delinquency, the juvenile justice system, the elements of juvenile law. Using that knowledge, students explore current research in primary and secondary prevention of delinquency, and relevant case law. Requires an original research project. Prerequisites: Social Ecology 10 and Criminology, Law and Society J132.

J181 Contemporary Legal Issues (4). Lecture, three hours. An in-depth analysis of current legal issues viewed from their political and constitutional perspectives. Issues studied are determined by instructor and student interest. Prerequisite: consent of instructor.

J185 Criminal Justice System Capacity (4). Lecture, three hours. Examination of "system capacity" in criminological and criminal justice related research and how it can be used to explain and describe current problems and practices in the American legal system. Limitations of sanctioning criminals due to political, physical space, and resource constraints. Prerequisite: Criminology, Law and Society J7.

J191 Law and Modernity (4). The rise and spread of Enlightenment legal traditions, social contract theory, individual rights, ideologies of "liberty, equality, fraternity"; contradictions of liberal law, its understandings of "primitive" and "civilized"; pervasive myths of property, difference, race, and rights. Reading- and writing-intensive. Same as Anthropology 127A. (VII-B)

DEPARTMENT OF ENVIRONMENTAL ANALYSIS AND DESIGN

John M. Whiteley, **Department Chair (Acting)**

The Department of Environmental Analysis and Design is concerned with the interactions between the physical environment and human health and behavior. Students begin with basic courses in human ecology, environmental quality, environmental psychology, urban sociology, and planning and public policy. Subsequent course work moves toward problem-oriented courses in these areas, enriched by ongoing faculty and student research on such topics as the effects of environmental stressors (e.g., crowding, smog, noise); environmental pollution; the biology and politics of water pollution; potential impacts of natural disasters; compliance with environmental regulations; the way in which economic changes in a community affect the health and well-being of its residents; the effects of stress on health; causes and consequences of urbanization and population change; and risk assessment. The undergraduate program leads to a B.A. degree in Environmental Analysis and Design.

In addition to providing basic knowledge for students in other areas, courses are relevant to professional careers in the areas of administration, environmental quality and health, environmental impact assessment, urban and regional planning and community environmental education. Graduate and professional opportunities related to environmental analysis include urban and regional planning, architecture, environmental psychology, ecology, public health, and urban sociology. Special emphasis is placed upon the roles of individual citizens and community organizations, both governmental and private, in maintaining and enhancing the quality of the human environment. Field study is done in city planning departments, private consulting firms, environmental information centers, pollution control agencies, and health agencies.

Information on the graduate program begins on page 319.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 307.

Departmental Requirements

Ten courses (40 units) as specified below:

- A. Four upper-division core courses (16 units) selected from Environmental Analysis and Design E101–E109.
- B. Six upper-division specialty courses (24 units) numbered E100, E110–E180L, selected in any combination from the areas of Socio-Environmental Studies, Design, Planning and Public Policy, and Environmental Health Science.

Environmental Analysis and Design Minor Requirements

Nine courses (36 units): Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, and six upper-division Environmental Analysis and Design courses, of which a minimum of two are selected from E101–E109U and the remainder are selected from E100, E110–E180L.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

Environmental Design Minor Requirements

Eight courses (32 units): Environmental Analysis and Design E102U, E108U, E120U, and five additional courses selected from E104U, E105U, E122, E123, E124, E125U, E128U, E129A-B-C, E142L, E145.

NOTE: A maximum of three courses may be counted toward both the minor in Environmental Design and the majors in Environmental Analysis and Design or Social Ecology.

Epidemiology and Public Health Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E5, E8, E177A, and six additional courses selected from E101, E122, E146, E166, E168, E175, E176, E177B, Psychology and Social Behavior P45, P134H, Biological Sciences 143.

NOTE: A maximum of three courses may be applied toward both the minor in Epidemiology and Public Health and the majors in Applied Ecology, Environmental Analysis and Design, or Social Ecology. (Environmental Analysis and Design E8 is by necessity one of the three.)

Urban and Regional Planning Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E8, E107U, and seven additional upper-division Environmental Analysis and Design courses selected from E104U, E105U, E108U, E109U, E115U, E118U, E131U, E140U, E141U, E143U, E144U, E147U, E148U, E149U, E150U, E151U, E152U, E155U, E159U.

NOTE: A maximum of three courses may be counted toward both the minor in Urban and Regional Planning and the majors in Environmental Analysis and Design or Social Ecology. (Environmental Analysis and Design E8 is by necessity one of the three.)

Courses in Environmental Analysis and Design

LOWER-DIVISION

E1 Natural Disasters (4) F. Lecture, three hours. Examines the natural processes and impacts of natural disasters. The responses of our society are examined and compared with available prehistoric case studies. Basic understanding of natural processes is gained in this course. Formerly Environmental Analysis and Design E4. (II)

E3 Human Environments (4) W. Lecture, three hours. Study of natural and physical components of earth's environmental problems due to human activities. Topics include global air, water, soil, biodiversity, rainforests, energy, demographics, agriculture, and urbanization. Theme is sustainability. Integrated into the science are social, legal, and economic considerations. Prerequisite: Environmental Analysis and Design E1. (II)

E5 Introduction to Environmental Quality and Health (4). Lecture, three hours. A preliminary survey of how pollution of the natural and physical environment affects human health. Topics include toxicology, epidemiology, risk assessment, water, food, air, noise, radiation, solid and hazardous waste. Included are elements of environmental administration, environmental education, consumer protection. Prerequisite: Environmental Analysis and Design E3. (II)

E6 Introduction to Ecology (4) S. Lecture, three hours. Principles of ecology: application to populations, communities, ecosystems, and humans. Prerequisite: Biological Sciences 1B. Same as Biological Sciences 55. (II)

E8 Introduction to Environmental Analysis and Design (4) F, W, S. Lecture, three hours. Overview of general concepts, theoretical principles, and analytical techniques for investigating environmental systems. Integrates tools from both natural and social sciences to analyze contemporary environmental challenges such as pollution, resource acquisition, facility and ecosystem design, impact assessments, the formulation of environmental policy. (III)

E15 Native American Religions and the Environmental Ethic (4) S. Examines Native American religions and their perspectives on the human relationship to the natural environment. Topics include the rise and fall of pre-Columbian state theocracies, the ceremony of the Sacred Pipe, revitalization movements, and sacredness and ritual in contemporary life. (VII-A)

E20 People, Cultures, and Environmental Sustainability (4). An anthropological consideration of global environmental sustainability from the perspective of human cultures and communities. Causes and consequences of population growth, natural resource management, environmental law, environmental ethics. Case studies emphasize tropical rain forests, arid lands of Africa and North America. Same as Anthropology 20A.

E45U AIDS Fundamentals (4). Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, risk reduction, and how the community can respond. Same as Psychology and Social Behavior P45 and Biological Sciences 45. (II)

UPPER-DIVISION

E100 Special Topics in Environmental Analysis (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of the instructor. Prerequisites: Environmental Analysis and Design E8 and, in some cases, consent of instructor.

E101 Environmental and Public Health Policy (4). Lecture, three hours. Examines factors involved in shaping public health and environmental policy. Topics include the role of science in public health policy, the function of governmental regulatory agencies, citizen participation, and economic and sociopolitical aspects of controlling infectious diseases and regulating carcinogens. Same as Psychology and Social Behavior P182P.

E102U Cultural Ecology and Environmental Design (4). Lecture, three hours. Introduction to cultural ecology and environmental and architectural design. With a view to understanding people's relationships with their built environments, the basic elements of architecture, architectural analysis, and cultural analysis are covered. Examines values in design and design for multicultural societies. Prerequisite: Environmental Analysis and Design E8. (VII-A)

E103 Topics in Applied Ecology (4). Lecture, three hours. Survey of selected issues from an ecological perspective. Topics may include conservation biology, pollution and water quality, hazardous waste cleanup, fire, wetlands, politics versus the environment. Causes, effects, control, cleanup. Integrated into the science are economic, social, and legal concerns. Prerequisite: Environmental Analysis and Design E3 or E8 or a course in ecology. Some previous biology and chemistry is helpful.

E104U Urban Sociology (4). Lecture, three hours. Overview of theoretical, substantive, and policy issues in urban sociology. History of urbanization, the school of human ecology, and recent trends regarding urbanism. Time is devoted to understanding the causes and possible solutions to urban problems. Prerequisite: Environmental Analysis and Design E8.

E105U Environmental Law (4). Lecture, three hours. Environmental law as combination of traditional legal principles and newly created statutes, rules, and decisions applied to environmental protection. Investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws utilized. Prerequisite: Environmental Analysis and Design E8. Same as Criminology, Law and Society J128.

E106 Human Ecology (4). Lecture, three hours. Will population growth doom the human race? Examines the influence of Malthus' *First Essay on Population* (1798) on current models of population-environment interactions and the implications of these models for action. Prerequisite: Environmental Analysis and Design E8.

E107U Urban and Regional Planning (4). Lecture, three hours. Important substantive areas, concepts, tools in the field of urban and regional planning. Topics include: forces that have historically guided and are currently guiding U.S. urbanization; land use, economic development, housing and community development, environmental planning; legal, environmental, governmental contexts. Prerequisite: Environmental Analysis and Design E8.

E108U Environmental Psychology (4). Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: Social Ecology 10 and Environmental Analysis and Design E8. Same as Psychology and Social Behavior P183P.

E109U Urban Public Policy (4). Lecture, three hours. Examines why and how urban policies are enacted and carried out in contemporary U.S. cities and regions. Topics include: evolution and organization of city governments and policymaking over the past century; who has the power to direct public

policy and control how cities develop. Prerequisites: Social Ecology 10 and Environmental Analysis and Design E8.

SOCIO-ENVIRONMENTAL STUDIES

E110 Human Stress (4). Lecture, three hours. Stress as a multidisciplinary topic. Biological, psychological, and sociological approaches to adaptation-related disorders. Effects of contemporary urban life, such as noise, crowding, work pressure, and traffic congestion on personal health and behavior. Methods of stress reduction. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Psychology and Social Behavior P104H.

E111 The Family (4). Lecture, three hours. Examination of Western family life from population and life course perspectives. Links between large-scale trends and changes in individual's family and household options. Same as Psychology and Social Behavior P168P and Women's Studies 187D.

E112 California's Population (4). Lecture, three hours. Surveys California's human population (past, present, and future) and its interactions with trends in society, government, the economy, and the environment.

E113 Social Ecology of Peace I (4). Lecture, three hours. Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age. Same as Psychology and Social Behavior P178P.

E114 Social Ecology of Peace II (4). Lecture, three hours. Examination of the relationship to achieving peace, of strivings for national security and arms control, and of the basic formative and stabilizing institutions of society including government, religion, business, education, and the family. Same as Psychology and Social Behavior P179P.

E115U Leadership (4). Lecture, three hours. Examines current theory and research about the origins, aspects, and consequences of leadership. Discussions with recognized community leaders and experiential assignments designed to focus on student's own leadership potential and skills. Prerequisite: Social Ecology 10 recommended. Same as Psychology and Social Behavior P159S.

E116 Ecological Anthropology (4). Lecture, three hours. Studies relationships between human communities and their natural environments. The role of environment in shaping culture; effects of extreme environments on human biology and social organization; anthropologist's role in studying global environmental problems, e.g., African famine, destruction of tropical rain forests. Prerequisite: Anthropology 2A, 2B, or 2C. Same as Anthropology 125B. (VII-B)

E117 Nuclear Environments (4). Lecture, three hours. Understanding the impact of the nuclear age on the environment and human health through the interrelated developments of nuclear power and nuclear weapons. The early years of weapon development, catastrophic environmental pollution, perils of nuclear power in the U.S. and Russia.

E118U Race, Ethnicity, and Cities (4). Lecture, three hours. Examines racial and ethnic inequality and the influence that urbanization has in affecting race relations. Explores how race/ethnicity, urban space, housing, economic development, public education, and land policy intersect in cities, both historically and today.

DESIGN

E120U Elements of Environmental Design (4). Lecture, three hours. Basic elements of environmental design such as scale, proportion, rhythm, color, sound, lighting, surfaces, texture, architectural definition of spaces, volumes, massing volumetric analysis, solids and voids, and cultural aspects of design. Excitement and creativity in design, imageability. Prerequisite: Environmental Analysis and Design E8, E102U, or consent of instructor.

E122 Environment and Health (4). Lecture, three hours. Examination of relationships between sociophysical environments and physical and mental health at both individual and aggregate levels of analysis. Environmental resources and risk factors associated with resistance or vulnerability to disease are considered at each level. Prerequisite: Environmental Analysis and Design E8. Same as Psychology and Social Behavior P137H.

E123 Advanced Environmental Psychology: Facilities Design for the Workplace (4). Lecture, three hours. Survey of major topics in the field of facilities design and management including methods of environmental programming and postoccupancy evaluation, design criteria for office automation, and facility-based strategies for promoting employee health, productivity, and improved quality of worklife. Prerequisites: Environmental Analysis and Design E8 and E108. Same as Psychology and Social Behavior P184P.

E124 Environmental Design Research Methods (4). Lecture, four hours. In-depth treatment of theoretical and empirical work relevant to selected topics in environmental psychology, followed by field work with architectural consultants. Students develop environmental evaluation instruments, collect data, and report findings to the consultants for review. Prerequisites: Social Ecology 10; Environmental Analysis and Design E8 and E108. Same as Psychology and Social Behavior P188P.

E125U Environmental Programming (4). Lecture, three hours. Various styles and methods of programming for buildings and building interiors. Examines information designers need; methods for acquiring, sorting, and processing information; making information more scientific, systematic, and reliable; how it can be represented; value judgments involved. Prerequisites: Environmental Analysis and Design E8; E120U, or consent of instructor.

E127 International Environmental Management (4). Lecture, three hours. Network of intergovernmental organizations (the United Nations, in particular) and international nongovernmental organizations in the field of environmental management. Analysis of key international projects and sources of information. Lessons for the integration of international research expertise. Prerequisite: Environmental Analysis and Design E8.

E128U Design and Behavior (4). Lecture, three hours. Tools of architectural analysis and programming. Teaches social scientists basic graphic communication tools. Prerequisites: Environmental Analysis and Design E8 and E125U. Same as Psychology and Social Behavior P189P.

E129A-B-C Research in Environmental Design I, II, III (4-4-4). Participating in a research project selected by the professor, students will learn to frame research questions, design a research project, collect data, analyze data, and write research reports. Focus will be on "qualitative research methods." Prerequisite: Social Ecology 10 or consent of instructor. Only one quarter of E129A-B-C may be used toward upper-division requirements.

E131U Diversity and Environments (4). Lecture, three hours. Explores human diversity and power in built environments. Examines contributions of underrepresented groups to design and planning professions, and how race, class, gender affect use and perception of environments. Investigates ways to make environments and environmental professions more responsive to diversity.

PLANNING AND PUBLIC POLICY

E140U Survey Analysis of Urban Residents (4). Lecture, three hours. Hypotheses concerning the nature and problems of metropolitan areas are tested using Orange County data. A resident survey and the 1980 census are used to study urban social and economic issues. Empirical research projects are assigned. Prerequisites: Environmental Analysis and Design E8; Social Ecology 10 and 166A-B-C. Same as Psychology and Social Behavior P185P.

E141U Urban and Regional Analysis (4). Lecture, three hours. Concepts and methods in regional science with applications to planning, public policy, and environmental analysis. Spatial interaction, location, multiplier, basic activity, and input-output models and their relation to ongoing urban and regional phenomena. Prerequisites: Social Ecology 10 and 13.

E142 Environmental Geology and Ecology for Land-Use Planning (4). Lecture, three hours. Applications of a number of scientific techniques used in environmental science and surveyed with reference to specific case studies. Students incorporate these techniques and sampling procedures in their research designs. Prerequisites: Environmental Analysis and Design E8 and Social Ecology 10 or equivalent; previous or concurrent enrollment in Environmental Analysis and Design E142L; consent of instructor; senior standing preferred. Same as Anthropology 143A.

E142L Laboratory for Environmental Science and Land-Use Planning (4). Provides weekly lecture, lab experiments, and demonstration of techniques in the environmental sciences. Three to five Saturday field trips as well as a four-day field trip to study specific environmental problems. Prerequisites: Environmental Analysis and Design E8 and previous or concurrent enrollment in E142; consent of instructor; senior standing preferred. Same as Anthropology 143LA.

E143U Social Ecology of the Borderlands (4). Lecture, three hours. An introduction to the most important socioeconomic issues affecting the urban-regional context of the U.S.-Mexico border area. Borderlands regional development, urbanization, migration, industrialization, labor market, and environmental issues are considered. Prerequisite: Environmental Analysis and Design E8. (VII-B)

E144U Urbanization and Social Change (4). Lecture, three hours. Examines interactions between social structure and physical space: (1) the contemporary evolution of cities and their hinterlands in the U.S.; (2) patterns of urbanization in the Third World; and, as background for understanding these developments, (3) the re-emergence of cities in Medieval Europe. Prerequisite: Environmental Analysis and Design E8.

E145 Environmental Impact Studies (4). Lecture, three hours. Covers the new laws requiring the preparation of environmental impact statements before projects are allowed to begin. Conceptual framework and methods of analysis are reviewed through case studies. Prerequisite: Environmental Analysis and Design E8.

E146 Dynamics of Human Populations (4). Lecture, three hours. Survey of measurement and theory in social demography, with applications to social and economic issues at local, regional, and global levels. Prerequisite: Environmental Analysis and Design E8.

E147U Locational Conflict (4). Lecture, three hours. NIMBY (Not-In-My-Back-Yard) activities, conflicts within government, and community hostilities (e.g., between different ethnic neighborhoods) as examples of locational conflict. Various theories explaining why conflict occurs and showing how society copes. Prerequisite: upper-division standing or consent of instructor.

E148U Cities and Transportation (4). Lecture, three hours. The relationship between urban areas and transportation systems. Economic analysis of cities, transportation and urban form, highway congestion, environmental impacts of transportation, public transit, transportation and labor markets, and political influences on transportation planning.

E149U Urbanization in Developing Countries (4). Lecture, three hours. Survey of important trends and policy issues in cities of the Third World. Topics include the global urban situation, urban poverty and employment, housing issues, transportation policy, and land policy (public land ownership, land banking, and land readjustment).

E150U Analysis for Decision Making (4). Lecture, three hours. Develops analytical thinking on issues and problems related to public policy. Sound public policy and management decisions rest better when based on rigorous, albeit stylized, analysis. Focuses on analytic methods which can inform the processes of policy and management deliberation.

E151U Housing and Urban Development Policy (4). Lecture, three hours. Surveys public policy issues and develops analytic techniques in the areas of housing and urban development. Examines a range of policy topics including housing assistance to low- and moderate-income families, housing finance system, incentives for economic development and neighborhood preservation. Recommended: previous course work in economics.

E152U Introduction to Urban Geography (4). Lecture, three hours. Introduction to urban geography, focusing on urban transformations, the urban system, and the internal structure of urban areas. Concepts are applied to contemporary issues such as welfare reform, growth management, housing, and economic development. Prerequisite: Environmental Analysis and Design E8.

E153 Public Issues in Biotechnology (4). Lecture, three hours. Examines developments in biotechnology potentially affecting various facets of human society or warranting significant public debate. The implications for public health, environmental science, agriculture, legislation, ethics in science, public policy, economics, and technological background in genetics and ecology.

E154 Environmental Ethics and the American Lands (4). Lecture, three hours. History and evolution of environmental ethics in America. Management problems in national parks, wilderness areas, wild and scenic rivers, national forests. Contemporary and historical aspects/contributors to the field. Mitigation, endangered species, habitat restoration, biodiversity, and environmental activism. Field trips required. Prerequisite: upper-division standing; consent of instructor.

E155U Water Resource Policy (4). Lecture, three hours. Examination of contemporary water problems worldwide, with particular attention to the competing demands for water in the western U.S., and water demand by the poor in developing countries. History and analysis of U.S. water policies at local, state, and federal levels.

E156U Public Health Cost-Effectiveness Analysis (4). Students learn how to calculate the cost-effectiveness of life-and-death public health interventions by measuring health-related quality of life, survival, and cost, and how to use cost-effectiveness information to make wise public health investment decisions in the face of limited resources.

E157U Public Policy Analysis (4). Examines different approaches to the analysis of public policy with differing notions of what constitutes good policy, the role of government, and how citizens participate in policy-making. Suggests a policy-design perspective which builds upon other frameworks but concentrates on goals, implementation structures, tools, and rationales. Prerequisites: Environmental Analysis and Design E8 and E109U. Same as Political Science 121E.

E159U Urban Economic Development Policy (4). Theoretical and practical perspectives on local economic development policy. Integrates economic, planning, political perspectives. Overview of economic role of cities and metropolitan areas. Specific development issues include link between taxes, regulation, job growth; redevelopment planning; evaluating economic development policy.

ENVIRONMENTAL HEALTH SCIENCE

E160 Microbial Ecology of Natural and Polluted Waters (4). Lecture, three hours. Examines microorganisms and their functions in the aquatic environment, specifically microorganisms' role in the biogeochemical cycles of nitrogen, sulfur, and mercury, and how our activities are affecting these cycles. How and why indicator organisms are used in the determination of water quality for public health. Prerequisites: Environmental Analysis and Design E5 and E8. Same as Biological Sciences 118.

E160L Microbial Ecology of Natural and Polluted Waters Laboratory (4). Laboratory, three hours. Enumeration and identification of microorganisms from various aquatic environments. Examines microbial mediation of the sulfur, nitrogen, and mercury cycles and the public health aspects of water quality. Prerequisites: Environmental Analysis and Design E8 and completion of or concurrent enrollment in E160. Same as Biological Sciences 118L.

E161 Chemistry for Environmental Engineering (3). Lecture, three hours. Basic concepts from general, physical, organic, and analytical chemistry as they relate to environmental engineering. Particular emphasis on the fundamentals of equilibrium and kinetics applied to acid-base chemistry, mineral and gas solubility, coordination, redox reactions, and adsorption. Corequisite: Environmental Analysis and Design E161L. Prerequisites: Chemistry 1C; Engineering ChE60, Engineering MAE91, or Engineering 101. Same as Engineering CEE164.

E161L Chemistry Laboratory for Environmental Engineering (1). Laboratory, one hour. Experimental methods and fundamentals for environmental chemical analysis. Corequisite: Environmental Analysis and Design E161. Prerequisites: Chemistry 1C; Engineering ChE60, Engineering MAE91, or Engineering E101. Same as Engineering CEE164L.

E162 The Chemical Components of Water Quality (4). Lecture, three hours. A survey of the chemical properties of water used for drinking, agriculture, and industry. Covers basic chemical analyses of water and the significance of these tests in determining water quality. Prerequisites: Chemistry 1A and Environmental Analysis and Design E5 and E8. Same as Biological Sciences 119.

E164 Environmental Chemistry (4). Lecture, three hours. Uses and impact of heavy-metal toxins in the environment traced from ore bodies, product manufacture, consumption, and waste management. Routes of exposure; medical and societal impacts of these exposures. Prerequisites: Environmental Analysis and Design E8; junior standing and consent of instructor.

E164L Environmental Chemistry Laboratory (4). Lecture, two hours, laboratory, one hour. Involves planning, sampling, gathering, and analyzing data. Direct firsthand experience in carrying out a scientific research project from inception through final technical report. Corequisite: E164 or consent of instructor. Prerequisite: Environmental Analysis and Design E8.

E166 Strategies of Health Promotion (4). Lecture, three hours. Examination of strategies for promoting physical and mental health at community, organizational, and individual levels. Interventions designed to promote healthier lifestyles, organizational structures, and environmental conditions. Criteria for monitoring cost-effectiveness of these programs. Prerequisite: Environmental Analysis and Design E8. Same as Psychology and Social Behavior P138H.

E168 Community Health: An Epidemiological Approach (4). Lecture, three hours. An examination of the distribution and dynamics of human health problems on the community level and exploration of scientific investigations used to determine circumstances under which diseases occur or health prevails. Epidemiology including environmental, genetic, nutritional, and social ramifications. Prerequisites: Environmental Analysis and Design E8 and consent of instructor. Same as Psychology and Social Behavior P139H.

E169A-B Applied Ecology Seminar (3-3). Seminar, two hours. Introduces Applied Ecology majors to a variety of research occurring in industry and universities concerned with subjects addressed in the major. Selected topics include environmental health issues, water quality, hazardous waste management, biotechnology, and economic concerns in management of pollution problems. Prerequisites: Environmental Analysis and Design E8; upper-division Applied Ecology majors.

E173 Limnology and Freshwater Biology (4). Lecture, three hours; discussion, one hour. Biology of freshwater environments: lakes, ponds, rivers, their biota, and the factors which influence distribution of organisms. Prerequisite: Biological Sciences 96 or consent of instructor. Same as Biological Sciences 179.

E173L Limnology and Freshwater Biology Laboratory (4). Analytical techniques for common water-quality variables of lakes, streams, rivers. Benthic fauna, vertebrates and invertebrates, algae, and aquatic plants. Emphasis on field methods with an experimental approach; laboratory exercises. Weekend field trips to estuaries, marshes, lakes, and streams. Prerequisite: concurrent or previous enrollment in Environmental Analysis and Design E173. Same as Biological Sciences 179L.

E174 Restoration Ecology (4) F. Lecture, two hours; field, two hours. Theoretical and practical aspects of habitat restoration and mitigation. Design, implementation, and monitoring of restoration projects in local habitats. Collection of seed and cuttings, planting and maintenance presented. Control of exotics in natural areas discussed. Environmental ethics of restoration emphasized. Prerequisite: Biological Sciences 96. Same as Biological Sciences 175.

E175 Environmental Sources of Human Pathogens (4). Lecture, three hours. Epidemiology, environmental routes of transmission, fate of human pathogens transmitted via water and food. Bacterial, viral, parasitic pathogenic organisms; diseases they cause, the immune response, and transmission routes; biology and survival of pathogens and strategies for their removal from water and food. Recommended: previous course in biology, microbiology, biochemistry, or immunology.

E176 Environmental and Occupational Health (4). Lecture, three hours. Occupational health theory, practice, and regulations: recognition, evaluation, and control of workplace and community health hazards. Complexities of personal and ambient environment recognizing that health is an individual's response to a diverse and dynamic world. Same as Psychology and Social Behavior P142H.

E177A Epidemiology I (4). Lecture, three hours. The distribution of disease and injury across time, space, and populations. Covers basic concepts and methods of descriptive epidemiology including the natural history of disease, demography, public health interventions, models, measurement, sources of data, and indices of health. Prerequisites: Social Ecology 10 and 13, or consent of instructor. Same as Psychology and Social Behavior P128H.

E177B Epidemiology II (4). Lecture, three hours. Covers basic concepts of analytic epidemiology and applications, including experimental and observational designs, prevention, screening, treatment and rehabilitation, infectious disease, and injury prevention. Prerequisite: Environmental Analysis and Design E177A. Same as Psychology and Social Behavior P129H.

E178 Environmental Biotechnology (4). Lecture, three hours. A comprehensive yet concise description of the field of environmental biotechnology as it relates to human environments and the global ecosystem. Students will become conversant in the natural history of environmental, biotechnical developments, and the applications of biotechnology. Recommended prerequisite: a course in biology, chemistry, ecology, or environmental science.

E180 Field Methods for Applied Ecology (4). Uses descriptive format to introduce environmental analysis, methodology, and writing skills necessary to conduct research and produce written papers in scientific journal format. Corequisite: Environmental Analysis and Design E180L. Prerequisite: satisfactory completion of the lower-division writing requirement; senior standing. Open only to Applied Ecology majors.

E180L Field Methods Laboratory (3). Active participation in acquisition and analysis of data. Introduction to field sampling techniques, data collection and laboratory analysis, and the production of written papers in scientific journal format. Habitats include terrestrial, aquatic, and the built environment, both natural and polluted conditions. Corequisite: Environmental Analysis and Design E180.

E181U Health Education for University Life (4). A survey of health issues that present a potential for high-risk behavior in the student community. Students acquire knowledge of risk and wellness factors in sexual health, stress management, fitness and nutrition, alcohol and other drug use, and health relationships.

E182U Peer Community Health Training (4). Focuses on the study of health behavior theory, change models, and environmental analysis skills as applied to college student health risk issues. Students design an intervention for the UCI student community which addresses individual, environmental, or policy change in health risk behavior. Prerequisite: one course from Environmental Analysis and Design E168, E181U, Psychology and Social Behavior P139H, or consent of instructor.

E197A-B Applied Ecology Research (4-4). Basic introduction to research and laboratory research techniques: experimental design, laboratory skills, biostatistics, library research. Students undertake a two-quarter project focusing on environmental health of humans or of flora and fauna associated with environments that are impacted by human activities. Corequisite: first year of Biological Sciences Core. Prerequisites: general chemistry; Biological Sciences 100L or Environmental Analysis and Design E103, or consent of instructor. In-progress grading.

DEPARTMENT OF PSYCHOLOGY AND SOCIAL BEHAVIOR

Carol K. Whalen, **Department Chair**

The Department of Psychology and Social Behavior is concerned with human behavior in social contexts. A major objective is to study variations in social environments (e.g., the family, school, workplace) that affect human behavior over the life cycle. Students begin with basic course work in developmental, social, health, and abnormal psychology. Subsequent course work examines a variety of topics pertinent to the fields of abnormal, developmental, clinical, health, social, and environmental psychology, and the psychological study of social problems. Courses cover such topics as psychosocial development in children, adolescents, and adults; gerontology; childhood behavior disorders and developmental psychopathology; sex differences; attitude change; clinical health psychology; cross-cultural perspectives; cognition and emotion; stress and coping; and counseling and therapy. Opportunities also are available to work with faculty on research in these and other areas. The undergraduate program leads to a B.A. degree in Psychology and Social Behavior.

Students are given a foundation that will enable them to work after graduation from UCI in the private or public sectors or to do graduate work in psychology, human development, public health, health services, social work, counseling, or education. Field study opportunities include schools, child care facilities, community clinics, counseling centers, hospital settings, and social service agencies, among others.

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in developmental, clinical, environmental, health, or social psychology, or in psychology and the law, are advised to consult the course listings here in the Department of Psychology and Social Behavior section. Students interested in other areas of psychology are advised to consult the course listings in the Department of Cognitive Sciences and the School of Biological Sciences sections of the *Catalogue*.

In addition to courses in the Department of Psychology and Social Behavior, strongly recommended courses for students who anticipate pursuing graduate study in psychology include: Biological Sciences 35, (The Brain and Behavior); Social Ecology 166A-B-C (Social Science Statistics I, II, III); and Psychology 112A-B-C (Experimental Psychology), 140L (Learning Theory), and 140M (Human Memory).

Transfer applicants should be aware that the number of students admitted to the major is limited.

Information on the graduate program begins on page 319.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See page 307.

Departmental Requirements

Ten courses (40 units) as specified below:

- A. Four upper-division Psychology and Social Behavior core courses (16 units), one from each of the areas: Developmental Psychology (P101, P102), Health Psychology (P103, P104), Pre-Clinical Psychology (P105, P107), and Social Psychology (P108).
- B. In addition, a total of six upper-division specialty courses (24 units) in **at least** three specialty areas: Developmental Psychology (P115D–P124D), Health Psychology (P128H–P143H), Pre-Clinical Psychology (P144C–P155C), Social Psychology (P156S–P167S), or Societal Problems (P168P–P196P).

Psychology and Social Behavior Minor Requirements

Nine courses (36 units): Criminology, Law and Society J7, Environmental Analysis and Design E8, Psychology and Social Behavior P9, and six upper-division Psychology and Social Behavior courses selected from P100–P193.

NOTE: Students pursuing a major in the School of Social Ecology may not use upper-division course work for both school, major, or minor requirements. No overlap is permitted. Social Ecology 198 and 199 may not be applied toward the minor.

Courses in Psychology and Social Behavior

LOWER-DIVISION

P9 Introduction to Human Behavior (4). Lecture, three hours. Introduction to models of human development and mental health, and the application of the scientific methods to the study of social behavior. Differences among individual, group, and societal levels of analysis and intervention emphasized. (III)

P45 AIDS Fundamentals (4). Lecture, three hours. Considers the biological and sociological bases of the AIDS epidemic. Topics include the history of AIDS, current medical knowledge, transmission, risk reduction, and how the community can respond. Same as Environmental Analysis and Design E45U and Biological Sciences 45. (II)

UPPER-DIVISION

P100 Special Topics in Social Behavior (4). Lecture, three hours. Special topics courses are offered from time to time. Course content varies with interest of instructor. Prerequisites: Psychology and Social Behavior P9 or equivalent, and consent of instructor. May be repeated for credit as topics vary.

P101 Child Development (4). Lecture, three hours. Examines social, emotional, and intellectual growth and development between the ages of 2 and 12 years. Prerequisite: Psychology and Social Behavior P9 or equivalent. Psychology and Social Behavior P101 and Psychology 120D may not both be taken for credit.

P102 Adolescent Development (4). Lecture, three hours. Examines current research in such areas as the psychosocial impacts of puberty, decision-making competencies, biological and cultural bases for changes in family relationships, peer groups, and their functions. Additional topics include identity formation and selected psychosocial problems of adolescence. Prerequisite: Psychology and Social Behavior P9 or Psychology 7A or equivalent. Psychology and Social Behavior P102 and Psychology 21A may not both be taken for credit.

P103 Health Psychology (4). Lecture, three hours. Theory and research are considered as they contribute to an understanding of the role of psychological processes in health and illness. The distinction between prevention and treatment of illness is established, and a variety of psychosocial interventions are elaborated. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P104 Human Stress (4). Lecture, three hours. Stress as a multidisciplinary topic. Biological, psychological, and sociological approaches to adaptation-related disorders. Effects of contemporary urban life, such as noise, crowding, work pressure, and traffic congestion on personal health and behavior. Methods of stress reduction. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Environmental Analysis and Design E110.

P105 Abnormal Behavior (4). Lecture, three hours. Survey of disorders organized by the diagnostic categories of the American Psychiatric Association. Interdisciplinary orientation combines environmental, psychological, and organic perspectives on etiology and treatment. Prerequisite: Psychology and Social Behavior P9 or equivalent; Social Ecology 10 recommended. Psychology and Social Behavior P105 and Psychology 120A may not both be taken for credit.

P107 Clinical Child Psychology (4). Lecture, three hours. Examines research and theory concerning childhood psychopathology and behavior disorders. Diagnosis and assessment, early identification of high-risk children, fear and phobias, antisocial behavior, childhood psychoses, autism, depression, hyperactivity and attention deficit disorders, ethical and policy implications of identifying children who are different. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P108 The Social Animal (4). Lecture, three hours. Theories and research exploring social behavior and social influences on behavior. Topics include methods of social research, attitude formation and change, social perception, the social self, stereotypes and prejudice, conformity, obedience, altruism, aggression, interpersonal relationships and love, and group behavior. Prerequisite: Psychology and Social Behavior P9 or equivalent.

DEVELOPMENTAL PSYCHOLOGY

P115D Infant Development (4). Lecture, three hours. Study of human development from conception through the first two years of life, covering processes and events in the domains of physical, social, and cognitive development. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P116D Adult Development (4). Lecture, three hours. Examines why and how we change (with attention to gains as well as losses) from ages 25–65 and the nature and sources of continuity over time. Topics include physical and intellectual functioning, personality, coping strategies, and social roles and relationships. Prerequisites: Psychology and Social Behavior P9 or equivalent; Social Ecology 10.

P117D Gerontology (4). Lecture, three hours. Examines stereotypes and myths associated with aging; physiological and psychological changes that accompany old age; distinguishes behavior changes due to aging *per se* from those due to historical and socioeconomic factors; political, social aspects of old age in contemporary society. Prerequisites: Psychology and Social Behavior P9 or equivalent; Social Ecology 10 or equivalent.

P119D Cognition and Emotion (4). Lecture, three hours. Examines relations between cognition and emotion. How have the relations between cognition and emotion been construed historically? How closely related are cognitive and emotional development? How do emotions influence reasoning and memory? How similar is emotional experience across cultures? Prerequisite: Psychology and Social Behavior P9 or equivalent.

P120D Cognitive Development (4). Examines theories on nature of cognitive development. Discusses behaviorist theories on role of the environment including those of Vygotsky, Piaget, and recent evidence from cognitive psychologists stressing the importance of knowledge and skills within specific domains. Prerequisite: Psychology and Social Behavior P9 or equivalent. Psychology and Social Behavior P120D and Psychology 141D may not both be taken for credit.

P121D Human Sexuality (4). Lecture, three hours. A broad survey of human sexuality encompassing genetic factors, physiological and anatomical development, customary and atypical forms of behavior, reproductive processes, and cultural determinants. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Women's Studies 187E.

P122D Development of Gender Differences (4). Lecture, three hours. Examination of research on how sexes differ in physiology, cognitive functioning, personality, and social behavior. Sex-differentiated development from the prenatal period through adulthood. Explanations for male-female differences are sought, focusing on biological (genetic, hormonal) and social (familial, cultural) mechanisms. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Women's Studies 187B.

P123D Perspectives on Child Rearing (4). Lecture, three hours. Impact of different child rearing practices on the development of personality and character. Effects on development of variations in structure and dynamics of the family and school; consequences of group care, working mothers, and the one-parent family. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P124D Human Development in Cross-Cultural Perspective (4). Lecture, three hours. Human development in diverse cultures (e.g., Asian, American, and African). Special emphasis on the East-West contrasts and when East meets West (i.e., Asian-American experiences). Topics include parenting, family relations, language and cognition, schooling and academic achievement, and morality. Prerequisites: Psychology and Social Behavior P9 or equivalent; Social Ecology 10.

HEALTH PSYCHOLOGY

P128H Epidemiology I (4). Lecture, three hours. The distribution of disease and injury across time, space, and populations. Covers basic concepts and methods of descriptive epidemiology including the natural history of disease, demography, public health interventions, models, measurement, sources of data, and indices of health. Prerequisites: Social Ecology 10 and 13, or consent of instructor. Same as Environmental Analysis and Design E177A. Formerly P143H.

P129H Epidemiology II (4). Lecture, three hours. Covers basic concepts of analytic epidemiology and applications, including experimental and observational designs, prevention, screening, treatment and rehabilitation, infectious disease, and injury prevention. Prerequisite: Psychology and Social Behavior P128H. Same as Environmental Analysis and Design E177B. Formerly P144H.

P130H Psychoneuroimmunology (4). Lecture, three hours. Examines the interactive relationships of behavioral-neural-hormonal-immune systems and how these relationships contribute to the maintenance of health and to the development of disease. Topics include: psychosocial factors, stress, disease and immunity; behavioral dispositions toward immune-related disorders. Prerequisites: Psychology and Social Behavior P9 or equivalent, P104 or consent of instructor.

P131H Child Health Psychology (4). Lecture, three hours. Exploration of psychological antecedents, concomitants, and consequences of medical illnesses in children. Children's beliefs about health, illness, and medication; the role of stress; coronary-prone behavior; therapeutic adherence and physician-patient interaction; coping with chronic illness; effects of a child's illness on family. Prerequisite: Psychology and Social Behavior P9 or equivalent; Social Ecology 10 recommended.

P132H The Human Pain Experience (4). Lecture, three hours. Examines the physiological and sociocultural correlates of human pain perception. Emphasis on laboratory and clinical methods of measuring acute and chronic pain; social influences on the experience and communication of pain; biopsychosocial approaches to pain control. Prerequisites: Psychology and Social Behavior P9 or equivalent and any upper-division course from the Health or Pre-Clinical Psychology areas.

P133H Sociology of Mental Health and Illness (4). Lecture, three hours. Sociological contributions of the nature, causes, and consequences of mental health and illness. Social status and mental health, stressful life events, societal response to mental disorders, organization of mental health services in the community, problems of institutionalization and deinstitutionalization. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P134H Behavioral Medicine (4). Lecture, three hours. Examines biobehavioral aspects of health and illness, focusing on how stress contributes to or exacerbates disease processes. Background information on psychosomatic medicine and stress models and detailed examination of specific organ systems emphasizing the reactivity of these systems to stress. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P135H Sports Psychology (4). Lecture, three hours. Psychological components of athletic performance with regard to scientific and practical issues. Roles of cognitive processes, physiological arousal, and emotion. Various personality factors related to performance, competition, and coaching. Strategies for improving athletic performance for individual and team competition. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P136H Advanced Seminar: Human Stress (4). Lecture, three hours. In-depth exposure to selected topics in the field of human stress. Includes environmental determinants of stress, life events and social support, stress-related disturbances, occupational stress, and stress management interventions. Theoretical and methodological issues in stress research. Prerequisites: Psychology and Social Behavior P9 or equivalent, P104, and consent of instructor.

P137H Environment and Health (4). Lecture, three hours. Examination of relationships between sociophysical environments and physical and mental health at both individual and aggregate levels of analysis. Environmental resources and risk factors associated with resistance or vulnerability to disease are considered at each level. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E122.

P138H Strategies of Health Promotion (4). Lecture, three hours. Examination of strategies for promoting physical and mental health at community, organizational, and individual levels. Interventions designed to promote healthier lifestyles, organizational structures, and environmental conditions. Criteria for monitoring cost-effectiveness of these programs. Prerequisite: Environmental Analysis and Design E8. Same as Environmental Analysis and Design E166.

P139H Community Health: An Epidemiological Approach (4). Lecture, three hours. An examination of the distribution and dynamics of human health problems on the community level and exploration of scientific investigations used to determine circumstances under which diseases occur or health prevails. Epidemiology including environmental, genetic, nutritional, and social ramifications. Prerequisites: Environmental Analysis and Design E8 and consent of instructor. Same as Environmental Analysis and Design E168.

P140H Beliefs, Attitudes, and Health Behaviors (4). Lecture, three hours. Examines health relevant beliefs, attitudes, and behaviors from a social psychological perspective. Topics include: optimism; perceived control; self-deception; protection motivation; the health belief model; and religiosity and health. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P141H Clinical Health Psychology (4). Lecture, three hours. Role of behavior in etiology, treatment, and prevention of certain diseases. Behavioral intervention including biofeedback, stress-, pain-management, health habit counseling, and other skills to assist patients make cognitive, emotional, and behavioral changes needed to cope with disease or achieve better health. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P142H Environmental and Occupational Health (4). Lecture, three hours. Occupational health theory, practice, and regulations: recognition, evaluation, and control of workplace and community health hazards. Complexities of personal and ambient environment recognizing that health is an individual's response to a diverse and dynamic world. Same as Environmental Analysis and Design E176.

PRE-CLINICAL PSYCHOLOGY

P144C Personality (4). Lecture, three hours. Comparison of the major theories of personality. Provides a frame of reference for understanding lifestyles, development, maturity, and psychopathology. Emerging research themes are used to identify promising lines of personality theorizing. Prerequisite: Psychology and Social Behavior P9 or equivalent. Psychology and Social Behavior P144C and Psychology 120P may not both be taken for credit.

P146C Clinical Psychology (4). Lecture, three hours. Overview of theories, assessment techniques, research methodologies and intervention approaches in clinical psychology. Psychodynamic, behavioral, humanistic, and cognitive perspectives are examined along with ethical and professional issues. Prerequisites: Psychology and Social Behavior P9 or equivalent; Psychology and Social Behavior P105; Social Ecology 10 recommended. Formerly Psychology and Social Behavior P106.

P147C Behavioral Assessment (4). Lecture, three hours. Laboratory-seminar exploration of diverse methods of assessing, analyzing, and recording behavior. Includes methods of direct behavioral observation, structured (analog) assessments, rating scales, interviewing, and self-monitoring. Development of assessment skills and their application in intervention and research programs. Prerequisite: Psychology and Social Behavior P9 or equivalent; Social Ecology 10 recommended.

P148C Counseling Theory I (4). Lecture, three hours. Theoretical approaches and related counseling techniques examined, including client-centered, rational-emotive, transactional analysis, Adlerian, Gestalt, and behavioral counseling. Beginning relationship skills practiced in a laboratory section, using film and audio tapes. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P149C Behavior Modification (4). Lecture, three hours. Principles and methods of behavior modification derived from psychological theories of learning. Considers applications of behavior techniques to treat childhood disorders, school problems, juvenile delinquency, marital and sexual problems, alcoholism, and eating disorders. Behavioral interventions in community and industrial settings. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P150C Cognitive Behavior Therapy (4). Lecture, three hours. Presentation of principles and procedures of therapeutic interventions based on cognitive-behavior methods. Cognitive factors in learning, emotional arousal, psychological disorder, and psychotherapy reviewed. Introduces the application of cognitive behavioral methods to problems of depression, anxiety, anger, pain, and impulsivity. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P151C Child Therapies (4). Lecture, three hours. Examines research methodologies, empirical data, and implications of diverse intervention strategies. Primary topics include psychotherapy process and outcome, family therapies, behavioral intervention, cognitive behavior modification, pediatric psychopharmacology, and ethical and social policy implications of intervening in other people's lives. Prerequisite: Psychology and Social Behavior P9 or equivalent; Social Ecology 10 recommended.

P152C Developmental Psychopathology (4). Lecture, three hours. Research and theory of origins, course, and outcomes of disordered behavior. Continuity and change in patterns of behavior; environmental challenges and buffers; stress and competence in children; vulnerable and invincible children; children of mentally ill parents; families at risk; childhood antecedents of adult disorders. Prerequisite: Psychology and Social Behavior P9 or equivalent; Social Ecology 10 recommended.

P153C Existential Psychology (4). Lecture, three hours. Overall emphasis on life's meanings and directions as an unfolding expression of the pattern of decisions engaged in by each person. Topics include relevant personality and developmental theory research, and philosophy, plus applied consideration of diagnostic testing and psychotherapy. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P154C Women's Peer Counseling I (4). Lecture, three hours. Focuses on the development of basic counseling skills and knowledge in specific issues related to the psychology of women. Students are required to provide counseling services at the Women's Resource Center. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P155C Women's Peer Counseling II (4). Second quarter of two-quarter course which focuses on the development of basic counseling skills and knowledge in specific issues related to the psychology of women. Prerequisites: Psychology and Social Behavior P9 or equivalent, P154C, and consent of instructor.

SOCIAL PSYCHOLOGY

P157S Attitudes and Behavior (4). Lecture, three hours. Cultural influences on attitudes and behavior. Situational versus attitudinal determinants of compliance and altruism. Cognitive dissonance theory and the minimally sufficient justification principle. Prejudice and discrimination. Ajzen's theory of planned behavior. Prerequisites: Psychology and Social Behavior P9 or equivalent.

P158S Social Relationships (4). Lecture, three hours. Examines major issues, concepts, and methods in the scientific study of social relationships. Topics include relationship formation and dissolution, friendships and love relationships, loneliness, bereavement, societal influences on close relationships, significance of close relationships for health and well-being. Prerequisites: Psychology and Social Behavior P9 or equivalent; Social Ecology 10.

P159S Leadership (4). Lecture, three hours. Examines current theory and research about the origins, aspects, and consequences of leadership. Discussions with recognized community leaders and experiential assignments designed to focus on student's own leadership potential and skills. Social Ecology 10 recommended. Same as Environmental Analysis and Design E115U.

P160S Attitude Organization and Change (4). Lecture, three hours. Source, message, and audience effects in communication and persuasion. Psychological functions of beliefs and attitudes. Theoretical explanations of message impact including protection motivation theory and the elaboration likelihood model. Prerequisites: Psychology and Social Behavior P9 or equivalent, Social Ecology 10 or equivalent, and Social Ecology 13 or equivalent.

P164S Psychology and the Law (4). Lecture, three hours. Psychological assumptions of American legal system and mental health aspects of provision of criminal justice services. Civil commitment, insanity defense, competence to stand trial, jury selection, eye-witness identification. Use of police, courts, correctional institutions in prevention of behavior disorders. Prerequisite: Criminology, Law and Society J7 or J101. Same as Criminology, Law and Society J105.

P166S Family, Society, and Education (4). Lecture, three hours. Examines the development of children's academic and cognitive competence in social context. Effects of parental beliefs, home environment, school environment, peer norms, community norms, cultural values. Effects of selected demographic factors such as ethnicity, parental SES, maternal employment, birth order. Prerequisite: Psychology and Social Behavior P9 or equivalent.

SOCIETAL PROBLEMS

P168P The Family (4). Lecture, three hours. Examination of Western family life from population and life course perspectives. Links between large-scale trends and changes in individual's family and household options. Same as Environmental Analysis and Design E111 and Women's Studies 187D.

P169P Family Law (4). Lecture, three hours. Examines legal issues surrounding marriage, cohabitation, divorce, child custody and support, adoption, and the rights of parents and children in the family context. The findings of social science research are used to illuminate the legal issues. Prerequisite: Criminology, Law and Society J7 or J101. Same as Criminology, Law and Society J123.

P170P Work and Family (4). Lecture, three hours. Effects of employment and unemployment on mental health and marital quality; effects of work on parenting and child development; corporate and social policies for "families that work"; young adults' decision-making about work and family. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Women's Studies 187A.

P171P Impacts of Divorce (4). Lecture, three hours. Examines divorce in historical, economic, and, primarily, psychological contexts, emphasizing recent research pertaining to the impacts of divorce on children, families, and society. Prerequisite: Psychology and Social Behavior P9 or equivalent. Same as Women's Studies 187C.

P172P Social Ecology of Child Abuse and Neglect (4). Lecture, three hours. Emphasizes integration of psychological, social, and cultural factors for understanding the etiology of child maltreatment. Prediction, treatment, prevention, and policy issues also are covered. Same as Criminology, Law and Society J124.

P174P Social Inequality (4). Lecture, three hours. Examines the nature, causes and consequences of social inequality in advanced industrial societies. Focuses primarily on the United States, but references are made to other societies as well. Discusses the basic issues of social inequality followed by issues of social mobility. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P175P Violence in Society (4). Lecture, three hours. Current theory and research on aggression; anger and violence as problems in individual and social functioning. Process and functions of anger examined with regard to normal behavior and psychopathology. The determinants, prevalence, and implications of violence in society are analyzed. Prerequisite: Psychology and Social Behavior P9 or equivalent.

P176P Violence and Ideas Concerning the Social Order (4). Lecture, three hours. Historical and philosophical perspectives of violence as a way to enhance social science views. Violence as a problem of the social order. The state of nature, the social contract, and human destructiveness explored in conjunction with overviews of violence and warfare. Prerequisite: Psychology and Social Behavior P9 or equivalent and consent of instructor.

P178P Social Ecology of Peace I (4). Lecture, three hours. Examination of differing definitions of the problem of achieving peace and the special problems of seeking peace in the nuclear age. Same as Environmental Analysis and Design E113.

P179P Social Ecology of Peace II (4). Lecture, three hours. Examination of the relationship to achieving peace, of strivings for national security and arms control, and of the basic formative and stabilizing institutions of society including government, religion, business, education, and the family. Same as Environmental Analysis and Design E114.

P181P Mentors in Higher Education (4). Seminar, three hours. Discussion of roles and functions of mentors in higher education. Specific mentoring issues include: personal skills, training, the sociocultural role of mentoring in higher education, student affirmative action, history and politics in higher education. Prerequisite: consent of instructor.

P182P Environmental and Public Health Policy (4). Lecture, three hours. Examines factors involved in shaping public health and environmental policy. Topics include the role of science in public health policy, the function of governmental regulatory agencies, citizen participation, and economic and sociopolitical aspects of controlling infectious diseases and regulating carcinogens. Same as Environmental Analysis and Design E101.

P183P Environmental Psychology (4). Lecture, three hours. Impact of the physical environment on individual and group behavior. Three basic concerns examined: (a) environmental determinants of behavior at the individual and interpersonal level; (b) social planning and urban design; and (c) methodological approaches to the study of environmental issues. Prerequisites: Social Ecology 10 and Environmental Analysis and Design E8. Same as Environmental Analysis and Design E108U.

P184P Advanced Environmental Psychology: Facilities Design for the Workplace (4). Lecture, three hours. Survey of major topics in the field of facilities design and management including methods of environmental programming and postoccupancy evaluation, design criteria for office automation, and facility-based strategies for promoting employee health, productivity, and improved quality of worklife. Prerequisites: Environmental Analysis and Design E8 and E108U. Same as Environmental Analysis and Design E123.

P185P Survey Analysis of Urban Residents (4). Lecture, three hours. Hypotheses concerning the nature and problems of metropolitan areas are tested using Orange County data. A resident survey and the 1980 census are used to study urban social and economic issues. Empirical research projects are assigned. Prerequisites: Environmental Analysis and Design E8; Social Ecology 10 and 166A-B-C. Same as Environmental Analysis and Design E140U.

P188P Environmental Design Research Methods (4). Lecture, four hours. In-depth treatment of theoretical and empirical work relevant to selected topics in environmental psychology, followed by field work with architectural consultants. Students develop environmental evaluation instruments, collect data, and report findings to the consultants for review. Prerequisites: Social Ecology 10; Environmental Analysis and Design E8 and E108U. Same as Environmental Analysis and Design E124.

P189P Design and Behavior (4). Lecture, three hours. Tools of architectural analysis and programming. Teaches social scientists basic graphic communication tools. Prerequisites: Environmental Analysis and Design E8 and E125U. Same as Environmental Analysis and Design E128U.

P197 Research Seminar in Psychology and Social Behavior (4). Seminar, three hours. Special topics research seminar. Content varies with interest of instructor. Capstone research opportunity with Psychology and Social Behavior faculty members. Prerequisites: upper-division standing and consent of instructor. May be repeated for credit as topics vary.

DEPARTMENT OF URBAN AND REGIONAL PLANNING

World Wide Web: http://www.sococol.uci.edu/~sococol/depart/urp_home
Scott A. Bollens, **Department Chair**

Established in 1992, the Department of Urban and Regional Planning utilizes an interdisciplinary approach to urban community problem solving. The Department faculty devote their scholarly and teaching efforts to theory-driven and empirically oriented urban research and their interests include community attitudes and social policy, economics and public policy, land-use and growth management, transportation policy, community health planning and policy, and urban design and well-being. Collaborative academic and research ties are maintained with other units on campus including the School of Social Sciences, the Graduate School of

Management, and the Institute of Transportation Studies. The Department's teaching, research, and graduate training utilize UCI's close proximity to both urban institutional centers and planned suburban communities, as well as the University's location within the dynamic Southern California and Pacific Rim regions.

Currently, the Department offers a program of study leading to the Ph.D. degree in Urban and Regional Planning; the Master of Urban and Regional Planning degree (M.U.R.P.), which is fully accredited by the National Planning Accreditation Board; and an undergraduate minor in Urban and Regional Planning. Departmental faculty also teach courses within the School's undergraduate programs in Social Ecology; Criminology, Law and Society; Environmental Analysis and Design; and Psychology and Social Behavior.

The common mission linking the Department's undergraduate, master's, and doctorate-level instruction and faculty research efforts is to bring applied research to the cause of bettering neighborhoods, communities, and regions. Southern California has grown dramatically over the past three decades and will soon become the nation's largest urban corridor. The challenges to maintain the quality of life, provide employment opportunities, and reduce the deep socioeconomic disparities of this binational, metropolitan, and multiethnic region are enormous. No other region in the United States has been faced with the kinds of problems and future possibilities that now confront Southern California and its increasingly diverse communities.

If the challenges presented by contemporary urbanization are enormous, its promise is equally vast. Extremely diverse, multiethnic communities face the necessity of solving their problems in ways that are acceptable to their populations. Older central city areas that are vital to the region face issues of social and economic sustainability. The need to create employment opportunities, through the application of new technologies in industries and services, will be one of the most challenging policy questions facing urban regions. At the same time, urban growth and transportation will have to meet the increasingly stringent environmental regulation that can safeguard the population's health and the quality of the natural environment. The urban design and landscape of most communities stand to be reshaped as never before, as the building stock ages and the need to redevelop increases.

Ph.D. in Urban and Regional Planning: See page 324.

Master of Urban and Regional Planning: See page 320.

Urban and Regional Planning Minor Requirements

Nine courses (36 units): Environmental Analysis and Design E8, E107U, and seven additional upper-division Environmental Analysis and Design courses selected from E104U, E105U, E108U, E109U, E115U, E118U, E131U, E140U, E141U, E143U, E144U, E147U, E148U, E149U, E150U, E151U, E152U, E155U, E159U.

Course descriptions are available in the Department of Environmental Analysis and Design section.

NOTE: A maximum of three courses may be counted toward both the minor in Urban and Regional Planning and the majors in Environmental Analysis and Design or Social Ecology. (Environmental Analysis and Design E8 is by necessity one of the three.)

GRADUATE PROGRAMS

Graduate training in the School of Social Ecology is organized around the study of contemporary problems in the social and physical environment. Emphasis is placed primarily upon theory and research that have implications for policy and intervention. Problems are investigated from the complementary perspectives of a multidisciplinary faculty that includes specialists in social, developmental, clinical, environmental, and health psychology; urban and regional planning and architecture; urban sociology; law; criminology; and environmental health.

Among issues of long-standing interest in the School are crime and justice in society, social influences on health and human development over the life course, and the effects of the physical environment on health and human behavior. The graduate curriculum emphasizes an interdisciplinary orientation, training students to draw upon the knowledge offered by several of the traditional academic fields in order to examine important social, legal, and environmental problems from a perspective of breadth as well as depth.

Programs of study leading to the M.A., M.S., M.U.R.P., and Ph.D. degrees are offered. Doctoral students have the opportunity to pursue an individualized course of study in the principles and methods of social ecology, leading to the Ph.D. in Social Ecology, or a specialized course of study that leads to the Ph.D. in Social Ecology with a concentration in Environmental Analysis and Design. Additional programs lead to one of the following degrees: Ph.D. in Criminology, Law and Society; Ph.D. in Environmental Health Science and Policy; Ph.D. in Health Psychology; Ph.D. in Human Development; or Ph.D. in Urban and Regional Planning. Master's degree students may elect a course of study that leads to the M.A. in Social Ecology, the M.S. in Environmental Health Science and Policy, or the Master of Urban and Regional Planning.

Social Ecology faculty members apply diverse methods of scientific inquiry to social and environmental problems. Evaluation research, legal research, questionnaire and survey methods, field research, naturalistic observation, and quasi-experimental techniques receive emphasis along with laboratory experimentation. Collaborative research with faculty members is an important component of graduate education in the School.

A sampling of faculty research and teaching interests includes human stress, health promotion, biobehavioral bases of health and illness, program evaluation, economic change and behavioral disorders, atypical child development, adaptive aging, end-of-life medical decision-making, violence and aggression, legal sanctions and deterrence, white-collar and organized crime, police work, transitions to parenthood, personality and psychopathology, effects of social environments on early child development, urban growth management and policies, transportation policies, poverty and homelessness, water quality and water policy, air quality, biotechnology, epidemiology, the use of scientific information in public policy formation and litigation, community approaches to HIV/AIDS prevention, the health impacts of work environments, and processes involved in environmental regulation.

ADMISSION

Students should submit their complete application file including the application form, transcripts, three letters of recommendation, and Graduate Record Examination (GRE) scores by January 9 if they are applying to the Department of Psychology and Social Behavior or by January 15 if they are applying to any other department. Additional information is available from the Social Ecology Graduate Counselor; telephone (949) 824-5917, 824-5918.

CAREER OPPORTUNITIES

Graduates enjoy a wide variety of career opportunities and have succeeded in obtaining positions in academic institutions such as Stanford University; Rutgers University; The Johns Hopkins University; Temple University; University of California, Los Angeles; University of California, San Diego; University of Colorado; University of Kansas; University of Minnesota; the University of Oregon; the University of Wisconsin; Indiana University; Carnegie Mellon University; and the City University of New York. Other graduates have established research and administrative careers in government agencies and private firms throughout the United States and Canada, including the National Institutes of Health, the Toronto Department of Public Health, The United Cerebral Palsy Foundation, The Philadelphia Geriatric Center, The New Mexico

Tumor Registry, Orange County Superior Court, Southern California Metropolitan Water District, and in marketing and research firms such as the Yankelovich Group.

Master's Programs

M.A. IN SOCIAL ECOLOGY

At the graduate level, the emphasis in the School of Social Ecology is on the Ph.D. program. However, the School does offer a Master's degree in Social Ecology for a small number of exceptional students.

Incoming Master's degree students are assigned a faculty advisor with whom the student discusses an individual program of education. The program leading to the M.A. degree requires a thesis and satisfactory completion of seven approved courses (28 units), including the Seminar in Social Ecology (Social Ecology 200), Research Methods (Social Ecology 201), and at least one additional approved course in statistics or methodology. Other courses should be selected with regard to the student's academic and career objectives, and must be approved by the faculty advisor. The seven required courses must include at least five graduate courses and must be exclusive of any directed study, independent study, or thesis courses (Social Ecology 298, 299, or 295). A grade of B or better must be achieved in all courses. Students are advanced to candidacy for the M.A. degree, and a thesis committee is appointed, after a review of their graduate work and thesis plans by a faculty committee.

M.S. IN ENVIRONMENTAL HEALTH SCIENCE AND POLICY

The Master of Science (M.S.) in Environmental Health Science and Policy (EHSP) trains environmental professionals for applied analytical and administrative positions in government, commerce, and the nonprofit sector. In common with the doctoral program in EHSP, training focuses on the integration of natural and social science knowledge for the promotion of human health within a sustainable ecosystem. M.S. students must complete a core of five required courses: Environmental Health Science (EHS) I, II, III; Data Analysis, Part A (Social Ecology 264A); and Data Analysis, Part B (Social Ecology 264B) or Ecological Modeling (Social Ecology 252); and three electives. Students must also complete a field study of about six months in duration, resulting in a defended Master's thesis and degree completion within two to three years.

MASTER OF URBAN AND REGIONAL PLANNING

The Master of Urban and Regional Planning (M.U.R.P.) program trains researchers and professionals in contemporary methods of planning and policy analysis. The program is fully accredited by the National Planning Accreditation Board and has 13 core full-time faculty. Students gain familiarity with planning problems and practices through a series of courses on the growth and development of metropolitan areas, and the environmental, economic, and social challenges that modern communities face. This program views planners as mediators between the market-driven forces of metropolitan change and the environmental, economic, and social impacts of such change.

The program leads to the M.U.R.P. degree—Master of Urban and Regional Planning. Students are required to complete 72 units, distributed between core and elective courses. Required courses are History of Urban Planning (U202), Microeconomics Analysis for Urban Planning (U206), Quantitative Analysis for Planners (U214), Development Control Law and Policy or Environmental Law and Policy (U207 or U252), Analytical Methods for Planning (U215), Regional Analysis or Urban Sociology (U223 or U274), and two quarters of Urban Planning Studio (U280A-B). Master's

degree specializations include community attitudes and social policy, economics and public policy, land use and growth management, transportation policy, community health planning, and urban design and behavior. In addition, a written comprehensive examination or a professional report is required during the last quarter of residency in the program. Successful completion of the examination or professional report is required before the degree can be awarded. A thesis is not required.

Some of the specific planning issues addressed include the environmental, social, health, and economic impacts of urban and regional development; regional growth management; state and municipal fiscal policy; poverty-related concerns; urban design; the operation of housing and land markets; land-use law and regulation; transportation planning; and planning for urban development in newly industrialized countries. Students are provided not only with a rigorous foundation in the tools that public and private sector planners use, but also with the intellectual wherewithal to use them effectively in addressing these concerns.

Practical experience in community planning in the form of part-time planning internships is strongly encouraged and supported as part of a student's education. Additionally, a two-quarter Planning Studio in the second year of study links classroom learning to work on a community-based and client-based planning project. Students have access to the Planning Studio equipment which includes drafting stations and computers for use in planning studies, geographic information systems (ARC-VIEW) courses, and research. Students also have full access to computer laboratories in the two Social Ecology buildings which are equipped with word processing, statistical, spreadsheet, and database programs; electronic mail, and World Wide Web browsers.

The range of employment opportunities for professional planners in the public and private sectors is once again expanding due to rapid metropolitan growth, rising concerns over health and environmental issues, and the continuing need for redevelopment and social services in older communities. Career paths exist in government agencies dealing with urban planning, economic development, transportation planning, regional growth management, air quality and water treatment, public utilities, health care organizations and public health agencies, and conservation organizations and agencies. Many employment possibilities also exist with private consulting firms specializing in environmental impact assessment, with residential and commercial development firms, and many engineering and architectural firms.

Ph.D. Programs

The doctoral programs offered by the School of Social Ecology prepare students for academic careers in research and teaching. Graduates also are well qualified for employment in private or government agencies, where they can bring advanced academic training, strong methodological and statistical skills, and special expertise to such issues as *environmental health and design*, urban and regional planning, criminal justice, and social policies affecting mental and physical health across the life course. Students who enter with the normal academic preparation and pursue a full-time program of study ordinarily should be able to earn the Ph.D. in four to five years of study beyond the baccalaureate.

Each incoming Ph.D. student is assigned a faculty advisor with whom the student should meet at least once every quarter to discuss an individualized program of graduate education. The following core courses are required of *all* Ph.D. students except those enrolled in the Environmental Health Science and Policy doctoral program and the Urban and Regional Planning doctoral program: Seminar in Social Ecology (Social Ecology 200), Research Methods (Social Ecology 201), two approved quarters of graduate-level statistics, and one additional approved research methods course.

In addition to these five required core courses, doctoral students take additional required and elective courses, as summarized in subsequent sections that describe the individual Ph.D. programs. This additional course work is exclusive of any field study, directed study, independent study, or dissertation research courses (Social Ecology 297, 298, 299, or 296).

School faculty believe that Ph.D. students should become involved in research very early in their graduate careers. To encourage such involvement, doctoral students are encouraged to complete a research project before advancement to candidacy for the Ph.D. degree. The method of research may include experiments, questionnaire and interview studies, systematic field observation, secondary analysis, computer simulations, legal research, and other methods. It is expected that students will begin their project during the first year in residence and will complete it during the second year.

A student may be formally advanced to candidacy for the Ph.D. degree when all requirements except the dissertation have been completed, and when the student's dissertation plan has been approved by the candidacy committee appointed by the School of Social Ecology, on behalf of the Dean of Graduate Studies and the Graduate Council. The student will appear before this committee for an oral examination. The dissertation plan will include a thorough examination of the history of the problem being proposed for investigation, its current status, the way in which the proposed research will further knowledge, a detailed specification of the proposed method of investigating the problem, and a description of the planned methods for analyzing the data collected. It is strongly recommended that students advance to candidacy during their third year of study. In no case will students be allowed to advance to candidacy after the end of their fifth year of study.

Formal advancement to candidacy for the Ph.D. degree will be approved by the Dean of Graduate Studies upon recommendation by a unanimous vote of the student's candidacy committee. Alternatively, the committee may recommend a course of action to strengthen the student for advancement to candidacy at a future date. When the student is advanced to candidacy, a doctoral committee will be appointed on behalf of the Graduate Council. The doctoral committee, ordinarily consisting of three members of the faculty, will supervise the preparation and completion of the doctoral dissertation. The dissertation should be completed and accepted within one to two years, and no later than three calendar years after the student's advancement to candidacy.

All Ph.D. students who have not been advanced to candidacy will be formally evaluated by members of the Social Ecology faculty at the end of each year. At that time, the faculty may recommend that the student continue toward the Ph.D. degree, complete the M.A. degree only, or cease graduate studies in the School. Evaluation of Ph.D. students who have advanced to candidacy is the responsibility of the student's doctoral dissertation committee. Prior to the award of the Ph.D. degree, each doctoral student must serve as a Teaching Assistant under faculty supervision for at least two quarters.

Ph.D. IN SOCIAL ECOLOGY

The training program that leads to the Ph.D. in Social Ecology allows students to develop a tailored course of graduate study that draws upon the knowledge of several traditional academic disciplines. This is a small distinguished program intended for genuinely interdisciplinary doctoral students. The emphases of this training program are in keeping with the academic mission of the School, namely, its emphases on an ecological approach to research and policy, an interdisciplinary approach to research and community intervention, and the application of theory and research to community problem solving. Students are encouraged to integrate the diverse theoretical and methodological insights of several

disciplines in order to analyze important social and environmental problems from a perspective of breadth as well as depth. In doing so, students gain familiarity with the classic and contemporary literature in social ecology and with the application of the ecological paradigm, as it has evolved in the natural and behavioral sciences.

Each incoming student takes the five core courses required of most Ph.D. students, noted above, and six elective courses, chosen in consultation with the faculty advisor. The normative time for completion of the Ph.D. requirements is four to five years. Students are encouraged to become involved in research in their first year of study by participating in the research projects of the faculty. Students complete a supervised research project before they begin work on their doctoral dissertation. Research is broadly construed to include experimental methods, questionnaire and interview studies, systematic field observation, secondary analyses, and legal analyses. This predissertation research project should be completed during the second year in residence and must be evaluated and approved by a committee of three faculty members.

Students complete the breadth requirement during their third year of study. This is accomplished through successful completion of either a written comprehensive examination or the submission of a major paper or series of papers that intensively examine specific substantive problems and bodies of research. Preferably, the perspective taken should be multidisciplinary, but a single disciplinary approach is acceptable if it is more congruent with the student's educational goals and is acceptable to the student's committee. Each student's plans for completing the breadth requirement are developed in collaboration with a committee of three Social Ecology faculty members. Students are encouraged to meet with this committee as early as possible during their graduate career and are required to do so by no later than the third quarter of their second year. Once the student's plans have been approved and implemented, the examining committee will determine whether the breadth requirement was successfully completed, and will recommend additional academic work if it is deemed necessary. The fourth and possibly fifth years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

Ph.D. IN SOCIAL ECOLOGY WITH A CONCENTRATION IN ENVIRONMENTAL ANALYSIS AND DESIGN

The doctoral concentration in Environmental Analysis and Design prepares students to conduct research on questions of vital importance to professionals in environmental analysis and evaluation, in environmental design and behavior, and on related questions on the formulation of environmental policy. These questions reflect on overarching concern with the effects of the natural and built environments on the health and social well-being of humans.

This doctoral concentration particularly focuses on insights from a social ecological perspective. One of the concentration's strengths is its research sequence which spans the disciplines within the Departments of Environmental Analysis and Design and Urban and Regional Planning. Students typically choose the majority of their graduate classes from those two departments.

Students conduct analyses of sociocultural, behavioral, and environmental factors that influence health and well-being, including public and private sector policy. The curriculum and diversity of faculty within the concentration afford unique opportunities for multidisciplinary research and training.

Potential employment sources for graduates include academic and research institutions; federal agencies; policy-making organizations; urban and regional planning agencies; national, community, and workplace health-promotion programs; and environmental design consulting firms.

Each incoming student takes the five core courses required of most Ph.D. students, noted earlier, and eight elective courses drawn from the three focal areas within this concentration: Environmental Design and Behavior, Urban Planning and Design, and Environmental Health and Public Policy. The elective courses cover topics such as environmental and urban design, environmental health risks, urban planning, facilities design and management, behavioral epidemiology, demography, the regulatory process, urban and regional analysis, technological hazards and change, and environmental toxicology. The normative time for completion of the Ph.D. requirements is four to five years. Students are expected to become involved in research activities in their first year of graduate study. Students complete a supervised research project before they begin work on their doctoral dissertation. This predissertation research project should be completed during the second year in residence (preferably by the end of the winter quarter of the second year). The research project must be evaluated and approved by a committee of three faculty members. Students complete the breadth requirement, described earlier, during their third year of study. The fourth and possibly fifth years of study are devoted to developing and defending a dissertation proposal and conducting dissertation research.

Ph.D. IN CRIMINOLOGY, LAW AND SOCIETY

The study of crime, institutional responses to illegal behavior, and the interaction of law and society are the foci of the doctoral program in Criminology, Law and Society. Students examine issues related to the etiology of crime, the process of changing criminal behavior, social regulation, the civil justice system, and the social and cultural context of law.

Students gain familiarity with a number of subjects including sentencing; crime rates; modes of modifying criminal behavior; police behavior; white collar and organized crime; hate crimes; behavior of courts, juries, and regulatory agencies; environmental law; immigration law; Native American justice issues; and the interaction among law, culture, and identity. In general, students are introduced to the leading classical and contemporary issues in criminology, law and society and to ways of understanding them through interdisciplinary research. The program aims to develop theoretical sophistication and to prepare the graduate student for faculty positions at major universities; and for research and administrative work in institutions in the legal system, the criminal justice system, and related organizations.

In addition to the five core courses required of most Ph.D. students, noted earlier, students take at least three required courses, Theories of Crime, (C235), Law and Society, (C239), Legal Reasoning, (C237), and four elective courses in Criminology, Law and Society. These elective courses should be chosen in consultation with the student's faculty advisor. Students become involved in research activities from the earliest stages of their training and complete an independent, supervised research project during the second year of graduate study. Methods of research may include questionnaires and surveys, systematic field observation, computer simulation, legal analyses, and archival research. Students complete a written comprehensive examination during year three, which requires them to demonstrate mastery of major theoretical, substantive, and methodological issues in criminology, law and society. The fourth and, possibly, fifth years of study are devoted to developing and defending a dissertation proposal and completing dissertation research. Opportunities for field placements in legal and criminal justice settings also are available.

Ph.D. IN ENVIRONMENTAL HEALTH SCIENCE AND POLICY

Human health and the integrity of the natural environment are interdependent. More now than ever, challenges in public health and the environment must be faced using knowledge both from the social and the natural sciences. The graduate program in Environmental Health Science and Policy (EHSP) is rooted in existing disciplines, but emphasizes an emerging common base of knowledge that spans both the social and the natural sciences. To optimize flexibility, including options for primary emphasis on laboratory and field work, the curriculum is organized around four concentrations. The **concentration in Environmental Biotechnology** provides training in the use of microbial, genetic, or molecular applications for environmental monitoring, environmental cleanup, and other related purposes. The **concentration in Environmental Health Science** expands its conventional focus to include ecological context. The **concentration in Environmental Management and Policy** explores the linkages between physical environmental problems and the social institutions that are both their cause and solution. The **concentration in Epidemiology and Public Health** embeds traditional approaches in these fields within a framework of physical and natural systems.

Within each concentration, students are expected to develop interests in particular substantive problems, for example, those of the core faculty, which include water quality monitoring and bioremediation, toxic metals in the environment (their characterizations, exposure levels, and health effects), international conflict and cooperation in resource management, habitat restoration and conservation biology, the demographic foundation of health and well-being, and the epidemiology of violence and injury-prevention. Students are prepared to become active researchers, able to assume positions in higher education, government, commerce, or the non-profit sector—wherever environmental quality is of concern.

Prior to graduate program admission, students must elect one of the four EHSP concentrations listed above. For all concentrations, students must complete a core of five required courses: Environmental Health Science (EHS) I, II, III; Data Analysis, Part A (Social Ecology 264A); and Data Analysis, Part B (Social Ecology 264B) or Ecological Modeling (Social Ecology 252). In addition, students must complete six approved electives relating to their respective concentrations. Consistent with the program's multidisciplinary nature, elective courses may be drawn not only from within the Department of Environmental Analysis and Design but (with approval) from throughout the School of Social Ecology and the campus (including, for example, the College of Medicine or the School of Engineering). After the second year, students must submit a written doctoral research proposal. Advancement to doctoral candidacy is achieved upon successful defense of the proposal during an oral, comprehensive qualifying examination. Degree completion should occur in four or five years. In addition, doctoral students must serve a minimum of three quarters as a teaching assistant.

Ph.D. IN HEALTH PSYCHOLOGY

Doctoral training in Health Psychology focuses on identifying, evaluating, and enhancing the psychosocial and behavioral factors that promote health, prevent disease, and optimize medical treatments. The training program involves a strong commitment to multidisciplinary scholarship and a focus on knowledge and theory, research competencies, and professional skills. Students are encouraged to join active investigative teams studying processes such as adaptive aging; stress, coping, and social support; biobehavioral mechanisms of cardiovascular reactivity; personality factors that increase resilience to health threats; the development of heart-healthy behavior patterns during childhood and adolescence; worksite health promotion and the design of work environments;

and perceptions of health and environmental risks. In addition, a year-long practicum provides students with research experience in health care settings and exposure to clinical interventions in the field of health psychology. Potential employment sites for graduates include academic institutions; health care settings; federal agencies; school, workplace, and community health-promotion programs; research organizations; and university and government policy institutes.

Students take the five core courses required of most Ph.D. students, noted earlier. In addition, students take four required health psychology courses, Seminar in Health Psychology (P258), Biobehavioral Aspects of Health and Illness (P273), Human Stress and the Environment as Stressor (P267) or Coping with Stressful Life Events (P268), and the three-quarter Practicum in Health Psychology (P209A-B-C). Also, students take one health psychology elective, Perceptions of Environmental and Health Risks (E206), Interpersonal Processes and Health (P262), Health and Social Relations (Social Science 252O); and three additional courses, e.g., Late Adulthood and Aging (P225), Violence and Its Social Impact (P237), Environmental Psychology (E288), only one of which can be taken from the Health Psychology cluster.

Students are expected to become involved in research activities from the earliest stages of their training and must complete an independent, supervised research project during their second year. Students take a written comprehensive examination during their third year, which requires them to demonstrate mastery of the principles of social ecology and major theoretical, substantive, and methodological issues in health psychology. The fourth and possibly fifth years are devoted to developing and defending a dissertation proposal and completing dissertation research. Opportunities for field placements in health-related settings also are available.

Students must complete all requirements for the Ph.D. in Health Psychology no later than their eighth year of study, adjusted for any approved leaves of absence that may have been taken. It is expected that most students will complete the degree requirements well in advance of this deadline.

Ph.D. IN HUMAN DEVELOPMENT

The doctoral program in Human Development focuses on the development of individuals across the life course and the effects of the varying social, physical, and cultural contexts in which development takes place. Students are introduced to key developmental theories and concepts, with attention to all phases of the life course; the research methods of several social science specialties; and the conduct of problem-oriented research that is relevant to the improvement of individual and societal functioning. Potential employment sites for graduates include academic institutions (e.g., departments of psychology or human development); research organizations; human services settings (e.g., hospitals, schools, community agencies); government policy institutes; and a variety of private sector employers.

Students are encouraged to become actively involved in research from the earliest stages of their training. Through close association with faculty members in the Human Development program and participation in their research projects, students learn to use a variety of research methods and to conduct methodologically sophisticated research that addresses contemporary social issues. Current research teams are investigating the effects of divorce and custody arrangements; the effects of maternal and paternal employment on parents' well-being and child and adolescent outcomes; children's health risk perceptions; the strengths and limitations of children as witnesses; modes of adapting to stress over the life span; and the impact of activity patterns and social ties on the well-being of the elderly.

Students take the five core courses required of most Ph.D. students, noted earlier. In addition, students take two required human development courses, Principles of Human Development (P220) and Issues in Human Development (P236); and two of five life cycle courses chosen from the following: Infancy (P218), Childhood (P234), Adolescence (P204), Adulthood (P230), Late Adulthood and Aging (P225). An additional four elective courses are selected from the following six clusters: life span development; foundations of development; social, physical, and cultural contexts of development; health and adjustment over the life span; social problems and policies; and methods and strategies of research. These courses should be chosen according to a plan that best meets the needs of the individual student, as determined in consultation with the student's faculty advisor. In addition to courses offered by the School of Social Ecology, the Human Development curriculum may include courses offered by the Department of Psychobiology in the School of Biological Sciences, the Graduate School of Management, and the Departments of Anthropology and Sociology in the School of Social Sciences.

Students complete an independent, supervised research project during their second year. They take a written comprehensive examination during their third year, which requires them to demonstrate mastery of the principles of social ecology and of major theoretical, substantive, and methodological issues in the study of human development. The fourth and possibly fifth years are devoted to developing and defending a dissertation proposal and completing dissertation research.

Students must complete all requirements for the Ph.D. in Human Development no later than their eighth year of study, adjusted for any approved leaves of absence that may have been taken. It is expected that most students will complete the degree requirements well in advance of this deadline.

Ph.D. IN URBAN AND REGIONAL PLANNING

The doctoral program in Urban and Regional Planning seeks to train researchers and professionals who will further our understanding of how planning and policy-making can best improve the social, economic, and environmental characteristics of our communities and regions. The curriculum emphasizes the analytic, applied planning, and policy skills required of contemporary planners. Specializations include community attitudes and social policy, land use and growth management, economics and public policy, transportation policy, community health planning, and urban design and behavior. UCI's proximity to both urban centers and planned suburban communities, as well as its location within the dynamic Southern California and Pacific Rim regions, add to the program's appeal.

The Ph.D. program in Urban and Regional Planning features course work in planning theory and research methods, and there are substantial choices in elective courses on critical issues in urban and regional planning. Students complete eight required courses and at least four elective courses. A pre-dissertation research project, supervised by a faculty member, is required during the second year. The third year includes preparation for, and completion of a comprehensive examination. Following this, dissertation proposals and research begin. The normative time for completion of the Ph.D. in Urban and Regional Planning is five years. Doctoral students who wish to earn the existing Master's degree in Urban and Regional Planning can do so by fulfilling all of the course and eligibility requirements for that degree. Three required courses for the Master's degree are also part of the Ph.D. program.

Graduates with a doctorate degree in Urban and Regional Planning are employed in a wide array of activities, ranging from university teaching and research, to administrative and research-oriented positions in governmental agencies, international agencies, non-profit organizations (including research institutions), and private consulting practices. There are a broad range of specialties in

which graduates can apply their skills. Land-use policy research, environmental management analysis, social policy research and implementation, economic development program analysis, transportation analysis, and research on the physical design of communities and urban spaces are only some of the various occupational functions.

Graduate Courses in Social Ecology

200 Seminar in Social Ecology (4). Students are introduced to the classic and contemporary literature of human and social ecology and are expected to use the ecological paradigm to analyze social phenomena of interest to the differing subprograms.

201 Research Methods (4). In-depth analysis of the conceptualization of research and the design of appropriate research strategies. Topics covered are experimental design, questionnaire and interview construction, and observation techniques. Prerequisite: previous course work in statistics.

241A-B Environment, Development, and Health (2-2). Highlights developments in environmental, developmental and health psychology, urban sociology, and public health. Emphasizes mental health aspects of person-environment transactions. Prerequisite: graduate standing or consent of instructor.

255 Professional Issues (2). Examines a variety of issues related to the professional socialization and development of graduate students in Social Ecology. Topics include the publication process, sources of research funding, alternative employment options, competitiveness in the job market, and the academic career route. Prerequisites: graduate standing and consent of instructor. May be taken for credit twice.

260 Seminar in Applied Statistics (4). Introduces methods for data analyses and statistical computing using SPSS for Windows. Emphasis is on the applied use of statistics to test specific hypotheses and drawing appropriate conclusions based on available statistical evidence.

261 Strategies of Theory Development (4). The goals are (1) to examine key issues and controversies facing the development of social ecological theory, and (2) to encourage students to develop their own abilities as theorists. Strategies for enhancing creative hypothesis formation are emphasized.

263 Integrating Concepts in Social Ecology (2 or 4). Examines epistemology, theoretical foundations, underlying assumptions, and applications of social ecological perspectives. Integrates interdisciplinary concepts drawn from the interests of students, faculty, and invited guests. Prerequisite: graduate standing or consent of instructor.

264A-B Data Analysis (4). Provides an appreciation and understanding of statistics necessary to conduct applied research. Topics include approaches to and presentation of data, robust statistics, standardization techniques, multivariate regression, and analysis of variance. Prerequisite: graduate standing or consent of instructor.

266A Structural Equation Modeling (4). The general structural equation model is developed including path models, recursive and nonrecursive structural models, multiple indicator models, and confirmatory factor models. Use of LISREL and other software for estimating model parameters is covered. Prerequisites: Social Ecology 264A-B or consent of instructor. Formerly Social Ecology 266.

266B Applied Logistic Regression (4). Develops statistical models to be used where the dependent variable is dichotomous. Applications to be considered include cohort and case-control analyses. Prerequisites: Social Ecology 264A-B or consent of instructor.

266C Analysis of Statistical Power (4). Statistical power is a crucial aspect of hypothesis testing. Students learn how to interpret statistical power; how to calculate statistical power for most common designs; and how to design experiments and quasi-experiments to optimize power. Prerequisites: Social Ecology 264A-B; and graduate standing or consent of instructor.

266D Analysis of Survival Date (4). Provides an introduction to survival analysis methods for the analysis of change in discrete dependent variables. Focuses on data collection strategies for obtaining longitudinal data and continuous-time hazards models. Communicates the variety and power of multivariate hazard models.

270 Applied ANOVA (4). Examines fundamental concepts and a variety of ANOVA designs, in an applied setting. Basic terminology, theoretical background, and applications of ANOVA models (univariate, multivariate, and repeated measures) with multiple comparisons are presented through lecture and use of statistical hardware. Prerequisite: one graduate-level statistics course.

275 Special Topics in Social Ecology (2 to 4). Topics covered vary with interests of the instructor. Prerequisite: consent of instructor. May be repeated for credit.

290A Descriptive Multivariate Statistics I (4). Lecture, four hours; laboratory, two hours. Mathematical tools to organize and illuminate the multivariate methods. Multiple regression analysis. Multi-dimensional scaling and cluster analysis. Statistical computing via MDS(x), DMDP, and SPSS. Students must enroll in the laboratory section which meets on Wednesdays. Satisfactory/Unsatisfactory grading only. Prerequisite: Social Sciences 100A-B-C or equivalent. Same as Information and Computer Science 238A, Social Science 201A, and Management 290X.

290B Applied Multivariate Statistics (4). Lecture, four hours; laboratory, two hours. Presentation of the principle methods of multivariate statistics including criteria for appropriate use and the interpretation of resulting measurements. Computer exercises are used to demonstrate concepts. Prerequisites: Social Ecology 290A. Same as Information and Computer Science 238B, Management 290Y, and Social Science 201B.

290C Sampling Techniques and Estimation Methods (4). Review of confidence interval estimates derived from simple random samples followed by presentation of techniques for improving precision of sample-generated estimates that take account of realistic issues. Methods for dealing with bias and nonsampling errors. Prerequisite: Social Ecology 166A-B-C or equivalent. Same as Social Science 201C and Management 290.

291 Program Evaluation (4). Students are introduced to the use of research techniques and statistical methods in assessing the effectiveness of social programs. Different evaluative models are discussed using examples of actual program evaluations. Prerequisites: Social Ecology 201 and two quarters of graduate-level statistics. Intended for students in the Ph.D. program.

295 Master's Thesis Research and Writing (4 to 8). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only.

296 Doctoral Dissertation Research and Writing (4 to 12). Prerequisite: advancement to candidacy. Satisfactory/Unsatisfactory only.

297 Field Studies (2 to 4) F, W, S

298 Directed Studies (2 to 4) F, W, S

299 Independent Study (2 to 8) F, W, S. Prerequisite: consent of instructor. May be repeated for credit.

399 University Supervised Teaching (2 to 4) F, W, S. Required of and limited to Teaching Assistants. Prerequisite: consent of instructor. Satisfactory/Unsatisfactory only.

Graduate Courses in Criminology, Law and Society

C230 Crime and Public Policy (4). Discusses the measurement of violent crime; violent offenders and their victims; theoretical explanations of violence; the contribution of the media, drugs, guns, and alcohol to violence; and how the justice system treats and punishes violent offenders. Prerequisite: graduate standing or consent of instructor.

C232 Juvenile Delinquency (4). Examines the major theories of juvenile delinquency, prevention and control programs, and the administration of juvenile justice. Prerequisite: graduate standing or consent of instructor.

C235 Theories of Crime (4). Examines the positions of thinkers such as Bentham, Freud, Marx, Lombroso, Sutherland, as well as those of the current labeling theorists, who believe that crime is primarily a function of the distribution of power. Prerequisite: graduate standing or consent of instructor.

C237 Legal Reasoning (4). Examines the leading theoretical and philosophical approaches to jurisprudence and legal reasoning; introduces primary print and electronic sources of legal data and basic legal research techniques. Prerequisite: graduate standing or consent of instructor.

C239 Law and Society (4). Discusses the major schools in the sociology of law from the early years to the present. Addresses the differences among the schools and locates them in their historical and intellectual context. Presents case studies, comparing the utility of these theoretical traditions. Prerequisite: graduate standing or consent of instructor.

C240 Law and Social Change (4). Examines laws and legal institutions and their interaction with society focusing on the issue of change. Law as a product of social change and law as a source of social change. Prerequisite: graduate standing or consent of instructor.

C243 Juvenile Justice and Public Policy (4). Explores the phenomenon of juvenile delinquency and society's responses to it. Reviews major theoretical perspectives regarding the onset, persistence, and desistance of juvenile delinquency and examines their relationship to juvenile justice policies and practices.

C245 Social Science and the Legal Process (4). Examines social science methods for understanding and affecting the legal process. Emphasizes a current legal issue. The class provides, through its research and legal analysis, input into the adjudication of the issue under consideration. Prerequisite: graduate standing or consent of instructor.

C249 Law and Morality (4). Examines major theoretical, empirical, and policy-oriented research related to the design, implementation, and analysis of government intervention, through the criminal sanction, in the spheres of vice and morality. Prerequisite: graduate standing or consent of instructor.

C251 Qualitative Criminological Analysis (4). Examines issues and strategies involved in the collection and analysis of qualitative data. Application of qualitative research methods with respect to criminology, law and society. Prerequisite: graduate standing or consent of instructor.

C276 Social Deviance (4). Provides an in-depth examination of the field of social deviance. Major perspectives are examined in relation to policy issues concerning causation and control of deviant behavior. Prerequisite: graduate standing or consent of instructor.

Graduate Courses in Environmental Analysis and Design

E206 Perceptions of Environmental and Health Risks (4). In-depth discussion of nonexpert assessment of risks presented by environmental carcinogens, technologies, natural hazards, and chronic and infectious diseases. Examines how the public interprets and uses aggregate risk/health data, and the role of cognition and emotion in risk perception. Prerequisite: graduate standing or consent of instructor.

E210 California's Population (4). Provides a non-specialist introduction to social demography through a focus on California population. Surveys historical and current trends in the State's growth, its industries and occupations, and its ethnic and racial makeup. Prerequisite: graduate standing or consent of instructor.

E217 Qualitative Research Methods in Environmental Design (4). Explores the nature and varieties of qualitative inquiry and qualitative methodology. Includes a brief look at ethnography, ethnoarchaeology, ethnomethodology, phenomenology, critical approaches, hermeneutics, case studies, and action research. Prerequisite: graduate standing or consent of instructor.

E224 Environmental Health Science II: The Physical Environment (4). Provides a background in natural processes and the physical environment. Focuses on earth processes some of which lead to natural disasters and catastrophes for human populations. Other processes are quite benign and related to anthropogenic perturbations. Prerequisite: graduate standing or consent of instructor.

E225 Environmental Health Sciences I: Physical and Human Interaction (4). Explores the impacts of environmental exploitation such as acid rain, the Greenhouse Effect, and industrial pollution, and the use of mineral and energy resources. Topics addressed include heavy metals, radionuclides biogeochemistry, natural toxins, food additives, pesticides, and industrial catastrophes. Prerequisite: graduate standing or consent of instructor.

E226 Environmental Health Sciences III: Biostatistics and Epidemiology (4). Presents descriptive and experimental approaches to the recognition of the causal association of disease for the occupational setting, as these approaches apply to populations using different study designs and models from the literature, and with frequent assistance of laboratory methods. Prerequisite: graduate standing and consent of instructor. Formerly SE215.

E236 Molecular Environmental Microbiology Laboratory (4). Focuses on field and laboratory techniques used in analyzing microbial populations in natural and polluted environments.

E237 Ecotoxicology (4). Focuses on ecological receptors for toxic chemicals in the environment. Includes analytical methods for pollutant source, transport, transformation, and organism exposure; molecular bloodmarkers of organism and ecosystem response to pollutants.

E244 Toxic Substances in the Environment (4). Examines the sources, distribution, and cycling of toxic substances in the general environment, and discusses patterns of human exposure and mechanisms of damage. Reviews the scientific basis for selected toxic-substance standards and explores the role of risk assessment. Prerequisite: graduate standing or consent of instructor.

E249 Environmental Epidemiology (4). Concentrates on epidemiological approaches to the assessment of community environmental hazards; issues involved in environmental exposure estimation; interdisciplinary approaches to environmental epidemiology, including the use of biomarkers of exposure and susceptibility; epidemiological studies within the context of risk assessment. Prerequisite: Environmental Analysis and Design E226.

E250 Cancer Epidemiology (4). Concentrates on understanding how epidemiology plays a role in the search for cancer etiology, prevention, control, and treatment; gives an overview of cancer research with an appreciation of the multidisciplinary nature of the field. Prerequisite: Environmental Analysis and Design E226.

E251 Genetic Epidemiology (4). Concentrates on the role of genetic factors in the etiology of disease in human populations with an objective of disease control and prevention, and the role of interactions of genetic factors and environmental exposures in the occurrence of disease. Prerequisite: Environmental Analysis and Design E226.

E252 Ecological Modeling (4). Introduces students to the basic principles of modeling, and demonstrates the complex temporal and spatial relationships found in environmental science. Lectures and readings survey the broadest possible range of mathematical models found in the environmental-ecological literature. Prerequisite: graduate standing or consent of instructor.

E272 Principles of Environmental Design (4). Explores the principles and processes of design in the built environment, including graphic analysis and behavioral programming. Prerequisite: graduate standing or consent of instructor.

E283 Environmental Health and Quality (4). Concepts and principles of environmental health. Focuses on industrial hygiene, water and air quality, noise pollution, and environmental carcinogens. Discusses theory and implementation practices through review of legislative measures and enforcement procedures. Examines social and biological interactions surrounding each topic. Prerequisite: graduate standing or consent of instructor.

E285 Topics in Environmental Health (4). Each quarter a topic of importance to the field of environmental health is covered. Topics include environmental chemistry, geochemistry, soil science, environmental microbiology, and air or water chemistry. Prerequisite: graduate standing or consent of instructor.

E289 Environmental Design Research Practicum (4). Provides an intensive field research experience in environmental psychology. Overviews basic theory and methods of environmental assessment. The latter portion of the course involves consultation with professional designers and subsequent post-occupancy evaluation of an existing setting. Prerequisite: graduate standing or consent of instructor.

E293 Lead in the Environment and Society (4). The social ecology of lead use and presence in subsistence goods and the environment, examined from earliest prehistory to the present. Lead has particular impacts throughout human development. Public policy and surveillance are discussed. Guest lecturers. Prerequisite: graduate standing or consent of instructor.

Graduate Courses in Psychology and Social Behavior

P203 Development of Gender Differences (4). Evaluation of research on sex differences in physiology, psychology, and social behavior from the prenatal period through adulthood. Topics include intelligence, moral reasoning, achievement, prosocial behavior, aggression, and mental health. Examination of psychological and biological theories of sex differences. Prerequisite: graduate standing or consent of instructor.

P204 Adolescence (4). Considers pubertal and cognitive changes and their social consequences; the family, peer group, school, and cultural contexts in which adolescence is embedded; and selected psychosocial issues including autonomy, identity, health, and well-being. Prerequisite: graduate standing or consent of instructor.

P205 Issues in Social Psychology (4). Provides in-depth treatment of theoretical and empirical work relevant to selected topics in social psychology. Theories of attitude change, group dynamics, and attribution are applied to such problems as overpopulation, environmental degradation, media violence, and racial conflict. Prerequisite: graduate standing or consent of instructor.

P207 Self-Serving Illusions and Well-Being (4). Reviews theory and research on positive illusions such as inflated self-esteem, exaggerated internal control, and unrealistic optimism. Psychological functions of positive illusions and the implications of such illusions for mental and physical health and well-being are examined. Prerequisites: graduate standing or consent of instructor.

P209A-B-C Practicum in Health Psychology (2-2-2). Explores research and practice in the field of health psychology, focusing on scientific and professional issues. Topics include assessment and diagnosis; communication skills; intervention approaches; collaboration, consultation, and referral; and ethical issues associated with at-risk populations research. In-progress grading fall and winter quarters. Prerequisite: graduate standing or consent of instructor.

P210 Community Psychology (4). Describes the historical development of community psychology and various models for its practice. An analysis of the persistence of problems within social systems is linked to social intervention strategies. The impact of the social environment on physical and psychological health is studied as a function of contemporary stress factors. Prerequisite: graduate standing or consent of instructor.

P211 Attitude Theory and Research (4). Survey of theory and research on attitude organization and change. Topics include attitude measurement, ideology and the organization of belief systems, stereotypes, communication and persuasion research, theories of attitude change, and the relationship between attitudes and behavior. Prerequisite: graduate standing or consent of instructor.

P213 Issues in Social Intervention (4). Covers issues in assessment and design of social interventions. These include systems analysis in social settings, role of the social interventionist, problems of entry, assessment of systems ranging from small group through the community, and planning of social change. Prerequisite: graduate standing or consent of instructor.

P218 Infancy (4). Covers development from conception through the second year. Focus is on research and theory pursuant to infants' physical, social, cognitive, perceptual, emotional, and language development. Also covers transition to parenthood and social policy issues. Prerequisite: graduate standing or consent of instructor.

P220 Principles of Human Development (4). Examines key concepts and research methods in the study of life span development. Considers different models of development; contextual and ecological perspectives; the nature of plasticity; continuity and change over time. Introduces research designs and statistical procedures for studying human development. Prerequisite: graduate standing or consent of instructor.

P221 Clinical Child Psychology (4). Examines research and theory concerning childhood psychopathology. Topics include research methodologies; diagnosis and assessment; early identification of high-risk children; fears and anxiety disorders; conduct and attention deficit-hyperactivity disorders; childhood psychoses; depression and suicide; children's rights and child policy. Prerequisite: graduate standing or consent of instructor.

P223 Cross-Cultural Developmental Psychology (4). Examines human development in diverse cultures (e.g., Asian, American, and African). Cultural diversity within the U.S. and acculturation of various ethnic groups also discussed. Topics include parenting, family relations, language and cognition, schooling and academic achievement, and morality. Prerequisite: graduate standing or consent of instructor.

P225 Late Adulthood and Aging (4). Examines sociocultural and environmental influences on the social roles, behavior, and personal adjustment of middle-aged and older adults. Topics include changes in age composition and structure of populations, the functions of work and leisure, support systems, health care, and prospects for social intervention. Prerequisite: graduate standing or consent of instructor.

P230 Adulthood (4). Focuses on early and middle adulthood. Theoretical perspectives and methodological issues in research on adulthood; the impact of major role-related experiences (e.g., spouse, parent, worker) on development and well-being; continuity and change in cognitive abilities, personality, and identity. Prerequisite: graduate standing or consent of instructor.

P233 Personality in Development, Society, and Pathology (4). Provides a frame of reference for understanding personality and its role in life-span development, the relationship of the individual to society, and both mental and physical illness. Prerequisite: graduate standing or consent of instructor.

P234 Childhood (4). Examines the development of children from two to 12 years of age, covering the areas of cognition, language, emotion, and social relations. Emphasizes recent research and contemporary theory and presumes some knowledge of theories and basic principles of development. Prerequisite: graduate standing or consent of instructor.

P236 Issues in Human Development (4). Examines selected issues that have current research salience and policy significance, including day care, parental employment and family functioning, sex differences in adults' well-being, developmental psychopathology, and the importance of social ties among the elderly. Prerequisite: Psychology and Social Behavior P220, graduate standing, or consent of instructor. Formerly P236A-B.

P237 Violence and Its Social Impact (4). Reviews the history of violence in our society and its effect on communities and social institutions. Violence is presented in terms of theories of aggression and of crime as applied to the behavior of individuals, groups, and corporations. Suggestions are made for social policy regarding violence prevention. Prerequisite: graduate standing or consent of instructor.

P244 Personality Assessment (4). Examines the nature of personality as it influences assessment approaches. Discusses adequacy criteria for personality assessment and introduces some current approaches to personality assessment. Addresses applications to student research and practice needs and interests. Prerequisite: graduate standing.

P250 Emotion, Reasoning, and Memory (4). Examines research and theory on emotion from the perspective of cognitive psychology. Topics include the effects of emotions on attention, memory, and problem solving; the relations between emotional and cognitive development, flash-bulb memories of intense emotional experiences; eyewitness testimony. Prerequisite: graduate standing or consent of instructor.

P258 Health Psychology (4). Interdisciplinary exploration of emerging fields of health psychology and behavioral medicine. Topics: role of stress in the development and treatment of medical problems; sociocognitive determinants of health and illness; interpersonal health transactions; behavioral approaches to medical problems such as diabetes, obesity, hypertension. Prerequisite: graduate standing or consent of instructor.

P262 Interpersonal Processes and Health (4). Examines traditions of research linking interpersonal processes to emotional or physical health. Topics include: role of social support in ameliorating stress, effects of social control on health-compromising behaviors, adverse effects of social relationships on health, causes of deficient social relationships. Prerequisite: graduate standing or consent of instructor.

P267 Human Stress and the Environment as Stressor (4). Examines sources of stress from biological, psychological, social, and physical environments, with respect to their impact on personal health, behavior, and functions of social systems. Stress is presented as a multidimensional concept that can profitably be studied by an ecological analysis of determinants and outcomes. Prerequisite: graduate standing or consent of instructor.

P268 Coping with Stressful Life Events (4). Explores how individuals cope with serious life crises (e.g., illness, bereavement), life transitions, and daily stressors. Considers how such events impact on people's cognitions, emotions, and health, and the role of others in the coping process. Prerequisite: graduate standing or consent of instructor.

P273 Biobehavioral Aspects of Health and Illness (4). Examines the behavior-physiology interactions of some major bodily systems: the nervous, cardiovascular, gastrointestinal, and endocrine systems. Analysis of normal and abnormal states of these systems as they relate to tissue injury, disease, and rehabilitation. Prerequisite: graduate standing or consent of instructor.

P287 Employment and Family Functioning: Policy Issues (4). Examines the effects of current and potential policies on the well-being of working parents and their children. Focus on policy-making at various governmental levels and in the private sector. Prerequisite: graduate standing or consent of instructor.

P294A-B-C Research Directions in Psychology and Social Behavior (2-2-2) F, W, S. Introduces students to the current research of faculty, graduate students, and visitors to the Department of Psychology and Social Behavior. Includes examination of contemporary research issues and controversies, as well as issues related to students' development as professionals. Satisfactory/Unsatisfactory only. Prerequisite: consent of instructor.

Graduate Courses in Urban and Regional Planning

U202 History of Urban Planning (4). Introduction to the historical roots and fundamental perspectives of urban and regional planning. Exploration of the significant historical phases and personalities which have shaped the profession. The roles and responsibilities, the limitations and potential, of urban planning. Prerequisite: graduate standing.

U206 Microeconomic Analysis for Urban Planning (4). Provides students with a working knowledge of basic microeconomic concepts. Emphasizes applications related to urban planning and policy analysis. Topics covered include demand analysis, firm behavior, market structure, public goods, externalities, and the role of information in markets. Prerequisite: consent of instructor.

U207 Development Control Law and Policy (4). Investigates legal and institutional frameworks for development control. Review of constitutional issues implicated in land-use regulation. Traces development control historically and analyzes contemporary approaches to land-use control which reflect environmental and economic development concerns. Prerequisite: graduate standing. Formerly Social Ecology 207.

U208A-B Advanced Research Methodology for Planning (4-4). Provides in-depth training in research methods enabling students to conduct and critically evaluate research on planning and environmental design. Topics include research design, measurement, scaling, survey sampling and construction, observational and other unobtrusive methods, and ethical and philosophical issues. Course must be taken as a two-quarter sequence. In progress grading. Prerequisites: graduate standing and consent of instructor.

U210 Infrastructure Planning (4). Examines planning and policy issues surrounding public services and facilities. Topics include the distribution of the benefits and costs of various public services and fiscal, traffic, and environmental impacts of land development. Prerequisite: graduate standing.

U211 City Building: Urban Design in Theory and Practice (4). Acquaints students with vocabulary, history, theories, process, and trends in urban design. The local environment is used as a resource and a laboratory, providing a context for understanding urban design practices and products in Southern California and beyond. Prerequisite: graduate standing and consent of instructor.

U212 Transportation Planning (4). Introduces current topics in transportation planning. Includes an analysis of the economic role of transportation in urban areas, land-use impacts of transportation projects, traffic congestion, air quality, alternatives to the automobile, and other transportation topics. Prerequisite: graduate standing.

U214 Quantitative Analysis for Planners (4). Introduces students to the basic statistical concepts used to address issues of public concern. Familiarizes students with the information needed to recognize good analysis and prepares them to organize and interpret quantitative inquiries. Prerequisite: graduate standing.

U215 Analytical Methods for Planning (4). Emphasizes the development of analytical techniques proven useful in the fields of management and administration. Topics include multiple regression, cost-benefit analysis and discounting, decision trees, and other techniques useful for the purposes of community analysis and planning. Prerequisite: graduate standing.

U217 Poverty and Social Policy (4). Provides an overview of contemporary American poverty and related social debates. Emphasis is on discussing and evaluating urban policies aimed at reducing poverty. Prerequisite: graduate standing or consent of instructor.

U221 Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Political Science 221A.

U222 Water Policy (4). Policy-oriented approach to social science research on water supply/demand management. Water pricing, privatization and finance issues, markets for water transfers between regions and among competing uses, environmental and sanitation considerations, water and poverty, planning for infrastructure investment. Prerequisite: consent of instructor.

U223 Regional Analysis (4). Major concepts and techniques of regional analysis, with applications for urban and regional planning and public policy-making. Definition of regions, processes of economic change, regional structure, location of activities, and analysis of selected policy issues. Emphasis on practical applications. Prerequisite: graduate standing or consent of instructor.

U224 Environmental Politics and Policy (4). Reviews and critiques literature on discussion topics including: the nature and effectiveness of the environmental movement and environmental policies; the role of science and technology; the use of economic incentives in policy; decentralization of decision making; and creating arenas for public involvement. Prerequisite: graduate standing or consent of instructor. Same as Political Science 224A.

U229 Communities and Health (4). Increasingly, communities rather than individuals are seen as the locus of change for making communities healthier. Reviews different theoretical approaches, analyzes programs in the U.S. and abroad, and undertakes a critical evaluation of their success. Prerequisites: graduate standing and consent of instructor.

U230 New Leadership Roles (4). Explores the impact and interaction of the various stakeholders of private, public, and nonprofit organizations and the effects these stakeholders have on the responsibilities and actions of the organizations' leaders. Focuses primarily on the relationships between leaders and various constituencies. Prerequisite: graduate standing or consent of instructor.

U232 Diversity and Urban Environments (4). Explores diversity and power in the use and design of the physical environment. Examines how people differ in their relationships to environments on the basis of gender, race/ethnicity, age, socioeconomic status, physical abilities, sexuality, religion, and culture.

U235 Mobile Sources of Air Pollution (4). Offers an interdisciplinary perspective of a major health and public policy concern focusing on the linkage between transportation and air quality. Perspectives addressed include urban planning, environmental sciences, engineering, law and public administration, economics, and public policy. Prerequisite: graduate standing or consent of instructor.

U236 Contemporary American Urban Design: Understanding and Challenging the Status Quo (4). Provides an overview of the current condition of urban design in the United States. Topics covered include the academic environment, the retail environment, multi- and single-family residential environments, the office environment, and new urban design tools. Prerequisite: graduate standing or consent of instructor.

U237 Introduction to Geographic Information Systems (4). Application of Geographic Information Systems (GIS) to the field of urban and regional planning. Emphasizes current issues that occur in actual implementation settings. Lecture/discussion followed by laboratory demonstrating the area of GIS discussed. Offers "hands-on" student usage of GIS software.

U242 Regional Development Theory (4). Regional economic development concepts and studies, with applications for urban and regional planning, and public policy-making. Roles and performance of economic sectors, technological innovation, and communications in the process of development. Analysis of regional development policies and programs. Prerequisite: graduate standing or consent of instructor.

U243 State and Local Public Finance (4). Examines and critiques current trends in how state and local governments do, and should, finance their activities. Attention to property and sales taxes, development fees, special assessment districts, the measurement of public service demand, privatization trends, and intergovernmental fiscal reform. Prerequisite: graduate standing.

U244 Land-Use Policy (4). Examination of the role of public policy in guiding growth and development in urban and suburban environments. Description of a wide-ranging set of growth policies, the rationales underlying their use, controversies and legal constraints, and evaluation of their effectiveness. Prerequisite: graduate standing.

U246 Housing Demography (4). Examines recent trends in population demographics and housing market behavior, focusing on the living conditions of selected migrant, ethnic, and income groups in California. Describes and assesses housing market opportunities and experiences in geographic detail, and evaluates public policies. Prerequisites: basic statistics; consent of instructor.

U250 Analysis of Metropolitan Communities (4). Introduces methods of statistical analysis for census data and community surveys, for the purposes of testing hypotheses and formulating policies concerning urban, suburban, and regional issues. Prerequisite: graduate standing or consent of instructor.

U252 Issues in Environmental Law and Policy (4). Treatment of legal and policy strategies of promoting environmental protection and deterring environmental degradation within the context of other societal objectives. Topical approach with a focus on problems of special interest to criminologists and to environmental policy specialists. Prerequisite: consent of instructor.

U253 Urban Planning (4). A survey of the models of urbanism assumed by professional planners and of the tools and powers at their command. Students assess the likely effectiveness of planning efforts given those tools and the complexity of urban dynamics. Prerequisite: graduate standing or consent of instructor.

U254 Seminar on the Regulatory Process (4). Multidisciplinary investigation of the regulatory process. Topics include analysis of objectives of regulation; legal overview of the process in administrative law and organizational and historical overview. Examples include economic and environmental regulation. Same as Management 260.

U269A-B Research in Environmental Psychology (4). Two-quarter sequence focusing on critical discussion and analysis of on-going research in environmental psychology being conducted by faculty, graduate students, and postdoctoral fellows. Off-campus researchers present to the group on occasion. Prerequisite: graduate standing or consent of instructor.

U272 Survey Research Methods (4). Overview of survey research methods. Topics covered include historical background, constraints and biases of survey research, and in-depth study of factors involved in the development, administration, and analysis of surveys.

U273 Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this processes? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Social Science 254J and Sociology 252A.

U274 Seminar on Urban Sociology (4). Survey of issues in urban sociology. Included are such topics as urbanization, city-hinterland relations, urbanism, metropolitan growth, migration, intra-urban differences and issues, local community, metropolitan organization, power structure, and urban social psychology. Prerequisite: graduate standing or consent of instructor.

U275 Special Topics in Urban Planning (4). Special topics in urban and regional planning are offered from time to time, but not on a regular basis. Course content varies with interest of the instructor. May be repeated for credit as topic varies. Prerequisite: graduate standing or consent of instructor.

U280A-B Urban Planning Studio (4-4). Offers a practical, problem-solving approach that involves students in varied planning projects. Projects expose students to data gathering, analysis, graphic presentation, politics, law, citizen participation, report writing, and public speaking. Projects emphasize the surrounding metropolitan area. Prerequisite: graduate standing.

U281 Community Attitudes and Opposition (4). Focuses on community attitudes: structure of attitudes, sources of variation, and links to behavior. Of particular interest is the NIMBY (Not-In-My-Back-Yard) syndrome and other forms of community opposition. Prerequisites: graduate standing and consent of instructor.

U282 Theoretical Foundations of Planning (4). Overview of theories which have contributed to the development of contemporary urban planning; theories covered include rationality, advocacy, economics, structuralism, and postmodernism; critiques of these theories; connections between theory and practice; the future of urban planning. Prerequisites: Social Ecology U202; graduate standing and consent of instructor.

U288 Environmental Psychology (4). Provides an overview of major theoretical and research perspectives within the field of environmental psychology. These perspectives are discussed in terms of their value for behavioral sciences projects launched in the community. Prerequisites: graduate standing or consent of instructor.

U298 Directed Studies in Urban Planning (4). Prerequisite: graduate standing; consent of instructor. May be taken for credit two times.

U299 Independent Study in Urban Planning (4). Prerequisite: graduate standing; consent of instructor. May be taken for credit two times.

SCHOOL OF SOCIAL SCIENCES

William R. Schonfeld, **Dean**

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Hector L. Delgado, Ph.D. University of Michigan, *Assistant Professor of Chicano/Latino Studies and Sociology*
Arthur S. DeVany, Ph.D. University of California, Los Angeles, *Professor of Economics*
John DiNardo, Ph.D. Princeton University, *Associate Professor of Economics*
Barbara A. Doshier, Ph.D. University of Oregon, *Professor of Cognitive Sciences*
Michael D'Zmura, Ph.D. University of Rochester, *Associate Professor of Cognitive Sciences and of Information and Computer Science*
David Easton, Ph.D. Harvard University, *UCI Distinguished Research Professor of Political Science*
Harry Eckstein, Ph.D. Harvard University, *UCI Distinguished Professor Emeritus of Political Science*
Jean-Claude Falmagne, Ph.D. University of Brussels, *Professor of Cognitive Sciences*
James Ferguson, Ph.D. Harvard University, *Associate Professor of Anthropology*
Raul Fernandez, Ph.D. Claremont Graduate School, *Professor of Social Sciences*
Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor Emeritus of Social Sciences*
James J. Flink, Ph.D. University of Pennsylvania, *Professor Emeritus of Social Sciences*
Linton Freeman, Ph.D. Northwestern University, *Professor Emeritus and Research Professor of Sociology*
Sue Freeman, Ph.D. University of California, Irvine, *Lecturer in Anthropology and Sociology*
Creel Froman, Ph.D. Northwestern University, *Professor of Political Science*
Naoki Fukui, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Linguistics*
Kaku Furuya, Ph.D. University of California, Berkeley, *Assistant Professor of Economics*
Paula Garb, Ph.D. U.S.S.R. Academy of Sciences, *Assistant Adjunct Professor of Social Sciences and Social Ecology*
L. Manuel García y Griego, Ph.D. University of California, Los Angeles, *Assistant Professor of Political Science*
Jeffrey M. Garcilazo, Ph.D. University of California, Santa Barbara, *Assistant Professor of Chicano/Latino Studies and History*
Robert Garfias, Ph.D. University of California, Los Angeles, *Director of Chicano/Latino Studies and Professor of Anthropology*
Michelle Garfinkel, Ph.D. Brown University, *Associate Professor of Economics*
Amihai Glazer, Ph.D. Yale University, *Professor of Economics and Social Ecology*
Gilbert Gonzalez, Ph.D. University of California, Los Angeles, *Professor of Social Sciences and Education*
Richard H. Granger, Ph.D. Yale University, *Professor of Information and Computer Science and of Cognitive Sciences*
Susan Greenhalgh, Ph.D. Columbia University, *Associate Professor of Anthropology*
Bernard N. Grofman, Ph.D. University of Chicago, *Professor of Political Science and Social Psychology*
Frank Haight, Ph.D. University of New Zealand, *Adjunct Professor of Economics*
Gregory Hickok, Ph.D. Brandeis University, *Assistant Professor of Cognitive Sciences*
Donald Hoffman, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and of Information and Computer Science*
Lawrence A. Howard, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*
C.-T. James Huang, Ph.D. Massachusetts Institute of Technology, *Chair of the Department of Linguistics and Professor of Linguistics*
Gavin Huntley-Fenner, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Cognitive Sciences*
Tarow Indow, Ph.D. Keio University, *Professor Emeritus of Cognitive Sciences*
Helen Ingram, Ph.D. Columbia University, *Professor of Social Ecology and of Politics and Society, and Drew, Chace, and Erin Warrington Chair in the Social Ecology of Peace and International Cooperation*
Geoffrey J. Iverson, Ph.D. New York University, *Professor of Cognitive Sciences*
John Johnston, Ph.D. University of Wales, *Professor Emeritus of Economics*

- Joseph G. Jorgensen, Ph.D. Indiana University, *Professor of Social Sciences*
 Sheen T. Kassouf, Ph.D. Columbia University, *Professor Emeritus of Economics*
 Mary-Louise Kean, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences and Linguistics*
 George Kent, Ph.D. University of California, Berkeley, *Professor Emeritus of Social Sciences*
 Mary Ritchie Key, Ph.D. University of Texas, *Professor Emerita of Linguistics*
 Claire Jean Kim, Ph.D. Yale University, *Assistant Professor Asian American Studies and of Political Science*
 Jerome Kirk, Ph.D. The Johns Hopkins University, *Professor Emeritus of Sociology*
 David LaBerge, Ph.D. Stanford University, *Professor Emeritus of Cognitive Sciences*
 Utpal Lahiri, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Linguistics*
 Charles Lave, Ph.D. Stanford University, *Professor of Economics*
 Jaewoo Lee, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Economics*
 Karen Leonard, Ph.D. University of Wisconsin, *Professor of Anthropology*
 David M. Lilien, Ph.D. Massachusetts Institute of Technology, *Professor of Economics*
 John M. Liu, Ph.D. University of California, Los Angeles, *Associate Professor of Social Sciences*
 Christine Lofgren, Ph.D. University of California, Irvine, *Lecturer in Cognitive Sciences*
 R. Duncan Luce, Ph.D. Massachusetts Institute of Technology, *Director of the Institute for Mathematical Behavioral Sciences and UCI Distinguished Professor Emeritus of Cognitive Sciences and Economics*
 Gary S. Lynch, Ph.D. Princeton University, *Professor of Biological Sciences, Information and Computer Science, and Cognitive Sciences*
 Craig MacAndrew, Ph.D. University of Chicago, *Professor Emeritus of Psychology*
 Liisa Malkki, Ph.D. Harvard University, *Associate Professor of Anthropology*
 Virginia Mann, Ph.D. Massachusetts Institute of Technology, *Professor of Cognitive Sciences*
 Julius Margolis, Ph.D. Harvard University, *Professor Emeritus of Economics*
 William M. Maurer, Ph.D. Stanford University, *Assistant Professor of Anthropology*
 Robert May, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Philosophy*
 Martin McGuire, Ph.D. Harvard University, *Professor of Economics and Management, and Clifford and Elaine Heinz Chair in the Economics and Public Policy of Peace*
 Richard B. McKenzie, Ph.D. Virginia Polytechnic Institute and State University, *Professor of Management and Economics and Walter B. Gerken Chair in Enterprise and Society*
 Marshall Medoff, Ph.D. University of California, Berkeley, *Lecturer in Economics*
 Duane Metzger, Ph.D. University of Chicago, *Professor Emeritus of Anthropology and Social Sciences*
 Louis Mirón, Ph.D. Tulane University, *Chair of the Department of Education, Associate Professor of Education and Social Sciences, and Director, Center for Collaborative Research in Education (CCRE)*
 Kristen R. Monroe, Ph.D. University of Chicago, *Professor of Political Science*
 Mark Moore, Ph.D. Massachusetts Institute of Technology, *Assistant Professor of Economics*
 Patrick Morgan, Ph.D. Yale University, *Director of Global Peace and Conflict Studies, Professor of Political Science, and Thomas T. and Elizabeth C. Tierney Chair in Peace Studies*
 Nancy Naples, Ph.D. City University of New York, *Assistant Professor of Sociology and Women's Studies*
 Louis Narens, Ph.D. University of California, Los Angeles, *Professor of Cognitive Sciences*
 Robert Newcomb, Ph.D. University of California, Santa Barbara, *Senior Lecturer in Social Sciences and in Information and Computer Science*
 Nicholas R. Novello, Ph.D. University of California, Irvine, *Lecturer in Social Sciences*
 Michael J. Pazzani, Ph.D. University of California, Los Angeles, *Chair and Professor of Information and Computer Science and Professor of Cognitive Sciences*
 Jack W. Peltason, Ph.D. Princeton University, *President Emeritus of the University of California, UCI Chancellor Emeritus, and Professor Emeritus of Political Science*
 Mark P. Petracca, Ph.D. University of Chicago, *Chair of the Department of Politics and Society and Associate Professor of Political Science*
 M. Ross Quillian, Ph.D. Carnegie-Mellon University, *Professor Emeritus of Political Science*
 Priya Ranjan, Ph.D. Columbia University, *Assistant Professor of Economics*
 A. Kimball Romney, Ph.D. Harvard University, *Professor Emeritus of Anthropology*
 Shawn Rosenberg, M. Litt. University of Oxford, *Associate Professor of Political Science and Social Psychology*
 Wayne Sandholtz, Ph.D. University of California, Berkeley, *Associate Professor of Political Science*
 Michael J. Scavio, Ph.D. University of Iowa, *Lecturer in Cognitive Sciences*
 William R. Schonfeld, Ph.D. Princeton University, *Dean of the School of Social Sciences and Professor of Political Science*
 Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Dean for Undergraduate Studies, School of Social Sciences, and Associate Professor of Political Science*
 William Rodman Shankle, M.D. Brown University Medical School, *Associate Adjunct Professor of Cognitive Sciences and of Information and Computer Science*
 Paul Shirey, Ph.D. University of California, Irvine, *Lecturer in Economics*
 Stergios Skaperdas, Ph.D. The Johns Hopkins University, *Associate Professor of Economics*
 Brian Skyrms, Ph.D. University of Pittsburgh, *Director of the Emphasis and Minor in the History and Philosophy of Science and UCI Distinguished Professor of Philosophy and Economics*
 Kenneth A. Small, Ph.D. University of California, Berkeley, *Professor of Economics and Social Ecology*
 David A. Smith, Ph.D. University of North Carolina, Chapel Hill, *Associate Professor of Sociology and Social Ecology*
 Etel Solingen, Ph.D. University of California, Los Angeles, *Associate Professor of Political Science*
 Dorothy Solinger, Ph.D. Stanford University, *Professor of Political Science*
 George Sperling, Ph.D. Harvard University, *UCI Distinguished Professor of Cognitive Sciences and Biological Sciences*
 Judith Stepan-Norris, Ph.D. University of California, Los Angeles, *Chair of the Department of Sociology and Associate Professor of Sociology*
 Alec Stone, Ph.D. University of Washington, *Associate Professor of Political Science*
 Rein Taagepera, Ph.D. University of Delaware, *Professor Emeritus of Political Science*
 Katherine Tate, Ph.D. University of Michigan, *Associate Professor of Political Science*
 Gary Thom, Ph.D. Yale University, *Professor Emeritus of Political Science*
 John Torpey, Ph.D. University of California, Berkeley, *Assistant Professor of Sociology*
 Robert J. Town, Ph.D. University of Wisconsin, Madison, *Assistant Professor of Management and Economics*
 Bernard Tranel, Ph.D. University of California, San Diego, *Professor of Linguistics*
 Judith Treas, Ph.D. University of California, Los Angeles, *Professor of Sociology*
 Carole J. Uhlaner, Ph.D. Harvard University, *Associate Professor of Political Science*
 Robert Uriu, Ph.D. Columbia University, *Assistant Professor of Political Science*
 Roger Walsh, M.B.B.S., Ph.D. University of Queensland (Australia), *Professor of Psychiatry and Human Behavior, Philosophy, and Anthropology*
 Wang Feng, Ph.D. University of Michigan, *Assistant Professor of Sociology*
 W.C. Watt, Ph.D. University of Pennsylvania, *Professor Emeritus of Cognitive Sciences*
 Martin P. Wattenberg, Ph.D. University of Michigan, *Professor of Political Science*
 Norman Weinberger, Ph.D. Case Western Reserve University, *Professor of Biological Sciences and Cognitive Sciences*
 Christian Werner, Ph.D. The Free University of Berlin, *Professor Emeritus of Economics*
 Douglas R. White, Ph.D. University of Minnesota, *Professor of Anthropology*

Joseph L. White, Ph.D. Michigan State University, *Professor Emeritus of Social Sciences*

Murray Wolfson, Ph.D. University of Wisconsin, *Adjunct Professor of Economics*

Charles E. Wright, Ph.D. University of Michigan, *Associate Vice Chancellor for Communications and Technology and Associate Professor of Cognitive Sciences*

John I. Yellott, Jr., Ph.D. Stanford University, *Chair of the Department of Cognitive Sciences and Professor of Cognitive Sciences*

Moiria Yip, Ph.D. Massachusetts Institute of Technology, *Faculty Associate to the Dean and Professor of Linguistics*

OVERVIEW

Undergraduate and graduate education in the School of Social Sciences at UCI represents a commitment to modern social science. The classic subject areas of anthropology, economics, geography, linguistics, political science, psychology, and sociology are included in the School's educational programs, but these programs go well beyond the traditional disciplines and can be characterized by the following emphases.

First, the faculty recognizes the value of systematic empirical observation and quantitative analysis in the study of human behavior. Developments in computer science and in mathematics oriented toward the problems of the social sciences, and the refinement of techniques for the observational, experimental, and statistical study of human behavior, have contributed major new elements to social science. Students in the School of Social Sciences will become familiar with the mathematical, computational, and statistical tools underlying modern social science.

Second, many of the most interesting questions in the study of human behavior cannot be fixed within the traditional disciplinary boundaries. Some of the new and evolving areas which cross orthodox boundaries are political sociology, public policy, cognitive anthropology, and psycholinguistics. Therefore many courses and course modules are built around these interdisciplinary social science phenomena rather than representing social science disciplines.

Third, the School emphasizes the design of hypotheses and of systems of interrelated ideas as an essential part of scientific pursuit. Consequently, the educational programs place substantial emphasis on understanding social science phenomena through the development of theories that can be used to guide empirical studies.

Educational opportunities for students in the School of Social Sciences extend well beyond attendance at courses. Students may develop independent study proposals in cooperation with interested faculty members or may investigate social science applications via off-campus internships. They are invited to participate in the quarterly evaluation of courses and instructors, to propose new courses and other modifications in existing programs, to nominate candidates for visiting faculty appointments, and to serve on School committees. The School provides a variety of opportunities for faculty-student interaction, and students will find the faculty, administration, and academic counseling staff of the School highly accessible and responsive.

Special Facilities

The School of Social Sciences maintains several special facilities for research and education.

The **Social Sciences Research Laboratory**, used for both faculty and student research, occupies the entire fourth floor of the Social Sciences Laboratory Building. The facility contains 40 experiment and control rooms and several specialized facilities including a virtual reality facility and infant cognition laboratory.

The **Farm School**, a small, open, and ungraded elementary school located in a rural setting adjacent to the campus, serves as a

research facility for faculty and students having interests in children and how they learn. Undergraduates receive course credit for assisting staff teachers, for developing educational materials, and for observing and analyzing child behavior at the school.

Several **Undergraduate Computer Laboratories** provide access to networked IBM-compatible systems, where students can work on assignments using full-featured word-processing, database, graphics, and statistical packages. In addition, these computers provide students with access to e-mail, Internet services, and the World Wide Web. The new Social Science Plaza facility contains state-of-the-art, high-tech lecture halls and is fully Internet accessible.

The **Social Science Academic Resource Center** provides personal assistance to all Social Science students on research opportunities, off-campus internships, and graduate and professional programs. The Center also offers counseling on postbaccalaureate programs, provides Internet access and instruction to students, and disseminates information on scholarships, workshops, and other services.

The **Center for the Study of Democracy (CSD)** continues the work of the UCI Focused Research Program on Democratization that was founded in 1991 and sponsors research and training on the process of democratic transition and the expansion of the democratic process in already established democracies. CSD includes a multidisciplinary faculty from four UC campuses.

CSD's activities are focused on three areas. First, faculty administer a graduate training program on empirical democratic theory. The National Science Foundation selected UCI in 1995 as a national center for the training of doctoral students in democratization issues; the five-year NSF grant provides funding for graduate fellowships and other training activities.

Second, the Democracy research program aims at improving the democratic process in the United States and other established democracies as we enter the next century. The program focuses on reforms to increase the ability of citizens to express their preferences and have these preferences represented within the democratic process.

Third, CSD supports research on the development of sustainable democracies in Eastern Europe, East Asia, and other new democracies. The New Democracies Initiative contributes to the promotion of democracy in these formerly authoritarian systems. For more information visit CSD's Web site at <http://www.democ.uci.edu/democ>.

Visiting Distinguished Professorships

The School sponsors a program of Visiting Distinguished Professorships that exposes students to seminal thinkers in the social sciences. The professorships normally are of a quarter's duration. Participants have included Martin Bronfenbrenner, Professor of Economics at Duke University and Fellow of the American Academy of Arts and Sciences; Philip Converse, Robert C. Angell Professor of Political Sciences and Sociology (University of Michigan), President of the American Political Science Association, and member of the National Academy of Sciences and the American Academy of Arts and Sciences; Beatrice Whiting, Professor of Anthropology and Education Emeritus, Graduate School of Education (Harvard University), and member of the American Academy of Arts and Sciences; John Whiting, Professor of Social Anthropology (Harvard University) and member of the American Academy of Arts and Sciences; and James Coleman, Professor of Sociology (University of Chicago) and member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Degrees

Anthropology	B.A.
Economics	B.A., M.A., Ph.D.
Geography ¹	B.A.
International Studies	B.A.
Linguistics	B.A.
Political Science	B.A., Ph.D.
Psychology	B.A., Ph.D.
Social Science	B.A., M.A., Ph.D.
Sociology	B.A.
Transportation Science ²	M.S., Ph.D.

Within the Ph.D. in Social Science are four optional concentrations: *Anthropology*, supervised by Department of Anthropology faculty; *Linguistics*, supervised by Department of Linguistics faculty; *Mathematical Behavioral Sciences*, supervised by an interdisciplinary group of faculty; and *Sociology and Social Relations*, supervised by Department of Sociology faculty.

¹ The major of Geography is not available at this time; however, courses in Geography are offered under Social Science.

² Supervised by the Interdepartmental Group in Transportation Science. See the Interdisciplinary Studies section of the *Catalogue*.

HONORS

Honors at graduation, i.e., *cum laude*, *magna cum laude*, or *summa cum laude*, are awarded on the basis of academic performance. Of the graduating seniors, approximately 1 percent will be awarded *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. To be considered for honors, a student must have a minimum of 72 units in residence at a University of California campus. Other important factors are considered (see page 51).

Undergraduate Program

PLANNING A PROGRAM OF STUDY

Since there are many alternative ways to plan a program, some of which may require careful attention to specific major requirements, students should consult with the School of Social Sciences Undergraduate Counseling Office to design an appropriate program of study.

Students who elect one of the School majors in their freshman year might begin by taking the one-digit courses required by their major and one of the mathematics sequences listed under Part A of the School requirements. It is a good idea to take these courses early since they include fundamental concepts that will be widely applicable in more advanced courses. In addition, the lower-division writing requirement of the breadth requirement (Category I) should be completed during the first year. In the sophomore year, the student might complete the course on computing, three courses toward the breadth requirement, four courses in the social sciences, and four electives. Students who are planning to go on to graduate school can use their freshman and sophomore years to advantage by taking courses in theory, research methods, mathematics, and other areas important to graduate study. In the junior and senior years, the student should take courses in the major area and should create an individualized program of study through a combination of courses and course modules which fall in an area of interest. Particular attention should be paid to planning a program of study that will ensure that major requirements are met prior to graduation.

Double Majors

In order to double major within the School of Social Sciences, major and school requirements must be met for *both* majors with no overlap of courses except for those used to satisfy the mathematics, computer technology, and introductory social science requirements. The mathematics and computer courses need only be taken once. Only two introductory social science classes are

needed, provided this also meets the requirements of both major programs. The same two-digit and upper-division courses may *not* be used to meet the requirements of more than one major program. For example, a student who wishes to major in Psychology and Anthropology may take one of the mathematics sequences, Information and Computer Science 1A, 1P, or 21, or Social Science 3A, and may use Introduction to Psychology and Introduction to Anthropology to meet the major and School requirements for both programs. However, two different sets of two-digit and upper-division courses must be taken to complete the major and School requirements of the two programs.

Teaching Credentials

The major in Social Science, with the specialization in Social Studies, is specifically designed for prospective K–12 teachers. A subject matter preparation program is available for students pursuing a single subject credential in social science. See an academic counselor for details.

Mathematics and Social Sciences

The mathematics requirement stems from the nature of modern social science. The concepts and terms of mathematics, statistics, and computers are an important part of the social scientist's vocabulary. Basic knowledge of these tools is necessary to an understanding of current literature in the social sciences, to the analysis of data, and to an intelligent use of social science models. Each candidate for a degree in the School of Social Sciences is expected to have a basic knowledge of probability, statistics, and computing. In addition, for students who are preparing for graduate school in an area of social science, it will be important to supplement the minimal mathematics requirements with additional courses related to mathematics and social science methodology. The particular courses which would be recommended are not specified here, however, since they are highly dependent on the major emphasis of the student. Students who are preparing for graduate study should consult their advisors to determine a program of study which will give them the research skills necessary for successful graduate work.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements

- Familiarity with basic mathematical, computational, and statistical tools underlying modern social sciences. This requirement is met by passing a three-course sequence in mathematics (Anthropology 10A-B-C, Economics 10A-B-C, Mathematics 2A-B-C, Psychology 10A-B-C, Social Science 10A-B-C, Social Science 100A-B-C, or Sociology 10A-B-C). Computer education is essential for a complete social science education. This requirement can be satisfied by passing Information and Computer Science 1A, 1P, or 21, or Social Science 3A. Departments may have preferences for specific courses. See your major department for acceptable courses. This course requirement should be taken during the student's first year.
- An understanding of the fundamental concepts, analytical tools, and methods of social science. This requirement is met by taking two introductory courses in the School of Social Sciences bearing a one-digit course number. These courses normally should be taken during the student's first year.
- An understanding of important advanced areas in social science. This requirement is met by passing satisfactorily nine upper-division courses in the School of Social Sciences, where at least three of these courses comprise core courses or a module. For modules which are listed with more than three courses, the student may normally elect to take any subset of three courses in the module. Appropriate substitutions may be made upon petition.

D. Four additional social science courses from any level.

Students are reminded that the Pass/Not Pass option is not applicable to course requirements A through D above or to any additional requirements listed for specific major programs. However, Information and Computer Science 1A, 1P, 21, and Social Science 100A are exceptions to this rule and may be taken Pass/Not Pass.

Courses used to meet requirements B through D above are included in the computation of the grade point average in courses required in the major program.

TRANSFER STUDENTS

Freshmen and Sophomores: Students transferring to UCI as freshmen or sophomores will fulfill the regular requirements of the four-year program either through work at UCI or through transfer credit for comparable work elsewhere.

Juniors: Following review by the School of Social Sciences, it may be determined that junior transfer students electing to major in one of the School's degree programs, who have good records at other accredited colleges and universities, have satisfied School requirement B and the University requirements. However, all transfer students must fulfill the upper-division writing breadth requirement (category I) while at UCI. Students anticipating transfer to UCI in their junior year should plan their curriculum so as to anticipate the special mathematics requirement (School requirement A). Every effort will be made to accommodate individual variation in background, provided students are prepared to commit themselves to intensive work in areas of deficiency. Ordinarily, the typical two-year program for junior transfers is simply the last two years of the regular four-year program, except that students who have not satisfied the mathematics requirements of the School should plan to do so in the junior year and must do so before graduation.

Seniors: Students wishing to graduate with a degree in the School by transferring to UCI in their senior year should plan their work carefully to ensure that the requirements can be met in one year of residence. In general, differences between the program at UCI and programs elsewhere make senior transfers difficult.

SPECIAL PROGRAMS

3-2 Program with the Graduate School of Management

Outstanding students who are interested in a career in management may wish to apply for entry into the Graduate School of Management's 3-2 Program. Students normally apply for this program early in their junior year. See the Graduate School of Management section for additional information.

Education Abroad Program

Upper-division students have the opportunity to experience a different culture while making progress toward degree objectives through the Education Abroad Program (EAP). EAP is an overseas study program which operates in cooperation with host universities and colleges throughout the world. Additional information is available in the Center for International Education section.

Interdisciplinary Minors

A variety of interdisciplinary minors are available to all UCI students. See the Interdisciplinary Studies section of the *Catalogue* for complete information.

The minor in African-American Studies offers undergraduate students an opportunity to study those societies and cultures established by the people of the African diaspora and to investigate the African-American experience from a variety of disciplinary perspectives and theoretical approaches.

The minor in Asian American Studies examines the historical and contemporary experiences of Asians after their arrival in the United States and seeks to provide an awareness of the history,

culture (e.g., literary and creative art accomplishments), psychology, and social organization of Asian American communities.

The minor in Chicano/Latino Studies is designed to provide an awareness, knowledge, and appreciation of the language, history, culture, literature, sociology, anthropology, politics, social ecology, health, medicine, and creative (art, dance, film, drama, music) accomplishments in the Chicano/ Latino communities.

The minor in Global Peace and Conflict Studies addresses international violence, the threat of war, paths to cooperation in global and regional security, and international economic and environmental matters.

The minor in Global Sustainability trains students to understand the changes that need to be made in order for the human population to live in a sustainable relationship with the resources available on this planet.

The minor in the History and Philosophy of Science explores how science is actually done and how it has influenced history, and is concerned with determining what science and mathematics are, accounting for their apparent successes, and resolving problems of philosophical interest that arise in the sciences.

The minor in Latin American Studies is designed to develop in students an awareness, knowledge, and appreciation of Latin American issues in the areas of language, history, culture, literary studies, sociology, anthropology, political science, health, folk medicine, and creative (art, dance, film, drama, music) accomplishments.

The minor in Native American Studies focuses on history, culture, religion, and the environment. The three core courses serve as an introduction to the Native American experience from the perspective of different historical periods and frameworks of analysis.

The minor in Religious Studies focuses on the comparative study of religions in various cultural settings around the world and seeks to provide a wide-ranging academic understanding and knowledge of the religious experience in society.

The minor in Women's Studies offers a curriculum drawing from the humanities, social sciences, and the arts to examine contributions of women from different backgrounds to culture and society and to explore women's and men's lives in the context of changing gender relations.

CAREERS IN SOCIAL SCIENCES

Business and industry often look to social science graduates to fill positions in management, finance, marketing and advertising, personnel, production supervision, and general administration. In the public sector, a wide variety of opportunities are available in city, county, state, and federal government. Teaching is a frequently chosen career at all levels from elementary school teacher to professor. In addition, many graduates enter professional practice, becoming lawyers, psychologists, researchers, or consultants in various fields.

Because all Social Sciences degrees involve an educational program that is interdisciplinary and that prepares students to understand quantitative methods of data analysis, graduates of the School are well-positioned for research and analysis careers at all levels of government and in private firms. Their solid grounding in contemporary social science methods and their familiarity with a broad spectrum of social scientific thinking gives them an excellent foundation for the pursuit of further training in graduate and professional programs.

The UCI Career Center provides services to students and alumni including career counseling, information about job opportunities, a career library, and workshops on resume preparation, job search, and interview techniques. Additional information is available in the Career Center section.

Graduate Program

The School of Social Sciences offers graduate training in the following areas: Anthropology, leading to the Ph.D. in Social Science; Cognitive Sciences, leading to the Ph.D. in Psychology; Economics, leading to the Ph.D. in Economics; Linguistics, leading to the Ph.D. in Social Science; Mathematical Behavioral Sciences, leading to the Ph.D. in Social Science; Politics and Society, leading to the Ph.D. in Political Science; and Sociology and Social Relations, leading to the Ph.D. in Social Science. In addition, an interdisciplinary concentration in Public Choice is offered within the programs in Economics and Political Science, a specialized concentration in Transportation Economics is offered within the program in Economics, an emphasis in Social Networks is offered within the Mathematical Behavioral Sciences concentration, and a concentration in Political Psychology is offered within the program in Political Science. When an applicant's interests lie outside of or across these areas, the Associate Dean of Graduate Studies, School of Social Sciences, may, on rare occasions, appoint a three-member faculty committee to guide an independent course of study leading to the Ph.D. degree in Social Science.

Although the School does not admit students for a Master of Arts degree, the M.A. degree in Economics or Social Science may be conferred upon students in progress toward the Ph.D. degree.

A graduate program leading to the M.S. and Ph.D. degrees in Transportation Science is supervised by an interdepartmental faculty group. Information is available in the Interdisciplinary Studies section of the *Catalogue*.

ADMISSION

Potential graduate students should apply by January 15 to receive fullest consideration for financial aid. Applicants should indicate the title of the degree sought (Economics, Political Science, Psychology, or Social Science), and the academic area of concentration (see above). All applicants are required to submit Graduate Record Examination General Test scores. Letters of recommendation and the applicant's statement of interest are important factors in the admission decision.

In addition to the University admission requirements described in the Research and Graduate Studies section, individual graduate programs may prescribe special requirements or expectations of applicants, subject to the approval of the Graduate Council. Such requirements are minimum standards only; successful applicants typically must exceed them by a substantial margin.

FINANCIAL SUPPORT

Many students receive financial support in the form of fellowships, teaching assistantships, or research assistantships available under grants to individual faculty. Before accepting an offer of admission with financial support for the first year, applicants should inquire about the likelihood of such support in future years. Occasionally, a newly admitted student may receive a multiyear commitment of some specified financial support, but this is not the rule. Students are also advised to seek aid from sources external to the University. (NOTE: Teaching assistantships do not include remission of fees or nonresident tuition.)

LENGTH OF STUDY AND RESIDENCE

Students who enter with normal academic preparation should be able to earn the Ph.D. within five years to seven years.

Because the intellectual training offered by the School requires full-time study and constant contact with the faculty, the School does not accept part-time students.

DEPARTMENT OF ANTHROPOLOGY

4229 Social Science Plaza B; (949) 824-7602

Leo R. Chávez, **Department Chair**

Anthropology is the comparative study of past and contemporary human societies and cultures. The Department of Anthropology emphasizes contemporary theory in social and cultural anthropology, the anthropological tradition of field research, and formal methods for collecting and analyzing anthropological data. The Department has a strong interdisciplinary bent, with research and teaching interests in psychological anthropology, economic anthropology, social history and social change, culture and health, and social structure.

Undergraduate Program

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See pages 332–333.

Departmental Requirements for the Major

School requirements must be met and must include 10 courses (40 units) as specified below:

- A. Anthropology 2A.
- B. Anthropology 2B, 2C, or 2D.
- C. Three courses (12 units), no more than one course from any of the following topical areas in anthropology:
 - (1) Kinship and Social Structure (Anthropology 121A, 121B, 121D, 121G, 121H, 136B)
 - (2) Economic and Ecological Anthropology (Anthropology 121J, 125A, 125B, 125M, 125P-Q, 125S, 125X, 125Y)
 - (3) Psychological, Cognitive, and Medical Anthropology (Anthropology 132A, 132B, 134A, 134D, 134E)
 - (4) Religion and Cultural Expression (Anthropology 135A, 135H, 138M, 138O, 138P, 138Q, 138R)
 - (5) Political Anthropology (Anthropology 121E, 121G, 127A, 136A, 136G, 136J, 136K, 136M)
- D. Two courses (eight units) on a geographical area, selected from courses in the Area Studies module (Anthropology 160–169).
- E. Three additional anthropology courses (12 units) selected from those numbered Anthropology 40–180 or Social Science 70C.

Students are strongly encouraged to take Anthropology 71A early in their studies and Anthropology 180A after they have had at least three courses beyond Anthropology 2A, 2B, 2C, or 2D.

The faculty encourages Anthropology majors or minors to study abroad and experience a different culture while making progress toward degree objectives. The Center for International Education, which includes the Education Abroad Program (EAP) and the International Opportunities Program (IOP), assists students in taking advantage of many worldwide opportunities. For example, EAP offers excellent opportunities to study anthropology at many universities abroad and courses taken for departmental requirement C, D, and E would be excellent choices to take. Study abroad also can provide opportunities for cross-cultural experience, field research, and foreign language training. See the Center for International Education section of the *Catalogue* for additional information.

Honors Program in Anthropology

The Honors Program in Anthropology is designed to allow undergraduates to pursue field research and write an honors thesis on topics of their choice under the guidance of Department of Anthropology faculty members. Research projects typically involve a

combination of library research, exploratory ethnographic interviews, participant observation, and systematic data collection and analysis. The program is open to all senior Anthropology majors with a grade point average of 3.3 or better overall, with 3.5 in Anthropology courses (at least five courses). Successful completion of the Honors Program and the honors thesis satisfies the upper-division writing requirement.

Although course work for the Honors Program does not start until the senior year, it is highly recommended that during the spring quarter of the junior year, students find a professor willing to serve as their research project advisor on the basis of a mutually acceptable abstract that indicates the goal and significance of their project. If extensive research is to be undertaken at this time, students enroll in Anthropology 199.

During the fall quarter of the senior year, students enroll in Anthropology H190A and write a proposal describing their research question, the relevant background literature, and the method of data collection and analysis. Field work for the project may begin during this quarter.

In the winter quarter of the senior year, students begin or continue ethnographic field research by enrolling in Anthropology H190B. Field research typically combines exploratory field research with fixed format data collection methods.

In the spring of the senior year, students enroll in Anthropology H191 and complete a senior honor thesis that is typically 40 to 80 pages long. Honor theses are read and evaluated by the advisor and a second faculty member chosen by the chair of the undergraduate committee in consultation with the advisor.

Anthropology Minor Requirements

Requirements for the minor in Anthropology are met by taking eight anthropology courses (32 units) as specified below:

- A. Anthropology 2A.
- B. Anthropology 2B, 2C, or 2D.
- C. Three courses (12 units), no more than one from any of the following topical areas in anthropology:
 - (1) Kinship and Social Structure (Anthropology 121A, 121B, 121D, 121G, 121H, 136B)
 - (2) Economic and Ecological Anthropology (Anthropology 121J, 125A, 125B, 125M, 125P-Q, 125S, 125X, 125Y)
 - (3) Psychological, Cognitive, and Medical Anthropology (Anthropology 132A, 132B, 134A, 134D, 134E)
 - (4) Religion and Cultural Expression (Anthropology 135A, 135H, 138M, 138O, 138P, 138Q, 138R)
 - (5) Political Anthropology (Anthropology 121E, 121G, 127A, 136A, 136G, 136J, 136K, 136M)
- D. One course (four units) on a geographical area, selected from courses in the Area Studies module (Anthropology 160–169).
- E. Two additional anthropology courses (eight units), selected from those numbered Anthropology 40–180 or Social Science 70C.

Graduate Program

Participating Faculty

Duran Bell: Economics, economic anthropology
 Victoria Bernal: Economic development, peasants, gender, political economy; Africa, muslim societies
 James S. Boster: Cognitive anthropology, intracultural variation, ethnopsychology, ethnobiology, quantitative methods, social networks
 John P. Boyd: Kinship, social networks, mathematical anthropology
 Michael Burton: Economic anthropology, ecological anthropology, psychological anthropology, gender; Africa, Micronesia

Teresa Caldeira: Urban violence; spatial segregation and urban changes in multicultural societies; citizenship, individual rights, and conceptions of the body; racism; gender, critical urban studies, and contemporary developments in social theory; Brazil
 Frank Cancian: Economic anthropology, inequality, peasants; Mexico
 Leo R. Chávez: International migration, Latin American immigrants, medical anthropology, transnational communities
 Benjamin Colby: Culture theory and cultural pathology, content analysis, psychological anthropology, cognition, narrative structures, psychoneuroimmunology; Japan, Mesoamerica, women's health and well-being in Orange County
 James Ferguson: Political economy, "development," migration and culture; Southern Africa
 Robert Garfias: Ethnomusicology, ethnicity
 Susan Greenhalgh: Political economy, transnational studies, feminism/gender, politics of reproduction, critical demography, disciplinaryity, China, Taiwan, Pacific Rim
 Karen Leonard: Social history of India, caste, ethnicity and gender, Asian-Americans in the United States
 Liisa Malkki: Historical anthropology, nations and nationalism, refugees and exile, ethnicity and transnational identity; East and Central Africa
 William M. Maurer: Anthropology of law, globalization, transnationalism, citizenship and nationalism, finance capital, identity, Caribbean
 A. Kimball Romney: Experimental and psychological anthropology, quantitative and cognitive anthropology
 Douglas White: Cross-cultural research, mathematical anthropology, social networks, longitudinal analysis, development and social change

Affiliated Faculty

Chungmoo Choi: Modern Korean culture, colonialism, popular culture and culture theory, anthropology
 Jonathon E. Ericson: Archaeological chemistry, environmental quality and health, earth sciences
 Paula Garb: Anthropology of conflict and conflict resolution, ethnic and environmental conflict in the former U.S.S.R.
 Joseph G. Jorgensen: Mathematical comparative ethnology; Native American language and culture; explanations, theory, and method in social inquiry
 Arthur J. Rubel: Medical anthropology, peasants

The Department of Anthropology offers a program of study leading to a Ph.D. in Social Science with a concentration in Anthropology. The program focuses on social and cultural anthropology, with emphases in political economy and economic anthropology, cognitive anthropology, ethnography, and medical anthropology, and has multiple faculty interested in ethnicity, gender, historical anthropology, international migration, and social networks. The program also provides rigorous methodological training, with special strengths in quantitative and formal analysis and in the methodology of ethnographic fieldwork. The Department is committed to exploring new and innovative approaches to culture and society in a pluralistic and intellectually open academic environment. Program faculty take diverse theoretical and methodological approaches to a variety of substantive issues. They are united, however, in a willingness to question taken-for-granted theoretical premises and analytic frames, and to engage in good-faith intellectual dialogue about alternative models and approaches.

ADMISSION

Students are admitted to the concentration based on their application materials and evidence of scholarly potential, including grade point average, GRE scores, and letters of recommendation.

REQUIREMENTS

Students must complete a one-year Proseminar in Anthropology during their first year and one course in Anthropological Fieldwork during their second year. In addition, students are required to complete two quarters of Statistics, one course in Research Design, and six elective courses in Anthropology, which are selected in consultation with their advisor and which normally cover a coherent area of specialization within the field. All course work must be completed before a student is advanced to candidacy.

At the end of the first year, students must pass a formal evaluation which is made by the Department of the basis of (1) the first-year course work and (2) examinations to be taken as part of the Proseminar. Students should advance to candidacy by the end of the third year; the advancement to candidacy examination is based on a research proposal, a review of relevant literature, and an annotated bibliography. The fourth (and, in many cases, some or all of the fifth) year is normally devoted to extended anthropological fieldwork. The sixth year (in some cases, also part of the fifth) is devoted to writing the dissertation, in close consultation with the advisor.

Feminist Studies Emphasis

A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Courses in Anthropology

LOWER DIVISION

2 Introduction to Anthropology. Basic introduction to anthropology. These courses can be taken in any order.

2A Introduction to Sociocultural Anthropology (4). Introduction to cultural diversity and the methods used by anthropologists to account for it. Family relations, economic activities, politics, gender, and religion in a wide range of societies. Stresses the application of anthropological methods to research problems. (III, VII-B)

2B Introduction to Biological Anthropology (4). Evolutionary theory and processes, comparative primate behavior, primate fossil record, human variation, and the adequacy of theory, i.e., fit of theory and empirical data. (III)

2C Introduction to Archaeology (4). Archaeological theory and cultural processes with emphasis on the American Southwest, Mesoamerica, and Mesopotamia. (III)

2D Introduction to Language and Culture (4). Explores what the study of language can reveal about ourselves as bearers of culture. After introducing some basic concepts, examines how cultural knowledge is linguistically organized and how language might shape our perception of the world. Same as Linguistics 68. (III)

10A-B-C Probability and Statistics (4-4-4). An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Emphasizes examples from anthropology, sociology, and related social science disciplines. Same as Sociology 10A-B-C. Students who receive credit for Anthropology 10A-B-C may not receive credit for Economics 10A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Science 10A-B-C, or Sociology 10A-B-C. (V)

20A People, Cultures, and Environmental Sustainability (4). An anthropological consideration of global environmental sustainability from the perspective of human cultures and communities. Causes and consequences of population growth, natural resource management, environmental law, environmental ethics. Case studies emphasize tropical rain forests, arid lands of Africa and North America. Same as Environmental Analysis and Design E20.

40A The Rise of Civilization (4). Surveys of archaeological techniques and theories for the study of cultural evolution. Specific theories of the origins of the state and civilization. Sociopolitical structure of simple, egalitarian societies, and origins of complex society. Overview of the archeological database.

50A Primate Societies (4). Surveys the lifeways of non-human primates. Topics include general characteristics of primates, their evolution, geographical distribution, ecology, and social relationships. Special emphasis placed on the adaptive aspects of primate societies and their relevance for understanding humans and the nature of human societies. Same as Psychology 73P.

60A Japan and America: Culture and Society (4). A comparison of values and behavior in Japanese and American culture. (VII-B)

71A-B-C Ethnography I, II, III (4-4-4) F, W, S. Introductory topics in ethnography. Students may be required to make one or more field trips to Mexico at their own expense. Cost varies depending upon mode of travel and availability of outside funds for support.

85A Cultures in Collision: Indian-White Relations Since Columbus (4). An introductory survey of topics such as: indigenous religious belief and socio-political organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Slides, films, and trips to local museums enhance student learning. Same as Sociology 65. (VII-A)

89 Special Topics in Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

UPPER-DIVISION

Course modules emphasizing anthropology are assigned numbers from 120-180. NOTE: Students wishing to complete a module in the anthropology series may do so by taking any three upper-division Anthropology courses.

SOCIAL AND ECONOMIC ANTHROPOLOGY

121A Kinship and Social Organization (4). Organization of social life primarily in preindustrial societies. Theories of kinship, marriage regulations, sexual behavior, and social roles. Comparisons of biological, psychological, sociological, and economic explanations of social organization. (VII-B)

121B Sociobiology (4). Investigates the interacting between culture and biology. Each one affects the other in a process known as coevolution. Prerequisite: satisfactory completion of the lower-division writing requirement.

121D Cross-Cultural Studies of Gender (4). Familiarizes students with the diversity of women's experiences around the world. Gender roles and relations are examined within cultural and historical contexts. A central concern is how class, race, and global inequalities interact with women's status. Prerequisite: Anthropology 2A or 2B. Same as Women's Studies 180A. (VII-B)

121E Women, Race, and Social Movements in Latin America (4). Analyzes the emergence and transformation of social movements in Latin America from the 1980s to the present. Focuses on two groups of protagonists: women (who organized various types of movements), and Black Latin Americans (whose organization has been limited). Same as Women's Studies 180M. (VII-B)

121G Political Anthropology (4). Utilizes anthropological accounts of Western and non-Western societies to question conventional ways of thinking about power and politics. Classical traditions in political anthropology are critiqued; an alternative view is presented through recent anthropological political analyses of topics such as class, gender, aesthetics, and popular culture.

121H Social Inequality: Anthropological Perspectives (4). Concrete anthropological and sociological studies from across the world, including the United States, are compared to give perspectives on social status, power, economic differences, race, ethnicity, and gender. Prerequisite: one course in Anthropology, Economics, Political Science, or Sociology. Same as Sociology 165A. (VII-B)

121J Urban Anthropology (4). Cultural roles of urban centers and processes or urbanization in comparative perspective, focusing on nonwestern, nonindustrial societies of past and present; relationship between modern urban centers and Third World peoples. Migration, urban poverty, adaption, social and political integration of rural folk in urban settings in Africa, Asia, Latin America. (VII-B)

122S Sociolinguistics (4). Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Women's Studies 186A and Linguistics 168A.

125A Economic Anthropology (4). Economic systems in comparative perspective: production, distribution, and consumption in market and non-market societies; agricultural development in the third world. Prerequisite: one course in general science, anthropology, economics, geography, or sociology. Same as Economics 152A. (VII-B)

125B Ecological Anthropology (4). Studies relationships between human communities and their natural environments. The role of environment in shaping culture; effects of extreme environments on human biology and social organization; anthropologist's role in studying global environmental problems, e.g., African famine, destruction of tropical rain forests. Prerequisite: Anthropology 2A, 2B, or 2C. Same as Environmental Analysis and Design E116. (VII-B)

125M Community Change and Transnational Development (4). Focuses on community, national, and international perspectives on findings and applications of anthropological and economic research concerning development and social change. Anthropological critiques of development processes, development agencies, and development economics.

125P-Q The Economics of Traditional Societies I, II (4-4). **125P:** Models and ethnographic descriptions of noncommodity exchange relations of the form that characterize intergroup and intragroup economic processes of many tribal societies. Includes analyses of gift exchange and exchanges within the household. **125Q:** Devoted entirely to supervised research by class members. Prerequisite: Economics 20A-B-C; Economics 152A or Anthropology 125A recommended. Same as Economics 152P-Q. (VII-B)

125S The Anthropology of Money (4). Anthropological approaches to monetary systems; impact of money on subsistence economies; cultural history of money in the west; and modern transformations of money. Also considers recent developments in the cultural history of money, "securitization," credit alternative currencies, and digital cash.

125X Immigration in Comparative Perspective (4). Examines issues related to the migration and settlement of immigrants. Although the focus is on the Mexican migration to the United States, comparisons are also made to immigrant groups from Korea, Japan, Southeast Asia, Central America, the Caribbean, and Europe. Same as Women's Studies 180D. (VII-A)

125Y South Asian American Experience (4). Examines and compares the experiences of South Asian immigrants in the U.S. over time. Looks at the economic, political, and social positions of the immigrants, with special emphasis on religious changes and the changes in the second and later generations. Same as Asian American Studies 151F.

126G Marriage and Bridewealth (4). The rules by which children are positioned within a social system and by which men claim rights over women vary widely among societies. Analyzes these rules on the basis of a formal theory of wealth allocations between and among corporate groups that challenge neoclassical models. Prerequisites: Anthropology 2A and Economics 20A-B-C, or consent of instructor. Same as Economics 152M.

126N Political Economy of Economic Development (4). Focuses on fundamental factors affecting process of economic evolution and development. Most emphasized factors include methods by which economic surplus is appropriated by well-situated social groups and the characteristics of the economic policies of such groups. Prerequisites: Economics 20A-B-C. Strongly recommended prior or concurrent courses: Economics 10A-B-C or equivalent. Same as Economics 148D. (VII-B)

127A Law and Modernity (4). The rise and spread of Enlightenment legal traditions, social contract theory, individual rights, ideologies of "liberty, equality, fraternity"; contradictions of liberal law, its understandings of "primitive" and "civilized"; pervasive myths of property, difference, race, and rights. Reading- and writing-intensive. Same as Criminology, Law and Society J191. (VII-B)

129 Special Topics: Social and Economic Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

CULTURAL AND PSYCHOLOGICAL ANTHROPOLOGY

132A Psychological Anthropology (4). Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics, biocultural aspects of child development and attachment, evolutionary models of culture and behavior, politically linked personality, cognitive anthropology, psychology of narrative forms, comparative national character studies. Prerequisite: Anthropology 2A or Psychology 7A or Psychology 9A-B-C. Same as Psychology 173A and Women's Studies 180C.

132B Cognitive Anthropology (4). Focuses on individual and cultural differences and similarities in the categorization and organization of semantic structures. Relation of variations in these conceptual structures to other systems of behavior.

134D Culture and Health (4). Explores America's cultural diversity by examining differing systems of belief and behavior in relation to illness, curing, disease, practitioner behavior, and use of conventional medical services. Groups focused on include Native Americans, African Americans, Latinos, and Asians.

134E Ways of Healing (4). Designed to explore and discover the diverse ways humans have devised to heal themselves. The theoretical premise is that social ties are an essential ingredient to successful healing and, indeed, protection against the onset of illness.

135A Religion and Social Order (4). An anthropological exploration of religious belief and practices in diverse social and historical contexts. Emphasis placed on selected non-western traditions of the sacred, and on issues of power, ritual, moral order, and social transformation. (VII-B)

135H Religion in South Asia (4). Introduction to South Asian civilization looking not only at Hinduism and Islam but at the socioeconomic and political systems which have supported religions traditions. (VII-B)

136A Nationalism and Ethnicity in the Contemporary World (4). An exploration of the concepts of identity, culture, ethnicity, race, and nation through ethnographic cases, with a view to asking larger questions: How do people create nativeness and foreignness? How does "culture" get worked into contemporary racisms and nationalisms?

136B History of Anthropological Theory (4). A review of competing approaches in anthropological theory from the nineteenth century to the present, covering social evolutionism, functionalism, structuralism, and cultural relativism, as well as more recent intellectual movements and issues such as feminism, cultural studies, poststructuralism, and postmodernism.

136D Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Political Science 154G. (VII-B)

136G Colonialism and Gender (4). An anthropological enquiry into the ways colonial relations of power have been structured and gendered throughout the world, and to what effect. Examines the social locations of men and women in the everyday exercises of colonial and imperial power. Same as Women's Studies 180G.

136J Gender and Cultural Identity (4). Explores how anthropological traditions of studying symbolic classification might be connected with contemporary issues involving the political and cultural classification of people along the crosscutting axes of gender, race, ethnicity, culture, and nationality. Same as Women's Studies 180H.

136K The Woman and the Body (4). Probes culture and politics of the female body in late twentieth-century American life. Focusing on "feminine beauty," examines diverse notions of beauty, bodily practices, and body politics embraced by American women of different classes, ethnicities, and sexualities. Same as Women's Studies 180L. (VII-A)

136M Refugees and Exile (4). An anthropological exploration of exile and displacement. Examines how large population displacements occur, what is usually done about refugees and why, and how the lived experiences of exile influence displaced people's senses of identity, home, and history.

138M Music as Expressive Culture (4). Fundamental requirements for development of a musical tradition. Guiding structural principles which must be agreed upon for new forms of expression to be understood and accepted. How members of society develop their own individual musical cultures and how these permit them to interact with the personal cultures of others.

138N Readings in Ethnomusicology (4). A guided introduction survey through some of the written research in the field of ethnomusicology. Assigned readings and class discussion. Prerequisite: consent of instructor.

138O Music and Society in the Ottoman Sphere (4). The unique character of Ottoman society created a musical culture which spread throughout much of Eastern Europe and into much of the Arabic speaking world. This influence is still clearly manifest in these regions as well as in Turkey. (VII-B)

138P Music of Asia (4). A survey of the major music traditions of Asia and a consideration of the broad cultural and historical patterns which brought them about. Discusses the interaction and development of regional forms and communicates something of the value systems underlying these forms. (VII-B)

138Q Latino Music: A View of Its Diversity and Strength (4). A survey of the musics of the many Latin cultures of the Americas including Mexico, Central and South America, as well as the Caribbean, and of those many Latin cultures which thrive and survive in the United States. (VII-B)

138R Cross-Cultural Parameters of Popular Music (4). A consideration of popular music in the U.S. and abroad. How is pop defined and what does its evolution in other cultures tell us about our own pop music? The course will consider how the various cultures within the U.S. fit into the pop music scene, how they modify it today, and how they have in the past. (VII-A)

138S Music of Greater Mexico (4). A wide range of musics exist in Mexico, and in the Mexican traditions within the United States. From the indigenous traditions of Mexico and the ancient Aztec and Mayan civilizations through the Colonial and Revolutionary periods, the variety of Mexican music is explored.

138T Africa and Afro-American Music (4). Africa's range of musical languages had a profound influence on the musics of the Americas. Covers sub-Saharan Africa and Afro-American musics of Latin America and the United States. Explores the survival of cultural characteristics and diffusion of musical ideas. (VII-A)

139 Special Topics in Cultural and Psychological Anthropology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

ARCHAEOLOGY

141A Ancient Civilizations of Mexico and the Southwest (4). The prehistory and cultural evolution of the civilizations which originated in Mexico, including the Olmecs, Aztecs, Toltecs, Maya, and Zapotec, as well as the Pueblos of the Southwestern U.S. Topics include the origins of food production and of the state, political and social history, ancient cities, and the Spanish conquest.

143A Environmental Geology and Ecology for Land-Use Planning (4). Applications of a number of scientific techniques used in environmental science are surveyed with reference to specific case studies. Students incorporate these techniques and sampling procedures in their research designs. Prerequisites: Environmental Analysis and Design E8 and 10 or equivalent; previous or concurrent enrollment in Anthropology 143LA; consent of instructor; senior standing preferred. Same as Environmental Analysis and Design E142.

143LA Laboratory for Environmental Science and Land-Use Planning (4). Provides weekly lecture, lab experiments, and demonstration of techniques in the environmental sciences. Three to five Saturday field trips as well as a four-day field trip to study specific environmental problems. Prerequisites: Environmental Analysis and Design E8 and previous or concurrent enrollment in Anthropology 143A; consent of instructor; senior standing preferred. Same as Environmental Analysis and Design E142L.

149 Special Topics in Archaeology (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

AREA STUDIES

160M Women and Arabic Society (4). Overview of Arabic history and way of life emphasizing Morocco. Transformation of women's condition during the past half-century. Lecture and seminar format. Same as Political Science 154B and Women's Studies 180F. (VII-B)

161T Field Research: Asian Immigrants and Refugees in Orange County (4). Instruction in field work methodology via research projects involving the local communities of immigrants and refugees from Asia. Open only to School of Social Sciences and Asian American Studies majors. Same as Asian American Studies 197. (VII-A)

162A Peoples and Cultures of Latin America (4). Surveys the prehistory of Latin America and its indigenous cultures, emphasizing the impact of colonial rule, capitalism, and twentieth-century transformations. Emphasis on communities from several countries. In some years, emphasis on comparisons between the Latin American and Caribbean experiences. (VII-B)

162B Indian North America (4). A survey of indigenous peoples in North America: American Indians, Alaska Natives, First Nations, Native Americans. Tribal populations and geographic distributions, political and social organization, sovereignty, self-determination, intergovernmental relations; cultural continuity and change; management, preservation, development of environments/resources. Prerequisite: satisfaction of the lower-division writing requirement. (VII-A)

163A Peoples of the Pacific (4). The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia. Same as Women's Studies 180E. (VII-B)

163H State and Society in Contemporary China (4). Explores the social relations and cultures of Chinese societies and their embeddedness in changing political and economic regimes. Emphasis is on transformations associated with the construction and partial dismantling of socialism on the Chinese mainland, but attention is also given to the Chinese diaspora. (VII-B)

163K Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as East Asian Languages and Literatures 130 and Sociology 175A. (VII-B)

164A African Societies (4). Comparative studies of the cultures and societies of Sub-Saharan Africa, with emphasis on ecological adaptations, social organizations, languages, and social change. Prerequisite: Anthropology 2A.

164K South Africa (4). Explores current political events in South Africa and uses these events to explore some classic issues in social and political theory. Historical and anthropological approaches are combined. (VII-B)

164L Ethnography and Politics in Southern Africa (4). Explores the way that ethnographic accounts have described political processes in southern Africa (including such things as migrant labor and rural transformation, urbanization, ethnicity, and political resistance), and how such accounts have been shaped by their own political contexts. Prerequisite: consent of instructor. (VII-B)

164P Peoples and Cultures of Post-Soviet Eurasia (4). Examines the cultures and political conflict of the more than 130 indigenous ethnic groups in the European and Asian territories of the former U.S.S.R. Emphasis is on the theoretical issues of ethnicity, nationalism, and conflict management. Same as Political Science 154F. (VII-B)

169 Special Topics in Area Studies (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

METHODS AND FORMAL REPRESENTATIONS

171H-I History of Science I, II (4-4). A two-quarter sequence focusing on understanding and appreciating science. Reviews history of science for those characteristics that are essential for the accumulation of knowledge. Implications for growth of social and behavioral sciences are explored. Participation involves extensive reading and individual case history reports.

172A-B Data Collection and Analysis I, II (4-4) F, W. Basic methods and theories of proximity and preference data collection including pile-sort, ranking, triads, item-by-use matrices, rating, and free-listing. Multidimensional scaling, clustering, and quadratic assignment approaches are utilized. Extensive hands-on computer use. Prerequisite: Social Science 10A-B-C, 100A-B-C, or consent of instructor. Same as Social Science 101G-H.

174A World Cultural Comparisons (4). Introduction to ethnology/ethnography, comparative research and theory, culminating in processes of discovery and hypotheses testing using world cultural databases to which students can contribute. Prerequisite: satisfaction of the lower-division writing requirement. (VII-B)

175A Cantometrics (4). Cantometrics is a method for the analysis of music based on sound rather than music notation. Devised by Alan Lomax, cantometrics yields measurable data on the world's many forms of music and permits mapping of global patterns following Murdock.

176A Exploring Society Through Photography (4). Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques. Same as Social Science 182A and Sociology 114A.

177A Laboratory in Sociocultural Anthropology (4). Student research projects designed for this class may range from anthropological data collection (interviews, kinship data, field notes, cognitive tasks) and their analysis to secondary analysis (cross-cultural data, network data, on-line 1980 and 1990 U.S. census data, text databases), and simulation or programming. Prerequisite: consent of instructor.

179 Special Topics: Methods and Formal Representations (1 to 4) F, W, S. Prerequisites vary. May be repeated for credit as topic varies.

SPECIAL COURSES

180A Anthropology Majors Seminar (4-4-4). A course in anthropological theory designed especially for majors in Anthropology. Different issues are considered in different years. Prerequisite: Anthropology major only or consent of instructor.

190 Senior Thesis (4). May be taken a total of three times. Prerequisite: consent of instructor.

H190A Honors Research Workshop (4) F. Students articulate the goals and significance of their research projects. Written work consists of an eight- to fifteen-page research proposal, due by quarter's end, describing the research question, the relevant literature, and methods of data collection and analysis. Prerequisites: open only to students in the Honors Program in Anthropology; consent of instructor.

H190B Honors Field Research (4) W. Students begin or continue ethnographic field research that combines exploratory field research (e.g., participant-observation, interviews, study of archival and documentary materials) with fixed format data collection methods (e.g., standardized interviews, behavioral observations). Prerequisite: Anthropology H190A; consent of instructor.

H191 Honors Senior Thesis (4) S. Student drafts a senior honor thesis (typically) with the following sections: problem statement, literature review, ethnographic background, description of the methods, results, and conclusions. Prerequisites: Anthropology H190A, H190B; satisfaction of the lower-division writing requirement; consent of instructor.

197 Field Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Group Directed Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

GRADUATE

202A-B-C Proseminar in Anthropology (4-4-4). Year-long intensive introduction to the history of anthropological thought and reading in classical and contemporary ethnography for first-year graduate students. Prerequisite: graduate standing or consent of instructor.

208A Anthropological Fieldwork Methodology (4). A survey of anthropological fieldwork methodology techniques, including attention to contemporary analysis of fieldwork. Prerequisite: graduate standing or consent of instructor.

210A-B Graduate Statistics I, II (4-4). Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor. Same as Sociology 221A-B and Social Science 255M-N.

220A Analysis of Quantitative Field Data (4). The uses of quantitative data by field anthropologists and sociologists, including found data (e.g., government censuses and archives), and data from interviews, field censuses, surveys, and systematic elicitation. Hands-on work with existing data. Very elementary statistics and basic computer literacy assumed. Prerequisite: graduate standing or consent of instructor. Same as Social Science 256L.

221A Family and Life History (4). Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor. Same as Social Science 253A.

222A Analysis of Relational Data (4). A practicum in social networks data analysis focusing on the special problems raised by data sets that embody relations. Log-linear and quadratic assignment procedures are stressed along with multidimensional scaling and other representational models. Prerequisites: graduate standing; consent of instructor. Same as Social Science 201G, 241C, and 256A, and Sociology 225A.

223A Research Design (4). Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant-observation, behavior observation, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisites: graduate standing; consent of instructor. Same as Social Science 255A and Sociology 220A.

230A Anthropology and History (4). An examination of the complex, long-standing relationship between anthropology and history. Themes include: history, culture, and colonialism; history and the power to represent; nostalgia and the uses of the past in struggles over "national history." Prerequisite: graduate standing or consent of instructor. Same as Social Science 251A.

231A Cognitive Anthropology (4). Cognitive Anthropology studies how people classify, reason, and make decisions in a cultural context. Explores how cultural knowledge is organized, how members of society come to collective understandings of the world, and what variation reveals about how individuals learn. Prerequisite: graduate standing or consent of instructor. Same as Social Science 252D.

232A Health and Social Relations (4). Comparative approach to health, illness, and curing from a social science perspective. Readings report on health issues in different societies which range from contemporary United States to modern tribespeople from lowland Venezuela. Prerequisite: graduate standing or consent of instructor. Same as Social Science 252O.

234B Gender and Globalization (4). Teases out gender implications of transformations in global culture and political economy. By examining processes such as globalization of production and investment, spread of religious fundamentalisms, and extension of mass media throughout the world, maps out terrain for future ethnographic and theoretical work. Same as Social Science 254K.

235A Urban Anthropology and International Migration (4). Interdisciplinary, but favors anthropological perspectives to examine the nature of urban society, theoretical explanations for international migration, economic vs. political migration, the female experience in migration, and the social integration and cultural adaptation of migrants in receiving communities. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254A.

237A Anthropology of Power Relations (4). Examines contemporary anthropological research on power relations in societies and cultures experiencing change as a result of increasing incorporation into a world capitalist system. Topics include: ethnicity, gender, migration, hegemony, and resistance. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254C.

238A Social Inequality: Anthropological Perspectives (4). Comparative social inequality over the range of issues to which anthropologists have contributed. Topics include: egalitarian societies, local effects of international political economy, ethnicity, gender, caste, and inequality in peasant and urban industrial populations. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254D.

240A Economic Anthropology (4). Classic and contemporary theory in economic anthropology. Case studies from Latin America (primarily Mexico and the Andes), Africa, and the Pacific. Substantive topics include non-market exchange, markets and marketplaces, households, gender, management of common property (fisheries, pastoral lands, forests), labor, development, and change. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254E.

241A Women and Development (4). Explores questions about the dynamics of gender in processes of economic change, and the related problem of the production of knowledge about "women" and "development," with particular attention to Third World feminist critiques. Prerequisite: graduate standing or consent of instructor. Same as Social Science 253G.

242A The Politics of Ethnography (4). Explores the way that ethnographies are linked to wider contexts within which they are produced. Through examination of recent critiques of ethnographic writing, and a series of cases, shows how ethnography is bound up with the politics of representation. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254F.

243A Cultural Studies and Ethnography (4). Examines, from the standpoint of anthropology, areas of recent innovation in "cultural studies," including studies of popular culture, media, consumption, and sub-cultures. Selected theoretical approaches in these areas are brought into a dialogue with anthropological and ethnographic approaches and methods. Prerequisite: graduate standing or consent of instructor. Same as Social Science 252F.

244A The Anthropology of Commodities (4). Explores anthropological perspectives on commodities and commodity exchange. Begins with anthropological accounts of exchange in pre-capitalist societies, and moves on to explore: commodification and capitalism; consumer society and the semiotics of consumption; and the implications of contemporary transnational commodity flows. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254G.

245A Seminar in Political Anthropology (4). Explores anthropological approaches to politics. Covers a range of issues and topics, including: theories of culture, power, and hegemony; approaches to colonial and post-colonial relations of global inequality; and ethnographic approaches to the modern state. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254H.

246A Studies in the National Order of Things (4). Examines how "the nation" has come to appear as an inevitable unit of the contemporary political and cultural order and how it shapes orders of knowledge. Themes: nation and gender; nationalism and colonialism; culture and citizenship; violence and racism. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254I.

246B Law, Colonialism, and Nationalism (4). Origins and spread of law in colonial and nationalist contexts: law's role in constituting and policing difference. Recent theoretical approaches; property in things and people; human and indigenous rights; "customary" law; legal foundations of nationalism; resistance to/through law; globalization. Prerequisite: graduate standing. Same as Social Science 254M.

246C Nations, States, and Gender (4). Explores the ways in which nations, nationalism, states, and citizenship are gendered relations and processes. Questions include: How do women construct themselves as political subjects, and how are constructions of citizenship and discourses of rights gendered? Same as Social Science 253Q.

247A Structuralism and Post-Structuralism (4). Traces recent theoretical discussions and arguments over the philosophical and historical "subject" from structuralist decenterings toward the characteristically "post-structuralist" contemporary concern with the historical and political constitution of subjectivities and subject positions. Prerequisite: graduate standing or consent of instructor. Same as Social Science 252G.

248A Approaches to Globalization (4). Historical and contemporary approaches to the world economy, emphasizing anthropological questions of culture, power, identity, inequality. Examines "neo-imperialism," "late capitalism," accumulation, global markets, urban space, the state, business and policy globalization discourse, "local" responses to and instantiations of the "global." Prerequisite: graduate standing or consent of instructor. Same as Social Science 254L.

248B Citizenship, Democracy, and Violence (4). Building on the discussion of works which formulate broader hypotheses about the relationship of culture and the control of violence, explores the dynamics of violence under democratic regimes in case studies either in Europe or in the Americas. Prerequisite: graduate standing or consent of instructor. Same as Social Science 254N.

289 Special Topics in Anthropology (4). Special topics vary from quarter to quarter. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (4 to 12). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

299 Independent Study (4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit.

DEPARTMENT OF COGNITIVE SCIENCES

3221 Social Science Plaza B; (949) 824-7569

John I. Yellott, Department Chair

The Department of Cognitive Sciences is committed to the investigation of the abstract, complex structures that underlie human cognition: language, thought, memory, learning, and perception. The main areas of research strength within the Department are visual and auditory perception, experimental psychology, and mathematical psychology.

Undergraduate Program

Students should be aware that psychology courses are offered in several different departments and programs. Students interested in general psychology including the areas of development, clinical, perception, learning, memory, and cognitive processes are advised to consult the course listings here in the Department of Cognitive Sciences section. These courses are designed to provide students with a strong foundation in general psychology. Students interested in other areas of psychology are advised to consult the course listings in the School of Social Ecology section.

In anticipation that the number of students who are qualified to elect Psychology as a major will exceed the number of positions available, students applying for admission for fall 1999 should be sure to file their application before November 30, 1998.

Continuing-Student Applicants: Students who were not admitted to the Psychology major upon their admission to the University may apply for entry into the major during the first five weeks of any quarter after their freshman year. Applications must be filed in the School of Social Sciences Undergraduate Counseling Office. To be considered for admission into the Psychology major, students must have completed the following: (a) the lower-division writing requirement and (b) the requirements of two additional campus breadth categories. Students applying to the major should have an overall grade point average of at least 2.7. NOTE: Acceptance into the major is not guaranteed. In the event that more applications are received than can be accommodated, applicants may be subject to screening beyond these minimum criteria.

Excellence in Psychological Research: Psychology majors doing independent research under Psychology 199 may be eligible for participation in the Excellence in Psychological Research program. Participants have the opportunity to present their research papers published in a peer-reviewed student journal. Guidelines for the program are available from the Department of Cognitive Sciences office.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: See pages 332-333.

Departmental Requirements for the Major in Psychology

School requirements must be met and must include 18 courses (70 units) as specified below:

A. Psychology 9A-B-C.

B. Two introductory courses (eight units) in the social sciences chosen from Anthropology 2A or 2B, Economics 1, Linguistics 3, Political Science 6A, 6B, or 6C, Sociology 1, or, by petition, one or two quarters of Social Science H1E, H1F, or H1G, when topic is not psychology.

C. A one-quarter course and laboratory in experimental psychology or research methods selected from 112A and 112LA, 112D and 112LD, or 115A and 115LA.

- D. Four upper-division psychology core courses are required (16 units). These courses are designated with the ending number "0" and include the following: Psychology 120A, 120D, 120H, 120P, 130A, 140C, 140L, 140M, and 140N. NOTE: Psychology 110E cannot be used to satisfy core course requirements.
- E. Seven additional courses (four or more units each) with emphasis in psychology, distributed as follows:
- (1) No more than one of the seven may be lower-division. Psychology 7A may not be used to fulfill this requirement.
 - (2) Three of the upper-division courses used to satisfy requirements D and E must be taken from one of the following modules: Psychology 110–119 (Research Methodologies), 120–129 (General Psychology), 130–139 (Perception and Sensory Processes), 140–149 and 150–159 (Learning and Cognition and Semiotics and Language combined), and 170–179 (Interdisciplinary Studies).
 - (3) Certain courses offered in the School of Biological Sciences and the School of Social Ecology may be used in partial satisfaction of this requirement. Such courses must be chosen from the approved list of psychology-related courses in these disciplines.

NOTE: Psychology majors are strongly encouraged to take Biological Sciences 1A-B and 35 in satisfaction of the natural sciences portion of the breadth requirement (Category II). Furthermore, it is strongly recommended that students who intend to pursue postbaccalaureate work in psychology take the sequence Psychology 112A-B-C or 115A-B. Most psychology graduate programs require statistics (which, at UCI, may be satisfied by taking Social Science 10A-B-C, Psychology 10A-B-C, or Social Science 100A-B-C), but some require calculus (which, at UCI, may be satisfied by taking Mathematics 2A-B-C).

Honors Program in Psychology

The two-year honors program in Psychology is open to selected juniors who are majoring in Psychology. It provides basic training in research methods and culminates with the opportunity for basic research in some area of psychology under faculty supervision. The program has a limited number of openings and seeks to attract outstanding students who plan to undertake postgraduate education in some field of the psychological sciences. Admission to the program is based on a formal application that is normally submitted in the spring quarter of the sophomore year. Applicants should have an overall grade point average of at least 3.2 and a grade point average of at least 3.5 in psychology courses, although this requirement may be waived in unusual cases.

During the junior year, students who participate in the program are expected to enroll in Honors Experimental Psychology (H111A-B-C), and in the fall quarter of the Honors Seminar in Psychology (H101A). As seniors, following successful completion of these junior-year requirements, Psychology honors students are enrolled in the Honors Seminar in Psychology (H101B-C) in the fall and spring quarters. Participants in the honors program are expected to complete course work beyond the breadth requirement in one or more of the following areas: biological sciences, mathematics, computer science, physical science, linguistics, philosophy. The honors seminar may be used to satisfy two of the courses required by Part E of the Psychology major requirements. To graduate with Honors in Psychology, a student must successfully complete the requirements for the B.A. degree in Psychology with an overall grade point average of 3.2 and a grade point average of at least 3.5 in Psychology courses. In addition, Honors students must successfully complete a senior honors thesis as part of the senior-year course work.

Psychology Minor Requirements

Requirements for the minor in Psychology are met by taking seven psychology courses (28 units) as specified below:

- A. Psychology 7A.
- B. Three upper-division psychology courses chosen from the following core courses in Psychology: 120A, 120D, 120H, 120P, 130A, 140C, 140L, 140M, 140N.
- C. Three additional psychology courses (four or more units each) no more than one of which is a lower-division course.
- D. In addition, the School mathematics and computer science requirement (School requirement A) must be satisfied.

Graduate Program

Participating Faculty

William Batchelder: Mathematical models of learning and memory, mathematical psychology, and measurement
 Bruce Berg: Psychoacoustics of complex sounds, auditory attention
 Myron Braustein: Visual perception and computer applications
 Michael Butler: How people learn and how they can learn better
 Charles F. Chubb: Visual perception, motion processing, psychophysics, neural network models
 Carol M. Cicerone: Visual perception and the physiological bases of visual perception, with emphasis on human color vision and retinal mechanisms of sensitivity regulation
 Barbara Doshier: Memory, information processing, perception
 Michael D'Zmura: Visual perception, color vision, attention and virtual reality
 Jean-Claude Falmagne: Mathematical behavioral sciences
 Gregory Hickok: Neural organization of language and other cognitive systems
 Donald Hoffman: Human and machine vision, recovery of three-dimensional structure from image motion, visual recognition of objects by their shape
 Gavin Huntley-Fenner: Relationship between language and thought, with an emphasis on cognitive development
 Tarow Indow: Mathematical models in visual space, color space, and human memory
 Geoffrey J. Iverson: Cognitive science and mathematical models
 Mary-Louise Kean: Linguistic theory and biological foundations of higher mental processes
 R. Duncan Luce: Mathematical behavioral science; measurement theory, utility theory, response times
 Virginia Mann: Speech perception and its development, the development of reading ability, development of dyslexia
 Louis Narens: Measurement, logic, and metacognition
 George Sperling: Vision, perception, information processing
 W.C. Watt: Cognitive semiotics
 Charles E. Wright: Motor control, motor learning
 John I. Yellott, Jr.: Mathematical psychology and visual perception

The Department of Cognitive Sciences offers an integrated course of study leading to a Ph.D. in Psychology, with a specialization in cognitive science, to prepare students for research and teaching careers in academia, industry, and government. The emphasis is on modern techniques of experimentation and theory construction. Special attention is given to providing hands-on research experience and equipping students with sophisticated mathematical and computing skills. The Department has 22 faculty; two are members of the National Academy of Sciences, and many serve as editors or editorial board members of leading professional journals, and as members of NSF and NIH study panels. Many Cognitive Sciences faculty are also members of UCI's Institute of Mathematical Behavioral Sciences, and the Department is generally regarded as one of the world's leading centers for mathematically oriented research in cognitive psychology. One sign of this is the fact that six of its members serve on the Board of Editors of the *Journal of Mathematical Psychology*.

ADMISSION

In addition to meeting the general requirements for admission, applicants should have acquired a background in mathematics

equivalent to at least one year of calculus. (That background is required for completing the program's research methods courses.) Advanced courses in some of the following fields are considered highly desirable: computer science, mathematics and the physical sciences, biology, logic, and linguistics. Standard requirements for admission include Graduate Record Examination (GRE) scores for tests taken within the past five years, official transcripts of all college course work, and three letters of recommendation. Applicants from non-English speaking countries must also take the Test of English as a Foreign Language (TOEFL) and achieve a score of 550 or higher; and if applying for a teaching assistantship, the Test of Spoken English (TSE) must also be taken and a score of 50 or more achieved.

To receive full consideration for fellowship and assistantship awards, applications must be received by January 15. Late applications may be considered until July 1 on a space-available basis. Since the program starts in the fall quarter, students are not normally admitted in the winter or spring, though exceptions may be made. Application materials may be obtained by contacting the Social Sciences Graduate Office.

REQUIREMENTS FOR THE DOCTORAL DEGREE IN PSYCHOLOGY

Each student is expected to take two three-course graduate sequences in the first year. One is a three-quarter research methods sequence covering the areas of probability, statistics, and experimental design (Psychology 203A-B-C). The other is a proseminar sequence covering areas such as learning, memory, perception, and linguistics (Psychology 202A-B-C). Suitable substitutes may be made with written approval of the Department's Director of Graduate Studies. Additional advanced course work in other fields relevant to the student's interests will supplement the required courses. Students are expected to enroll in the Cognitive Sciences Research Seminar (Psychology 201A-B-C) during all quarters in residence prior to passage of the advancement-to-candidacy examination.

In addition, students must take at least six more courses prior to advancement to candidacy. These courses are normally taken from at least three of the following five modules: Foundations (Psychology 200–209); Human Cognition (Psychology 210–229); Methodologies and Models (Psychology 230–249); Human Performance (Psychology 250–269); and Sensation and Perception (Psychology 270–289).

Each student is expected to carry out theoretical/empirical research during the first two years. By the end of the second year, each student should have completed a research project of a scope and nature that is potentially publishable in a professional journal. Every student is assigned a faculty advisor, and the advisor is responsible for assisting in the planning and other facets of the project. Students are required to write a paper based on their research project and to present a talk to the Cognitive Sciences Research Seminar by the end of the spring quarter of their second full year in the graduate program. (Another forum for the second-year talk may be substituted with the written approval of the Graduate Director.)

At the end of each academic year the faculty of the Department meet to discuss and provide feedback on the progress of each student in the program.

Formal permission to begin a Ph.D. dissertation research project (a step known as "advancement to candidacy") is contingent on passage of an examination, normally taken at the end of the third year or the beginning of the fourth year in the program. The advancement-to-candidacy examination is based on a written dissertation proposal prepared by the student, and consists of an oral examination and, at the faculty's option, a written examination as well.

Knowledge of one foreign language or a computer language appropriate to the student's research interests is also required.

Prior to submission of the final version of the dissertation the student is expected to defend the dissertation in a public colloquium.

Courses in Psychology

LOWER DIVISION

7A Introduction to Psychology (4) F, W, S, Summer. Weekly topics include human development, memory and problem solving, learning theory, perception, biological mechanisms, emotions and motivation, personality theory, social psychology, and behavior disorders. Students are expected to volunteer for participation in several ongoing laboratory experiments. Formerly Psychology 7. No credit is given for Psychology 7A if it is taken concurrently with or after 9A, 9B, or 9C. (III)

9A-B-C Psychology Fundamentals (4-4-4) F, W, S. A year-long sequence designed to provide freshman Psychology majors with an in-depth survey of general psychology. Topics include biological bases of behavior, sensation, perception, cognition, development, personality, psychopathology, and social psychology. Prerequisite: freshman Psychology major; consent of instructor. No credit is given for Psychology 7A if it is taken concurrently with or after 9A, 9B, or 9C. (III)

10A-B-C Probability and Statistics in Psychology I, II, III (4-4-4). An introduction to probability and statistics. Emphasis on thorough understanding of the probabilistic basis of statistical inference. Examples drawn primarily from psychology. Students who receive credit for Psychology 10A-B-C may not receive credit for Anthropology 10A-B-C, Economics 10A-B-C, Social Ecology 13, Social Science 10A-B-C, or Sociology 10A-B-C. (V)

11E Social Psychology of Higher Education (4). Focuses on issues and concerns unique to freshmen enrolled at a major research institution. Theoretical framework for understanding the role of higher education in today's society. The field of research and inquiry from a social/psychological perspective. Critical understanding of key issues. Although designed for freshmen, beneficial for all students. (III)

21A Adolescent Psychology (4). Focuses on psychosocial dynamics of today's adolescents in America emphasizing the quest for identity, independence, values, and sexual orientation. The influence of society, family, school, and peers is analyzed. Strategies for helping troubled adolescents are discussed. Prerequisite: Psychology 7A or 9A-B-C. Psychology 21A and Psychology and Social Behavior P102 may not both be taken for credit. (III)

21F Psychology and the Family (4). Examines theories, research, implications, and applications of psychology as they relate to the understanding of family structure, process, development, and change. Prerequisite: Psychology 7A or 9A-B-C.

23A Principles of Applied Psychology (4). Introduction to the understanding of human functioning through cognitive and behavioral analysis and application.

24A Life-Span Development (4). Combines developmental and clinical psychology concepts to explore major life transition stages and adjustment challenges faced by individuals across the life span. Introductions to personality development and coping adaptively with these changes are covered. Prerequisite: Psychology 7A or 9A-B-C.

46A Introduction to Human Memory (4). Covers the core concepts of modern research and theorizing about human memory, including structural subdivisions (e.g., perceptual memory, short-term memory, long-term memory), different measures of memory (e.g., recall, reorganization), and some practical applications of memory research (e.g., mnemonics). Prerequisite: Psychology 7A or 9A-B-C. Psychology 46A may not be taken for credit after Psychology 140M. (III)

55A Introduction to Semiotics (4). How humans and other animals communicate with each other by means of symbols and other signs. The symbols of everyday life, of movies and literature, of religion and society. Symbolic systems and symbolic evolution. Same as Linguistics 80 and Social Science 13A. (III)

56L Acquisition of Language (4). What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year olds. Comparison of kinds of data on which these theories are based. Same as Linguistics 51. (III)

73P Primate Societies (4). Surveys the lifeways of non-human primates. Topics include general characteristics of primates, their evolution, geographical distribution, ecology, and social relationships. Special emphasis placed on the adaptive aspects of primate societies and their relevance for understanding humans and the nature of human societies. Same as Anthropology 50A.

76M Language and the Mind (4). The relationship of knowledge of grammar to mental processes and mental representations. How linguistic behavior is rule governed. Same as Linguistics 52.

78A Introduction to Social Psychology (4). Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction. Same as Sociology 31. (III)

89 Special Topics in Lower-Division Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

UPPER DIVISION

H101A-B-C Honors Seminar in Psychology I, II, III (4-4-4). Focuses on the research activities and honors thesis research projects of each student and on the research of various Cognitive Sciences faculty. Students discuss their research interests in the early and later stages of their projects. Research projects and write-ups are required. Restricted to students in the Honors Program in Psychology.

RESEARCH METHODS

110E Introduction to Experimental Psychology (4). Explores the application of scientific research methods to the study of psychology. The development of testable hypotheses, the design of experiments that test a hypothesis adequately, the collection of experimental data, and the interpretation of results. Prerequisites: Psychology 7A or 9A-B-C; Psychology 10A-B or any other 10A-B series in the School of Social Sciences (10B may be taken concurrently), or equivalent. Students cannot take Psychology 110E for credit after they have taken Psychology H111A or 112A.

H111A Honors Experimental Psychology (4) F. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Corequisite: Psychology H111LA. Prerequisites: Psychology 7A or 9A-B-C; either Psychology 10A-B-C, any other 10A-B-C series in the School of Social Sciences, Social Science 100A-B-C, or Mathematics 2A-B-C. Open only to students in the Honors Program in Psychology or by consent of instructor. Students cannot take Psychology 110E for credit after they have taken Psychology H111A or 112A.

H111LA Honors Experimental Psychology Laboratory (2) F. Corequisite: Psychology H111A.

H111B Honors Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology H111LB. Prerequisite: Psychology H111A or Psychology 112A. Open only to students in the Honors Program in Psychology or by consent of instructor.

H111LB Honors Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology H111B.

H111C Honors Research in Experimental Psychology (4) S. Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology H111B or 112B. Open only to students in the Honors Program in Psychology or by consent of instructor.

112A Experimental Psychology (4) F. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Corequisite: Psychology 112LA. Prerequisites: Psychology 7A or 9A-B-C; Psychology 10A-B-C or any other 10A-B-C series in the School of Social Sciences, Social Science 100A-B-C, Mathematics 2A-B-C, or Mathematics 2A-B and Mathematics 7. Students cannot take Psychology 110E for credit after they have taken Psychology H111A or 112A. Only one course from Psychology 112A, 112D, and 115A-B may be taken for credit.

112LA Experimental Psychology Laboratory (2) F. Corequisite: Psychology 112A.

112B Advanced Experimental Psychology (4) W. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Corequisite: Psychology 112LB. Prerequisite: Psychology 112A, 112LA. Only one course from Psychology 112B, 112D, and 115A-B may be taken for credit.

112LB Advanced Experimental Psychology Laboratory (2) W. Corequisite: Psychology 112B.

112C Research in Experimental Psychology (4) S. Each student conducts a research project in experimental psychology. The projects are discussed in a seminar format. Written reports on each project are submitted at the end of the quarter. Prerequisite: Psychology 112B, 112LB. Only one course from Psychology 112C, 112D, and 115A-B may be taken for credit.

112D Observational Research Methods in Psychology (4) W. Introduction to research methods in social psychology, with emphasis on observational studies. Each student is given the opportunity to propose, carry out, analyze, and report a piece of original social psychology research. Prerequisites: Psychology 110E; Psychology 10A-B-C, any other 10A-B-C series in the School of Social Sciences. Mathematics 2A-B-C recommended. Statistics may not be taken concurrently. Restricted to Psychology majors with upper-division standing only. Only one sequence from Psychology 112D, 112A-B-C and 115A-B may be taken for credit.

112LD Observational Research Methods in Psychology Laboratory (2). Corequisite: Psychology 112D.

113T Introduction to Psychological Tests and Measurements (4). Principles of psychological measurement, including elementary psychophysics, psychometrics, test theory, and the measurement of abilities, attitudes, traits, and interests. Reliability and validity of psychological measurements. Prerequisites: Psychology 7A or 9A-B-C; Psychology 10A or any other 10A course in the School of Social Sciences or equivalent.

114A Informal and Formal Reasoning (4). Examines human reasoning, focusing on scientific argument and elementary logic. Involves the translation of informal arguments from everyday language into logic. Specific feedback allows students to pace themselves through this computer-assisted course. Weekly informal classroom discussions.

114C Computers and Psychology (4). Introduction to computer applications in applied and research psychology, including automated psychological assessment, diagnosis, prescription developments, artificial intelligence applications, and "expert systems." Prerequisite: Psychology 110E or 112A.

115A-B Behavioral Research (4-4) F, W. A two-quarter introduction to the practice of behavioral research: generating research ideas, finding and reading previous research, research methods, quantifying observations, sampling, drawing inferences from data, and writing up results. Students will propose and conduct their own research project with approval. Corequisite: Psychology 115LA, 115LB. Prerequisites for 115A: Psychology 9A-B-C and one of the following series: Psychology 10A-B-C, or any other 10A-B-C sequence in the School of Social Sciences, or Social Science 100A-B-C, or Mathematics 2A, 2B, 7. Prerequisites for 115B: completion of the lower-division writing requirement and a passing grade in 115A. Only one sequence from Psychology 115A-B, 112A-B-C, and 112D may be taken for credit.

115LA-LB (2-1) F, W. Corequisite: Psychology 115A-B.

116 Research Methods in Cognitive Development (4). Introduces students of cognitive psychology to experimental design, the laboratory techniques, and the data analysis employed in studies with very young subjects. Specific paradigms vary each quarter. May be repeated for credit as topics vary.

119 Special Topics in Research Methodologies (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

GENERAL PSYCHOLOGY

120A Abnormal Psychology (4). Introduction to psychopathology and behavioral deviations, and the concepts of theories regarding these conditions. Prerequisite: Psychology 7A or 9A-B-C. Psychology 120A and Psychology and Social Behavior P105 may not both be taken for credit.

120D Developmental Psychology (4). A general introduction to the study of the physical, intellectual, social, and emotional development of the child from birth to adulthood. Prerequisites: Psychology 7A or 9A-B-C. Psychology 120D and Psychology and Social Behavior P101 may not both be taken for credit.

120H History of Psychology (4). A history of the development of various schools and systems of psychological thought. Prerequisites: Psychology 7A or 9A-B-C.

120P Personality Theories (4). A survey of the evolution of personality theory during this century. An overview of major perspectives in the field, with special attention to Freud, Jung, and Adler. Prerequisite: Psychology 7A or 9A-B-C. Psychology 120P and Psychology and Social Behavior P144C may not both be taken for credit.

121A, B, C Creative Learning in Children I, II, III (4, 4, 4) F, W, S. Seminar, two hours; field work, six hours. Students assist in teaching children at the Farm School, recording and studying their interactions with the children, and developing materials for use in the School. The Farm School is ungraded; the children range in age from five to twelve. Open to students in any major.

121D Models of Addiction (4). Review of medical, psychological, sociological, moral, behavioral, personality, and other models of the addiction process and its treatment. A variety of common addictive behaviors are considered, including alcoholism, drug addiction, gambling, work, and smoking.

121M Theories of Motivation (4). Factors affecting the behavioral performance of organisms. A survey of theoretical and empirical approaches to the physiological, psychological, and social factors which generate behavior. Prerequisite: Psychology 7A or 9A-B-C.

121S Psychology of Sleep and Dreaming (4). Covers the physiology, neurochemistry, and neuroanatomy associated with sleep, contemporary sleep theory, REM and NREM, phenomenology, sleep disorders, examination of differences between conscious and unconscious cognitive function, the history of sleep and dream theories from ancient time to present day.

121T A History of Psychoanalytic Thought (4). A survey of psychoanalytic thought from its origins in shamanistic healing through the discovery of a dynamic unconscious and beyond. Includes psychoanalytic hypotheses, developments, transformations, and influences on various aspects of Western culture and society, including art and literature. Prerequisites: Psychology 7A or 9A-B-C; upper-division standing.

122I Organizational/Industrial Psychology (4). Introduction to applied psychology in organizations, including personnel testing, selection, training and evaluation, job and classification analysis, job satisfaction and motivation, organizational development, leadership, market research and consumer psychology. Potential ethical problems are discussed.

128 Trends in Psychology (0). Explores current trends in different fields of psychology. Two units of workload credit. Prerequisite: consent of instructor. Pass/Not Pass only. May be repeated for credit as topics vary.

129 Special Topics in General Psychology (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

PERCEPTION AND SENSORY PROCESSES

130A Perception and Sensory Processes (4). A general introduction to the scientific study of sensory processes and perceptual phenomena, with special emphasis on the visual system. Prerequisites: Psychology 7A or 9A-B-C. Psychology 130A may not be taken for credit if taken after 131A or 131B.

131A Vision (4). Visual perception and the anatomy and physiology of the visual system. Topics include: the retina and the visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and the development of the visual system. Prerequisite: Psychology 9A-B-C or consent of instructor. Psychology 130A may not be taken for credit if taken after 131A. Same as Biological Sciences 182.

131B Hearing (4). Auditory perception, the anatomy and physiology of the auditory system, and the physics of sound. Topics include: neural transduction of sound, sensitivity, sound localization, complex sound perception, and hearing loss. Prerequisite: Psychology 9A-B-C; upper-division standing or consent of instructor. Psychology 130A may not be taken for credit if taken after 131B.

131C Advanced Perception and Sensory Process (4). A continuation of Psychology 131A and 131B. In-depth study of selected topics, emphasizing the way questions in sensory and perceptual research are formulated and pursued. Prerequisites: Psychology 9A-B-C; Psychology 131A and 131B or consent of instructor.

133C Introduction to Color Science (4). How to specify colors (colorimetry), how to systematize colors (color system), what cognitive processes underlie perception, and naming of colors. Examples from experimental psychology, color TV, and photography. Color harmony and aesthetic aspects of color are not covered. Prerequisite: Psychology 7A or 9A-B-C or consent of instructor.

133P Advanced Topics in Visual Perception (4). Topics in vision related to ophthalmology and optometry. Course for students considering a career in eye care. Prerequisite: upper-division standing; Psychology 130A or consent of instructor.

134A Human Attention (4). Reviews and discusses methods of research, current data, and current theories in the field of human attention. Prerequisite: Psychology 7A or 9A-B-C.

134R Visual Attention Research (2). Review and discussion of current research on the role of attention in the perception of visual patterns. Experiments are designed, run, and analyzed. Students have the option of participating as subjects or writing a term paper. Prerequisites: upper-division standing; Psychology 7A or 9A-B-C; consent of instructor.

135D Perceptual Development (4). Human perceptual development is examined from birth through childhood with emphasis on localization, discrimination, and pattern recognition abilities in vision and audition. The role of perceptual development in cognition is evaluated. Prerequisites: Psychology 130A and upper-division standing.

136M Psychophysical Methods and Models (4). Experimental and theoretical methods used in the study of vision, with special emphasis on signal detection theory and linear system analysis. Intended for students who plan to pursue graduate training in fields related to visual sciences; familiarity with elementary probability is assumed. Some knowledge of calculus is helpful. Prerequisite: Psychology 130A.

136S Introduction to Scaling (4). Procedures to quantify sensation, preference, ability, and attitude are explained (unidimensional scaling), with applications to various problems in psychology and some problems in industry and marketing. Prerequisite: upper-division standing; Mathematics 2A or equivalent.

139 Special Topics in Perception and Sensory Processes (4). Prerequisites vary. May be repeated for credit as topic varies.

LEARNING AND COGNITION

140C Cognitive Science (4). Introduction to investigations of the structure and function of the mind, from viewpoints of computation, neuroscience, philosophy, and cognitive psychology. Topics include: perception, attention, knowledge representations, learning and memory, action, reasoning, and language. Prerequisites: Psychology 7A or 9A-B-C.

140L Principles of Learning Theory (4). Investigation of the learning and memory processes of humans and animals. Basic experimental approaches to learning and memory, empirical results, and theoretical interpretations of the evidence are discussed. Prerequisites: Psychology 7A or 9A-B-C.

140M Human Memory (4). Developments in the area of memory; history of memory research; theories of the nature of memory. Visual memory, recognition memory, high-speed scanning, free recall, short-term memory, mnemonics, retrieval, relationship of memory to thinking. Selected theoretical formulations for memory. Prerequisites: Psychology 7A or 9A-B-C. Psychology 46A may not be taken for credit after Psychology 140M. Formerly Psychology 146A.

140N Human Neuropsychology (4). Disorders of human brain functions are used to illustrate basic issues and findings in the study of brain and behavior. Topics include development and aging, perception and action, language, laterality, learning and memory, spatial behavior, psychopathology. Prerequisite: consent of instructor. Formerly Psychology 141N.

141D Cognitive Development (4). An analysis of intellectual development from birth through maturity. Mechanisms of cognitive growth from Piagetian and current information processing theories are examined. Recent research on developmental changes in concept formation, knowledge structures, memory skills, and problem-solving strategies is presented. Prerequisites: Psychology 120D and upper-division standing. Psychology 141D and Psychology and Social Behavior P120D may not both be taken for credit.

143D Choice and Decision Models (4). Introduction to some of the main concepts in the study of individual decision making. The interplay of empirical observation and mathematical theory is emphasized. Prerequisites: elementary mathematical formalism, including sets, relations, functions, and basic concepts of probability. Concurrent with Psychology 212.

143H Human Factors (4). The application of knowledge of human characteristics to the design of equipment, facilities, and environments for human use. Research on attention, perception, learning, and decision-making are applied to problems involving aviation, space, highway safety, industrial safety, consumer products, human-computer interaction, and aging. Prerequisites: Psychology 7A or 9A-B-C.

143P Human Problem Solving (4). Modern developments in the psychology of human problem solving. Topics include: concept identification, arithmetic, sets, logic puzzles, story problems, group problem solving, chess, and theorem proving. Prerequisites: Psychology 7A or 9A-B-C.

143R Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Prerequisite: Psychology 7A or 9A-B-C; Psychology 140C or Linguistics 150A; satisfactory completion of the lower-division writing requirement. Same as Linguistics 157. Concurrent with Psychology 215 and Linguistics 257.

145B Neurobiology of Learning and Memory (4). Basic issues concerning the nature of behavioral plasticity and information storage and their neural substrates. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Biological Sciences 158.

145P-Q-R Attention and Learning Deficits in Children I, II, III (4-4-4). Learning in normal and attention-deficit disordered children. Covers the normal developmental course of learning and a variety of deficits. Includes field work with attention-deficit disordered children. Prerequisite: consent of instructor.

146D Human Memory Disorders (4). Focuses on models and methods of assessing human memory and its disorders. Exposure to conventional and new assessment devices provided. Prerequisite: Psychology 46A or consent of instructor.

149 Special Topics in Cognition and Learning (4). Prerequisites vary. May be repeated for credit as topics vary.

SEMIOTICS AND LANGUAGE

154C Foundations of Communication (4). The logical and semiotic foundations of communication and signification. Same as Linguistics 184.

155A Introduction to Cognitive Semiotics (4). Symbols and their webs. The foundation course in cognitive semiotics, comprising an introduction both from the philosophical standpoint represented by Peirce and from the linguistic standpoint represented by Dalgarno and Saussure. Current cognitive developments are studied. Same as Linguistics 180.

155H History of Semiotic Theory (4). The history of semiotic theory from Aristotle through the Greek and Roman Stoics and St. Augustine to Peirce and the present. The seventeenth-century obsession with the creation of a "universal and philosophical language" is treated. Prerequisite: Psychology 155A. A reading knowledge of Greek and/or Latin is very helpful. Same as Linguistics 181.

155I Cognitive Iconics (4). The study of writing systems (alphabets, runes, Mayan and Egyptian hieroglyphics) and their evolution and modern changes introduced spontaneously through "mistakes," with a view toward exploring aspects of the human mind. Same as Linguistics 182.

155T Semiotic Theory of Writing Systems (4). Ancient and modern writing systems, ranging from Sumerian pictographs through Egyptian and Mayan hieroglyphs to the Phoenician alphabet and its modern descendants (including our own). Distinctive traits of written language (what can be written that cannot be said?), and issues distinguishing hand-execution from eye-recognition. Prerequisite: Linguistics 10. Same as Linguistics 183.

156A Psychology of Language (4). Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Same as Linguistics 150.

156B Language and the Brain (4) W. Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasia; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Linguistics 158 and Biological Sciences 160.

157A Linguistic Theories as Psychological Theories (4). Examines the claim that a central foundational tenet of contemporary linguistics is that linguistic theories are a type of psychological theory pertaining to the nature of human knowledge and language. Critical discussion from linguistic, psychological, and philosophical perspectives. Prerequisites: Psychology 7A or 9A-B-C, or Linguistics 3. Same as Linguistics 152.

159 Special Topics in Semiotics and Language (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

INTERDISCIPLINARY STUDIES

173A Psychological Anthropology (4). Cultural differences and similarities in personality and behavior. Child-rearing practices and consequent adult personality characteristics; biocultural aspects of child development and attachment; evolutionary models of culture and behavior; politically linked personality; cognitive anthropology; psychology of narrative forms; comparative national character studies. Prerequisite: Psychology 7A or 9A-B-C, or Anthropology 2A. Same as Anthropology 132A and Women's Studies 180C.

174A Asian American Psychology (4). Examines the social and psychological concerns of Asian Americans, e.g., coping with racial prejudice, maintaining bicultural identities, dealing with cross-cultural conflicts in interracial relationships, and trying to reconcile generational differences between immigrant parents and their American-born children. Same as Asian American Studies 141. (VII-A)

174B Social Psychology of African-American Families (4). Social psychological analysis of African-American families from an Afro-centric perspective with examination of historical and contemporary factors which affect their structure and functioning and the psychosocial development of family members. Issues and challenges in the twenty-first century. Same as Women's Studies 181A. (VII-A)

174C Adolescent Psychology in Urban American Society (4). Psychosocial dynamics of adolescents in American society; their ongoing quest for identity, independence, values, moral and cognitive development, peer group relationships, sexuality and sex role preference. Analysis of power struggle between adolescent subcultures and institutions of dominant society.

174D Adolescent Psychological Disorders (4). Examines how predictable internal and external adolescent conflicts involving self, family, society become intensified until a breakdown in coping pattern occurs. Specific syndromes indicative of increased adolescent stress as well as major psychological, social, and psychiatric treatment approaches are discussed. Prerequisites: senior standing; Psychology or Social Ecology majors only; one previous course in adolescent psychology.

174E Psychology of the African-American (4). Historical overview of the development of Black psychology and the African-American frame of reference. Topics include personality development, psychological assessment, issues in education, Black mental health, and the role of the African-American psychologist in the community. Formerly Comparative Culture 120L. (VII-A)

174F Chicano/Latino Psychology (4). Examines research and literature investigating Chicano/Latino ethnicity as a variable influencing behavior. Explores mental health needs and issues of Chicano/Latinos and discusses competent, sensitive methods of mental health service delivery. Prerequisite: Psychology 7A or 9A-B-C. (VII-A)

176A Political Psychology (4). Examination of how psychological theory and research may be used to better understand political thought and behavior. Drawing on theories of learning, cognition, and personality, discusses such topics as the formation of political attitudes, the process of political decision-making, and the nature of political leadership. Same as Political Science 128A.

178D Deviance (4). Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Open to majors only. Same as Sociology 156 and Criminology, Law and Society J107.

178N Social Psychology of Networks (4). Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network study of cognitive social structure, exchange and communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues. Same as Sociology 135.

179 Special Topics in Interdisciplinary Studies (1 to 4). Prerequisites vary. May be repeated for credit as topic varies.

190 Senior Thesis (4-4-4). In progress grading. Prerequisite: consent of instructor.

197A-Z Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198A-Z Directed Group Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. Students may enroll in only one 199 per quarter. May be repeated for credit as topic varies.

GRADUATE

201A-B-C Cognitive Sciences Research Seminar (1.3-1.3-1.4) F, W, S. Weekly reports and colloquia by faculty, students, and visitors. Prerequisite: admission to graduate program in Cognitive Sciences or consent of instructor.

202A-B-C Proseminar in the Cognitive Sciences (4-4-4) F, W, S. Year-long intensive introduction to the conceptual foundations and basic research results in the cognitive sciences for first-year graduate students. Prerequisite: graduate standing or consent of instructor.

203A Discrete Mathematics and Probability (4). Logic and set theory are covered during the first three weeks, using an interactive computer system. The remaining seven weeks are devoted to probability theory and cover elementary concepts from sample spaces to Chebychev's Inequality and the moment generating function. Prerequisite: graduate standing.

203B Introduction to Mathematical Statistics (4). An introduction to statistical estimation and statistical inference. Topics include sufficiency and the Rao-Blackwell Theorem, completeness and the Lehmann-Scheffe Theorem. The method of maximum likelihood is explored in some detail. Inference in linear models covers regression and analysis of variance. Same as Economics 220B.

203C Experimental Design (4). Discussion of the logic of experimental design and inferential statistics. Presentation of mathematical ideas from behind analyses of variance and covariance, analysis of counted data; main emphasis on research applications rather than mathematical formulations. Prerequisite: graduate standing or consent of instructor.

212 Choice and Decision Models (4). An introduction to some of the main concepts in the study of individual decision making. The interplay of empirical observation and mathematical theory is emphasized. Prerequisites: elementary mathematical formalism, including sets, relations, functions, and basic concepts of probability. Concurrent with Psychology 143D.

215 Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Prerequisite: graduate standing or consent of instructor. Same as Linguistics 257. Concurrent with Psychology 143R and Linguistics 157.

229 Special Topics in Human Cognition (4). Current research in brain/behavior relationships, human memory, and learning theory will be presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

233A-B-C Observer Theory I, II, III (4-4-4). Provides framework for mathematical analysis of perception/cognition and its relation to the physical world. Permits a unified treatment of perceptual and physical interactions and lays the foundation for a nondualistic, nonreductionistic science. Mathematical aspects include a study of Markovian dynamic systems. Prerequisite: graduate standing or consent of instructor. Same as Mathematics 216A-B-C.

234A-B Mathematical Models of Cognitive Processes I, II (4-4). Mathematical models of various cognitive processes developed since 1960, including learning, memory, perception, psycholinguistics, and problem solving. Models are formulated in different mathematical languages: calculus, algebra, logic, probability, and computer. Difficulties in testing and validating models discussed. Prerequisite: graduate standing or consent of instructor.

249 Special Topics in Methodology and Models (4). Current research in cognitive sciences methodologies, concepts, and models will be presented. May be repeated for credit as topics vary.

251 Human Factors (4). An introduction to the field of human factors for graduate students in cognitive sciences and related fields. Focuses on relationships between basic research in cognitive psychology and the study of human performance in a variety of environments. Prerequisite: graduate standing or consent of instructor.

252 Human Response Times (4) S. Explores conceptual issues concerning response times and response accuracy in information processing models. Focuses on models and methodology; theoretical questions are also addressed. Prerequisites: differential and integral calculus, introductory probability; graduate standing or consent of instructor.

254 Human Information Processing (4). Detailed introduction to speed-accuracy tradeoff experimental procedures; speed-accuracy tradeoff issues; quantitative modeling of temporal aspects of human information processing. Prerequisite: graduate standing or Honors Program in Psychology undergraduate with consent of instructor.

269 Special Topics in Human Performance (4). Current research in the human issue involved with sensation, perception, and cognition. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

271A, B, C Vision Seminar (1.3, 1.3, 1.4). Participants, including the vision faculty and all interested graduate students, make research presentations and discuss current publications in the literature. Also serves as a forum for presentations by visiting vision researchers. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. Formerly Psychology 271.

274 Physiological Bases of Visual Perception (4). Covers visual perception and the anatomy of physiology of the visual system. Topics include: the retina and visual pathway; visual sensitivity; color vision; spatial vision; motion perception; and development of the visual system. Prerequisites: graduate standing, consent of instructor.

289 Special Topics in Sensation and Perception (4). Current research in the reception and processing of visual and auditory stimuli presented. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

290 Dissertation Research (4 to 12). Prerequisites: consent of instructor, graduate standing, psychology major only. May be repeated for credit.

299 Individual Study (4). Prerequisites: consent of instructor, graduate standing. May be repeated for credit.

DEPARTMENT OF ECONOMICS

3223 Social Science Plaza B; (949) 824-5788
Linda Cohen, **Department Chair**

Economics is concerned with the way individuals or societies allocate scarce resources and distribute goods and services. Any situation requiring choice among competing alternatives can be viewed as an economic problem. Economics courses enable students to study the way individuals make these choices (microeconomics), the way governments make these choices (public choice), and the aggregate consequences of these choices (macroeconomics). In addition, the economics curriculum addresses international trade, money and banking, and economic development of the less developed nations.

The Department of Economics is composed of faculty with interests in a broad range of areas within micro- and macroeconomics, and the evaluation of public policy. It is especially strong in applied econometrics, public choice, and applied microeconomics including transportation, energy, industrial organization, labor, and urban development. Members of the Department maintain close ties with members of the Department of Politics and Society and the Graduate School of Management.

Undergraduate Program

In anticipation that the number of students who want to major in Economics will exceed the number of positions available, students applying for admission for fall 1999 should be sure to file their application before November 30, 1998.

In the event the major in Economics receives more qualified applicants than can be accommodated, applicants may be subject to screening beyond minimum University of California admissions requirements. Freshman applicants not selected for Economics at the time of admission will be encouraged to opt for the Undeclared major within the School of Social Sciences or for any other open major for which they qualify. However, lower-division courses prerequisite to upper-division major study are available to all students, and selection to the Economics major at the end of the sophomore year will be based on performance in those courses.

Continuing-Student Applicants. Sophomore students who were not admitted to the Economics major upon their admission to the University may apply for entry into the major. Such students should apply in the School of Social Sciences Undergraduate Counseling Office. The following three criteria must be met to be considered for admission as a junior: the student must have (a) completed two quarters of calculus (Mathematics 2A-B) with a minimum grade of B, (b) completed the Basic Economics sequence (Economics 20A-B-C) with a minimum grade of a B in at least two of the three quarters, and (c) completed the lower-division writing requirement.

Transfer-Student Applicants: For transfer-student admission, preference will be given to junior-level applicants with the highest grades overall and who satisfactorily complete course prerequisites. All applicants must complete the following required courses: one-year of microeconomics and macroeconomics theory and one semester or two quarter courses of approved calculus.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See pages 332–333.

Departmental Requirements for the Major

School requirements must be met and must include 15 courses (60 units) as specified below:

- A. Economics 20A-B-C; this course is a prerequisite for almost all upper-division economics courses.
- B. All majors must demonstrate competence in probability and statistics prior to enrolling in any upper-division economics course, or they must be concurrently enrolled in an approved probability and statistics course. Students may satisfy this requirement by completing Economics 10A-B-C or an equivalent course.
- C. All majors must demonstrate competence in calculus by completing Mathematics 2A-B or equivalent courses. Students must complete at least Mathematics 2A or an equivalent course prior to enrolling in Economics 100A.
- D. Economics 100A-B-C.
- E. Four additional four-unit upper-division economics courses. At least one of the four courses must be research-oriented and involve the production of a significant research paper. This required paper may be approved by any faculty member in economics. It is strongly recommended that students take either the data analysis sequence (Economics 121A-B-C) or the econometrics sequence (Economics 123A-B-C).

Honors Program in Economics

The Honors Program in Economics is open to outstanding students seeking an in-depth study of economic theory and an opportunity to work more closely with faculty members in smaller honors-designated courses, such as Honors Intermediate Economics I, II, III (Economics H100A-B-C). In their senior year, students complete an honors thesis devoted to the collection and rigorous analysis of data, demonstrating their achievement of an advanced level of research and analytical skills. The honors thesis is usually completed while taking Economics 123C. Upon successful completion of an approved thesis, students graduate with Honors in Economics and their transcript notes that they have completed the Honors Program in Economics. Successful completion of the thesis also satisfies the upper-division writing requirement.

To graduate with Honors in Economics, School requirements must be met and must include 19 courses (76 units) as specified below:

- A. Economics 20A-B-C.
- B. Mathematics 2A-B-C must be completed prior to taking Economics H100A.

- C. Mathematics 3A or an equivalent course.
- D. Economics 10A-B-C or equivalent courses.
- E. Economics H100A-B-C.
- F. Economics 123A-B-C or equivalent.
- G. An honors thesis.
- H. A minimum of four additional upper-division economics courses.
- I. Achievement of a grade point average of at least 3.0 in upper-division economics courses taken to fulfill requirements.

Graduate Program

Participating Faculty

Duran Bell: Models of social processes
 David Brownstone: Econometrics and applied microeconomics
 Soo Hong Chew: Economics of information and uncertainty, preference theory
 Linda R. Cohen: Political economy, social choice, government regulation and government policy toward research and development
 Arthur S. DeVany: Economic theory, industrial organizations
 John E. DiNardo: Labor economics and applied microeconomics
 Gordon J. Fielding: Urban theory and transportation policy
 Kaku Furuya: Macroeconomics, international economics
 Michelle R. Garfinkel: Macroeconomic and monetary theory
 Amihai Glazer: Public choice, industrial organization
 John Johnston: Econometrics
 Sheen T. Kassouf: The theory of stochastic speculative pricing
 Charles A. Lave: Transportation economics
 Jaewoo Lee: International economics, macroeconomics
 David M. Lilien: Macroeconomics, labor economics and applied econometrics
 R. Duncan Luce: Theory of measurement, individual decision theory, response times
 Julius Margolis: Political economy of national defense and government behavior
 Martin C. McGuire: Public finance, international trade, economics of peace and security
 Mark P. Moore: International economics, macroeconomics
 Priya Ranjan: International economics, macroeconomics
 Stergios Skaperdas: Economic theory, political economy
 Kenneth A. Small: Urban economics, transportation economics, discrete-choice econometrics, energy
 Christian Werner: Mathematical geography

Affiliated Faculty

Dennis J. Aigner: Statistical and econometric methodology, efficiency estimation
 Marlon G. Boarnet: Urban economics, urban planning, urban economic development
 Thomas C. Buchmueller: Economics of health care
 Michael Burton: Economic anthropology, households, environmental anthropology, comparative research methodology
 Frank Cancian: Anthropology, social stratification, economic anthropology, agriculture, Mexico
 Randall Crane: Urban planning, public policy
 Paul J. Feldstein: Health economics
 Bernard Grofman: Public choice, law and economics, models of collective decision making
 Richard McKenzie: Public choice
 Brian Skyrms: Game theory and decision making
 Carole J. Uhlaner: Comparative political participation, formal models of political behavior

The Department of Economics offers a program of study leading to the Ph.D. in Economics. Drawing upon the School's strong quantitative tradition, it specializes in public choice, transportation economics, urban economics, econometrics, and applied microeconomics. Admission is highly selective and is limited to students whose interests mesh closely with those of the faculty. By requiring a high degree of overlap between faculty and student research interests, the program offers extensive faculty contact within a tutorial framework.

Motivated and well-qualified students find the graduate program highly attractive because of its small size and its great flexibility. Self-discipline and an inquiring mind are prerequisites.

ADMISSION

The deadline for application for admission is January 15 for fall quarter. Students are admitted for winter or spring quarters only under exceptional circumstances. Late applications are considered on a space-available basis. All applicants must take the Graduate Record Exam (GRE) prior to the application deadline. Foreign applicants must also submit Test of English as a Foreign Language (TOEFL) scores.

REQUIREMENTS

All students must show competence in microeconomics, macroeconomics, and econometrics. Normally this is done by taking a three-course sequence in each of these areas. Students also must master two fields of applied economics by taking a two-course sequence (possibly including independent reading courses) and writing a research paper in each field. Students also must enroll for at least four quarters in the graduate colloquium, in which attendance at regular Economics faculty research colloquia is supplemented by discussion of the papers presented and additional reading. Students are encouraged to become conversant with areas of current economic research early in their graduate careers, in order to facilitate a timely transition from meeting course and field requirements to thinking through a dissertation research plan. Knowledge of one foreign language is required; a computer language may be substituted at the discretion of the faculty. After meeting the above requirements, the student will be advanced to candidacy upon completion of an oral examination on a written dissertation proposal.

Concentration in Transportation Economics

Students can also be awarded a Ph.D. in Economics with a concentration in Transportation Economics. This option draws upon the transportation researchers on the campus within the School of Social Sciences, the School of Engineering, the Graduate School of Management, and the School of Social Ecology. Students benefit from association with the Institute of Transportation Studies, which facilitates student research by providing research assistantships and interdisciplinary seminars on all modes of transportation.

Requirements for the concentration are the same as those described above with the following three exceptions: (1) instead of the third quarter of microeconomics and macroeconomics, students may substitute specified courses such as Discrete Choice Econometrics (Economics 223A), Advanced Travel Demand Analysis (Engineering CE220A), or Operations Research for Management (Management 201B); (2) one of the student's two required fields of competence must be transportation economics; the other must be a related field such as urban economics, labor economics, industrial organization, or a transportation-related field from outside economics (such as travel demand and flow theory, urban and transportation policy analysis, environmental impacts of transportation, or urban and transportation planning) subject to the approval of the Director of Graduate Studies for Economics; and (3) students must take at least one additional course from a list of designated courses in transportation and related subject areas.

Concentration in Public Choice

Students can also earn a Ph.D. degree in Economics with a concentration in Public Choice. This is an interdisciplinary field, at the intersection of Economics and Political Science, which draws on quantitative tools to model the functioning of political institutions. Faculty from the Departments of Economics, Politics and Society, and Philosophy and from the Graduate School of Management are involved in research that supports the concentration.

Students who elect this concentration are admitted under the normal procedures for the program in Economics and must fulfill all the requirements for the Economics degree with the following modifications: (1) one of the student's two required fields of competence must be public choice; included is a three-quarter core course in public choice, which is jointly organized by faculty in the Department of Economics and the Department of Politics and Society. (A background in economic theory equivalent to Economics H100A-B-C, Honors Intermediate Economic Theory, is a prerequisite to this sequence.) The requirement for competence in a second field may be met with a one-quarter course, instead of two, if it provides sufficient fluency in the field; and (2) students must obtain a background knowledge in political science equivalent to that provided by a one-year undergraduate survey course, if they do not already have it.

RESEARCH FACILITIES

UCI is a major research university with an excellent library, as well as special interlibrary loan arrangements with other Universities of California libraries. The School of Social Sciences provides a computer laboratory. The Economics Department has a small library with current journals and unpublished working papers from other universities. Students also have access to several campus computers including a Convex C240 mini-super computer. Three Organized Research Units, the Institute of Transportation Studies, the Center for Research on Information Technology and Organizations, and the Institute for Mathematical Behavioral Sciences, provide research opportunities for graduate students.

Courses in Economics

NOTE: Students are reminded that each quarter of a sequential course (i.e., Economics 20A-B-C, 100A-B-C) must be taken in order.

LOWER-DIVISION

1 Introduction to Economics (4) F, W, S. An analysis of the problems society faces in organizing itself to provide goods and services. How decisions of government, business, and the individual relate to current economic problems such as unemployment, inflation, poverty, and environmental pollution. Open only to non-Economics majors. (III)

10A-B-C Probability and Statistics in Economics I, II, III (4-4-4) F, W, S. An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Examples from economics. Students who receive credit for Economics 10A-B-C may not receive credit for Anthropology 10A-B-C, Psychology 10A-B-C, Social Ecology 13, Social Science 10A-B-C, or Sociology 10A-B-C. (V)

20A-B-C Basic Economics I, II, III (4-4-4) F, W, S. The fundamentals of economic theory: microeconomics and macroeconomics. The behavior of firms and of consumers: markets, supply/demand, utility maximization, resource allocation, and efficiency. Government behavior: monetary and fiscal policy, inflation and unemployment. (III)

UPPER-DIVISION

100-119: GENERAL ECONOMICS

100A-B-C Intermediate Economics I, II, III (4-4-4) F, W, S. Determinants of supply and demand; operation of competitive and monopolistic markets; imperfections of the market system, explanations of unemployment, inflation, recessions; public policy for macroeconomic problems. Prerequisites: Economics 20A-B-C; Mathematics 2A or equivalent.

H100A-B-C Honors Intermediate Economics I, II, III (4-4-4) F, W, S. An advanced and mathematical version of Economics 100A-B-C for students in the Honors program. Prerequisites: Economics 20A-B-C and Mathematics 2A-B-C. Open only to honors program students.

101A Advanced Macroeconomics (4). Consumption and investment theories. Theories of money demand and supply. Capital accumulation, economic growth, productivity and supply-side theory. Rational expectations in macroeconomic models of inflation and unemployment. Macroeconomic dynamics; balance of international payments; fiscal and monetary policies to counteract demand and supply shocks. Prerequisite: Economics 100C.

101B Advanced Microeconomics (4). A presentation of the theory of production and distribution, relying heavily upon formal mathematical models. Prerequisites: Economics 100A-B-C and Mathematics 2A-B-C.

102A The Economics of Accounting Principles (4). Introduction to accounting concepts and principles, including the accounting model and accounting cycle, transaction analysis, and the preparation of financial statements. An analysis of the similarities and differences between accounting and economic concepts (e.g., value, profits).

104A History of Economic Thought (4). Discussion of the principal schools of economic thought. Emphasis on ideas expressed by Smith, Malthus, Ricardo, Marx, Jevons, J.B. Clark, Bohm-Bawerk, Wicksell, Marshall, and Keynes. Assignments include readings (in English) of important selections from the original works. Prerequisite: Economics 20A-B-C.

109 Special Topics in Economic Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

120-124: QUANTITATIVE METHODS

121A-B Data Analysis I, II (4-4). Practical applications-oriented course on multiple regression. How to discover and explore general socioeconomic models in data. Prerequisite: simple probability and statistics (Social Science 10A-B-C strongly recommended). Same as Social Science 101A-B.

121C Data Analysis-Writing (4). Advanced regression analysis. Covers practical techniques for solving model-building problems. Strong emphasis on learning clear, effective writing. Prerequisite: Economics 121B or 123B. Same as Social Science 101C.

123A-B-C Econometrics I, II, III (4-4-4) F, W, S. Specification, estimation, and testing of econometric models. Applications in various areas of microeconomics and macroeconomics. Prerequisites: Mathematics 2A-B-C; Economics 10A-B-C or consent of instructor. **123C:** Seminar course in which students complete either an applied or theoretical econometric research project.

124A Time Series Analysis (4). Introduction to the basic techniques of time series analysis. Univariate time series models and forecasting. Multivariate models. Transfer function models. Relations between time series models and econometric models. Prerequisite: Economics 123A.

129 Special Topics in Quantitative Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

130-139: FINANCIAL ECONOMICS

131A The Economics of Risk and Uncertainty (4). The theory of insurance and joint-ownership of risky enterprises; optimal procedures for the allocation of uncertain payoffs. Prerequisites: Economics 20A-B-C.

132A Portfolio Selection and Capital Market Theory (4). Optimal design of portfolios based upon mean-variance characteristics. An examination of the efficiency of present-day capital markets. Prerequisites: Economics 10A-B-C and 100A-B-C.

134A Corporate Finance (4). Provides an analytic approach to modern economic finance theory. Covers capital markets, investment decisions, decision theory under uncertainty, capital asset pricing, and contingent claims theory. Prerequisite: Economics 100A-B-C.

139 Special Topics in Financial Economics (4). Prerequisites vary. May be repeated for credit as topic varies.

140-149: ECONOMICS OF PUBLIC AND PRIVATE ORGANIZATIONS

141A-B-C Economic Analysis of Government Behavior I, II, III (4-4-4). The study of government using the tools of economics. **141A:** The influence of voters' preference on governmental policy; Arrow's impossibility theory; the Downsian theory of voting. **141B:** The effects of various taxation and expenditure policies, such as social security. **141C:** Research course in which students write a paper testing one of the theories covered in the first two quarters of the sequence. Prerequisite: Economics 100A-B. Same as Political Science 127A-B-C.

142A-B-C Industrial Organization I, II, III (4-4-4) F, W, S. **142A:** The theory of market structure. Imperfect markets, government policies, and industry performance. **142B:** Regulation and antitrust theory and performance in industries. **142C:** Research in industrial organization. Prerequisites: Economics 100A-B.

143K-L-M Economics of Information and Incentives I, II, II (4-4-4). **143K:** Study of how incentive structures affect the decisions and actions of economic agents. The consequences of differing property rights for the existence and operation of markets and their implications for the use and allocation of resources. Contracts, structure of the firm, mining, primitive economies, fisheries, environmental management, invention, and innovation. **143L:** Information as an economic resource focusing on principles which govern the production, distribution, and value of information. Implications of different information structures for decision and the operation of markets. Auctions and procurement methods, contracts, searching warranties, and price guarantees, truthful and nontruthful mechanisms. **143M:** Directed research and writing. Prerequisites: Economics 100A-B-C.

144A-B-C Urban Economics I, II, III (4-4-4). **144A:** Focus on spatial impact of economic process within urban areas. **144B:** Emphasizes economic theory and the assessment of the urban problem including housing, transportation, environmental quality, and public finance. **144C:** Allows students to apply knowledge of urban and transportation economics in the conduct of individual research. Prerequisites: Economics 20A-B-C. Strongly recommended prior or concurrent enrollment in Economics 10A-B-C.

144T Mathematical Analysis of Transportation Networks (4). Models of transportation demand; optimal utilization of transportation networks; cost-benefit analysis of network design projects; the economic impact of transportation networks. Prerequisite: Economics 20A-B-C. Same as Social Science 118A.

145E Economics of the Environment (4). Surveys economic aspects of natural resources, pollution, population, and the environment. Examines the causes of pollution, e.g., air, water, noise, toxic waste, and nonoptimal utilization of certain resources, e.g., fisheries; analysis of public policies regarding these problems. Emphasis on microeconomic aspects of environmental problems. Prerequisites: Economics 20A-B-C.

145F Economics of the Environment II (4). Applications of the tools covered in Economics 145E to such topics as global warming, destruction of the ozone layer, and emissions trading. Emphasis on independent research papers. Syllabus and classes include writing technique. Prerequisites: Economics 10A-B-C or equivalent; Economics 145E; and satisfactory completion of the lower-division writing requirement.

145L Economics of Law (4). Examination of several economic concepts which are useful in understanding legal rules: externalities, the assignment of property rights, and Coase's theorem. Examples are drawn from the fields of pollution control, no-fault insurance, medical malpractice, and product liability. Prerequisites: Economics 100A-B or concurrent enrollment in Economics 100B.

146 Public Policy Issues (4). An unabashed examination and interpretation of the following areas of public policy: schooling, housing and homelessness, occupational licensing, F.D.A. drug approval, credit bureaus, the U.S. Postal Service, and auto emissions. Heavy reading requirements from recent public-policy literature. Prerequisites: Economics 20A; satisfaction of the lower-division writing requirement.

148A-B Political Economy of National Defense I, II (4-4). **148A:** Analysis of the adoption of military solutions to international problems; military budgets, weapons policy, and procurement; distribution of benefits and costs of military systems. Emphasis given to nuclear military policy. Focuses on empirical and descriptive works on policy and practice. **148B:** Research seminar. Research paper required. Prerequisites: Economics 20A-B-C.

148D Political Economy of Economic Development (4). Focuses on fundamental factors affecting process of economic evolution and development. Most emphasized factors include methods by which economic surplus is appropriated by well-situated social groups and the characteristics of the economic policies of such groups. Prerequisites: Economics 20A-B-C. Strongly recommended prior or concurrent courses: Economics 10A-B-C or equivalent. Same as Anthropology 126N. (VII-B)

148I-J-K Political Economy of International Relations I, II, III (4-4-4).

148I-J: Migration, trade, and finance in competitive markets; bargaining and compacts; hegemony and imperialism; alliances; multinational firms; international institutions; international law; war and national boundaries; common markets; nationalism; super power conflicts. **148K:** Research seminar. Prerequisites: Economics 20A-B-C.

149 Special Topics in Economics of Public and Private Organizations (4). Prerequisites vary. May be repeated for credit as topic varies.

150-159: HUMAN RESOURCES**151A-B-C Labor Economics and Human Resources I, II, III (4-4-4).**

Analysis of wage determination and the role of labor in production. **151A:** Develops, extends, and applies basic supply/demand analysis. **151B:** Labor market discrimination. **151C:** Original research by students. Prerequisites: Economics 10A-B-C and 20A-B-C.

152A Economic Anthropology (4). Economic systems in comparative perspective: production, distribution, and consumption in market and non-market societies; agricultural development in the third world. Prerequisite: one course in general science, anthropology, economics, geography, or sociology. Same as Anthropology 125A. (VII-B)

152M Marriage and Bridewealth (4). The rules by which children are positioned within a social system and by which men claim rights over women vary widely among societies. Analyzes these rules on the basis of a formal theory of wealth allocations between and among corporate groups that challenge neoclassical models. Prerequisites: Anthropology 2A and Economics 20A-B-C, or consent of instructor. Same as Anthropology 126G.

152P-Q The Economics of Traditional Societies I, II (4-4). **152P:** Models and ethnographic descriptions of noncommodity exchange relations of the form that characterize intergroup and intragroup economic processes of many tribal societies. Includes analyses of gift exchange and exchanges within the household. **152Q:** Devoted entirely to supervised research by class members. Prerequisites: Economics 20 A-B-C; Economics 152A or Anthropology 125A recommended. Same as Anthropology 125P-Q. (VII-B)

155A Economics of the Family (4). Students write and rewrite papers on topics that are suggested by the models and literature in the "economics of the family." Prerequisite: satisfactory completion of the lower-division writing requirement and Economics 100A-B-C; Economics 151A-B-C desirable.

159 Special Topics in Economics in Human Resources (4). Prerequisites vary. May be repeated for credit as topic varies.

160-169: MACROECONOMICS

161A Money and Banking (4). What is money, what does it do, and why is it important? How do depository institutions create money? What is the Federal Reserve Board, what does it do, and how does government affect its behavior? Why are interest rates so high/low, and who is responsible? How about inflation? Prerequisites: Economics 20A-B-C and 10A-B-C.

161B International Money (4). Open economy macroeconomics and determination of exchange rates. Asset-market approach to the balance of payments. Internal and external balance in the economy. Macroeconomic policies under fixed and floating exchange rates. The international monetary system and institutions. Prerequisites: Economics 100A-B-C or 100A-B and concurrent enrollment in 100C.

161C International Trade and Commercial Policy (4). Determination of trade flows and the relative prices. Gains from trade, the terms of trade, and income distribution. Imperfect competition and international trade. The effect of tariffs, export subsidies, and import quotas. The effects of free and restricted trade on economic welfare. Prerequisites: Economics 100A-B or concurrent enrollment in 100B.

161D Advanced Money and Banking (4). What happened in the Great Depression and why? Could it happen again? What is the transmission mechanism? What do economists know about the money supply process? What is the evidence on the demand for money? What are the more important current issues for monetary policy? Prerequisites: Economics 10A-B-C and 20A-B-C.

162A The Japanese Economy (4). An analysis of the structure and performance of the Japanese economy in the post-World War II period. The mechanism and policies of rapid growth. Japan's industrial structure, labor market, and financial system. United States-Japanese trade friction and policy issues. Prerequisites: Economics 100A-B-C. Formerly Economics 115I.

168A-B Comparative Economic Systems I, II (4-4). Survey of models and real-world examples of different economic systems, ranging from market capitalism to planned socialism, with special emphasis on resource allocation mechanisms and contemporary economic problems such as inflation, unemployment, defense spending, labor, and energy shortage. Prerequisites: Economics 20A-B-C.

169 Special Topics in Economics in Macroeconomics (4). Prerequisites vary. May be repeated for credit as topic varies.

GRADUATE

200A-B-C Graduate Colloquium for Economics I, II, III (2-2-2) F, W, S. Weekly reports and colloquia by faculty, students, and visitors. Supplemented by class discussion of these presentations and other material on current research methodology. Prerequisite: admission to graduate program in Economics or consent of instructor. May be repeated for credit.

203A Mathematics for Economists (4). Gives students the mathematical background required for graduate work in economics. Topics covered include multivariate calculus, differential equations, and linear algebra. Prerequisite: graduate standing or consent of instructor.

205A Research Writing in Economics (4). For Economic graduate students who are writing their required research paper in an applied field. How to write an original paper in economics, guidance for specific papers. Prerequisite: admission to the graduate program in Economics.

210-219: GRADUATE ECONOMIC THEORY

210A-B-C Microeconomic Theory I, II, III (4-4-4) W, S. Theoretical microeconomics. Emphasis on the meaning and empirical interpretation of theoretical models. Topics include theory of the firm, theory of the market, theory of the consumer, duality theory, application to econometrics, general equilibrium and welfare economics, uncertainty, game theory. Prerequisite: graduate standing or consent of instructor.

210D-E-F Macroeconomic Theory I, II, III (4-4-4) F, W, S. Advanced macroeconomic theory including alternative macroeconomic models, microeconomic foundations of macroeconomics, investment and growth theory, inflation and unemployment, rational expectations and macroeconomic policy, wealth effects, crowding out and fiscal policy, money and interest, open economy models.

219A-Z Special Topics in Economic Theory (4) F, W, S. Prerequisites vary. May be repeated for credit.

220-229: QUANTITATIVE METHODS

220A-B-C-D Statistics and Econometrics I, II, III, IV (4-4-4-4). Mathematical statistics necessary to prepare students for econometric study and applied work. Topics include probability theory, distributions, sampling, parametric interval and point estimation, statistical hypothesis testing and nonparametric tests. **220B:** An introduction to statistical estimation and statistical inference. Topics include sufficiency and the Rao-Blackwell Theorem, completeness and the Lehmann-Scheffe Theorem. The method of maximum likelihood is explored in some detail. Inference in linear models covers regression and analysis of variance. Same as Psychology 203B. **220C-D:** Specification, estimation and testing of econometric models. emphasis on linear simultaneous equations models, and limited dependent-variable models are covered.

221A-B-C-D Statistics and Econometrics Laboratory I, II, III, IV (2-2-2-2). Discussion of problems in statistics and econometrics and their relationship to statistical and econometric theory. Instruction in the use of computers for applied econometric work. Concurrent with Economics 220A-B-C-D.

223A Discrete Choice Econometrics (4). Specification, estimation, and testing of discrete choice models, with emphasis on cross-section application. Qualitative choice, limited dependent variables, sample selection bias, and latent variables. Students use computer packages to apply models to real data. Prerequisites: Economics 220A and 220C.

224A Time Series Econometrics (4). Econometric analysis of time series data. Moving average and autoregressive series, regression analysis, Box-Jenkins techniques, computational methods, and causality conditions. Prerequisites: Economics 220A, 220C-D.

229A-Z Special Topics in Quantitative Methods (4). Prerequisites vary. May be repeated for credit as topics vary.

230-239: FINANCIAL ECONOMICS

231A-B Financial Economics and Markets (4-4). 231A: Modern theory of portfolio selection as an application of individual decision making under uncertainty. Implication for equilibrium financial asset-pricing. 231B: Roles, characteristics, policies of financial institutions, and behavior of capital markets. Attention to relationship between these aspects of the financial sector and federal monetary management and policy.

239A-Z Special Topics in Financial Economics (4). Prerequisites vary. May be repeated for credit as topics vary.

240-249: MICROECONOMICS

241A-B Industrial Organization I, II (4-4). Analysis of the structure and economic performance of markets, and the impact of public policy and their efficiency and equity. Effects of information structure. 241A: Oligopoly, cartels, mergers, vertical integration, patents, innovation, antitrust, and regulation; 241B: price flexibility and dispersion, auctions, search and industrial structure, intrafirm organization. Prerequisites: Economics 100B and 203A.

242A Information Economics (4). Study of information as an economic resource, focusing on principles which govern the production, distribution, and value of information. Impact of information structures on individual decision, corporate structure, and the operation of markets. Prerequisites: Economics 100A-B-C and 203A.

243A Game Theory (4). An introduction to game theory with emphasis on noncooperative games and economic applications. Topics include: properties of Nash equilibrium and its refinement, repeated games, bargaining games, games with incomplete information. Prerequisites: graduate standing or consent of instructor.

249A-Z Special Topics in Microeconomics (4). May be repeated for credit as topics vary.

250-259: HUMAN RESOURCES

251A-B Labor Economics I, II (4-4). Analytic and empirical study of labor markets. Topics include labor supply and demand, human capital, educational sorting, life-time earnings profiles, discrimination, unemployment, unions; several econometric techniques including combined time-series and cross-sections, sample selection bias, and switching regressions are taught as needed. Prerequisites: Economics 100B and 203A.

259A-Z Special Topics in Human Resources (4). Prerequisites vary. May be repeated for credit as topics vary.

260-269: MACROECONOMICS

261A-B International Trade I, II (4-4). Covers theoretical models, empirical methods, and policy issues in international trade. Following the conventional treatment of the Ricardian model, the Heckscher-Ohlin model, and the specific factors model; new trade models which incorporate scale economies and imperfect competition are discussed. Prerequisite: Economics 210A-B.

269A-Z Special Topics in Macroeconomics (4). Prerequisites vary. May be repeated for credit as topics vary.

270-279: PUBLIC CHOICE

270A-B-C Seminar in Public Choice I, II, III (4-4-4). Public choice lies at the intersection of economics and political science. This course involves the use of tools derived from economics to understand the behavior of governments and of citizens when they deal with politics. Prerequisite: graduate standing and Social Science 111H. Same as Political Science 270A-B-C.

271A-B Public Choice I, II (4-4). Application of economics tools to understanding the behavior of democratic governments. Arrow's Impossibility Theorem, spatial voting models, the behavior of bureaucracies, the influence of special interest groups on policy, and analysis of the effects of electoral politics on public policy.

279A-Z Special Topics in Public Choice (4). Prerequisites vary. May be repeated for credit as topics vary.

280-289: URBAN AND TRANSPORTATION ECONOMICS

281A-B Urban Economics I, II (4-4). Theoretical and empirical analysis of the economic functioning of urban areas. Urban economic development, location of firms and households, housing markets, urban public finance. Econometric estimation of hedonic price functions for housing. Prerequisites: Economics 100B and 203A or equivalent.

282A-B Transportation Economics I, II (4-4). 282A: Economic analysis of intercity transportation. Cost measurement, applications of pricing principles, project evaluation, and economic regulation. Policy toward railroads, air passenger transport, and intercity highways. 282B: Travel demand analysis including discussion of econometric techniques. Pricing and investment in urban transportation, selected policy issues.

283A Urban and Transportation Policy (4). Application of economic approaches to urban and transportation policy issues at national, state, and local levels. Special attention is given to the evolution of competition between modes and attempts to realistically price urban transportation. Prerequisite: graduate standing or consent of instructor.

285A-B-C Colloquium for Transportation Science I, II, III (2-2-2). Selected perspectives on transportation based on the study of human behavior. Organized by Interdisciplinary Program in Transportation Science. Research presentations by faculty, students, and visitors supplemented by class discussion. Prerequisite: graduate standing or consent of instructor.

289A-Z Special Topics in Urban and Transportation Economics (4). Prerequisites vary. May be repeated for credit as topics vary.

290-299: SPECIAL COURSES

290 Dissertation Research (4 to 12). Prerequisite: consent of instructor. May be repeated for credit.

299 Independent Study (4). May be repeated for credit.

THE CURRICULUM IN GEOGRAPHY

The curriculum in geography covers such topics as the evolution of the landscape, arrangement of urban centers, the internal structure of cities, the arrangement of industrial and agricultural activities, the pattern of movement of people, goods and ideas, and relationships between humans and the environment. The B.A. in Geography is not available at this time.

Courses in Geography**LOWER-DIVISION**

Social Science 5 Introduction to Geography. Basic introduction to geography.

5A Introduction to Human Geography (4). Human behavior in a geographical context. Spatial patterns and organization of the cultural, social, and economic activities of man as imposed on and influenced by the earth's physical setting. (III)

5B Introduction to Physical Geography (4). An introduction to the physical world we live in. Distribution and dynamics of the earth's air, water, and solid crust. Concepts and principles from climatology and geology. Selected examples from North America and beyond. (III)

5C Environment and Resources (4). Analysis of landscapes, with special attention to California and the West. Emphasis on humans as agents of environmental change. (III)

5D U.S. and World Geography (4). Provides a broad survey of general geographical principles and facts on a world scale as well as introduces students to the broad regional and resource geography of the U.S., emphasizing in particular the interactions of physical and cultural factors. (III)

Social Science 18A Evolution of Landforms (4). Introduction to geomorphology; major forces which shape the relief of the earth's surface and the forms which result from their activity. General principles demonstrated using examples from the western United States with special emphasis on California. (III)

Social Science 18C Dynamics of the Physical Landscape (4). A seminar on landscape processes and the management of natural hazards (e.g., erosion, flooding, droughts, landslides, earthquakes). Emphasis on Southern California. Students research and make oral presentations on topics determined by agreement with instructor.

Social Science 18D Models in Economic Geography (4). Economic decision making in a spatial context: the location, distribution, and dynamics of economic activities. Theories of population growth, urbanization, industrial location, interregional trade, and regional planning. (III)

UPPER-DIVISION

Course modules emphasizing geography are assigned numbers 118 and 119.

Social Science 118 Geographical Analysis

118A Mathematical Analysis of Transportation Networks (4). Models of transportation demand; optimal utilization of transportation networks; cost-benefit analysis of network design projects; the economic impact of transportation networks. Prerequisites: Economics 20A-B-C. Same as Economics 144T.

118C Transportation Theory (4). Advanced topics in transportation systems analysis and planning; land-use and traffic generation; traffic flow and network theory; transportation impact; transportation policy. Emphasis on theoretical approaches and mathematical models. Prerequisites: Economics 20A-B-C.

118D Urban Policy (4). The first quarter of a series of urban policy issues in view of the principles of urban politics and urban administration. Special emphasis on transportation problems.

118E Urban Theory (4). Urban theory as it pertains to American metropolitan areas. Location theory, central place theory, and theories of urban land use and social areas. Prerequisite: Social Science 118D or consent of instructor.

118F Urban Analysis (4). Students participate in design of an urban research project; involves analysis of transit systems and their relationship to urban structure of metropolitan areas. Focus is on the methodology of evaluation research as it relates to public programs and public policy analysis. Prerequisite: consent of instructor.

118G Regional Geography of California (4). Geographical analysis of selected regions of California, in particular their geomorphological, hydrological, and climatic conditions, as well as their economic and social strengths and weaknesses. Includes discussion of Orange County on environmental, social, and residential problems.

118J Maps and Landscapes (4). Focuses on (1) the principles of map preparation, with examples and exercises; and (2) the interpretation of maps, with special emphasis on the topographic maps of the U.S. Geologic Survey, again with selected examples and exercises. Recommended prerequisite: introductory course work in physical geography or earth sciences.

118L Spatial Structure of Metropolitan Areas (4). The spatial arrangement of activities in U.S. metropolitan areas. Identification of the economic, social, and technological processes which affect urban spatial structure. The processes of urbanization and suburbanization are discussed, and the policy implications of contemporary urban spatial structure are examined. Prerequisites: upper-division status and either Economics 1 or 20A-B; Social Science 5A recommended.

Social Science 119A-Z Special Topics in Geography (4) F, W, S. May be repeated for credit. Prerequisites vary.

THE UNDERGRADUATE MAJOR IN INTERNATIONAL STUDIES

The major in International Studies provides an interdisciplinary perspective on global issues, societies, and cultures. Students completing this major receive training in twenty-first-century analytical skills, and obtain knowledge that enables them to understand the rapidly evolving global community. A degree in International Studies provides preparation for careers in a variety of fields, including international affairs and public policy, business and international finance, and teaching.

Major requirements include lower-division courses in essential aspects of international studies (political science, economics, and sociology or anthropology). A second set of lower-division courses then provide a focus on particular topics to be continued in upper-division work. Upper-division course work includes a two-fold focus—on a particular geographical area, and on specific aspects of global studies (i.e., global issues and institutions, global conflict and negotiation, the global role of California and the U.S., or global society and culture). Mandatory faculty advising is included

in the major, and annual meetings direct students toward appropriate course work for their particular academic or career goals. Additional study in language, including international education or work experience, is strongly encouraged.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See pages 332–333.

Requirements for the Major

- A. Political Science 41A, Economics 1, and either Sociology 2 or Anthropology 2A.
- B. Three additional lower-division courses from the following list: Anthropology 2A (if not used to satisfy A above); Anthropology 2D; Economics 20A, 20B; History 11, 21C; Political Science 51A; Social Science 1A; Social Science (Geography) 5A, 5B, 5C, or 5D (one course only to count toward major); Sociology 2 (if not used to satisfy A above), 3; Environmental Analysis and Design E8. (Students should be advised that these courses provide critical “stepping stones” to advanced study. Please consult with a counselor or faculty advisor concerning appropriate course work for your chosen upper-division module and educational and career objectives.)
- C. Five upper-division module courses, at least three of which must be from one module. The four modules are: Global Issues and Institutions, Global Conflict and Negotiation, Global Role of U.S. and California, and Global Society and Culture. The approved courses are:

Global Issues and Institutions: Anthropology 125A, 125B, 126N, 129; Economics 148A, 161A, 161B, 161C; Political Science 126C, 141A, 141B, 141D, 143A, 144A, 145B, 147A, 147B, 154E, 172A; Sociology 141, 155, 173; Criminology, Law and Society J128; Environmental Analysis and Design E127, E146, E155U; History 135D, 190 (approval required as topics vary); Management 190 (when title is International Business).

Global Conflict and Negotiation: Anthropology 139 (when title is Conflict Management); Political Science 128B, 134H, 141D, 142G, 143A, 143B, 143D, 147A; Social Science 183A, 183B; Sociology 141, 174, 176, 178, 179 (when title is Ethnicity in World Perspective); Environmental Analysis and Design E113; History 126A, 126B, 126C; Psychology and Social Behavior P161S.

Global Role of U.S. and California: Anthropology 125X, 161T; Economics 148A; Political Science 125A, 126C, 142D, 142E, 142F, 142G, 145A, 145B, 147B; Sociology 176; Criminology, Law and Society J128; Environmental Analysis and Design E143U; History 140E, 142A, 158A.

Global Society and Culture: Anthropology 121D, 121G, 121H, 125A, 125B, 129, 132A, 132B, 134E, 135A, 136A, 136G, 174A; Political Science 128A; Social Science 170P; Sociology 144, 155, 165A, 173, 178, 179 (when title is Ethnicity in World Perspective); Environmental Analysis and Design E102, E146; Psychology and Social Behavior P124D.

- D. Four upper-division Regional Studies courses, at least three of which must cover one geographic region. These regions are: Europe, Middle East/Africa, Asia/Pacific Rim, and the Americas (excluding U.S.A.). Approved courses are:

Europe: Anthropology 169 (approval required as topics vary); Political Science 152C, 152D, 152E, 152F, 154C, 171C; Criminology, Law and Society J106; History 118C, 124B, 127, 190 (approval required as topics vary).

Middle East/Africa: Anthropology 138O, 164A, 164K, 164L, 169 (approval required as topics vary); Criminology, Law and Society J106; History 177, 190 (approval required as topics vary).

Asia/Pacific Rim: Anthropology 135H, 163A, 163G, 163H, 163K, 169 (approval required as topics vary); Economics 162A; Political Science 151A, 151B, 151C, 151D, 151E, 151F, 154C, 171C; Sociology 175B, Criminology, Law and Society J106; History 171C, 190 (approval required as topics vary).

The Americas: Anthropology 169 (approval required as topics vary), Political Science 153B, 153D, 154C, 171C; Social Science 172F; Criminology, Law and Society J106; History 161C, 190 (approval required as topics vary).

- E. Competency in an approved modern international language other than English. An international language is spoken in at least two countries. Competency is established by one of the following: (a) completion of at least the equivalent of UCI's 2A in the language, or (b) passing a proficiency examination in an approved international language at the 2A level. The following languages will automatically be approved: Chinese (Mandarin), French, German, Italian, Japanese, Korean, Spanish, and Russian. Other languages will be considered on a case-by-case basis in consultation with the faculty advisor. (Students are strongly encouraged to go beyond these minimal requirements with additional work in language, literature and culture courses taught in the language.)

HONORS PROGRAM IN INTERNATIONAL STUDIES

The Honors Program allows International Studies majors to engage in research leading to the completion of an honors thesis. The topic for the honors thesis is selected by the student, in consultation with a faculty advisor, and should reflect a theme consistent with the student's module in the International Studies major. The Honors Program is open to all junior and senior International Studies majors with an overall GPA of 3.0 and a 3.5 GPA in the major. Successful completion of a written honors thesis in the Social Science H158C course satisfies the upper-division writing breadth requirement.

During the spring quarter of the junior year or during the summer before the senior year, students formally apply to the Honors Program. Students will be notified of their selection to the Honors Program by September 1. In the fall quarter of the senior year, students enroll in Social Science H158A, Honors Research Seminar. In this course, each student formulates a written research plan (i.e., prospectus) for the honors thesis. Students also select a faculty member who agrees to supervise the research, evaluate the written work, and approve the honors thesis. In the winter quarter of the senior year, students enroll in Social Science H158B, Honors Thesis Research, with their faculty advisor. The faculty advisor supervises and evaluates data collection and analysis and reads and edits chapter drafts. In the spring quarter of the senior year, students enroll in Social Science H158C, Honors Thesis, with their faculty advisor. The thesis is to be completed by the student and approved by the advisor prior to the end of the quarter.

Honors students must also demonstrate a high level of language proficiency by completing two courses beyond the 2A level in language, literature, or culture taught in their chosen international language. A list of acceptable courses is available from faculty advisors and the counseling office.

Students are also strongly encouraged to complete at least two quarters of study, work, or internship abroad in a geographic region where their chosen language is spoken.

DEPARTMENT OF LINGUISTICS

5221 Social Science Plaza B; (949) 824-7504

C.-T. James Huang, **Department Chair**

Language is one of the most fundamental human instincts. It is an extraordinarily intricate system that all of us master as young children without special teaching, and that gives us the ability to communicate, tell stories, and express our deepest feelings. Linguistics is the scientific study of this human language. It is concerned with understanding the nature of language and our knowledge of it, how we acquire it, and how that knowledge is put to use. It is connected to many other fields of study, including psychology, anthropology, sociology, biology, physics, mathematics, computer science, philosophy, and literature.

Undergraduate Program

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See pages 332–333.

Departmental Requirements for the Major

School requirements must be met and must include 14–15 courses (56–63 units) as specified below:

- A. Six core courses: Linguistics 3, 10, 20, 100, 111, and 121.
- B. Six linguistics courses, at least four of which must be upper-division. One of these four upper-division courses must be 112, 122, or 143.
- C. Natural/Formal language requirement. One of the following three groups of courses:
 - (1) Three courses in a single language other than English, or equivalent. Courses taken to satisfy breadth requirement category VI do not qualify.
 - (2) Two linguistics courses on the structure of foreign languages (e.g., Linguistics 165A, 165B, 165C, 166A, and as the topics might apply, 160 and 164A).
 - (3) Two courses in logic (from the Philosophy series 30A-B or 105A-B-C) or computation (from the Information and Computer Science series 21–22).

Residence Requirement for the Linguistics Major: At least five upper-division courses required for the major must be completed successfully at UCI.

Honors Program in Linguistics

The Honors Program in Linguistics is designed for selected junior and senior Linguistics majors who have shown interest in moving beyond the material covered in the regular undergraduate program and demonstrated their readiness for more advanced work than is usually expected at the undergraduate level. An overall grade point average of 3.0 with 3.5 in Linguistics courses is required.

Participating students design their program in consultation with the faculty and complete a specified set of courses, culminating in the production and oral defense of a senior thesis. Successful completion of the Honors Program satisfies the upper-division writing requirement.

Four one-quarter courses are required, including Linguistics H195 (Honors Research Workshop) and H190 (Senior Thesis). Students also select one or two courses from Linguistics 114, 119, 124, 129, 139, 149, 159, and H192. Students also may choose to take either Linguistics 198 or 199. Each of these courses will normally require a term paper, and satisfactory completion of these papers with a grade of A- or better is required for Honors students. These term papers usually are closely connected to the senior thesis topic and contribute to its final form. Two of the courses taken toward

fulfilling the Honors Program requirements will also count toward the requirements for the major in Linguistics.

Linguistics Minor Requirements

Requirements for the minor in Linguistics are met by taking seven linguistics courses (28 units) as specified below:

- A. Linguistics 3, 10, and 20.
- B. Four additional linguistics courses, three of which must be upper-division.

Residence Requirement: At least three upper-division courses required for the minor must be completed successfully at UCI.

Graduate Program

Participating Faculty

Lisa L.-S. Cheng: Syntactic theory, comparative syntax, Chinese linguistics
Naoki Fukui: Syntactic theory, comparative syntax, structure of Japanese
C.-T. James Huang: Syntax, semantics, structure of East Asian languages
Mary Ritchie Key: Historical linguistics, American Indian languages
Utpal Lahiri: Formal semantics, syntax
Robert May: Semantics, syntax, philosophy of language
Bernard Tranel: Phonological theory, French linguistics
Moira Yip: Phonological theory, Chinese phonology, morphology

Affiliated Faculty

James Boster: Cognitive anthropology, ethnographic semantics
Michael Fuller: Classical Chinese grammar and literature
Gregory Hickok: Neural organization of language
Gavin Huntley-Fenner: Language acquisition, semantics
Mary-Louise Kean: Biological foundations of language
Virginia A. Mann: Speech perception, psycholinguistics
Terence Parsons: Semantics, philosophy of language
Robin Scarcella: Sociolinguistics, second-language acquisition
Armin Schwegler: Spanish, historical linguistics, pidgins and creoles
W.C. Watt: Cognitive semiotics

The doctoral concentration in Linguistics, administered by a group of faculty specializing in the field, is focused on theoretical linguistics and its role in the cognitive sciences. The research emphasis is directed towards the core areas of theoretical work in syntax, semantics, phonology, and psycholinguistics with a concentration on the formal analysis of natural language. Additional emphasis is on the study of a broad range of languages and language families, including East Asian and Romance. Students are further expected to gain expertise in other areas of the cognitive sciences, especially as this pertains to the study of language.

The program leads to a Ph.D. in Social Science with a concentration in Linguistics.

ADMISSION

While at least some undergraduate training in theoretical linguistics is desirable, applications are also welcomed from students with backgrounds in other areas, e.g., philosophy, psychology, language studies, computer science. Decisions on admissions are based on students' undergraduate performance, letters of recommendation, statement of purpose, and any written research materials submitted by the candidate. Applicants must submit Graduate Record Examination (GRE) scores; applicants from non-English speaking nations must also submit Test of English as a Foreign Language (TOEFL) scores.

REQUIREMENTS

Course requirements consist of eight core courses (Phonology I, II, III; Syntax I, II, III; and Semantics I, II), four additional Linguistics courses, a proseminar in Cognitive Sciences or an appropriate substitute, research seminars, and a research workshop. The minor area requirement can be met with two courses in a single minor area (e.g., cognitive sciences, computational linguistics, philosophy) or a

critical literature survey in a non-core area of language research. For the qualifying examination, students must write two papers of publishable quality in different core areas (phonology, morphology, syntax, semantics, psycholinguistics). A dissertation proposal is required for the advancement to candidacy examination.

Students are required to demonstrate mastery of a foreign language on the basis of a written examination. The quantitative methods requirement is fulfilled by a course on symbolic logic or formal language theory.

Students are expected to defend the dissertation and to give a public presentation of their doctoral research.

Courses in Linguistics

LOWER DIVISION

1 Languages of the World (4). The world has over 5,000 languages, with an exuberant variety of sounds, words, and grammars. Introduction to a representative selection (about eight), drawn from every continent. Students are not expected to learn these languages, but rather to explore them and study their structure and complexity. (VII-B)

3 Introduction to Linguistics (4). Emphasis on the notion that language is a remarkable achievement of the human mind. Current insights into the nature of language. Survey of various subfields of linguistics. Introduction to linguistic analysis. (III or V)

10 Introduction to Phonology (4). Basic concepts in phonetic description and phonological analysis. Prerequisite: Linguistics 3. Formerly Linguistics 110. (III or V)

20 Introduction to Syntax (4). Basic concepts in syntactic description and grammatical analysis. Prerequisite: Linguistics 3. Formerly Linguistics 120. (III or V)

51 Acquisition of Language (4). What children say, what they mean, and what they understand. Theories about the learning of language by one-, two-, and three-year olds. Comparison of kinds of data on which these theories are based. Same as Psychology 56L. (III)

52 Language and the Mind (4). The relationship of knowledge of grammar to mental processes and mental representations. How linguistic behavior is rule governed. Same as Psychology 76M.

68 Introduction to Language and Culture (4). Explores what the study of language can reveal about ourselves as bearers of culture. After introducing some basic concepts, examines how cultural knowledge is linguistically organized and how language might shape our perception of the world. Same as Anthropology 2D. (III)

80 Introduction to Semiotics. (4). How humans and other animals communicate with each other by means of symbols and other signs. The symbols of everyday life, of movies and literature, of religion and society. Symbolic systems and symbolic evolution. Same as Psychology 55A and Social Science 13A. (III)

99 Special Topics in Linguistics (4). Special topics at lower-division level. May be repeated for credit when topic varies.

UPPER DIVISION

100 Grammatical Theory (4). Has both a phonology and a syntax component, and forms a bridge between lower-division course offerings and more advanced courses in phonology, syntax, and morphology. Emphasis on development of analytical skills, and evaluation of alternative proposals. Prerequisites: Linguistics 10 and 20.

101–109: COMPUTATIONAL LINGUISTICS

102 Formal Languages and Automata (4). Formal aspects of describing and recognizing languages by grammars and automata. Parsing regular and context-free languages. Ambiguity, nondeterminism. Elements of computability: Turing machines, random access machines, undecidable problems, NP-completeness. Prerequisites: ICS 23 and ICS 51 with grades of C or better; Mathematics 2A-B-C; Mathematics 6A or ICS 6A; Mathematics 6B; Mathematics 6C or 3A. Same as Information and Computer Science 162.

110–119: PHONETICS / PHONOLOGY

111 Intermediate Phonology (4). Fundamentals of phonological theory. Intensive practice in phonological analysis. Prerequisite: Linguistics 100 or equivalent. Concurrent with Linguistics 211.

112 Advanced Phonology (4). Overview of recent developments in phonological theory. Prerequisite: Linguistics 111. Concurrent with Linguistics 212.

114 Current Topics in Phonological Theory (4). Phonology seminar. Intensive study of a small number of current topics in phonological theory. Prerequisite: Linguistics 112. May be repeated for credit as topic varies. Concurrent with Linguistics 214.

119 Special Topics in Phonetics/Phonology (4). Prerequisites vary. May be repeated for credit as topic varies.

120–129: SYNTAX

121 Intermediate Syntax (4). Examination of syntactic phenomena and analysis, with emphasis on current issues in grammatical theory. Focus on the nature of syntactic rules, representations, and constraints as they determine empirical properties of language. Prerequisite: Linguistics 100 or equivalent. Concurrent with Linguistics 221.

122 Advanced Syntax (4). Intensive investigation of selected current topics in syntactic theory. Readings drawn from primary literature. Prerequisite: Linguistics 121. Concurrent with Linguistics 222.

124 Current Topics in Syntactic Theory (4). Research seminar in syntax. Intensive study of a small number of well-defined topics which have had significant impact on the development of syntactic theory. Prerequisite: Linguistics 122. May be repeated for credit as topic varies. Concurrent with Linguistics 224.

129 Special Topics in Syntax (4). Prerequisites vary. May be repeated for credit as topic varies.

130–139: MORPHOLOGY

132 Morphology and the Lexicon (4). Study of the lexical representations of words; relation of the lexicon to phonology, morphology, and syntax, with special emphasis on recent theoretical developments. Prerequisite: Linguistics 10 or 20 or consent of instructor. Concurrent with Linguistics 232.

139 Special Topics in Morphology (4). Prerequisites vary. May be repeated for credit as topic varies.

140–149: SEMANTICS

140 Formal Foundations of Linguistics (4). Introduction to the fundamental concepts of logic, set theory, and automata theory, and their relation to linguistics. Prerequisite: at least one of the following: Linguistics 121 or 143, Philosophy 105B, Mathematics 150, ICS 162, or consent of instructor. Concurrent with Linguistics 240.

141 Topics in Philosophy of Language (4). Selected topics in the philosophy of language, e.g., the nature of meaning, mechanisms of reference, speech acts. May be repeated for credit as topics vary. Same as Philosophy 145.

143 Semantics (4). The role of semantics in an integrated linguistic theory. Examination of a truth theory for natural language and the role of logical form as the interface of syntax and semantics. Discussion of reference, predication, quantification, and intentionality. Readings drawn from linguistic and philosophical sources. Prerequisite: at least one of the following: Linguistics 100 or 140, Philosophy 105B, Mathematics 150, ICS 162, or consent of instructor. Concurrent with Linguistics 243.

149 Special Topics in Semantics (4). Prerequisites vary. May be repeated for credit as topic varies.

150–159: PSYCHOLINGUISTICS

150 Psychology of Language (4). Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Same as Psychology 156A.

152 Linguistic Theories as Psychological Theories (4). Examines the claim that a central foundational tenet of contemporary linguistics is that linguistic theories are a type of psychological theory pertaining to the nature of human knowledge and language. Critical discussion from linguistic, psychological, and philosophical perspectives. Prerequisites: Linguistics 3 or Psychology 7A or 9A-B-C. Same as Psychology 157A. Concurrent with Linguistics 252.

154 Theories of Second Language Acquisition (4). Research in the acquisition and learning of second and foreign languages. The influence of language acquisition theory on past and current teaching methodology. A comparison of first and second language acquisition. Prerequisite: Linguistics 3. Recommended: Linguistics 51.

155 Readings in Child Language (4). In-depth reading and discussion of recent works in language acquisition. Concentration on relating research to contemporary linguistic theory. Prerequisite: Linguistics 51.

157 Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Prerequisites: Psychology 7A or 9A-B-C; Linguistics 150 or Psychology 140C; satisfactory completion of the lower-division writing requirement. Same as Psychology 143R. Concurrent with Linguistics 257.

158 Language and the Brain (4). Analysis of current research on the biological bases of human linguistic capacity. Development, focusing on hemispheric specialization and plasticity; localization of specific linguistic functions in adults, with emphasis on study of aphasia; relation of linguistic capacity to general cognitive capacity, considering research on retardation. Prerequisite: Biological Sciences 1C when topic is Brain and Behavior, or Biological Sciences 110, or consent of instructor. Same as Biological Sciences 160 and Psychology 156B.

159 Special Topics in Psycholinguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

160–169: LANGUAGE STUDIES

160 Language Typology (4). Cross-linguistic survey of major linguistic phenomena, especially as they pertain to word order, phrase structure, grammatical relations, anaphora, movement processes and constraints. Discussion of the relation between language universals and linguistic typology. Prerequisite: Linguistics 121. Concurrent with Linguistics 260.

163A American Dialects (4). A survey of the English-speaking dialects of the Americas. History of the making of atlases and dictionaries of the regional dialects. Special attention to phonological variation and sound change in progress. Prerequisite: Linguistics 3. Recommended: Linguistics 110.

163B The Structure of English (4). An examination of American English phonology, morphology, and syntax. Intended primarily for prospective teachers of English in elementary and secondary schools and for teachers of English as a second language. Prerequisite: Linguistics 3. Same as English 181.

164A Topics in Romance Languages (4). Prerequisites vary. May be repeated for credit as topic varies. Concurrent with Linguistics 264A.

164B French Phonetics (4). Study of the sound structure of French. Introduction to elements of general phonetics, contrastive (French/English) phonetics, and French phonetics and phonology. Designed to help students improve their pronunciation. Also serves as a preparatory course for language teaching. Prerequisite: French 2C or equivalent. Same as French 111.

165A Linguistic Structure of Chinese (4). Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Prerequisite: Chinese 2C or Linguistics 10 or 20. Same as East Asian Languages and Literatures 113. Concurrent with Linguistics 265A.

165B Linguistic Structure of Japanese (4). Detailed analysis of essential grammatical aspects of Japanese. Comparison with aspects of English grammar. Course not designed to teach Japanese per se, but to study the grammatical characteristics of Japanese from the perspective of theoretical linguistics. Prerequisite: Linguistics 10 or 20. Same as East Asian Languages and Literatures 123. Concurrent with Linguistics 265B.

165C Linguistic Structure of Korean (4). Introduction to essential grammatical aspects of the Korean language. Comparisons to other languages. Prerequisite: East Asian Languages and Literatures 2C or consent of instructor. Same as East Asian Languages and Literatures 133.

166A Structures of Non-Indo-European Languages (4). Nontechnical analysis of essential grammatical aspects of selected non-Indo-European languages. Comparison and contrast with aspects of the grammars of more familiar Indo-European languages (e.g., English and French) are emphasized. Prerequisite: Linguistics 3.

168A Sociolinguistics (4). Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 3. Same as Women's Studies 186A and Anthropology 122S.

169 Special Topics in Language Studies (4). Prerequisites vary. May be repeated for credit as topic varies.

170–179: HISTORICAL LINGUISTICS

170 Historical Linguistics (4). Study of language change. Methods of historical analysis of language. Classification of languages and aspects of language change by internal reconstruction and the comparative method. Prerequisite: Linguistics 3. Recommended: Linguistics 10.

179 Special Topics in Historical Linguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

180–189: COGNITIVE SEMIOTICS

180 Introduction to Cognitive Semiotics (4). Symbols and their webs. The foundation course in cognitive semiotics, comprising an introduction both from the philosophical standpoint represented by Peirce and from the linguistic standpoint represented by Dalgarno and Saussure. Current cognitive developments are studied. Same as Psychology 155A.

181 History of Semiotic Theory (4). The history of semiotic theory from Aristotle through the Greek and Roman Stoics and St. Augustine to Peirce and the present. The seventeenth-century obsession with the creation of a "universal and philosophical language" is treated. Prerequisite: Linguistics 180. A reading knowledge of Greek and/or Latin is very helpful. Same as Psychology 155H.

182 Cognitive Iconics (4). The study of writing systems (alphabets, runes, Mayan and Egyptian hieroglyphics) and their evolution and modern changes introduced spontaneously through "mistakes," with a view toward exploring aspects of the human mind. Same as Psychology 155I.

183 Semiotic Theory of Writing Systems (4). Ancient and modern writing systems, ranging from Sumerian pictographs through Egyptian and Mayan hieroglyphs to the Phoenician alphabet and its modern descendants (including our own). Distinctive traits of written language (what can be written that cannot be said?) and issues distinguishing hand-execution from eye-recognition. Prerequisite: Linguistics 10. Same as Psychology 155T.

184 Foundations of Communication (4). The logical and semiotic foundations of communication and signification. Same as Psychology 154C.

189 Special Topics in Cognitive Semiotics (4). Prerequisites vary. May be repeated for credit as topic varies.

190–199: SPECIAL COURSES

H190 Senior Thesis (4-4-4). Prerequisite: enrollment in Honors Program in Linguistics and consent of instructor; completion of lower-division writing requirement.

H192 Honors Seminar (4). Critical reading of current literature and discussion of work in progress by members of the department. A research paper is required. Prerequisite: enrollment in Honors Program in Linguistics and consent of instructor. May be repeated for credit as topics vary.

H195 Honors Research Workshop (4). Research methods and paper-writing skills. Students present various stages of their Honors thesis research projects for feedback and guidance from the professor and each other. Prerequisite: enrollment in Honors Program in Linguistics and consent of instructor. May be repeated for credit as topics vary.

197 Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies. Students may enroll for only one 199 each quarter.

GRADUATE

209 Topics in Linguistics (1 to 4). Focuses on ongoing research in linguistics. Variable units based on course content as determined by Department. May be repeated for credit as topics vary.

210–219: PHONETICS/PHONOLOGY

211 Phonology I (4). Fundamentals of phonological theory. Intensive practice in phonological analysis. Prerequisite: graduate standing. Concurrent with Linguistics 111.

212 Phonology II (4). Overview of recent developments in phonological theory. Prerequisite: Linguistics 211. Concurrent with Linguistics 112.

214 Phonology III (4). Intensive study of a small number of current topics in phonological theory. Prerequisite: Linguistics 212. May be repeated for credit as topic varies. Concurrent with Linguistics 114.

218 Seminar in Phonetics/Phonology (4). Focuses on ongoing research in phonetics/phonology. Prerequisite: Linguistics 214 or consent of instructor. May be repeated for credit as topic varies.

219 Topics in Phonetics/Phonology (4). Prerequisites vary. May be repeated for credit as topic varies.

220–229: SYNTAX

221 Syntax I (4). Examination of syntactic phenomena and analysis, with emphasis on current issues in grammatical theory. Focus on the nature of syntactic rules, representations, and constraints as they determine empirical properties of language. Prerequisite: graduate standing. Concurrent with Linguistics 121.

222 Syntax II (4). Intensive investigation of selected current topics in syntactic theory. Readings drawn from primary literature. Prerequisite: Linguistics 221. Concurrent with Linguistics 122.

224 Syntax III (4). Research seminar in syntax. Intensive study of a small number of well-defined topics which have had significant impact on the development of syntactic theory. Prerequisite: Linguistics 222. May be repeated for credit as topic varies. Concurrent with Linguistics 124.

228 Seminar in Syntax (4). Seminar representing instructor's and graduate students' current research. Prerequisite: Linguistics 224 or consent of instructor. May be repeated for credit as topic varies.

229 Topics in Syntax (4). Prerequisites vary. May be repeated for credit as topic varies.

230–239: MORPHOLOGY

232 Morphology and the Lexicon (4). Study of the lexical representations of words; relation of the lexicon to phonology, morphology, and syntax, with special emphasis on recent theoretical developments. Prerequisite: graduate standing. Concurrent with Linguistics 132.

239 Topics in Morphology (4). Prerequisites vary. May be repeated for credit as topic varies.

240–249: SEMANTICS

240 Formal Foundations of Linguistics (4). Introduction to the fundamental concepts of logic, set theory, and automata theory, and their relation to linguistics. Prerequisite: graduate standing. Concurrent with Linguistics 140.

241 Topics in Philosophy of Language (4). Prerequisite: graduate standing. May be repeated for credit as topics vary. Same as Philosophy 245.

243 Semantics I (4). The role of semantics in an integrated linguistic theory. Examination of a truth theory for natural language and the role of logical form as the interface of syntax and semantics. Discussion of reference, predication, quantification, and intentionality. Readings drawn from linguistic and philosophical sources. Prerequisite: graduate standing. Concurrent with Linguistics 143.

244 Semantics II (4). The empirical study of semantics within linguistic theory. Emphasis on the Theory of Logical Form and its integration in the broader context of the representation of syntactic and semantic structure. Explores quantification, anaphora and ellipsis. Prerequisite: Linguistics 243.

248 Seminar in Semantics (4). Focuses on ongoing research in semantics. Prerequisite: Linguistics 244 or consent of instructor. May be repeated for credit as topic varies.

249 Topics in Semantics (4). Prerequisites vary. May be repeated for credit as topic varies.

250–259: PSYCHOLINGUISTICS

252 Linguistic Theories as Psychological Theories (4). Examines the claim that a central foundational tenet of contemporary linguistics is that linguistic theories are a type of psychological theory pertaining to the nature of human knowledge and language. Critical discussion from linguistic, psychological, and philosophical perspectives. Prerequisite: graduate standing. Concurrent with Linguistics 152 and Psychology 157A.

257 Psychology of Reading (4). Surveys the major components of skilled reading and the determinants of successful reading acquisition. Examination of contemporary models of skilled reading. Focuses on models of the development of reading. Research on the causes of developmental dyslexia. Prerequisite: graduate standing or consent of instructor. Same as Psychology 215. Concurrent with Linguistics 157 and Psychology 143R.

258 Seminar in Psycholinguistics (4). Focuses on ongoing research in psycholinguistics. Prerequisite: graduate standing. May be repeated for credit as topic varies.

259 Topics in Psycholinguistics (4). Prerequisites vary. May be repeated for credit as topic varies.

260–269: LANGUAGE STUDIES

260 Language Typology (4). Cross-linguistic survey of major linguistic phenomena, especially as they pertain to word order, phrase structure, grammatical relations, anaphora, movement processes and constraints. Discussion of the relation between language universals and linguistic typology. Prerequisite: Linguistics 221 or consent of instructor. Concurrent with Linguistics 160.

264A Topics in Romance Languages (4). Prerequisites vary. May be repeated for credit as topic varies. Concurrent with Linguistics 164A.

265A Linguistic Structure of Chinese (4). Introduction to the phonology and major syntactic patterns of Mandarin Chinese. Open only to Linguistics graduate students or consent of instructor. Concurrent with Linguistics 165A and East Asian Languages and Literatures 113.

265B Linguistic Structure of Japanese (4). Detailed analysis of essential grammatical aspects of Japanese. Comparison with aspects of English grammar. Course not designed to teach Japanese per se, but to study the grammatical characteristics of Japanese from the perspective of theoretical linguistics. Prerequisite: Linguistics 221 or consent of instructor. Concurrent with Linguistics 165B and East Asian Languages and Literatures 123.

268 Seminar in Language Studies (4). Seminar in language studies. Prerequisite: graduate standing. May be repeated for credit as topic varies.

269 Topics in Language Studies (4). Prerequisites vary. May be repeated for credit as topic varies.

290–299: SPECIAL COURSES

290 Dissertation Research (4 to 12). Prerequisite: graduate standing. May be repeated for credit.

295 Research Workshop (4). Under close faculty guidance, students prepare the papers of publishable quality required for the qualifying examination. Prerequisite: consent of instructor. Students may take the course once for each of the two required papers.

299 Independent Study (1 to 4). Prerequisite: graduate standing and consent of instructor. May be repeated for credit as topic varies.

DEPARTMENT OF POLITICS AND SOCIETY

5229 Social Science Plaza B; (949) 824-5361
Mark P. Petracca, **Department Chair**

Undergraduate Program

The Department of Politics and Society offers a wide variety of courses at the introductory, lower-division, and more specialized upper-division levels. Courses in both micropolitics (individual and group politics) and macropolitics (politics at the state and international levels) are offered. The curriculum is organized into five areas: American politics and society, political theory, international relations, comparative politics, and public law. The Department also offers an Honors Program in Political Science for juniors and seniors, culminating in a senior honors thesis.

The Department is composed of a strong and diverse faculty especially interested in analyzing central questions of political science related to such topics as policy-making, political structures, participation, conflict, change and development, power and authority, and interstate relations. The faculty has particular strength in interdisciplinary approaches, in comparative analysis, and in the application of quantitative data to political science issues.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See pages 332–333.

Departmental Requirements for the Major in Political Science

School requirements must be met and must include 11 courses (44 units) as specified below:

- A. Three introductory courses (12 units) in political science, Political Science 6A, 6B, and 6C. It is recommended that these courses be taken during a student's first two years as a Political Science major at UCI.
- B. Two lower-division courses in political science (eight units).
- C. Six upper-division courses in political science (24 units) chosen from one of the political science modules numbered 120–179. Three of these courses must be from one module. In addition, the lower-division introduction course to that module also is required.

Honors Program in Political Science

The Honors Program in Political Science is open to all junior and senior Political Science majors who meet the minimum academic qualifications (3.5 GPA in Political Science courses and 3.2 GPA overall).

During their junior year, Honors program students must enroll in at least one Honors Seminar (Political Science H180). These courses include intensive reading and discussion of the most influential works and fundamental issues in modern political science, and prepare students for rigorous independent research. Students should also prepare a written proposal for their senior thesis. Proposals are approved by their faculty advisor and filed with the Department and Undergraduate Counseling offices.

During their senior year, students must enroll in the Honors Thesis Workshop (Political Science H182A, offered during the fall quarter), and three quarters of the Senior Thesis course (Political Science 190). Students write their senior thesis, which is designed and completed under their faculty advisor's supervision. Upon successful completion of their senior thesis, students graduate with Honors in Political Science and their transcripts note that they were in the Honors Program in Political Science.

Public Affairs Internship Program

The Public Affairs Internship Program, sponsored by the Department of Politics and Society, is designed to provide Political Science students with professional experience in the fields of government, nongovernmental organizations, the media, law, business, consulting, and others. The program is open to all sophomore, junior, and senior Political Science majors and minors.

This program provides a selection of internship opportunities open exclusively to Political Science students by intern-sponsors, as available. Students also may create their own internship opportunities, consistent with Departmental guidelines. Students are required to enroll in Political Science 183 during the quarter of their internship. This course, supervised by the internship coordinator and participating members of the faculty, is offered Pass/Not Pass and cannot be used to satisfy upper-division Political Science requirements.

Information and applications are available in the Department office.

Political Science Minor Requirements

Requirements for the minor in Political Science are met by taking seven political science courses (28 units) as specified below:

- A. One course selected from Political Science 6A, 6B, or 6C.
- B. Three upper-division political science courses, chosen from one Political Science module.
- C. Three additional courses in political science, chosen from those numbered Political Science 6A, 6B, 6C, 20-79, or 120-179.

Graduate Program

Participating Faculty

Alison Brysk: International relations, Latin American politics, human rights
 Michel Crozier: Organizational sociology, public administration
 Russell J. Dalton: West European politics, mass political behavior
 James Danziger: Urban political systems, public policy analysis, and technology and politics
 David Easton: Political systems, political structures
 Harry Eckstein: Macropolitics and authority relations
 Creel Froman: Human analysis
 L. Manuel García y Griego: U.S.-Mexico relations, international relations, migration and demography
 Bernard Grofman: Mathematical models of collective decision making, formal democratic theory, sequential decision making, and politics of small groups
 Helen Ingram: Public policy, U.S.-Mexico relations, American politics
 Claire Kim: Racial and ethnic politics, protest and social movements, contemporary political theory
 Kristen R. Monroe: Political economy, rationality, American politics, methodology
 Patrick Morgan: National security policy, American foreign policy, international politics, U.S.-European relations, Soviet politics
 Jack W. Peltason: Constitutional law and civil liberties
 Mark P. Petracca: American political institutions (presidency and congress), interest organizations, public policy, power and political discourse
 M. Ross Quillian: Mass communication, participatory forms of social organization, sociological theory, sociology of science, and artificial intelligence
 Shawn Rosenberg: Political psychology, cognitive psychology, public opinion
 Wayne Sandholtz: International political economy, European community
 William Schonfeld: Authority, democratic theory, and comparative politics
 Caesar Sereseres: U.S. foreign policy, U.S.-Latin American relations, Mexican-American politics
 Etel Solingen: International relations theory, international political economy, and world politics
 Dorothy J. Solinger: Chinese domestic politics and political economy, comparative politics, history of political philosophy
 Alec Stone: Comparative politics, comparative judicial behavior, international relations
 Rein Taagepera: Mathematical models and quantitative analysis of elections, inequality, arms races, growth-decline phenomena and Baltic area studies
 Katherine Tate: African-American and minority politics, voting behavior, public opinion and American elections, state and urban politics

Carole J. Uhlaner: Comparative political participation, formal models of political behavior

Robert Uriu: International relations, international political economy, Japanese political economy

Martin Wattenberg: American political behavior and institutions

The Department of Politics and Society offers a program of study leading to the Ph.D. in Political Science. The graduate program emphasizes empirical democratic theory, with an emphasis on the United States and other industrialized and industrializing nations, within a comparative context. Faculty interests include political behavior, political psychology, public choice theory, political economy, international relations, systems theory, mass media, and authority relations. Institutions of interest include the executive branch, bureaucratic politics, political parties, and representation and electoral systems. The strengths of the Political Science graduate program include its small size, its personalized attention to students, and its location within an interdisciplinary school.

Three Organized Research Units, the Institute of Transportation Studies, the Center for Research on Information Technology and Organizations, and the Institute for Mathematical Behavioral Sciences, offer opportunities for participation in ongoing faculty research. One group of Political Science faculty share interests in applied Public Choice with faculty members in both Economics and Philosophy; another group is involved with the program in Global Peace and Conflict Studies; and others are involved in the Center for the Study of Democracy.

ADMISSIONS

The deadline for application for fall quarter admission is January 15. Students are admitted for winter or spring quarters only under exceptional circumstances. Additional information is available in the general section on admission to Social Science graduate programs. Please note especially the required examinations.

REQUIREMENTS

First-year students must take a core program of graduate seminars, focusing on major substantive areas as well as research methods. Students are required to complete one year of statistics, preferably before enrollment but no later than their first year. Competence in a foreign language is required. Students may substitute mastery of an advanced research skill in place of a foreign language. To acquire such a skill (which could involve course work in such disciplines as economics, mathematics and computer science, or statistics), students could take courses in econometrics, advanced multivariate regression, or computer science. Attendance in a colloquium series also is required for all graduate students during their first two years in residence.

Reviews and Examinations

Students ordinarily are expected to maintain a grade point average of 3.5 or better. At the completion of the first year, a review of performance in the graduate program will be conducted for each student by the Politics and Society faculty.

A set of three papers, normally completed by the third year of study, tests the student's competence in a set of major domains for intellectual inquiry. These domains are determined by the student and the Political Science Graduate Director. Upon successful completion of these papers and demonstration of competence in mathematics and a foreign language or an advanced research skill, a candidacy committee is appointed to oversee the qualifying examination and the formal advancement to candidacy. Students are expected to advance to candidacy by the ninth quarter of graduate study.

After the student advances to candidacy, the doctoral committee, usually composed of three members of the candidacy committee, reviews a dissertation prospectus and supervises work toward

completion of the dissertation. Within six months of the oral qualifying examination (the formal advancement to candidacy), students are expected to meet with their doctoral committee, in order to discuss with the members a dissertation prospectus.

Concentration in Public Choice

Public Choice is an interdisciplinary field, at the intersection of political science and economics, which draws on sophisticated quantitative tools to model the functioning of political institutions. Public Choice examines such areas as theories of voter and party choice; the theory of constitutions; the theory of committees and elections; models of regulation; problems of public goods and externalities; rent-seeking models; and issues in social choice, social welfare, and demand revelation.

This concentration is administered by an interdisciplinary committee of faculty from the Department of Politics and Society and the Department of Economics. Students who elect this concentration are admitted under the normal procedures for the program in Political Science and must fulfill all the requirements for the Political Science degree, with the following modifications:

- (1) Students must complete the three-quarter core sequence in Public Choice, which is taught jointly by Politics and Society and Economics faculty. This sequence is usually taken in the student's second or third year.
- (2) Students must complete three additional graduate-level, four-unit courses in related fields with the consent of their graduate advisor, chosen from a set of courses designated by the interdisciplinary committee. The courses chosen are to be tailored to the individual interests and academic background of the student and usually will include at least two Economics courses (such as Econometrics, Game Theory, and Law and Economics) and one Political Science course (such as those on electoral systems, party systems, constitutions, courts).
- (3) Students are expected to write their dissertation on a topic related to Public Choice. Usually the dissertation advisor will be a Political and Society member of the interdisciplinary committee.

Concentration in Political Psychology

The last two decades have seen an explosion of interest in the field of political psychology. UCI's graduate concentration is part of this development, but enjoys a rather distinctive place. The concentration offers students a broader education than is typically available at other institutions. In this vein, the program aims to provide: (1) a strong background in both political science and psychology; (2) an emphasis on theoretical and conceptual issues as well as empirical and methodological ones; and (3) a familiarity with research being done outside of the United States as well as within it. In this context, a number of research concerns central to the participating faculty are considered, including: social change and democratization, ideology, altruism, social and political identity, public policy, community building, mass media effects, voting behavior, and international integration. Believing in academic community, the concentration's sponsoring faculty offer a host of activities including colloquia, reading groups, and joint research opportunities to facilitate contact between students and faculty and among the students themselves.

Requirements. The purpose of the concentration is to provide a course of study which supplements the Ph.D. degree in Political Science. Therefore, students are required to complete all degree requirements for the Ph.D. stipulated by the Department of Politics and Society. As part of or in addition to these requirements, students must take five courses: Introduction to Political Psychology I and II (Political Science 285A and 285B), and three graduate psychology courses which provide a strong background in psychology (selected from an approved group which includes courses such as Personality in Development, Society and Pathology, Personality

Assessment, Proseminar in Cognitive Science, and Human Information Processing). These courses are taught in the Department of Cognitive Science in the School of Social Sciences and the Department of Psychology and Social Behavior in the School of Social Ecology.

Courses in Political Science

LOWER-DIVISION

6 Introduction to Political Science. Basic introduction to politics and society. These courses can be taken in any order.

6A Introduction to Political Science: Political Analysis (4). Presents various modes of understanding politics. Emphasis on basic approaches to political analysis, their uses in constructing theories, and their application to particular national political systems. (III, VII-B)

6B Introduction to Political Science: Macropolitics (4). Introduction to political inquiry at the level of the nation-state. Addresses the questions: how do we account for the emergence of a world system of nation-states; how does the course of political development affect the distribution of political power within nation-states; what is the evolutionary linkage between liberal democracies and the transformation of capitalism; what are the major challenges to political governance facing western democracies. (III)

6C Introduction to Political Science: Micropolitics (4). Introduction to political behavior of individuals and groups within national systems. Three major questions are addressed: How do individuals come to understand the political world? How do individuals behave within this world? How do groups and individuals engage in the political process? (III)

21A Introduction to American Government (4). Introduction to American political processes and institutions. Topics include elections, political participation, parties, interest groups, the Presidency, Congress, the bureaucracy, and the judiciary. (III)

29 Special Topics for Introductory Courses (4). May be repeated for credit as topic varies.

31A Introduction to Political Theory (4). Types of questions: What is politics? What are the theoretical and philosophical bases for different types of political arrangements? How do these perspectives get translated into reality? Among others, the works of Rousseau, Locke, Mill, and Marx are read. (III)

39 Lower-Division Special Topics in Political Theory (4). May be repeated for credit as topics vary.

41A Introduction to International Relations (4). Analysis of political relations between and among nations with emphasis on explanations of conflict and cooperation. The role of ideologies and their relation to international problems are also examined. (III, VII-B)

42A Nuclear Arms and Global Conflicts (4). Introduction to the history, technical basis, military capacity, and political conceptions and perceptions that bear on the global nuclear arms race. Topics include how weapons work and are delivered, theories of deterrence, arms race models, prospects for arms control and disarmament. (VII-B)

49 Lower-Division Special Topics in International Relations (4). May be repeated for credit as topics vary.

51A Introduction to Comparative Politics (4). Presents various analytical methods used to compare political systems. Emphasis on examination of theories and research with national political systems as units of analysis. Understanding how it is possible to compare political units and make meaningful statements about them. (III)

59 Lower-Division Special Topics in Comparative Politics (4). May be repeated for credit as topics vary.

71A Introduction to Law (4). An introduction to the study of judicial politics. Questions include: what is law?; what is a court?; who are the judges? Analysis of a wide range of judicial decisions illustrates the political importance of courts in the U.S. and elsewhere.

79 Lower-Division Special Topics in Law (4). May be repeated for credit as topics vary.

UPPER-DIVISION**120-129: AMERICAN POLITICS AND SOCIETY**

121A The American Presidency (4). Presents a comprehensive survey of the American presidency and considers the question of political power.

121B Mass Media and the Nomination Process (4). Examines changes in the presidential nomination process over the last four decades as well as the role of the media in this process. Students do a research paper comparing the media's coverage of two nomination races in different historical eras.

121C U.S. Elections and Voting Behavior (4). Examines how voters evaluate political parties, candidates, and issues in electoral campaigns to reach their decisions. Numerous controversies concerning the degree of issue voting, sophistication of candidate evaluations, and the decline of political parties are discussed.

121D Public Policy (4). Introduction to the developmental processes, determinants, and substance of U.S. national public policy. The stages of issue generation, agenda-building, policy resolution, and implementation are examined within the context of specific policy areas.

121E Public Policy Analysis (4). Examines different approaches to the analysis of public policy with differing notions of what constitutes good policy, the role of government, and how citizens participate in policy-making. Suggests a policy-design perspective which builds upon other frameworks but concentrates on goals, implementation structures, tools, and rationales. Prerequisites: Environmental Analysis and Design E8 and E109U. Same as Environmental Analysis and Design E157U.

122A American Metropolitan Politics (4). An analysis of the politics of urban and suburban cities. Main themes include alternative explanations of how political power is exercised and how policy decisions are made for urban governments; the structure of local political systems, including the problems of metropolitanism and federalism; the major policy problems facing the urban area, particularly from the perspective of the "underclass."

122B California Politics (4). Explores California state politics in comparison to other states in such dimensions as: nature of electoral competition, state constitutions, lobbying patterns, gubernatorial leadership, scope and innovativeness of major policies, relationship of politics and policies to differing electoral orientations and economic conditions.

123A Parties and Political Organizations (4). A consideration of the role that parties and other political organizations play in the American political process. Also looks at the development and significance of PACs, interest groups, and social movements as vehicles for democratic participation.

123B Representation and Redistricting (4). Deals with classical theories of representation: issues of racial and political representation in U.S. legislatures and city councils; proportional representation models and comparative election systems. Prerequisite: Political Science 21A.

123C Reforming American Politics (4). Assesses the demands and prospects for political reform in America. Where is political reform most needed? Why? What form shall it take? Focuses specifically on ethics of public decision-making, professionalization of American politics, institutional designs for democratic governance.

123D Research Methods in Political Science (4). Introduction to the methods of social science research. Examines the principles of the scientific method and then applies these methods in a class research project. Heavy emphasis on hands-on research.

124A The Politics of Protest in the U.S. (4). Examines the Civil Rights movement, the Black Power movement, and the women's movement in light of existing social movement theories. The theories are used to illuminate the three cases, and the cases are used to critique and revise the theories.

125A The United States Congress (4). Does the Congress do a good job of representing the American citizenry? Is it the most appropriate mechanism for the creation, resolution, and implementation of public policy? Prerequisite: satisfactory completion of the lower-division writing requirement.

126A Mexican-Americans and Politics (4). Examines political development of Mexican-Americans. Topics include the "territorial" roots of the Mexican-American in the Southwest, demographics, political leadership and organization; policy issues of immigration, bilingualism, education, and economics; relations with other minority groups; and the role of Mexican-Americans in U.S.-Mexico relations.

126B Urban Policy Analysis (4). Problem-solving seminar examining key issues for urban political systems and the metropolitan area. Evaluation of the nature, quality, and feasibility of alternative analyses of a series of policy problems, such as housing, poverty/welfare policy, transportation, crime, education. Prerequisite: consent of instructor.

126C U.S. Immigration Policy (4). Examines selected immigration policy debates since the nineteenth century, rationale and consequences of immigration law since 1965, problems of administration, implementation and enforcement, impact of immigration policy on foreign relations, and contemporary debate regarding the future of U.S. policy.

127A-B-C Economic Analysis of Government Behavior I, II, III (4-4-4). The study of government using the tools of economics. **127A:** The influence of voters' preferences on governmental policy; Arrow's impossibility theory; the Downsian theory of voting. **127B:** The effects of various taxation and expenditure policies, such as social security. **127C:** Research course in which students write a paper testing one of the theories covered in the first two quarters of the sequence. Prerequisite: Economics 100A-B. Same as Economics 141A-B-C.

128A Political Psychology (4). Examination of how psychological theory and research may be used to better understand political thought and behavior. Drawing on theories of learning, cognition, and personality, discusses the formation of political attitudes, the process of political decision-making, the nature of political leadership. Same as Psychology 176A.

128B Political Ideology (4). Examination of how people think about and understand politics, covering a range of issues from the nature of liberalism-conservatism opposition to the development of ideological thought during the college years, and using the work of anthropologists, psychologists, sociologists, political scientists. Prerequisite: satisfaction of the lower-division writing requirement.

129 Special Topics in American Politics and Society (4). May be repeated for credit as topic varies.

130-139: POLITICAL THEORY AND METHODS

131A Political Thought Since Hobbes (4). Classic statements of political values from Hobbes to the present: classical liberalism, conservatism, radical democracy, liberal democracy, socialism, pluralism, Marxism, fascism, neo-conservatism. Emphasis on underlying views of human nature and history. Prerequisite: upper-division standing or consent of instructor.

131B Marx and Nietzsche (4). Juxtaposes and compares two of the most powerful and penetrating intellects of the nineteenth century. Lectures deal primarily with biographical material and historical setting. Reading and discussions emphasize systematic comparison of their respective views of human nature, history, social discontents, and the future of Western societies.

131C Varieties of Socialist Thought (4). Familiarizes students with a range of political thinkers who have written on the theme of socialism. In addition to Marx and members of the nineteenth-century English school of socialism, looks at socialist philosophies in the twentieth-century Third World, as well as writers on anarchism, syndicalism, revisionism, Lenin, and Mao.

131D Nietzsche (4). The social, economic, and political philosophy of Nietzsche. Nietzsche's seminal ideas about knowledge and language and how these ideas have influenced contemporary thinking concerning these subjects. Same as Sociology 127.

132A Critical Political Theory (4). Acquaints students with current political theories, critical of conventional thinking, which attempt to join political, economic, social, historical, linguistic, and philosophical concerns to questions involving the relationships between and among individuals, groups, and institutions in the society, economy, and polity. Prerequisite: upper-division standing. Same as Sociology 126.

132B-C-D Radical Social Proposals (4-4-4). An examination of current proposals for alternative mass media systems, political systems, and economic systems. Focus is on proposals aimed at increased citizen participation and control, and at more equal distribution of wealth. Prerequisite for 132B: satisfactory completion of the lower-division writing requirement.

132E Basic Societal Issues (4). For students who have serious concern about peace, economic justice, the environment, or the future of human society generally. Attempts to provide an understanding of the fundamental issues underlying such social problems; fundamental alternatives available for attempting to cope with them. Same as Sociology 172E. Students may not receive credit for both Political Science 32A/Sociology 72 and Political Science 132F/Sociology 172E.

133C Positive Theory (4). Examination of the nature of "positive theories" and of three major approaches to constructing such theories in macropolitics: formal-legal study, political-culture inquiry, and rational-choice theory. General discussion of approaches with specific reference to explaining political stability and instability, legitimacy, and dissent. Prerequisite: Political Science 6B.

133D Analytic Political Research (4). Encourages students to think creatively and analytically about politics by applying mathematical techniques as a means to increase understanding. Introduces the use of both static and dynamic mathematical models on such political topics as elections, revolution, and arms races.

134A Foundations in Modern Political Science (4). Provides an introduction to major works by highly influential scholars such as de Tocqueville, Marx and Engels, Mosca, Durkheim, Weber, Wallas, and Lasswell, that constitute the foundation of contemporary political science. Prerequisite: upper-division standing.

134B Modern Political Theory (4). Focuses on a different aspect of modern political theory each quarter.

134C Theories of Political Structure (4). An examination of alternative theories of political structure with particular attention to those found among sociologists such as Parsons, anthropologists such as Lévi-Strauss and Nadel, psychologists such as Piaget, and Marxists such as Althusser and Poulantzas. The objective is to test the utility of these approaches for the construction of a theory of political structure. Prerequisite: upper-division standing.

134D Theories for the Study of Politics (4). A critical introduction to alternative theories used for the study of politics. Special attention will be given to interpreting political life as a system of institutions and behaviors.

134F Social and Political Theory (4). Focus is on recent major work in social and political theory. An in-depth analysis of a relatively small body of writing. Authors discussed include Jurgen Habermas, Anthony Giddens, and Richard Rorty.

134H Language and Power (4). Seminar to study a theory of how reality/meaning/knowledge is created in language as a consequence of structures of power. Prerequisite: upper-division standing and consent of instructor. Strongly recommended: 3.5 GPA and/or background in modern language analysis.

134J Sexism and Power (4). Sexism may be seen as a particular form of socially constructed power which creates and maintains gender differences as relations and practices of structured inequalities. Males and females are objects constructed in a powered language dominated and controlled by males to their positional and distributional advantage. Prerequisite: upper-division standing. Same as Sociology 168.

136A Political Economy (4). Introduction to the interrelationships between the American economy and American politics. Follows two basic premises: (1) one can know nothing about politics if one does not understand its relationship to the economy; and (2) one can know nothing about economics if one does not understand how the economy is related to politics and how political language is used for economic purposes. Recommended: introductory courses in politics and economics.

136B History of Political Economy (4). Introduction to the major ideas in political economy. Stresses linkages between the humanities and political economic thought. A consideration of premarket and socialist politico-economic systems focuses attention on the cultural, historical, and political influences on economic systems. Politico-economic thought is viewed as part of the larger body of scientific inquiry into the natures of nature and humanity.

137A Politics and Human Nature (4). Addresses the central debate between positive social science and normative political theory: is there an intrinsic human nature? If so, what is it? What is its origin? And how much cultural variation does it display? Prerequisite: satisfaction of the lower-division writing requirement.

138A Moral Choice During the Holocaust (4). Considers moral choice by comparing some of the major theories of moral choice with empirical examinations of moral exemplars during one of the most difficult periods in recent history: the Holocaust. Prerequisite: satisfactory completion of the lower-division writing requirement.

139 Special Topics in Political Theory and Methods (4). May be repeated for credit as topic varies.

140-149: INTERNATIONAL RELATIONS

141B International Political Economy (4). Examination of problems in global political-economic relations through competing conceptual lenses or grand theories: mercantilism, liberalism, and marxism. Surveys North-North and North-South issues relating power and wealth.

141D The European Union (4). Examination of the European Union as an ongoing political experiment. Assesses diverse explanations for the evolution of European economic and political integration. Analyzes the development of EU institutions/policies in such areas as trade, high technology, monetary relations, foreign policy. Prerequisite: upper-division standing.

142C International Relations of Japan (4). An undisputed economic "superpower," Japan is internationally more significant today than ever before. Examines the historical background, salient issues, and future scenarios of the international relations of Japan.

142D U.S. Foreign Policy I: Globalism and Cold War (4). Looks at the changing international perspectives, policy responses, and military strategies of presidential administrations from Truman to Reagan. In assessing the motives and objectives of U.S. foreign policy leaders during the "Cold War" era, the concept of "national interest" is examined.

142E U.S. Foreign Policy II: Cold War Decline and After (4). Deals with U.S. foreign policy from the post-Vietnam War era through the collapse of the Cold War and into the emergence of the post-Cold War era, roughly from 1972 to the present.

142F U.S. Foreign Policy III: National Security Decision-Making (4). Concept of "national security" from 1947-1990s is reviewed. Organizational and psychological factors that influence decision-making, the dangers of "groupthink," and the issues of accountability are analyzed. National security agenda (military, economic, environmental, and social) for the 1990s is discussed.

142G U.S. Coercive Diplomacy (4). Examines the theory of compellence and the U.S. practice of coercive diplomacy—the power to change the behavior of other governments. Specific case examples include the Cuban missile crisis, bombing of North Vietnam, the Nicaraguan Contras, Desert Shield/Desert Storm, and Libya. Prerequisite: junior or senior standing.

143B Alternative Security (4). Seminar designed to critically evaluate the major means of preventing the outbreak of a great war — deterrence — and some major alternatives to this policy. Prerequisite: Political Science 42A.

143C Arms Control and International Security (4). General introduction to the theory and practice of arms control between the nuclear superpowers. Examines the history of the arms race, the disenchantment with disarmament, and the development of arms control as an alternative or complement to military power as a means of ensuring security. Prerequisite: Political Science 42A or consent of instructor.

143D Global Security and Cooperation (4). Examination of global conflict and cooperation since World War II, and future prospects. The Cold War, nuclear arms race, regional conflicts, arms proliferation and control, deterrence theory, psychology of conflict, governmental and nongovernmental efforts to promote global peace and cooperation.

144A Approaches to International Relations (4). Reviews theoretical and methodological approaches to the study of international relations using contending perspectives to analyze power and influence, capabilities, interdependence, reciprocity, international regimes, anarchy, cooperation, imperialism, and hegemony.

145A Central America and U.S. Policy (4). Examines revolution in Latin America and U.S. response of accepting, shaping, or opposing "radical" regimes. Recent conflicts in Central America compared to Mexico, Bolivia, Guatemala, Cuba, and Grenada. The theory and practice of coercive diplomacy and the case of U.S.-Nicaragua relations (1979-90) studied in detail.

145B U.S.-Mexican Relations (4). Realism and interdependence theories are applied to this asymmetric relationship. Analysis of NAFTA, relations with Canada, current issues in trade, capital flows, migration, narcotics control, and energy. Emphasis on interplay of domestic politics (California, Mexican Americans) and foreign policy.

146A Ethics and International Relations (4). Examines global political-economic relations through competing ethical perspectives, derived from different theoretical traditions. Topics: war and peace, intervention, North-South gap, supranational integration. (VII-B)

147A International Cooperation (4). Examines different approaches to the study of international cooperation placing special emphasis on multilateral institutional and “regimes” in areas such as trade (GATT), security (nonproliferation), and the global environment. (VII-B)

147B Interdependence in World Politics (4). Examines the effects of transnational networks and international economic interactions—e.g., migration, trade, and capital flows—on international political outcomes. Focuses on the cases of U.S.–Mexican and U.S.–Canadian relations.

148A Model United Nations (2). Focuses on simulations of the foreign policy pursuits of selected countries in the international community. Emphasis is placed on understanding the rules of debate, as well as the policy positions of the student’s selected country, in the United Nations. Should be taken as a one-year sequence. May be taken for credit six times.

149 Special Topics in International Relations (4). May be repeated for credit as topic varies.

150–159: COMPARATIVE POLITICS

151A East Asian Politics (4). Explores the recent history and political systems of China, Japan, and Korea, comparing the three countries with each other and with occasional reference to the United States, British, and French systems. (VII-B)

151B Introduction to Chinese Politics (4). Background to the Chinese revolution, rise of the Communist party; and institutions, ideology, and structure of Communist party rule from 1949–present. (VII-B)

151C Chinese Politics: Policy, Leadership, and Change (4). Examines major policies from 1949 to the present, and considers the changing role of the Communist Party and its shifting treatment of various social groups; the era of Mao Zedong, reforms under Deng, and post-Deng politics. (VII-B)

151D Japanese Politics: State and Economy in Modern Japan (4). Introduction to the political foundations and economic achievements of modern Japan. Focus on the development and evolving roles and functions of the principal institutional actors in Japan’s political economy. (VII-B)

151E Advanced Topics in Japanese Politics (4). Provides the advanced undergraduate the opportunity to probe beneath the surface of Japanese politics and policy. Focus on contemporary policy issues, including foreign policy, defense, social welfare, and industrial policy. Prerequisite: Political Science 151D or consent of instructor; satisfactory completion of the lower-division writing requirement.

151F Korean Politics and Society (4). Examination of contemporary political/social structures and process of Korea (South and North). Historical and cultural influences on current political systems and policies. Also included are economic development, national security, unification issues, and foreign relations. (VII-B)

151G Electoral Systems (4). A worldwide overview of electoral laws by which votes are converted into assembly seats. Systematic analysis of these laws and their effect on political process and stability. Single-, two-, and multi-party systems. Proportional representation versus plurality rule. Majoritarian and consensus patterns of government. Political Science 52B and 151G may not both be taken for credit.

152A Politics in Britain (4). The politics and processes of government in Britain; the operation of parliamentary government; the responses of the political system to the issues and problems in contemporary Britain. Racism and immigration policy; economic stagnation and entry into the Common Market; Northern Ireland; the linkages between social class and politics.

152B French Politics and Society (4). A general overview of the nature of French politics and society. Some of the basic literature on France is read, and students select a topic of particular interest to them. Students with a reading knowledge of French particularly welcome. (VII-B)

152C German Politics and Society (4). Concentrates on twentieth-century German politics and society, focusing on the contemporary political system of democratic West Germany. Study of the historical legacies of Weimar and the Nazi period, the postwar division between the two German states, and their reunification. (VII-B)

152D-E Post-Soviet Politics I, II (4-4). An overview of the present sociopolitical structure and of the major national cultures within the former Soviet Union. **152E:** Expands on the themes of 152D plus individual research on any former Soviet topic. Prerequisite for 152E: Political Science 152D or consent of instructor; satisfaction of the lower-division writing requirement. (152D: VII-B)

152F West European Politics (4). Explores four main themes: (1) thinking scientifically about politics; (2) understanding the linkages between different political structures and spheres of activity; (3) evaluating some theories about politics; (4) learning about three countries: Britain, France, and West Germany. (VII-B)

152J Political Economy of Industrialized Nations (4). Examines politics and policy in the “rich” countries, focusing particularly on the U.S., Japan, Britain, France, and Germany. Identifies the distinct policy profiles of these countries, looking at historical and political explanations for differences across countries.

153B Canadian Politics (4). An overview of contemporary Canadian government and politics. In addition to consideration of the basic structures and processes of Canadian government, topics may include regionalism, federalism, western alienation and oil, Canadian solutions to social welfare policy questions, developments in Quebec, and other issues associated with French-English relations.

153C Research in Canadian Politics (4). Intensive consideration of several topics in Canadian politics and society, leading to the writing of a research paper by each student. Topics are oriented toward contemporary issues of public policy. Prerequisite: Political Science 153B or consent of instructor.

153D Mexican Politics (4). An overview of contemporary Mexican government and politics and their evolution in the twentieth century. Emphasis on state-society relations, the changing role of government in the economy, democratization, and the impact of opposition groups in politics and policy, including foreign policy.

154B Women and Arabic Society (4). Overview of Arabic history and way of life emphasizing Morocco. Transformation of women’s condition during the past half-century. Lecture and seminar format. Same as Anthropology 160M and Women’s Studies 180F. (VII-B)

154C Comparative Politics: Four Nations, Three Continents (4). Studies four countries in a comparative fashion: their respective political histories and cultural traditions, actual differences among their superficially similar party, parliamentary, and executive institutions; contemporary economic policy. The countries represent three continents and stand at varying levels of economic development. (VII-B)

154E Comparative Political Economy (4). Examines the interaction between politics and markets, both in theory and in practice, explicitly linking classic works on political economy with current policy debates. Studies how political systems and markets are organized in different national settings.

154F Peoples and Cultures of Post-Soviet Eurasia (4). Examines the cultures and political conflicts of the more than 130 indigenous ethnic groups in the European and Asian territories of the former U.S.S.R. Emphasis is on the theoretical issues of ethnicity, nationalism, and conflict management. Same as Anthropology 164P. (VII-B)

154G Conflict Management in Cross-Cultural Perspective (4). Examines theories of conflict management. Analyzes how conflict is mitigated in diverse cultures: at the interpersonal level, between groups, and on the international scale. Students discuss readings, hear from conflict management practitioners, and simulate negotiations. Same as Anthropology 136D. (VII-B)

155B Political/Social Impacts of Computing (4). Aims to increase our understanding of the major impacts of computer and telecommunications technologies on contemporary society. Emphasis on the uses and effects of these technologies on the political world, as well as other effects on society that are policy-relevant. Analytic research paper required. Prerequisite: consent of instructor.

155C Organizations (4). How bureaucracies, formal organizations, and voluntary associations work, how and why they grow, and where they are going. History and structure of organizational rationality; dynamics of organized groups; behavior in organizations. The limits of bureaucratization and attempts to overcome these limits through decentralization. Same as Sociology 141.

155E Revolution and Collective Political Violence (4). Examines the theory of collective political violence, internal war, and insurgency. Considers causes and “process” of revolutions; comparative characteristics of organized armed movements; personality of revolutionary leaders. U.S. foreign policy and military doctrine on insurgency and low-intensity conflict reviewed. Prerequisite: satisfaction of the lower-division writing requirement.

156A Political Participation (4). The ways in which people in various political systems take part in politics, especially in activities directed toward affecting outcomes. Who is active, what they do, why they do it, and what difference it makes.

156B Participation and Representation (4). Examines the concepts “political participation” and “political representation” and the interconnection between these concepts. Addresses both the theoretical issues and debates raised by these concepts and considers how they are studied empirically. Prerequisite: upper-division standing or consent of instructor.

156C Citizen Politics (4). Study of the role of public opinion in the political process. Reviews some of the key research approaches and findings on which our current understanding of public opinion is based, and provides an opportunity to conduct research and to analyze public opinion surveys.

156D Social Movements and Collective Behavior (4). A survey of models of collective action drawn from sociology, economics, psychology, and political science, and focusing on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Political Science 6A, Sociology 1, or Economics 1. Same as Sociology 174.

157A Nationalism (4). Nationalism, one of the most potent social and political forces of the twentieth century, is explored. Seeks to understand the sources and nature of various forms of nationalism. Prerequisite: satisfactory completion of the lower-division writing requirement. (VII-B)

159 Special Topics in Comparative Politics (4). May be repeated for credit as topic varies.

170–179: PUBLIC LAW

171A Law and Society (4). Examination of the law and its various roles in society. The nature and meaning of law; legality and power in the American system; law as a mechanism for social change; the role of law in dispute processing, social control, compliance with judicial decisions. Prerequisites: Political Science 71A and satisfactory completion of the lower-division writing requirement.

171B Jurisprudence (4). A survey of legal philosophies. Explores jurisprudence from the ancient Greeks to the present, including natural law philosophy; legal positivism and realism; sociological jurisprudence; and liberal, radical, and conservative thought. Prerequisite: Political Science 71A.

171C Comparative Constitutional Politics (4). Examines the impact of constitutional courts on politics and policy-making in Canada, France, Germany, and the United States. Cases may focus on the constitutional politics of free speech, abortion, rights to property, and the conduct of foreign relations. Prerequisite: Political Science 71A and satisfaction of the lower-division writing requirement.

171D American Constitutional Law (4). American constitutional interpretation through extensive analysis of cases involving the separation of powers, federal-state relations, rights of property, free expression, privacy, criminal due process, political participation, and equality. Corollary topics include legal research methods, development of judicial review, legal reasoning, and the political impact of Supreme Court decisions. Prerequisite: Political Science 71A. Political Science 171D and Criminology, Law and Society J102 may not both be taken for credit.

171E Law and Social Sciences (4). The use of social science evidence in litigation is examined. Looks at the complex interaction of social facts, law, statistical models, and normative judgments, focusing on political science and sociological testimony in areas of Fourteenth Amendment equal protection jurisprudence. Prerequisite: Political Science 71A.

172A International Law (4). Examination of the origin, changing structure, and application of international law, and the role of legal norms in regulating the behavior of states and maintaining international order. The use of force, pacific settlement of disputes among nations, human rights, international terrorism. Prerequisite: Political Science 71A.

173A Comparative Legal Systems (4). Comparative survey and analysis of legal systems, actors, cultures, and norms in nations of the following traditions: common law (U.S. and British Commonwealth), civil law (Western Europe and Latin America), socialist (Soviet Union and Eastern Europe), and Asian (China and Japan). Prerequisite: Political Science 71A or consent of instructor.

174A Civil Liberties (4). Political analysis of selected Supreme Court cases involving claims under the Bill of Rights and the Fourteenth Amendment. Topics include: race, sex, and other forms of discrimination; criminal justice; privacy; freedom of speech and related claims. Prerequisite: Political Science 71A.

174B Constitutional Rights (4). Addresses a central aspect of politics: the interpretation and application of the United States’ fundamental rules. These rules tell us something about the goals of society, and the means chosen to achieve them by allocating rights and duties, costs, and benefits among its members. Prerequisite: Political Science 71A or consent of instructor.

174C U.S. Supreme Court (4) Detailed overview and analysis of the role played by the U.S. Supreme Court in the American political system. Judicial review, appointment of justices, judicial activism and judicial restraint, process of case selection, court deliberation, land decision-making, impact of Supreme Court decisions.

179 Special Topics in Public Law (4). Prerequisite: Political Science 71A. May be repeated for credit as topics vary.

SPECIAL COURSES—UPPER DIVISION

H180 Honors Seminar in Political Science (4). Restricted to students enrolled in the Honors Program in Political Science. May be taken for credit three times as topics vary.

H182A Honors Thesis Workshop (4). A weekly seminar/workshop to facilitate the exchange of ideas and research strategies among students and to review their progress in writing the thesis. Prerequisite: consent of instructor. Open only to students in the Political Science Senior Thesis program.

183 Public Affairs Internship (4). Supervised internship and study in political, governmental, nonprofit, or related organizations for students participating in the Department’s Public Affairs Internship Program. Enrollment dependent upon availability of intern positions. Pass/Not Pass only. Prerequisite: consent of instructor. May be taken for credit three times.

184 Government Internship (4). Internship and study in political, governmental, nonprofit, or related organizations for students participating in the UC/DC Program. Pass/Not Pass only. Prerequisite: consent of instructor. May be taken for credit twice.

190 Senior Thesis (1 to 4). Prerequisite: consent of instructor. May be taken for credit for a total of three times.

197 Field Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (1 to 4). Prerequisite: consent of instructor. May be repeated for credit as topic varies. Students may enroll for only one 199 each quarter.

GRADUATE

210A-B-C Research Seminar in Politics and Society (1.3-1.3-1.4). Weekly reports and colloquia by faculty, students, and visitors. Students required to report on one research project over the course of three quarters. Required of first- and second-year graduate students in Political Science. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

211A Foundations of Modern Political Science (4). Provides an introduction to major works by highly influential scholars in the nineteenth and twentieth centuries, such as Marx and Engels, Mosca, Michels, Weber, Wallas, and Lasswell, that constitute the foundation of contemporary political science. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

211B Micropolitics (4). Provides students with comprehensive introduction to the substance and methods of the study of political behavior. Focuses on the level of individual behavior, but the relation to macrosocial analysis is considered. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

211C Macropolitics (4). Examines some of the major research issues in political science involving macro-level questions: systemic processes, political institutions, or system outputs. Required of first-year graduate students in Political Science. Prerequisite: graduate standing or consent of instructor.

219A-Z Special Topics in Politics and Society (4). Current research in politics and society. May be repeated for credit as topics vary.

220A Issues in American Politics and Government (4). Seminar covering major issues in the study of American political behavior and institutions. Prerequisite: graduate standing or consent of instructor.

220B American Politics and the State (4). Explores recent scholarship on various aspects of American politics while remaining attentive to the analytical and substantive importance of the state.

220C Mass Media and Politics (4). The role of the mass media in shaping the political agenda and influencing political behavior. The primary focus is on the role of the media in election campaigns. Prerequisites: graduate standing and consent of instructor.

221A Public Policy (4). Explores different approaches to public policy analysis, the diverse conceptions of the goals and objectives that should be served by policy, and the appropriate role of the policy analyst. Policy consequences are traced to indirect and subtle incentives and disincentives. Prerequisite: graduate standing or consent of instructor. Same as Urban and Regional Planning U221.

224A Environmental Politics and Policy (4). Reviews and critiques literature on discussion topics including: the nature and effectiveness of the environmental movement and environmental policies; the role of science and technology; the use of economic incentives in policy; decentralization of decision making; and creating arenas for public involvement. Prerequisite: graduate standing or consent of instructor. Same as Urban and Regional Planning U224.

229 Advanced Research Methods (2). Topics in advanced research methods. Topics will vary. Prerequisite: graduate standing. May be repeated for credit as topics vary.

232B Electoral Systems Seminar (4). Studies electoral systems worldwide, analyzes their effect on the number of parties and duration of government cabinets, and applies the results to the present democratizing countries. Prerequisite: graduate standing or consent of instructor.

234A Research Methods in Political Science (4). An introduction to standard research techniques in political science. Issues of epistemology, research design, and approaches to empirical analysis. Prerequisites: graduate standing or consent of instructor, and upper-division or graduate-level statistics.

236A Wars, Democracy, and Fascism (4). Analyzes the important psychological legacies of wars in the later creation of political institutions. Prerequisite: graduate standing or consent of instructor.

240A American Foreign Policy Decision Making (4). Assesses the changing international perspectives, policy instruments, and decision making processes of United States presidential administrations since World War II. Prerequisite: graduate standing or consent of instructor.

241B Seminar in International Relations Theory (4). Overview of the major theories guiding research and scholarship in international relations. Focus on major conceptual approaches (realism, neoliberalism, marxism) and levels of analysis (systemic, state, and subnational), as well as on methodological/epistemological debates engulfing the field. Prerequisite: graduate standing or consent of instructor.

241C Theories of International Cooperation (4). Examines and evaluates theories of international cooperation and their relations to more general conceptual and methodological approaches in international relations. Prerequisite: graduate standing or consent of instructor.

242A International Political Economy (4). Examination of major theoretical approaches to explaining the politics of international economic relations. Analysis of the effects of power, ideas, and international institutions on economic competition and cooperation. Prerequisite: graduate standing or consent of instructor.

243A Normative Approaches to International Politics (4). Departing from materialistic, utility-based foundations of traditional international relations, "constructivist" or "normative" approaches hold that interests and behavior take shape within social structures whose crucial elements are beliefs, scripts, and rules. Seminar critically assesses major works in the normative tradition. Prerequisite: graduate standing or consent of instructor.

250A Political Economy (4). Introduction to the many relationships between economics, politics, and government, both within and among societies. Areas covered include contemporary American politics, American history, ideology, labor, property, multinational corporations, economic regulation, international relations, and the Third World. Prerequisite: graduate standing or consent of instructor.

252A The State in Comparative Perspective (4). Seminar examining the state from theoretical, empirical, comparative perspectives. How the state came into being, the state's role in the economy, toward society and internationally, and in policy-making in Western Europe, East Asian newly industrialized countries, the Third World. Prerequisite: graduate standing or consent of instructor.

252B The Comparative Method (4). Examines approaches to research design in comparative political science. Focus is on the uses of the comparative method in both theory and practice. Prerequisite: graduate standing or consent of instructor.

252C Conditions of Democracy (4). Analysis of the constitutional, historical, social, economic, and cultural conditions under which democracies can be stable and effective. Readings in the principal works on the subject from deTocqueville to Lipset, Dahl, Almond, and Verba. Prerequisite: graduate standing or consent of instructor.

252D Comparative Democratic Politics (4). Introduction to basic ideas in comparative politics and empirical democratic theory. The U.S. is used as a case study; its history, institutions, and policies are compared and contrasted with those of roughly 30 other major democracies, with particular interest in other large industrialized nations. Prerequisites: graduate standing and consent of instructor.

253A Political Culture (4). An introduction to the general study of political culture and the political cultures of selected societies, including Great Britain, Germany, Japan, Russia, China, India, and Mexico. Prerequisite: graduate standing or consent of instructor.

253B Regime Change in East Asia (4). Regime change from authoritarianism to democracies (Japan, South Korea, Taiwan); gradual political change (China). Uses theories from comparative literature on regime transition; combines theory with historical institutions, political culture, prior regimes, elements in the transition process in the four countries. Prerequisites: graduate standing or consent of instructor.

260A Research Seminar in Electoral Behavior (4). Students design and carry out an original research project in the field of electoral behavior, analyzing data from recent national election studies. Emphasis on learning techniques of data analysis and presentation. Prerequisite: graduate standing or consent of instructor.

260B Political Participation (4). Examines theoretical approaches to the explanation of the pattern of participation and consideration of the results of empirical studies of such activity by mass publics (mainly in Europe and North America). Addresses issues in both comparative politics and political behavior. Prerequisite: graduate standing or consent of instructor.

261A Language and Power (4). Seminar to study a theory of how reality/meaning/knowledge is created in language as a consequence of structure of power. Prerequisite: graduate standing or consent of instructor.

262A Rationality in Social Science (4). History of the paradigm, how it has been refined into the cost-benefit model as applied to political decision making; identification and examination of the main assumptions underlying the model; suggested modifications in the rationality paradigm. Prerequisite: graduate standing or consent of instructor.

262B Human Nature, Altruism, and Public-Spirited Behavior (4). Philosophical and behavioral discussions of altruism and cultural influences on public-spirited behavior. Prerequisite: graduate standing or consent of instructor.

270A-B-C Seminar in Public Choice I, II, III (4-4-4). Public Choice lies at the intersection of economics and political science. This course involves the use of tools derived from economics to understand the behavior of governments and of citizens when they deal with politics. Prerequisite: graduate standing and Social Science 111H. Same as Economics 270A-B-C.

280A Seminar in Political Psychology (4). Systematic introduction to the psychological study of political behavior. Topics will include: political ideology, communication and persuasion, political socialization, political decision-making, and political participation. Prerequisite: graduate standing or consent of instructor.

285A Introduction to Political Psychology I (4). Reviews theoretical questions regarding the relationship between the analytical and normative and the polity. Considers the relationship between the analytical and normative concerns of psychology and political science, addressing empirical literatures including works on political socialization, ideology and public opinion, identity and nationality.

285B Introduction to Political Psychology II (4). Discusses the complex set of relationships among the three disciplines of politics, psychology, and economics, focusing on human decision-making processes and political choice. Prerequisite: graduate standing or consent of instructor. Formerly Political Science 262C.

290 Dissertation Research (4 to 12). Prerequisite: consent of instructor. May be repeated for credit.

299 Independent Study (4). May be repeated for credit.

THE UNDERGRADUATE MAJOR IN SOCIAL SCIENCE

The major in Social Science provides an interdisciplinary perspective on the study of society, both at the individual and the group level. Using the knowledge and methods of anthropologists, economists, linguists, political scientists, psychologists, and sociologists, a student majoring in Social Science develops the skills to think clearly about social concepts and issues.

Students majoring in Social Science take a core curriculum of introductory courses that (1) compares the various social science disciplines and methods; (2) teaches applied computing methodology; and (3) provides an overview of topics in the social sciences. Each student chooses an area of specialization selected from Multicultural Studies, Public and Community Service, Research and Analytical Methods, or Social Studies. The specialization creates the framework for the remainder of the course work required to complete the degree program.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54–58.

School Requirements: See pages 332–333.

Requirements for the Major

- An understanding of the fundamental concepts, analytical tools, and methods of social science. This requirement is met by taking Social Science 1A, 2A, 3A, and one additional introductory course in the School of Social Sciences bearing a one-digit course number. These courses should be taken during the student's first year.
- A decision with respect to area of focus. This requirement is met by declaring a specialization before the end of the junior year.
- An understanding of the advanced areas in social science. This requirement is met by satisfying course work requirements as defined for the declared specialization (see below).

Students are reminded that the Pass/Not Pass option is not applicable to course requirements A through C above or to any additional requirements listed for specific majors.

Courses used to meet requirements A through C above are included in the computation of the grade point average in courses required in the major program.

Specialization in Multicultural Studies

This specialization examines various American ethnic and cultural communities (African-American, Asian American, Chicano/Latino, and Native American) from an interdisciplinary perspective. It provides students with the understanding necessary to address issues arising from the multicultural environment of the county, state, and nation.

Satisfaction of School requirements and 15 courses (60 units) as follows:

- Four courses as specified in major requirement A above.
- Two additional lower-division courses selected from Anthropology 20A, 60A, Linguistics 68, Social Science 70A, 70C, Sociology 63, 65.
- Six upper-division courses representing at least two departments selected from Anthropology 121D, 125A, 132A, 138M; Political Science 126C, 145B; Psychology 174A-B; Social Science 170A-170H, 172A-172E, 173F-173I, 173K-L, 175A, 175B; Sociology 173; or other similar courses as approved by petition.
- Three additional upper-division Social Science courses which must address the issues of one particular culture.

Specialization in Public and Community Service

This specialization prepares students to understand community and governmental issues from a social science perspective. Students participate in several off-campus learning experiences with community-based organizations and government agencies.

Satisfaction of School requirements and 15 courses (60 units) as follows:

- Four courses as specified in major requirement A above.
- Six upper-division social science courses in one department (Anthropology, Cognitive Sciences, Economics, Linguistics, Politics and Society, Sociology) or in the Interdisciplinary Programs in Women's Studies, African-American Studies, Asian American Studies, or Chicano/Latino Studies.
- Two quarters of off-campus internship experience linked to the selected field above, and for which upper-division credit is earned, as specified in the internship guidelines available in the School of Social Sciences Undergraduate Counseling Office.
- Three quarters of Social Science 196, Field Study in Multicultural Environments. Students should see their academic advisor for more information.

Specialization in Research and Analytical Methods

This specialization creates a more in-depth understanding of social science methods and research. Students with this specialization are well-prepared for graduate or professional programs.

Satisfaction of School requirements and 15 courses (60 units) as follows:

- Four courses as specified in major requirement A above.
- Two additional lower-division courses selected from Anthropology 2A, Economics 1, Linguistics 1, Political Science 6A, Psychology 9A, Social Science 70C, Sociology 3.
- Six upper-division courses, three each from two disciplines, selected from Anthropology 142A, 143A, 171-179; Economics 120-129; Linguistics 100-109, 170; Political Science 131-139; Psychology 110-119; Social Science 100-101; Sociology 110-119. (NOTE: For 1997-98, this requirement can be satisfied by choosing courses from Economics, Political Science, Psychology, or Social Science offerings.)
- Three additional upper-division courses from the same list.

Specialization in Social Studies

This specialization provides a broad overview to the social sciences, with an emphasis on maintaining an interdisciplinary perspective. This specialization also helps to prepare students for teaching in elementary schools. Students wishing to teach social science at the high school level can enroll in the State-approved subject matter preparation program through this specialization.

(Students *must* consult with a counselor to enroll in the subject matter preparation program.)

Satisfaction of School requirements and 15 courses (60 units) as follows:

1. Four courses as specified in major requirement A above.
2. Five other lower-division social science courses, representing at least three Social Sciences departments (Anthropology, Cognitive Sciences, Economics, Linguistics, Politics and Society, Social Science, and Sociology).
3. Six upper-division social science courses, including two courses from Anthropology, Cognitive Sciences, Linguistics, or Sociology, and two courses from Politics and Society or Economics.

HONORS PROGRAM IN SOCIAL SCIENCE

The Honors Program for Social Science majors allows students to engage in research leading to the completion of an Honors thesis. The topic for the Honors thesis, reflecting social science themes, is determined by the student in consultation with a faculty advisor. The Honors Program is composed of three four-unit courses: Social Science H190A (Honors Research Workshop), H190B (Honors Thesis Research), and H190C (Honors Thesis), which satisfies the upper-division writing requirement. Students are introduced to the Honors Program through Social Science 180 (Advanced Seminar in Social Science Research), which serves to review and discuss current research and student interests. The Honors Program is open to all junior and senior Social Science majors with an overall GPA of 3.00 and a 3.30 GPA in at least five Social Science courses.

The schedule of courses for the Honors Program is:

- (1) Each spring quarter, Social Science 180 provides students with an introduction to the Honors Program.
- (2) During the spring quarter of the junior year and over the following summer before the senior year, students formally apply to the Honors Program through the Office of the Associate Dean, Undergraduate Studies, School of Social Sciences.
- (3) In the fall quarter of the senior year, students enroll in H190A. This course ends with each student having formulated a written research plan for the honors thesis. Students also select a faculty member who has agreed to supervise the research and evaluate the Honors thesis.
- (4) In the winter quarter of the senior year, students enroll in H190B with their faculty advisor, who supervises and evaluates data collection and analysis.
- (5) In the spring quarter of the senior year, each student enrolls in H190C with their faculty advisor to complete the Honors thesis.

Courses in Social Science

LOWER-DIVISION

The Social Science curriculum includes major methodological and statistical courses suitable for social science students generally; courses which do not fall within disciplinary boundaries; and senior thesis, field study, and independent study courses.

1A Introduction to Social Science Analysis (4). Introduction to social science research and analytical models. Theory construction and use of research methods in an interdisciplinary context. Discussion of the application of social science research to public policy. Computer laboratories develop creative thinking, graphing, and data presentation skills. (III)

H1E-F-G Honors: Critical Issues in the Social Sciences (6-6-6) F, W, S. Major themes, methods, and works in the social sciences from an interdisciplinary perspective. Each quarter focuses on a different topic. Weekly small seminars emphasizing the development of the skills of critical thinking and quantitative analysis through regular written work are integral to the course. Prerequisite: restricted to members of the Campuswide Honors Program. Same as Social Ecology H20A-B-C. (III)

2A Principles in the Social Sciences (4) W. Introduction to various disciplines within the social sciences. Provides an interdisciplinary perspective on understanding human behavior and social institutions, including interpersonal, economic, political, and cultural activities. For those students desiring a broad introduction to the social sciences. (III)

3A Computer-Based Research in the Social Sciences (4) W. Focuses on the data manipulation, data visualization, and information searching techniques that are becoming increasingly popular and important as we move into the twenty-first century. Hands-on experience with mapping, graphics, and data arrays. Prerequisites: freshmen only or consent of instructor; school majors only.

10A Probability and Statistics in the Social Sciences I (4) F. Introduction to the variety of statistical applications in the social sciences. Descriptive statistics. Measures of central tendency and dispersion. Percentile ranks. Standardization and normal approximation. Basic probability theory focuses on application to statistical inference and binomial distribution. Laboratory required. Corequisite or prerequisite: Social Science 3A. Prerequisite: lower-division standing or consent of instructor. Students who receive credit for Social Science 10A may not receive credit for Anthropology 10A, Economics 10A, Psychology 10A, Social Ecology 13, or Sociology 10A. (V)

10B Probability and Statistics in the Social Sciences II (4) W. Introduction to statistical inference, sampling distribution, standard error. Hypothesis tests for proportions and means. Inferential techniques for nominal variables including chi-square, study measures of strengths, significance of relationships between variables, assumptions, data requirements, and types of error in significance tests. Prerequisite: Social Science 10A. Students who receive credit for Social Science 10B may not receive credit for Anthropology 10B, Economics 10B, Psychology 10B, Social Ecology 13, or Sociology 10B. (V)

10C Probability and Statistics in the Social Sciences III (4) S. Focus on correlation, regression, and control for effects of variables. One-way and two-way factorial analysis of variance. *A priori* and *a posteriori* comparisons. Introduction to repeated measures design and non-parametric statistics. Discuss use of statistics in newspapers and popular magazines. Prerequisite: Social Science 10B. Students who receive credit for Social Science 10C may not receive credit for Anthropology 10C, Economics 10C, Psychology 10C, Social Ecology 13, or Sociology 10C. (V)

13A Introduction to Semiotics (4). How humans and other animals communicate with each other by means of symbols and other signs. The symbols of everyday life, of movies and literature, of religion and society. Symbolic systems and symbolic evolution. Same as Psychology 55A and Linguistics 80. (III)

16A Current Topics in Global Peace and Conflict Studies (2). Topics focus on the perspectives of academic disciplines that examine global issues, bilateral and multilateral relations, and issues related to regions or countries. Students choose seminar subjects, prepare opening remarks, and lead discussions with a faculty member or guest lecturer.

61 Introduction to Chicano/Latino Studies I (4). Introduces links between culture, history, and sociology of Chicano/Latino communities. Examines the formation, evolution, and adaptation of Chicano/Latino communities within a national and international perspective. Reviews literature on Chicano/Latino Studies as a field of intellectual inquiry. (III, VII-A)

62 Introduction to Chicano/Latino Studies II (4). Foundations of Latinos from pre-history to present with emphasis on race, class, gender, and culture. Examines institutions/processes of: indigenous culture; conquests, colonialism/neocolonialism; racialization; capitalist industrialization; immigration; Americanization. History, literary and artistic materials/texts of Latino subgroups. (III, VII-A)

63 Introduction to Chicano/Latino Studies III (4). An introduction to Chicano/Latino Studies through inter- and intra-group comparisons of various Latino groups in the United States. Issues examined include immigration, political participation and protest, socioeconomic status, gender relations and sexuality, and ethnic and racial discrimination. (III, VII-A)

70A U.S. Ethnic and Racial Cultures (4). A survey of ethnic and racial groups in the United States, comparing their histories, evolution, and cultural individuality. Emphasis on cultural variations in the U.S. as well as the processes and changes, historical and current, within distinct demographic populations. (III, VII-A)

70B Introduction to Expressive Forms in American Society (4). A survey of the expressive forms of minority culture groups in the United States. Literature, music, visual art, ritual, and folklore are studied, with an emphasis upon understanding their relationship to their social and cultural contexts. Formerly Comparative Culture 20B. (III, VII-A)

70C Comparing Cultures (4). Introduces students to the scope of cross-cultural comparisons by analyzing the theories, methodologies, and facts utilized by anthropologists, sociologists, social psychologists, political scientists, and historians in comparing cultures. Formerly Comparative Culture 20C. (III, VII-A)

70T The History of Minorities in American Films (4). An examination of the cultural content of American films as it applies to the resident minority groups in the United States. Films projecting images of Afro-Americans, Asians, Native Americans, and Latinos/Hispanics are screened. Formerly Comparative Culture 21A. (VII-A)

78A Introduction to Asian American Studies I (4). Examines and compares the diverse experiences of major Asian American groups since the mid-nineteenth century. Topics include: origins of emigration; the formation and transformation of community; gender and family life; changing roles of Asian Americans in American society. Same as Asian American Studies 60A and History 15C. (VII-A)

78B Introduction to Asian American Studies II (4). Examines the renewal of Asian immigration following World War II. Focuses on domestic and international conditions influencing the liberalization of U.S. immigration laws, and the impact of contemporary Asian immigration on the U.S. political economy and social order. Same as Asian American Studies 60B. (VII-A)

78C Introduction to Asian American Studies III (4). Examines selected substantive, methodological and/or theoretical issues in Asian American Studies. Possible topics include interracial dating and marriage, electoral politics, educational and occupational achievement, participant community research, uses of oral history, underrepresented Asian American ethnic groups, and diasporic groups. Same as Asian American Studies 60C. (VII-A)

89A-Z Special Topics in Social Sciences (2 to 4). May be repeated for credit as topic varies.

UPPER-DIVISION

100A-B-C Foundations of Applied Statistics I, II, III (4-4-4). Lecture, four hours; laboratory, three hours. **100A-B:** Descriptive statistical concepts and techniques most widely used in social science research. Weekly laboratories employ computer graphics to investigate concepts. Pass/Not Pass only grading for 100A. **100C:** Classical statistical inference, limited to simple random sampling or simple randomization designs. Characteristics of sampling distributions; bias, standard error, mathematical models, estimation, hypothesis testing. Same as Social Ecology 166A-B-C. (V)

101A-B Data Analysis I, II (4-4). Practical applications-oriented course on multiple regression. How to discover and explore general socioeconomic models in data. Prerequisites: simple probability and statistics (Social Science 10A-B-C strongly recommended). Same as Economics 121A-B.

101C Data Analysis-Writing (4). Advanced regression analysis. Covers practical techniques for solving model-building problems. Strong emphasis on learning clear, effective writing. Prerequisite: Social Science 101B or Economics 121B or 123B. Same as Economics 121C.

101E Introduction to Statistical Computing (4) W. Enables the student to utilize the analysis routines available within the Statistical Package for the Social Sciences (SPSS). Methods of data management and interpretation of computer output are presented. Prerequisites: Social Science 100A or Social Ecology 166A. Corequisite: Social Science 100B or Social Ecology 166B. Pass/Not Pass only. Same as Social Ecology 166E. Formerly Social Science 100E.

101F Games as Models of Social Phenomena (4). Games as analogies of social, economic, and political situations. The interaction of contingency plans. Games (situations) with no winner and/or loser. Technical definition and discussion of conflict, threat, stability. Paradoxes involved in defining "rational decision." Prerequisite: one year of college-level mathematics. Same as Sociology 122. Formerly Social Science 154G.

101G-H Data Collection and Analysis I, II (4-4). Basic methods and theories of proximity and preference data collection including pile-sort, ranking, triads, item-by-use matrices, rating, and free-listing. Multidimensional scaling, clustering, and quadratic assignment approaches are utilized. Extensive hands-on computer use. Prerequisites: Social Science 10A-B-C, 100A-B-C, or consent of instructor. Same as Anthropology 172A-B.

H158A International Studies Honors Research Seminar (4). Designed to assist students prepare a thesis prospectus for the Honors Program in International Studies. The student identifies a thesis topic, reads on the subjects of writing and research methods, orally presents and defends the prospectus, and prepares a written prospectus/literature review. Prerequisite: acceptance into the International Studies Honors Program.

H158B International Studies Honors Thesis Research (4). In consultation with the faculty advisor, the student continues the research process and begins to provide draft chapters. Faculty advisor meets on a weekly/biweekly basis to discuss research problems, review/edit draft chapters, and monitor the established calendar for thesis completion. Prerequisite: Social Science H158A.

H158C International Studies Honors Thesis (4). Under the supervision of the faculty advisor, the student completes the final draft of the thesis and obtains the faculty advisor's signature approving the thesis. Prerequisites: Social Science H158B and satisfactory completion of the lower-division writing requirement.

166 Latino Social Movements and Organizations (4). An examination of social movement theories and organizational theories and research through an analysis of ways in which Latinos have organized to confront discrimination and secure full and fair participation in the labor market, education, politics, and other societal institutions.

167 Chicano/Chicana Labor History (4). Examines origins of Latino/Latina labor from colonial period to present. Emphasis on the issues of race, culture, class, and gender. Focus on processes and institutions including: *encomienda*, migration, unions, informal economies, Bracero program, domestic work. Same as Women's Studies 185A. (VII-A)

168 Chicano/Latino Research Seminar (4). Taught as a writing and research seminar in Chicano/Latino Studies. Student develops own project; engages in peer editing; drafts, writes, and presents paper at spring research conference. Prior course work in Chicano/Latino Studies helpful, i.e., Social Science 61, 62, 63. Prerequisites: satisfactory completion of the lower-division writing requirement and upper-division standing. (VII-A)

170A Scope and Problems of Interdisciplinary Research (4). Takes an empirical approach to quantitative and qualitative research problems in psychology, sociology, political science, anthropology, ethnic studies. Examines how traditional research designs (experiment, survey, field observation) can be modified to address interdisciplinary questions. Explores other techniques: discipline-specific writing styles. Prerequisites: Social Science 10A-B-C or equivalent.

170B Philosophy of Culture (4). Introduction to philosophies of culture that have been formulated by philosophers, historians, anthropologists, and sociologists. Intended to provide an understanding of the cultural concept in order to study culture acquisition and the diverse culture of the U.S. Formerly Comparative Culture 100E. (VII-A)

170C Work, the Economy, and Culture (4). Studies the economic fabric of societies relative to cultural institutions and activities. Relationships between global economy and national and international culture. Selected writers utilized in discussing class, race, gender, labor, and cultural processes in worldwide system of production and consumption. (VII-B)

170D Politics and Culture (4). Examination of the factors affecting the formation and structure of political/labor movements among racial/ethnic groups in the United States. Relationship of domestic movements to international developments is also analyzed. Formerly Comparative Culture 120C.

170E Society and Culture (4). An introduction to the processes underlying stratification in American society with emphasis on race/ethnic/class divisions. These processes also are examined in relationship to the works of major theorists such as Marx, Weber, and Durkheim. Formerly Comparative Culture 120D. (VII-A)

170F History and Culture (4). An introduction to ethnohistory, focusing on the contributions of history to the interdisciplinary study of sociocultural systems. Empirical focus on the slave South, with intensive analysis of major secondary sources. Formerly Comparative Culture 120F. (VII-A)

170G Language and Culture (4). Spoken and written language and its relation to thought and other forms of human culture: verbalization of morality, values, religion, aesthetics, and politics; problems interpreting ideological works in ancient and recent times; semantics and psychology of speech, image, gesture. Formerly Comparative Culture 130C.

170H Religion and Culture (4). A survey of the major issues in the comparative study of religious beliefs and behavior of minority American cultures. Formerly Comparative Culture 130G.

170P Philosophies and World Religions (4). A survey of the world's major philosophical traditions and religions and the ethical systems they have produced. The origins of these ethical systems and the fundamental principles upon which they are built. Examples: Kantian, Confucian, Judeo-Christian, and relativism. (VII-B)

171A Cultural Analysis of Literature (4). How the literature of minority American cultures can be studied as a cultural document. Focus on how culture affects the creation of literature. Formerly Comparative Culture 130A.

171F Cultural Analysis of Visual Arts (4). Explores the relationships between visual arts and the culture and society of which they are a part. The works of nonliterate societies as well as those of the Western world are analyzed and compared. Formerly Comparative Culture 130H. (VII-A)

172A American Culture (4). A survey of the historical development of dominant American culture and society; emphasis on a close reading of key cultural texts, with weekly text as a model of writing examining its use of language and rhetoric. Prerequisite: satisfactory completion of the lower-division writing requirement. Formerly Comparative Culture 140A.

172B Afro-American Culture (4). A survey of the development of Afro-American culture with a focus on the United States. Topics include African and New World sources and contemporary forms of Afro-American social and cultural life. Formerly Comparative Culture 140B. (VII-A)

172C Asian-American Culture (4). A survey of socio-political-economic dimensions of Asian-American people: their past, present, and future. Formerly Comparative Culture 140C. (VII-A)

172D Chicano Culture (4). A critical survey of social science literature on the Chicano experience and a general discussion of the various models and theories applied by social scientists to the study of oppressed national minorities. Discussion of race and class within the context of the Chicano experience. Formerly Comparative Culture 140D. (VII-A)

172E Native American Culture (4). An introduction to the history, evolution, ecology, and culture areas of North American Indians. Describes how Native Americans once were and why they were that way. A brief introduction to contemporary Native American culture is provided. Formerly Comparative Culture 140E. (VII-A)

172F Latin American Culture I (4). Study of political, social, economic, and intellectual forces in Latin America. Major topics include Latin American thought; social stability and instability including revolutionary change; and changing Latin American cultures. (VII-B)

172G Latin American Culture II (4). Specific aspects of economic and cultural transactions between the United States and Latin America. Topics include: U.S.-sponsored economic models for Latin America; integration versus regionalization in economic policy; theories of dependency and imperialism; Initiative for the Americas; NAFTA. Prerequisites: Social Science 172F and consent of instructor.

173F Chicano History (4). A survey of the history of the Spanish-speaking people of the Southwest. Includes Mexican settlement, American conquest, and the development of the Chicano national minority. Social Science 173F and History 151B may not both be taken for credit. (VII-A)

173G Film Media and the Latino Community (4). Uses film as a resource for understanding contemporary issues and problems facing the Chicano/Latino community. (Does not study cinema as a genre.) Formerly Comparative Culture 130J. (VII-A)

173H History of Chicano Education (4). Examines the relationship between the development of the public education system and the Chicano community in the U.S. Formerly Comparative Culture 120H. (VII-A)

173I Perspectives on the U.S.-Mexican Border (4). Economic aspects of the historical development of the U.S.-Mexican border. The current economic situation in the Southwest and border areas as it affects both Mexico and the Latino/Chicano population is also examined. Formerly Comparative Culture 120B. (VII-A)

173K Comparative Latino Populations I (4). Provides foundation for understanding of Chicano/Latino Studies as an interdisciplinary field of inquiry. Focus on the history, arts, cultures of distinct (Mexican, Cuban, Puerto Rican, Central American) Latino communities. Topics include: pre-colonial history and culture, conquest, mestizaje, colonialism/neocolonialism, resistance. (VII-A)

173L Comparative Latino Populations II (4). Focus on demographics, sociology, politics, and global setting of distinct (Mexican, Cuban, Puerto Rican, Central American) Latino communities. Topics include: immigration, demographics, socioeconomic status, family structure, political protest, law and policy, and links to homeland issues. Prerequisite: Social Science 173K. (VII-A)

175A Literature and Ethnicity (4). Examines the works of several American minority authors in order to discuss the relationship of ethnicity as a social phenomenon to literature. Formerly Comparative Culture 130B. (VII-A)

175B Ethnic and Racial Communities (4). Examines various theoretical analyses of race and ethnicity, particularly as they apply to Asian Americans. Also explores the relationship of Asian Americans to other racialized minorities in the U.S. Same as Asian American Studies 161. (VII-A)

176A Afro-Latin American Music (4). Musical culture of Afro-Latin American peoples, emphasizing Spanish-speaking Caribbean. Topics include: background in West Africa, the persistence of traditions in the Caribbean, the commercial music of the twentieth century, the connections between musical culture, religion, and the economy. Formerly Comparative Culture 130F. (VII-B)

178A Perspectives on Race and Ethnicity in the United States (4). Examines the debates surrounding the use of race and ethnicity in U.S. scholarship. Discussions focus on differing conceptions of both terms, the changes in relationship between the two concepts since the end of the nineteenth century, and specific theoretical formulations particularly in relation to the experience of Asian Americans. Same as Asian American Studies 100B.

178B Asian American Women (4). Examines the representations and experiences of Asian American women from diverse perspectives. Explores the commonalities and differences among various groups of Asian American women, with particular focus on history, culture, values, and family roles. Same as Asian American Studies 162. (VII-A)

178C The Korean American Experience (4). Explores the factors that have distinctly shaped the Korean American experience, including patterns of racial domination, the profile of immigrant flow, immigrant roles in the urban political economy, politics in Korea, and the role of the church. Same as Asian American Studies 151C. (VII-A)

178D The Vietnamese American Experience (4). Studies the resettlement of Vietnamese in the United States following their exodus from Southeast Asia. Topics discussed include the Vietnam War, the 1975 evacuation, boat and land refugees, the shaping of Vietnamese communities, and Vietnamese American literature. Same as Asian American Studies 151D. (VII-A)

178E The Japanese American Experience (4). Studies the settlement of Japanese in Hawaii and the continental United States since the late nineteenth century. Topics covered include sugar plantations, development of rural Japanese America, World War II internment, post-War community development, and persistence of Japanese American identity. Same as Asian American Studies 151E. (VII-A)

180 Advanced Topics in Social Science (4). Provides Social Science majors with information from the Multicultural Studies, Public and Community Service, Research and Analytical Methods, and Social Studies specializations and synthesizes lower-division work. Students choose one specialization to explore in more depth, creating a focus for upper-division work.

182A Exploring Society Through Photography (4). Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques. Same as Anthropology 176A and Sociology 114A.

183A Global Peace and Conflict Studies Forum (2). A faculty-student forum featuring lecturers from a variety of institutions with discussion issues related to global peace and conflict studies. Pass/Not Pass only. May be taken for credit four times. Same as Humanities 183A and Social Ecology 183A. Formerly Social Science 184E.

183B Senior Seminar on Peace and Conflict (4). Designed for seniors (juniors may also enroll) who are pursuing the Global Peace and Conflict Studies (GPACS) minor and/or International Studies major. Provides a forum in which students will mature as independent researchers and gain fundamental knowledge of contemporary global issues and scholarly approaches to the field. Same as Humanities 183B and Social Ecology 183B. Formerly Social Science 184B. (VII-B)

183C Senior Seminar on Peace and Conflict (4). Continuation of Social Science 183B. Students write a senior research paper under the direction of a faculty member, and analyze GPACS forum presentations. Designed for seniors (juniors may also enroll) who are pursuing the Global Peace and Conflict Studies minor and/or International Studies major. Prerequisite: Social Science 183B. Same as Humanities 183C and Social Ecology 183C. Formerly Social Science 184C.

184D Global Peace and Conflict Studies: Current Topics (2). Topics focus on the perspectives of academic disciplines that examine global issues, bilateral and multilateral relations, and issues related to regions or countries. Students choose seminar subjects, prepare opening remarks, and lead discussions with a faculty member or guest lecturer. Pass/Not Pass only. May be taken for credit four times as topics vary.

185 People in Society (4). Through readings about people in distinctly different societies throughout history, students learn concepts that cross the boundaries of the social science disciplines. Such themes as democracy, elitism, power, social class, race, gender are used as basis for discussion and writing. Prerequisite: satisfaction of lower-division writing requirement.

187 Twenty-First-Century Graduate Education (2). Discussion of graduate and professional education in twenty-first century United States. Examines specific strategies for admission to postbaccalaureate programs and success in graduate study culture. Introduction to processes including planning and preparation, school selection, entrance examination preparation, submission of applications, writing personal statements. Prerequisite: upper-division standing or consent of instructor. Pass/Not Pass only.

188 Global Issues and International Perspectives (2). Primarily for students planning to study abroad. Weekly guest lectures, giving global perspectives on culture, politics, economics, women's roles, environmental issues, language, and history. In discussion sections participants study the particular area to which they are going, and learn how to conduct themselves while there. Pass/Not Pass only. Same as Social Ecology 188.

189A-Z Special Topics in Social Sciences (2 to 4). May be repeated for credit as topic varies.

H190A Honors Research Workshop (4). The student develops a prospectus of research for the honors thesis. The prospectus, 20-25 pages in length, includes: the research question, literature review, methods of investigation, and bibliography. Prerequisite: acceptance into the Honors Program for Social Science majors.

H190B Honors Thesis Research (4). The student initiates and completes data collection for the honors thesis. Faculty advisors provide supervision and feedback on thesis chapters. Prerequisite: Social Science H190A.

H190C Honors Thesis (4). The student completes, with an advisor, an honors thesis containing: statement of the problem, literature review, research hypotheses, methods of investigation, results, discussion, and bibliography. Prerequisite: Social Science H190B and satisfactory completion of the lower-division writing requirement.

H190E-F Honors: Senior Thesis Research I, II (4-4). Students conduct research toward preparation of an Honors Thesis under supervision of designated faculty. Restricted to Campuswide Honors Program participants.

H190G Honors: Senior Thesis (4). Students write an Honors Thesis with the consultation of their thesis advisor. Prerequisites: Social Science H190E-F.

195 Applied Social Science Research (4) F, W, S. Allows students the opportunity to apply classroom knowledge to projects in local businesses and agencies. Groups of five to ten students work with faculty and graduate students to research and propose solutions to agency-posed questions. Prerequisites: completion of lower-division writing requirement and consent of instructor. Limited to School of Social Sciences majors. May be taken for credit three times.

196 Field Studies in a Multicultural Environment (4). Emphasis on applied multicultural education in schools and community organizations. Examines social, cultural, psychological, economic, and linguistic phenomena while providing academic support in schools with large populations of underrepresented students. There are 30-35 hours of field work required each quarter. May be taken for credit three times.

197 Field Study (2 to 4) F, W, S. Opportunities to apply knowledge and learn new skills outside of the normal classroom environment. Students participate in off-campus activities under a written agreement with a supervising UCI instructor. Prerequisite: consent of instructor. May be repeated for credit for a total of 12 units.

198 Group Independent Study (2 to 4) F, W, S. Students participate in independent study under a written contract with a supervising UCI instructor. Prerequisite: consent of instructor and department chair. May be repeated for credit for a total of 12 units.

199 Individual Study (2 to 4) F, W, S. Opportunities to do research and learn new skills outside the normal classroom environment. Students participate in planned research and study activities under a written contract with a supervising UCI instructor. Prerequisites: upper-division standing; consent of instructor and department chair. May be taken for credit for a total of 16 units. Students may enroll for only one 199 each quarter.

DEPARTMENT OF SOCIOLOGY

4215 Social Science Plaza B; (949) 824-7637

Judith Stepan-Norris, **Department Chair**

Undergraduate Program

Sociology studies societies and human groups. It examines social conflict and cooperation, and the organization of families, communities, workplaces, and nations. The program at UCI covers the breadth of the discipline while giving students opportunities to conduct independent research, to do an internship in the community, to participate in an Honors Program, and to join departmental Certificate Programs in Human Services, Diversity, International Sociology, and Business, Economy, and Society. All students take basic courses on social institutions, theory, and methods. Students then take more specialized courses such as Race and Ethnicity, Social Psychology, Sociology of Gender, or Chinese Society. Courses are enriched by ongoing faculty research on such topics as the work and family of immigrants to the U.S., economic change in Asia, the relation between women and men in different social classes and ethnic groups, and attitudes to sexual behavior.

In addition to developing students' ability to critically analyze and understand social patterns, the major is relevant to professional careers in high school teaching, social work, urban planning, law, business, public health, and government service. It also provides training for advanced graduate work in sociology.

REQUIREMENTS FOR THE BACHELOR'S DEGREE

University Requirements: See pages 54-58.

School Requirements: See pages 332-333.

Departmental Requirements for the Major

School requirements must be met and must include 12 courses (48 units) as specified below:

- Sociology 1 and either 2 or 3.
- One course in methods selected from Sociology 100-119 and one course in theory selected from Sociology 120-129.
- One course in research design and implementation (Sociology 180A; required for all majors). The second course in the sequence (Sociology 180B) is for students who pass the first course and wish to write a thesis.
- Five courses selected from the following list of core courses, no more than two of which may be lower-division: Sociology 31,

41, 43, 44, 56, 62, 63, 135, 141, 144, 145, 156, 161, 164, 173, 174, 175B.

- E. One additional upper-division Sociology course and one additional introductory course from another social science discipline.

Honors Program in Sociology

The Honors Program in Sociology is open to outstanding Sociology majors during their junior and senior year. To gain admission to the program, potential Honors students normally take Sociology courses in theory (Sociology 120), methods (Sociology 110), statistics (Sociology 10A-B-C) and at least two Sociology core courses. Students who receive an average grade of 3.5 or better in these five courses (including one of three statistics courses) are eligible for the Honors program. In addition, Honors students should have an average of 3.2 or better in all courses taken at UCI. Majors who are transfers may petition for entry into the program based on their grades from their former schools.

During their senior year, Honors Program students write a thesis, designed and carried out under faculty supervision. Projects normally entail some empirical analysis of sociological data. Students meet regularly in a two-quarter Honors seminar to design and carry out these projects, to exchange ideas, and to help analyze each other's work (Sociology H188A and H188B; satisfies Sociology major requirement C: Honors students do *not* have to take Sociology 180A). In addition, Honors students are required to attend between six to nine Sociology guest lectures and subsequent meetings to discuss relevant sociological issues. Upon successful completion of the program, students graduate with Honors in Sociology.

Sociology Minor Requirements

Requirements for the minor in Sociology are met by taking seven sociology courses (28 units) as specified below:

- A. Sociology 1 and either 2 or 3.
- B. One course in methods selected from Sociology 100–119 and one course in theory selected from Sociology 120–129.
- C. In addition, students must either satisfy the School mathematics and computer science requirement (School requirement A), or take three courses (12 units) or equivalent in a single acceptable foreign language.
- D. Three courses selected from the following list of core courses, no more than two of which may be lower-division: Sociology 31, 41, 43, 44, 56, 62, 63, 135, 141, 144, 145, 156, 161, 164, 173, 174, 175B.

Graduate Program

Participating Faculty

Francesca Cancian: Gender sociology of the family, caregiving
 Michel Crozier: Organizational sociology, public administration
 Hector Delgado: Race/ethnicity/minority relations, migration and immigration, Latino sociology
 Linton Freeman: Network models of social structure
 John Liu: Race/ethnic/minority relations; economy and society
 Nancy Naples: Women in poverty, sexual abuse, women's community activism
 David A. Smith: Urbanization, comparative historical sociology, political sociology, world-system analysis
 Judy Stepan-Norris: Sociology of work, political sociology, historical and comparative sociology, American society
 John Torpey: Applied sociology/research evaluation, comparative/historical sociology, political sociology
 Judy Treas: Population studies, sociology of aging, social stratification, sociology of family
 Wang Feng: Demography, social change, economy and society

Affiliated Faculty

Mark Baldassare: Urban sociology, public opinion research
 Ken Chew: Social demography, urban sociology, family and life course studies
 Kitty Calavita: Sociology of law, criminology, social deviance, immigration, and inequality
 John Dombrink: Crime and criminal justice, deviance and social control
 Valerie Jeness: Links between deviance and social control, gender, social change
 Henry Pontell: Criminal justice, sociology of law, medical sociology
 Danching Ruan: Sociology of gender, family relationships, social stratification and mental health

The Department of Sociology offers a program of study leading to a Ph.D. in Social Science with a concentration in Sociology and Social Relations. The focus on research in social inequality and comparative/international sociology reflects departmental faculty strengths. Particular emphases include gender, race/ethnicity, labor, social movements, family, migration, population, political economy, and states and global transformation. The program provides structured training in sociological theory, statistics, and qualitative and quantitative research methods. While the core of the program is sociological, it also includes an interdisciplinary component, incorporating links to anthropology, political science, history, criminology, and urban planning. Small entering cohorts ensure personalized attention for each student and provides them with greater access to professors, allowing for close mentorship relationships. Program faculty take diverse theoretical and methodological approaches to a variety of substantive issues, are committed to empirical research addressing central sociological issues, and are open to intellectual cross-pollination from cognate disciplines.

Graduate students have the opportunity to participate in a variety of interdisciplinary research units, including the Center for the Study of Democracy, the Program in Global Peace and Conflict Studies, and informal research groups in states studies, demography, and labor studies. The Sociology Department is closely linked to Women's Studies and various ethnic studies programs, such as Asian American Studies and Chicano/Latino Studies. Research and funding opportunities are also available through UC-wide programs like Pacific Rim Studies and the Humanities Research Institute located on the UCI campus.

ADMISSION

Students in the program come from diverse educational, ethnic, and social backgrounds, including a number from different countries and various regions of the United States. The deadline for applications to receive full funding consideration for fall admission is January 15. Students are admitted for winter and spring quarter only under exceptional circumstances. Admission is based on application materials and evidence of scholarly potential, including grade point average, GRE scores, statements of purpose, and letters of recommendation.

REQUIREMENTS

Students must enroll in a two-quarter proseminar and a course in research design. Students are also required to complete a two-quarter statistics sequence, one seminar each in classical and contemporary theory, an advanced sociological methodology course, five substantive sociology seminars, and three graduate courses in related disciplines. The elective courses in sociology and in related fields are selected in consultation with the student's advisor in order to build competency in an area of research specialization. Course work prepares students to complete an independent research project, which is presented in oral and written form during the winter quarter of their second year. Students must pass a formal evaluation at the end of their second year involving assessment of course work and the second-year research project.

All required course work must be completed prior to advancement to candidacy. Students will normally advance to candidacy by the

end of their third year. The advancement-to-candidacy examination is based on (1) a written field examination in a broad area of sociology (e.g., social stratification, gender, international development, political sociology, population studies) and (2) an oral defense of a dissertation research prospectus, contextualized in the appropriate literature and including a discussion of data collection and methods of analysis. In preparation, students usually take at least the required one quarter of the Dissertation Seminar course during the third year. After advancing to candidacy, students are expected to work in close consultation with their advisor and dissertation committee. Committee approval of a satisfactory dissertation follows a final oral defense of the document, which normally comes by the end of the sixth year.

Feminist Studies Emphasis. A graduate emphasis in Feminist Studies also is available. Refer to the Women's Studies section of the *Catalogue* for information.

Courses in Sociology

LOWER-DIVISION

INTRODUCTORY COURSES

1 Introduction to Sociology (4). Major concepts and approaches to the study of society: social interaction, social differentiation, social control, social change, social institutions. (III)

2 Social Structures (4). Social structures are the patterned regularities in human interaction which are the major focus of sociological theory and research. Examination of several layers of social structure, moving from the small-scale "micro" configurations of small groups of people to the all-encompassing "macro" patterns of relationships between societies and nations. (III)

3 Introduction to Social Problems (4). Focuses on how institutional and organizational features of societies generate problems for people. Particular attention is directed at a set of problems related to political and economic inequality: poverty, racism, sexism, urban and population problems, the environment, the criminal justice system. (III)

METHODS

10A-B-C Probability and Statistics (4-4-4). An introduction to probability and statistics. Emphasis on a thorough understanding of the probabilistic basis of statistical inference. Emphasizes examples from sociology, anthropology, and related social science disciplines. Same as Anthropology 10A-B-C. Students who receive credit for Sociology 10A-B-C may not receive credit for Anthropology 10A-B-C, Economics 10A-B-C, Psychology 10A-B-C, Social Ecology 13, or Social Science 10A-B-C. (V)

19 Special Topics: Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

THEORY

23 Understanding Social Facts (4). Focus on perspectives toward the question of what constitutes sociological knowledge and processes through which competent investigators have built sociological arguments from data. Examination of several types of research techniques. (III)

29 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL PSYCHOLOGY

31 Introduction to Social Psychology (4). Studies sociological contributions to theory and research in social psychology, with focus on the social influences on personality, attitudes, beliefs, and behavior; socialization, human groups, and social interaction. Same as Psychology 78A. (III)

39 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURE

41 Small Group Behavior (4). Deals with models for understanding behavior in small groups, including coalition formation, socialization, group norms and decision rules, leadership, conformity, group structure, and communication processes.

43 Urban Sociology (4). The nature, causes, and consequences of urbanization are examined along with its changing scale and complexity, demographic and ecological city growth patterns, the quality of life in urban areas, processes of decision-making in cities, and the bearing of sociological investigation on public policy concerns in contemporary urban society.

44 Populations (4). Demographic aspects of social/economic change. Considers the epidemiological transition to low mortality, the historical decline in Western family size, the baby boom, third-world family planning, changing marriage patterns, women's labor force participation, migration theories, and global aging. (VII-B)

49 Special Topics: Structures (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INSTITUTIONS AND CULTURE

55 Mass Media and American Society (4). Examines the social implications of the fundamental changes in the organization and structure of American mass media since World War II, including the demise of big-city newspapers, the rise of broadcast television, and the fragmentation of radio and magazine markets. Explores the potential implications of emerging technologies—cable, telecast, and direct broadcast satellite (DBS)—on American culture and institutions.

56 Society and Religion (4). A critical and personal examination of the varieties of religious and spiritual experiences human beings are undergoing in contemporary society. The role of conscious understanding and unconscious conditioning regarding religion and spirituality.

59 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

AGE, GENDER, RACE, AND ETHNICITY

62 Marriage and Families (4). Sociological theories and research on marriage, kinship, intimacy, and divorce. Emphasis on comparing family patterns in different social classes, ethnic groups, and societies, and on relating family life to the economy and other social institutions. Topics include gender roles, child-rearing, historical change. (III)

63 Race and Ethnicity (4). Focuses on racial and ethnic relations in the United States and compares them with those found in other societies. Analyzes the conditions that favor either cooperation and integration or rivalry, tension, and conflict. Appraises strategies for reducing and resolving conflicts. (VII-A)

64A Social Psychology of Family and Close Relationships (4). Analysis of the social psychology of family life: close relationships, courtships, marriage and family interaction in American society; examination of processes of preparation for marriage, role differentiation, communication, conflict, integration and socialization within the family: the psychodynamics of family life.

65 Cultures in Collision: Indian-White Relations Since Columbus (4). An introductory survey of topics such as: indigenous religious belief and socio-political organization, stereotypic "images," intermarriage, the fur trade, Native leaders, warfare, and contemporary issues. Slides, films, and trips to local museums enhance student learning. Same as Anthropology 85A. (VII-A)

69 Special Topics: Age, Gender, Race, and Ethnicity (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIETIES AND SOCIAL INEQUALITY

74 Social Inequality (4). Theory, methods, and empirical findings of social stratification studies. Topics include whether inequality is inevitable, American social classes, public beliefs about fairness, payoffs to college education and successful parents, the feminization of poverty, the prestige of occupations.

75 Social Change (4). Comparison of various theories of social change from the classical formulations of Marx and Weber through contemporary functionalist, neo-evolutionary, political economy, and world system perspectives. Emphasis is macrosociological, focusing on processes of transformation affecting societies, nation-states, or the international system as a whole.

77 Social Change in East Asia (4). Introduction to comparative sociology focusing on social change in East Asia. Particular attention to macrostructural shifts in these societies such as economic development/underdevelopment, social inequality, political stability/instability, and rapid urbanization and population growth. (VII-B)

79 Special Topics: Societies and Social Inequality (4). Prerequisites vary. May be repeated for credit as topic varies.

UPPER-DIVISION

METHODS

110 Research Methods (4). Methods of data collection and analysis used by sociologists. Experimental methods, surveys and interviews, field research and participant observation, demographic methods, historical and comparative approaches. Social Ecology 10 and Sociology 110 may not both be taken for credit.

111 Community Research (4). Students formulate and carry out a study on intimate relationships and interpersonal networks. Focus on family, friendship, and community and how people create a supportive network of relations in modern society. Prerequisite: consent of instructor. Same as Women's Studies 183B.

112A Practicum in Sociology (4). Hands-on research course. Students work together to apply sociological skills to class projects. Application of sociological theories to practical tasks. Use of multiple data collection methodologies (e.g., surveys, interviews, observations). May be taken for credit twice as topics vary.

114A Exploring Society Through Photography (4). Students explore society through presentation, interpretation, and discussion of their own photographs. A few common exercises at the beginning of the quarter are followed by individual projects. Photography as social observation and the relation of photographs in an essay are stressed. Prerequisite: basic darkroom techniques. Same as Anthropology 176A and Social Science 182A.

115A Oral History Interviewing (4). Provides detailed instruction on the oral history method including developing oral history projects, selecting research subjects, constructing an interview schedule/guide, oral history interviewing, transcribing the tapes, analyzing and writing up the results. Prerequisite: consent of instructor.

118A Seminar in Research Applications (4). Student research groups work closely with instructor to develop and carry out research on selected sociological topic(s). Students apply the logic of sociological research to gain understanding of the social world. Prerequisite: consent of instructor.

119 Special Topics: Methods (4). Prerequisites vary. May be repeated for credit as topic varies.

THEORY

120 Sociological Theory (4). What a theory of society is and is not. Historical and contemporary models, perspectives, and schools.

122 Games as Models of Social Phenomena (4). Games as analogies of social, economic, and political situations. The interaction of contingency plans. Games (situations) with no winner and/or loser. Technical definition and discussion of conflict, threat, stability. Paradoxes involved in defining "rational decision." Prerequisite: one year of college-level mathematics. Same as Social Science 101F.

124 Sociology of Knowledge (4). How the social world helps to shape what we take for granted, what we notice, and what we believe. The creation, diffusion, and social influence of knowledge, thought forms, and symbols. The making and unmaking of ideologies. Truth and knowledge as social productions. How we give meaning to the world and to ourselves. Prerequisite: upper-division standing.

125 Introduction to Ethnomethodology (4). Examines the contemporary school of sociology known as ethnomethodology through both readings and field experiments. Focuses on how we routinely, unremarkably, massively accomplish ordinary everyday reality moment to moment through interaction. The works of Schutz, Garfinkel, Sacks, Schegloff, Heritage.

126 Critical Political Theory (4). Acquaints students with current political theories, critical of conventional thinking, which attempt to join political, economic, social, historical, linguistic, and philosophical concerns to questions involving the relationships between and among individuals, groups, and institutions in the society, economy, and polity. Prerequisite: upper-division standing. Same as Political Science 132A.

127 Nietzsche (4). The social, economic, and political philosophy of Nietzsche. Nietzsche's seminal ideas about knowledge and language and how these ideas have influenced contemporary thinking concerning these subjects. Same as Political Science 131D.

129 Special Topics: Theory (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL PSYCHOLOGY

135 Social Psychology of Networks (4). Review of network methods used in small group and organizational research. Discussion of social psychological literature relevant to the network of study of cognitive social structure, exchange and communication, identity negotiation, and social control. Case study of network datasets exemplifies research issues. Same as Psychology 178N. Formerly Sociology 162R.

139 Special Topics: Social Psychology (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL STRUCTURE

141 Organizations (4). How bureaucracies, formal organizations, and voluntary associations work, how and why they grow, and where they are going. History and structure of organizational rationality; dynamics of organized groups; behavior in organizations. The limits of bureaucratization and attempts to overcome these limits through decentralization. Same as Political Science 155C.

143 Social Networks and Social Support (4). Examines the manner in which behaviors and attitudes of individuals are affected by their network ties to others. How are peoples' opportunities and well-being increased or decreased by their social networks? What are the processes involved? Topics vary and may include studies in mental and physical health, job seeking, separation and loss, and aging.

144 Political Sociology (4). Includes an examination of the major theoretical approaches to political sociology, and the application of these ideas to the politics of advanced capitalist societies. Also considers stability and change in power structures.

145 Occupations and Professions (4). What makes some jobs satisfying and others boring? How does technology influence the workplace? What changes are coming in the U.S. job market? Sociology and psychology of occupations. Students interview workers and study aspects of their occupations. Prerequisite: upper-division standing.

146 States and Societies (4). Examines, over an extended historical period, the forces that drove the state into being, its nature and distinctive forms, and its variable and contingent relations with that other modern creation, "society."

147A Cities and Social Change (4). Focuses on comparative urban political economy and the way cities and urban process are linked to changes in the global system. Attempts to draw on a diverse interdisciplinary literature that includes sociology, geography, and urban planning. Prerequisite: upper-division standing and completion of lower-division writing requirement.

149 Special Topics: Structures (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INSTITUTIONS AND CULTURE

152 Sociology and Psychology of the Arts (4). Explores the relationship between artists and the "art world" through which artistic activity is defined, supported, and consumed. Empirical studies in the plastic arts, performing arts, and literature are used to examine varieties of aesthetic expressions. Prerequisite: upper-division standing; authorization required.

153 Sociology of Science (4). Empirical studies in scientific activity, the growth of scientific communities, communication in science, and cognitive organization in science are used to explore the relationships of science, the organization of scientific communities and society. Provides an overview of the literature in the field and the direction of new research.

154 Medical Sociology (4). Current problems in the United States health-care system and proposals for reform. Considers financial barriers to access, the problem of patient dumping, underinsurance affecting the middle class, prenatal and perinatal care, child services, preventative care and needs of the elderly, minorities, low-income people, and the undocumented. Prerequisite: upper-division standing.

155 Mass Communications (4). An examination of the origin, history, and functions of mass communications and its effect on social life.

156 Deviance (4). Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. Open to majors only. Same as Psychology 178D and Criminology, Law and Society J107.

157A Sociology of Education (4). Focuses on education as a social institution and as an agent of socialization. Education from cross-national perspectives, the formal organization of education, education and the family, education and social stratification, and education as a vehicle for examining and solving social problems.

159 Special Topics: Social Institutions and Culture (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIAL INEQUALITY MODULE

161 Sociology of Gender (4). Explores the complex processes contributing to the social construction of gender and sexuality in the U.S. with particular attention to the intersection of gender, race, ethnicity, sexuality, and class; and evaluates how men and women are differentially constituted in the family, education, work, politics, media, and language. Same as Women's Studies 183C. (VII-A)

164 Sociology of Age (4). Introduction to sociology of age, aging, and the aged. Problems posed by aging population. Life course transitions. How social organizations influence the life course. Work, health, family in later life. Prerequisite: upper-division standing.

165A Social Inequality: Anthropological Perspectives (4). Concrete anthropological and sociological studies from across the world, including the United States, are compared to give perspectives on social status, power, economic differences, race, ethnicity, and gender. Prerequisite: one course in Anthropology, Economics, Political Science, or Sociology. Same as Anthropology 121H. (VII-B)

166A Sociology of Childhood (4). The child's place in society historically, cross-nationally, and in the contemporary United States. Childhood socialization, social class, and ethnic variation are addressed, as well as social problems and recommendations for social policy regarding children.

168 Sexism and Power (4). Sexism may be seen as a particular form of socially constructed power which creates and maintains gender differences as relations and practices of structured inequalities. Males and females are objects constructed in a powered language dominated and controlled by males to their positional and distributional advantage. Prerequisite: upper-division standing. Same as Political Science 134J.

169 Special Topics: Age, Gender, Race, and Ethnicity (4). Prerequisites vary. May be repeated for credit as topic varies.

SOCIETIES AND SOCIAL INEQUALITY

172E Basic Societal Issues (4). For students who have serious concern about peace, economic justice, the environment, or the future of human society generally. Attempts to provide an understanding of the fundamental issues underlying such social problems; fundamental alternatives available for attempting to cope with them. Same as Political Science 132E. Students may not receive credit for both Sociology 72/Political Science 32A and Sociology 172E/Political Science 132F.

172F American Society (4). Seminar examines recent trends in U.S. institutions such as family, community, labor, economy, media, schools, religion, criminal justice, medicine, politics, popular culture. Special attention to race, immigration, childhood, aging. Cross-national comparisons.

173 Social Stratification (4). Sources, functions, and dynamics of the unequal distribution of wealth, prestige, knowledge, and power in American and other societies.

174 Social Movements and Collective Behavior (4). A survey of models of collective action drawn from sociology, economics, psychology, and political science. Focus on areas such as social movements, strikes, crowd psychology, cults, fads, fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Economics 1, Political Science 6A, or Sociology 1. Same as Political Science 156D.

175A Korean Society and Culture (4). Introductory background to the social and cultural forces that affect the lives of the Koreans, including those in the United States. Considers traditional values and contemporary issues within a historical framework. Same as Anthropology 163K and East Asian Languages and Literatures 130. (VII-B)

175B Comparative Societies: China (4). Chinese society from 1949 to present. Social change in the context of political control and ideological considerations. Focus on the power structure, political decision processes, and ideological legitimation, and interplay with the Chinese community and culture. (VII-B)

175C Japanese Society (4). Cultural, social, and psychological features of Japanese society. Early feudalism in Japan to deviance in modern-day Japan. Comparisons made with the United States with main focus on Japan and its complexities.

176 Social Policy (4). Comparison of theoretical perspectives on the role of the state in contemporary society and an examination of the gender, racial-ethnic, and class dimensions of social policy. Particular focus on social welfare, labor, health policies, and policies on sexual violence.

177A East-Central European Societies (4). An introductory "area studies" course which examines some of the basic concepts that help us understand the workings of state socialism and the transition from state socialism in the societies of East-Central Europe. Lectures and class discussion. Readings from multiple disciplines. (VII-B)

177B The Other Europe (4). Highlights the rich and complex experience of East-Central European societies by analyzing some great films (shown in class) and novels. Students' creative participation is strongly encouraged. Weekly writing assignments. Prerequisites: satisfactory completion of the lower-division writing requirement; upper-division standing. Open only to majors in the School of Social Sciences.

178 Sociology of Peace and War (4). Describes various commonly accepted but often erroneous notions of the causes and consequences of war and deterrence. Major theories concerning the sources of war in international and intranational social systems. The modes, techniques, and outcomes of efforts to restrict, regulate, and resolve international conflicts. Same as Women's Studies 183A.

179 Special Topics: Societies and Social Inequality (4). Prerequisites vary. May be repeated for credit as topic varies.

RESEARCH AND HONORS

NOTE: Students are reminded that each quarter of a sequential course (i.e., Sociology 180A-B, H188A-B) must be taken in order.

180A-B Sociology Majors Seminar (4-4). Students learn sociology by doing it. A modest-sized research project is planned and implemented by each student. Prerequisite: Sociology major or consent of instructor.

182 Sociology Issues Seminar (2). Drawing on experts from campus and community, explores various sociological questions, findings, approaches through lectures and discussion. Students select seminar topics, prepare opening remarks, lead discussion with faculty member, guest lecturer. May be taken for credit four times as topics vary.

H188A-B Honors Research and Thesis (4-4). Focuses on the design and implementation of individual research projects undertaken by senior Sociology majors. Writing projects consist of a proposal and paper on some empirical research. Prerequisites: consent of instructor and honors status.

189 Special Topics: Honors Sequence (4). Prerequisites vary. May be repeated for credit as topic varies.

197 Field Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

198 Directed Group Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

199 Independent Study (4). Prerequisite: consent of instructor. May be repeated for credit as topic varies.

GRADUATE

202A Proseminar I in Sociology and Social Relations (2 to 4). Introduces first-year graduate students in Sociology and Social Relations to the current research interests of Sociology faculty, as well as to other aspects of graduate life at UCI and to the profession of sociology more generally. Prerequisites: graduate standing, consent of instructor.

202B Proseminar II in Sociology and Social Relations (4). Focus is on second-year research projects, design, development, data gathering, analysis, and preparing both oral and written presentations of the results. Students learn new analytic and writing skills, gain experience with the research process, and become socialized about professional standards, customs, and institutions. Prerequisites: graduate standing, consent of instructor.

210A Classical Social Theory (4). Examines the development of classical sociological theory through the writings of Karl Marx, Emile Durkheim, Max Weber, Georg Simmel, and George Herbert Mead. Prerequisites: graduate standing; consent of instructor. Same as Social Science 253N.

210B Contemporary Social Theory (4). Familiarizes students with twentieth-century developments in social thought that have influenced sociological research, suggesting “what is living and what is dead” in the “classics” and offering an overview of the main outlines of recent sociological theorizing. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253R.

211A Feminist Theorizing in Social Sciences (4). Analyzes current theoretical debates in feminist research, primarily in the social sciences. What is a useful definition of feminism? How can we integrate gender, class, and race? Do we need special research methods to explore feminist questions? Prerequisites: graduate standing, consent of instructor. Same as Social Science 253B.

219 Special Topics: Theory (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

220A Research Design (4). Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant-observation, behavior observation, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisites: graduate standing, consent of instructor. Same as Anthropology 223A and Social Science 255A.

221A-B Graduate Statistics I, II (4-4). Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor. Same as Social Science 255M-N and Anthropology 210A-B.

222A Comparative and Historical Methods (4). Topics include the logic of comparative and historical analysis techniques and the examination of exemplar works in representative problem areas. Prerequisites: graduate standing, consent of instructor. Same as Social Science 256M.

223A Activist and Applied Research Methods (4). Surveys ways of linking academic social science research with social change. Feminist, activist, participatory, applied, and mass-media-oriented research projects are analyzed and evaluated in terms of scientific standards and effectiveness in bringing about social change. Prerequisites: graduate standing, consent of instructor. Same as Social Science 255D.

223B Contemporary Ethnography (4). Designed to explore the theoretical underpinnings, methodological dilemmas, contemporary debates in ethnographic investigation. The goal is to provide a broad introduction to the theory and practice of ethnography and gain ethnographic research design and analysis of field data. Prerequisites: graduate standing, consent of instructor. Same as Social Science 255E.

224A Participatory and Feminist Research (4). Methods of participatory research developed by feminists, Paulo Freire, and others. Non-hierarchical, focused on everyday experience, and action-oriented. Students do preliminary projects with community members; may focus on family and gender, racism and ethnicity, oppression in the workplace, or others. Prerequisites: graduate standing, consent of instructor. Same as Social Science 256K.

225A Analysis of Relational Data (4). A practicum in social networks data analysis focusing on the special problems raised by data sets that embody relations. Log-linear and quadratic assignment procedures are stressed along with multidimensional scaling and other representational models. Prerequisites: graduate standing, consent of instructor. Same as Anthropology 222A and Social Science 201G, 241C, and 256A.

228A-B-C Dissertation Seminar (4-4-4) F, W, S. Research design, problem conceptualization, and advanced data analysis in the area of social relations. Emphasis on methods of analysis in ethnography, cross-cultural research, and quasi-experimental research. Prerequisites: graduate standing, consent of instructor. Same as Social Science 250X-Y-Z.

229 Special Topics: Methods (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

230A Race and Ethnicity (4). An examination of central questions and issues in the field of race and ethnicity through a critical analysis and discussion of the principal theoretical perspectives and paradigms that have framed much of the scholarship in the area. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253V.

232A Gender, Family, and Community (4). Analyzes theory and research on family and community relations from the perspective of gender. Feminist theories of family power relations, caring in family and community settings, women and men as caregivers in the family and workplace, grass-roots organizing for family and community issues. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253H.

239 Special Topics: Social Inequality (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

240A Social Movements (4). A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253J.

241A Political Sociology (4). Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253I.

242A Gender, Politics, and the State (4). Explores complex historical, cultural, and social processes by which the state and politics are gendered. Topics include: feminist and post-colonialist theories of the state; development of the welfare state; and the diversity of women's political activism. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253P.

249 Special Topics: Political Sociology and Social Movements (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

250A Development and Social Change (4). Examines both classical and contemporary macrosociological theories of modernization and development. Competing perspectives are discussed and evaluated in light of their ability to explain concrete problems of underdevelopment such as economic stagnation, social inequality, political instability, and overpopulation. Prerequisites: graduate standing, consent of instructor. Same as Social Science 254B.

252A Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this process? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Social Science 254J and Urban and Regional Planning U273.

259 Special Topics: Global Studies and Comparative Development (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

260A Family and Households (4). Families and households as a fundamental unit of social organization. Concepts and controversies. U.S. demographic trends and global changes in marriage, divorce, fertility, living arrangements. Housework and paid work. Gender and generational inequalities. How families reproduce stratification systems. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253S.

261A Age, Generations, and the Life Course (4). Age is a central organizing principle of individual lives, social institutions, and human populations. Considers how age is socially defined and how developmental transitions between ages (i.e., growing up and growing older) are accomplished. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253E.

262A Populations (4). Global history of population growth; how social, economic, political factors affect population processes of fertility, mortality, migration; the epidemiological transition; fertility declines in more and less developed nations; implications of demographic developments for women, children, and/or aged. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253F.

263A Sex Research Practicum (4). Human sexual behavior as social behavior to be studied empirically. Focuses on sexual attitudes and behavior, with particular reference to topics such as early sexual experiences, gender, sexual disease transmission, social movements. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253T.

269 Special Topics: Social Demography (2 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

272A Work and Industrial Relations (4). Explores the nature, causes, and results of workplace conflict in American Society. Considers topics such as "American Exceptionalism," sex segregation in the workplace, strikes and the role of unions in American society. Prerequisites: graduate standing, consent of instructor. Same as Social Science 253U.

273A Social Structures (4). Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Reading includes Marx, Weber, Dahrendorf, Sahlins, and Lenski. Prerequisite: graduate standing or consent of instructor. Same as Social Science 253O.

279 Special Topics: Social Organizations and Institutions (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

289 Special Topics (2 to 4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit as topics vary.

299 Independent Study (4). Prerequisites: graduate standing, consent of instructor. May be repeated for credit.

GRADUATE CONCENTRATION IN MATHEMATICAL BEHAVIORAL SCIENCES

In addition to the departmental graduate programs, the School also offers a graduate program leading to the Ph.D. in Social Science with a concentration in Mathematical Behavioral Sciences.

Participating Faculty

Dennis J. Aigner: Applied econometrics, statistics, operations research
William Batchelder: Mathematical models, measurement, and cognitive processes

Bruce Bennett: Algebraic geometry, theory of perception

John P. Boyd: Mathematical anthropology and systems theory

Myron Braunstein: Visual perception and computer applications

David Brownstone: Econometrics and industrial organization

Michael Burton: Economic anthropology; gender, family, and households; cognitive anthropology; Africa, Oceania

Soo Hong Chew: Economics of information and uncertainty, preference theory

Charles F. Chubb: Visual perception, psychophysics

Carol Cicerone: Visual perception and the physiological bases of visual perception, with emphasis on human color vision and retinal mechanisms of sensitivity regulation

Linda Cohen: Political economy, social choice, government regulation and government policy toward research and development

Rui J. P. de Figueiredo: Mathematical foundations of neural networks, contextual feedback models for automated image understanding

Arthur S. DeVany: Theory of markets, transportation, labor economics, industrial organizations

John E. DiNardo: Labor economics, development economics, applied economics

Barbara Doshier: Memory, information processing, perception

Michael D'Zmura: Vision research

Jean-Claude Falmagne: Mathematical psychology

Linton C. Freeman: Network models of social structure

Michelle Garfinkel: Macroeconomic and monetary theory

Amihai Glazer: Public choice, especially concerning commitment problems

Bernard N. Grofman: Mathematical models of collective decision making, formal democratic theory, sequential decision making, politics of small groups

Donald Hoffman: Artificial intelligence approaches to human and machine vision, recovery of three-dimensional structure from image motion, visual recognition of objects by their shape

Tarow Indow: Mathematical models in visual space, color space, and human memory

Geoffrey Iverson: Cognitive science and mathematical models

L. Robin Keller: Decision analysis, risk analysis, problem structuring, management science

Jaewoo Lee: Process and exchange rates, investment, economic fluctuations

David M. Lilien: Macroeconomics, labor economics and applied econometrics

R. Duncan Luce: Mathematical behavioral science

Louis Narens: Measurement, logic, and metacognition

Robert Newcomb: Statistical and research methods for the social sciences

A. Kimball Romney: Experimental and psychological anthropology

Stergios Skaperdas: Economic theory, political economy

Brian Skyrms: Philosophy of science, metaphysics

Kenneth A. Small: Urban economics, transportation economics, discrete-choice econometrics, energy

George Sperling: Vision, perception, information processing

Carole J. Uhlaner: Comparative political participation, formal models of political behavior

Christian Werner: Mathematical geography

Douglas White: Social networks, longitudinal social demography

Charles E. Wright: Skill acquisition and generalization, human motor behavior, visual attention

John I. Yellott: Mathematical psychology and vision perception

The concentration in Mathematical Behavioral Sciences offers a program of interdisciplinary and mathematical approaches to the study of human behavior, providing high levels of training in current mathematical modeling and in mathematics and software use and programming. The program is administered by an interdisciplinary group of faculty. Within the concentration, an emphasis in Social Networks is available; specific requirements are detailed below.

ADMISSION

Admission to the concentration in Mathematical Behavioral Sciences requires evidence of appreciable mathematical skill and knowledge. As an absolute minimum, a candidate should have taken one full year of calculus, including calculus of several variables, and one course in linear algebra, and should also provide evidence of additional mathematical depth. This depth can be manifested in a number of different ways including, but not restricted to, an undergraduate degree in mathematics or physical science, a high score on the mathematics portion of the GRE, or a strong undergraduate minor in mathematics. In addition, students should have some exposure to a behavioral science field. Especially useful is some experience with behavioral science modeling.

Those students interested in the emphasis in Social Networks should make this clear in their application. A student is free at any time after admission to move into or out of the emphasis in Social Networks, but will be subject to the requirements in effect at the time of original admission to the concentration in Mathematical Behavioral Sciences.

REQUIREMENTS

Four major classes of requirements must be fulfilled. Since a number of options are available, the student will, in consultation with an advisor, develop a plan of study.

Quantitative/Mathematical. To be completed by the end of the third year: (1) one course each in analysis beyond calculus (or discrete mathematics for the Social Networks emphasis), abstract algebra beyond linear algebra (or graph theory for the Social Networks emphasis), and logic; and (2) two quarters of mathematical statistics, with calculus as a prerequisite and covering the fundamentals of probability and random variables.

Language/Computer. All students must be sufficiently familiar with various computer programs and languages to be able to conduct serious research in their field of interest and must submit either proposed courses or some demonstration of competency as part of their plan of study. In addition, students must either (1) attain proficiency in reading social science technical publications in one foreign language with a substantial relevant technical literature or (2) demonstrate proficiency in computer programming considerably beyond that of the standard computer requirement. Because of the continually changing nature of computer languages and software, the conditions for fulfilling this additional computer expertise requirement is left to the judgment of the faculty subcommittee on computers of the Ph.D. program.

Substantive Minor. Students are expected to develop considerable expertise in some substantive field and in the application of models to it. This requires the completion of three courses at the upper-division or graduate level that do not necessarily entail extensive modeling, and three courses or seminars in which the primary thrust is mathematical modeling.

Research Papers and Colloquia. At the end of the second year, a 10–20-page paper reporting original research or a penetrating analysis of some subtopic of mathematical behavioral science (or social networks with a formal or mathematical component) is expected. An oral presentation will be given to faculty and graduate students. Two faculty members are assigned to read and evaluate the paper and talk.

Students are required to take for credit four quarters of the Mathematical Behavioral Sciences Colloquium, Social Science 211A-B-C, during their first three years. (Although not a formal requirement, students are expected to attend the Colloquium on a regular basis whenever in residence.) Students in the Social Networks emphasis are required to attend about 75 percent of these colloquia, including all that are designated as Social Networks colloquia. Social Networks students also must attend occasional colloquia, usually of local faculty and graduate students, which are separate from the general Mathematical Behavioral Sciences Colloquia.

Master of Arts Degree

The M.A. degree is awarded to UCI Ph.D. students who complete necessary requirements or to students currently enrolled in a Ph.D. program (or equivalent) at another institution who are directly admitted for graduate study leading only to the master's degree at UCI. Such applicants must provide evidence that their Ph.D. program agrees to this one-year arrangement. Requirements include the submission of a petition to the Graduate Committee along with a proposed plan of study consisting of 36 units of relevant Mathematical Behavioral Science courses, normally including the core requirement in mathematical statistics.

Graduate Courses in Social Science

SOCIAL SCIENCES

201A Descriptive Multivariate Statistics I (4). Mathematical tools to organize and illuminate the multivariate methods. Multiple regression analysis, multi-dimensional scaling, and cluster analysis. Statistical computing via MDS(x), DMDP, and SPSS. Students must enroll in the laboratory section which meets on Wednesdays. Prerequisite: Social Science 100A-B-C or equivalent. Satisfactory/Unsatisfactory grading only. Same as Information and Computer Science 238A, Social Ecology 290A, and Management 290X.

201B Descriptive Multivariate Statistics II (4). Presentation of the principal methods of multivariate statistics including criteria for appropriate use and the interpretation of resulting measurements. Computer exercises are used to demonstrate concepts. Prerequisite: Social Science 201A. Same as Information and Computer Science 238B, Social Ecology 290B, and Management 290Y.

201C Sampling Techniques and Estimation Methods (4). A review of confidence interval estimates derived from simple random samples is followed by a representation of techniques for improving the precision of such estimates under the constraints of feasibility, cost, and time. Methods for dealing with bias and nonsampling errors are also considered. Outside speakers. Prerequisites: Social Science 100A-B-C or equivalent. Same as Social Ecology 290C and Management 290Z. Satisfactory/Unsatisfactory only.

201D Introduction to Biostatistics (2). An introduction to the principles and methods of biostatistics with application to the health sciences. Statistical concepts, terminology, and techniques employed in health science research to analyze data and report such analysis. Articles from health science research literature are used for illustration. Prerequisite: graduate standing or consent of instructor.

201G Analysis of Relational Data (4). A practicum in social networks data analysis focusing on the special problems raised by data sets that embody relations. Log-linear and quadratic assignment procedures are stressed along with multidimensional scaling and other representational models. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 222A, Social Science 241C and 256A, and Sociology 225A.

202A Graph Theory with Applications (4). Introduction to graph theory. A graph is a collection of "vertices," some pairs of which are joined by "edges." Discusses both theoretical results and applications. Graphs have many applications in social and natural sciences. Prerequisite: consent of instructor. Same as Social Science 242F.

204D-E Von Neumann Games I, II (4-4). A substantive introduction to the mathematical theory of finite N-person von Neumann games. Games in extensive form, normal form, and characteristic form. Emphasis on developing various types of solution concepts for each of the three forms of games. Prerequisite: graduate standing or consent of instructor.

208A-B Workshop on Dissertation Writing I, II (2-2). **208A:** Introduction to library-based social science research in the electronic age. Overview of research library collections, book trade, and information dissemination.

208B: Data-based social science research introduction. Covers data collection, data preparation, and data sharing. Prerequisite: graduate standing or consent of instructor.

209A-Z Special Topics in Mathematical Social Science (4). Current research in Mathematical Social Science. Topics vary.

211A-B-C Mathematical Behavioral Sciences Colloquium (2-2-2). Weekly reports and colloquia by faculty, students, and visitors. Satisfactory/Unsatisfactory only. May be repeated for credit.

221 Latino National Identity and Global Reach (4). Focuses on national identity and cultural hegemony expressed through popular music as it has developed historically in Spanish-speaking countries of the Caribbean and in transnational Latino communities in urban centers in the United States.

239A, B, C Special Topics: Comparative Culture (4, 4, 4). Current research in comparative culture. Topics vary from quarter. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 239A-Z.

SOCIAL NETWORKS

240A-B-C Colloquium in Social Networks (1.3-1.3-1.4) F, W, S. A seminar drawing on visiting scholars and local faculty designed to keep students abreast of current developments in Social Networks research. Satisfactory/Unsatisfactory only. Prerequisite: graduate standing or consent of instructor.

241A Interaction Models (4). Human groups can be considered as finite systems of individuals, some of whom interact in pairs. These pairs are used to model such phenomena as clique formation. Prerequisite: graduate standing or consent of instructor.

241B Network Theories of Social Structure (4). Explores communicative, social, political, economic, and other flows of behavior using foundational network concepts and measures such as centrality, group, role, pattern, and system. Defines social structure, processes that generate structures, and behavioral consequences of structural rather than individual dispositional properties. Prerequisite: graduate standing or consent of instructor.

241C Analysis of Relational Data (4). A practicum in social networks data analysis focusing on the special problems raised by data sets that embody relations. Log-linear and quadratic assignment procedures are stressed along with multidimensional scaling and other representational models. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 222A, Social Science 201G and 256A, and Sociology 225A.

242A Mathematical Tools for Network Analysis (4). A broad introduction to selected topics in algebra and discrete combinatorics with special emphasis on semigroups and graph theory. Acquaints students with the mathematical tools used in social networks analysis. Prerequisite: graduate standing or consent of instructor.

242B Algebraic Theories in the Social Sciences (4). Various applications of abstract algebra to the social sciences. Examples drawn from pattern recognition (group theory), formal languages and social relations (semigroups and lattices), and the problems of inducing structure from data. Requires some mathematical maturity, but no specific knowledge. Prerequisites: Mathematics 2A-B-C or equivalent; graduate standing or consent of instructor.

242F Graph Theory with Applications (4). Introduction to graph theory. A graph is a collection of "vertices," some pairs of which are joined by "edges." Discusses both theoretical results and applications. Graphs have many applications in social and natural science. Prerequisite: consent of instructor. Same as Social Science 202A.

249A Special Topics in Social Networks (4) F, W, S. Current research in Social Networks. Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

SOCIOLOGY AND SOCIAL RELATIONS

PROSEMINARS AND COLLOQUIA

250A Proseminar in Social Relations I (4) F. Introduces first-year graduate students to current research of Social Relations faculty and related issues. Required for first-year graduate students in Social Relations. Prerequisite: graduate standing or consent of instructor.

250B Proseminar in Social Relations II (4) S. Concentrates on project definition, literature review, and proposal writing for student projects. Required for first-year graduate students in Social Relations. Prerequisites: Social Science 250A; graduate standing or consent of instructor.

250C Proseminar in Social Relations III (4) F. Concentrates on field research, data gathering, and analysis for student projects. Research ethics and human subjects procedures are also covered. Required for second-year Social Relations graduate students. Prerequisites: Social Science 250B; graduate standing.

250D Proseminar in Social Relations IV (4) W. Data analysis and report preparation for student projects. Required for second-year Social Relations graduate students. Prerequisites: Social Science 250C; graduate standing.

250R-S-T Current Research in Social Relations (1.3-1.3-1.4) F, W, S. Research seminar in which a number of Social Relations faculty members present and discuss their current research. Prerequisite: graduate standing or consent of instructor.

250X-Y-Z Social Relations Dissertation Seminar I, II, III (4-4-4) F, W, S. Research design, problem conceptualization, and advanced data analysis in the area of social relations. Emphasis on methods of analysis in ethnography, cross-cultural research, and quasi-experimental research. Prerequisites: graduate standing, consent of instructor. Same as Sociology 228A-B-C.

COGNITIVE ANTHROPOLOGY AND THE STUDY OF CULTURE

251A Anthropology and History (4). An examination of the complex, long-standing relationship between anthropology and history. Themes include: history, culture, and colonialism; history and the power to represent; nostalgia and the uses of the past in struggles over "national history." Prerequisite: graduate standing or consent of instructor. Same as Anthropology 230A.

252D Cognitive Anthropology (4). Cognitive Anthropology studies how people classify, reason, and make decisions in a cultural context. Explores how cultural knowledge is organized, how members of society come to collective understandings of the world, and what variation reveals about how individuals learn. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 231A.

252F Cultural Studies and Ethnography (4). Examines, from the standpoint of anthropology, areas of recent innovation in "cultural studies," including studies of popular culture, media, consumption, and subcultures. Selected theoretical approaches in these areas are brought into a dialogue with anthropological and ethnographic approaches and methods. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 243A.

252G Structuralism and Post-Structuralism (4). Traces recent theoretical discussions and arguments over the philosophical and historical "subject" from structuralist decenterings toward the characteristically "post-structuralist" contemporary concern with the historical and political constitution of subjectivities and subject positions. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 247A.

CULTURE AND HEALTH PRACTICES

252O Health and Social Relations (4). Comparative approach to health, illness, and curing from a social science perspective. Readings report on health issues in different societies which range from contemporary United States to modern tribespeople from lowland Venezuela. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 232A.

FAMILY AND GENDER

253A Family and Life History (4). Interdisciplinary and comparative work in family and life history. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 221A.

253B Feminist Theorizing in Social Sciences (4). Analyzes current theoretical debates in feminist research, primarily in the social sciences. What is a useful definition of feminism? How can we integrate gender, class, and race? Do we need special research methods to explore feminist questions? Prerequisites: graduate standing, consent of instructor. Same as Sociology 211A.

253E Age, Generations, and the Life Course (4). Age is a central organizing principle of individual lives, social institutions, and human populations. Considers how age is socially defined and how developmental transitions between ages (i.e., growing up and growing older) are accomplished. Prerequisites: graduate standing, consent of instructor. Same as Sociology 261A.

253F Populations (4). Global history of population growth; how social, economic, political factors affect population processes of fertility, mortality, migration; the epidemiological transition; fertility declines in more and less developed nations; implications of demographic developments for women, children, and/or aged. Prerequisites: graduate standing, consent of instructor. Same as Sociology 262A.

253G Women and Development (4). Explores questions about the dynamics of gender in processes of economic change, and the related problem of the production of knowledge about "women" and "development," with particular attention to Third World feminist critiques. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 241A.

SOCIAL STRUCTURE, SOCIAL ORGANIZATIONS, AND SOCIAL NETWORKS

253H Gender, Family, and Community (4). Analyzes theory and research on family and community relations from the perspective of gender. Feminist theories of family power relations, caring in family and community settings, women and men as caregivers in the family and workplace, grass-roots organizing for family and community issues. Prerequisites: graduate standing, consent of instructor. Same as Sociology 232A.

253I Political Sociology (4). Begins with an examination of the three major orientations to the State (Pluralist, Elitist, and Class). Next considers current topics in political sociology including the Welfare State, the New Deal, political behavior, social movements, participation, and democracy. Prerequisites: graduate standing, consent of instructor. Same as Sociology 241A.

253J Social Movements (4). A survey of the field of Social Movements, oriented around critical themes in the major theoretical traditions and contemporary exemplars. Prerequisites: graduate standing, consent of instructor. Same as Sociology 240A.

253N Classical Social Theory (4). Examines the development of classical sociological theory through the writings of Karl Marx, Emile Durkheim, Max Weber, Georg Simmel, and George Herbert Mead. Prerequisites: graduate standing; consent of instructor. Same as Sociology 210A.

253O Social Structures (4). Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Reading include Marx, Weber, Dahrendorf, Sahlinns, and Lenski. Prerequisites: graduate standing, consent of instructor. Same as Sociology 273A.

253P Gender, Politics, and the State (4). Explores complex historical, cultural, and social processes by which the state and politics are gendered. Topics include: feminist and post-colonialist theories of the state; development of the welfare state; and the diversity of women's political activism. Prerequisites: graduate standing, consent of instructor. Same as Sociology 242A.

253Q Nations, States, and Gender (4). Explores the ways in which nations, nationalism, states, and citizenship are gendered relations and processes. Questions include: How do women construct themselves as political subjects, and how are constructions of citizenship and discourses of rights gendered? Prerequisite: graduate standing or consent of instructor. Same as Anthropology 246C.

253R Contemporary Social Theory (4). Familiarizes students with twentieth-century developments in social thought that have influenced sociological research, suggesting "what is living and what is dead" in the "classics" and offering an overview of the main outlines of recent sociological theorizing. Prerequisites: graduate standing, consent of instructor. Same as Sociology 210B.

253S Family and Households (4). Families and households as a fundamental unit of social organization. Concepts and controversies. U.S. demographic trends and global changes in marriage, divorce, fertility, living arrangements. Housework and paid work. Gender and generational inequalities. How families reproduce stratification systems. Prerequisites: graduate standing, consent of instructor. Same as Sociology 260A.

253T Sex Research Practicum (4). Human sexual behavior as social behavior to be studied empirically. Focuses on sexual attitudes and behavior, with particular reference to topics such as early sexual experiences, gender, sexual disease transmission, social movements. Prerequisites: graduate standing, consent of instructor. Same as Sociology 263A.

253U Work and Industrial Relations (4). Explores the nature, causes, and results of workplace conflict in American society. Considers topics such as "American Exceptionalism," sex segregation in the workplace, strikes and the role of unions in American society. Prerequisites: graduate standing, consent of instructor. Same as Sociology 272A.

253V Race and Ethnicity (4). An examination of central questions and issues in the field of race and ethnicity through a critical analysis and discussion of the principal theoretical perspectives and paradigms that have framed much of the scholarship in the area. Prerequisites: graduate standing, consent of instructor. Same as Sociology 230A.

THIRD WORLD DEVELOPMENT AND SOCIAL CHANGE

254A Urban Anthropology and International Migration (4). Interdisciplinary, but favors anthropological perspectives to examine the nature of urban society, theoretical explanations for international migration, economic vs. political migration, the female experience in migration, and the social integration and cultural adaptation of migrants in receiving communities. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 235A.

254B Development and Social Change (4). Examines both classical and contemporary macrosociological theories of modernization and development. Competing perspectives are discussed and evaluated in light of their ability to explain concrete problems of underdevelopment such as economic stagnation, social inequality, political instability, and overpopulation. Prerequisites: graduate standing, consent of instructor. Same as Sociology 250A.

254C Anthropology of Power Relations (4). Examines contemporary anthropological research on power relations in societies and cultures experiencing change as a result of increasing incorporation into a world capitalist system. Topics include: ethnicity, gender, migration, hegemony, and resistance. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 237A.

254D Social Inequality: Anthropological Perspectives (4). Comparative social inequality over the range of issues to which anthropologists have contributed. Topics include: egalitarian societies, local effects of international political economy, ethnicity, gender, caste, and inequality in peasant and urban industrial populations. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 238A.

254E Economic Anthropology (4). Classic and contemporary theory in economic anthropology. Case studies from Latin America (primarily Mexico and the Andes), Africa, and the Pacific. Substantive topics include non-market exchange, markets and marketplaces, households, gender, management of common property (fisheries, pastoral lands, forests), labor, development, and change. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 240A.

254F The Politics of Ethnography (4). Explores the way that ethnographies are linked to wider contexts within which they are produced. Through examination of recent critiques of ethnographic writing, and a series of cases, shows how ethnography is bound up with the politics of representation. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 242A.

254G The Anthropology of Commodities (4). Explores anthropological perspectives on commodities and commodity exchange. Begins with anthropological accounts of exchange in precapitalist societies, and moves on to explore: commodification and capitalism; consumer society and the semiotics of consumption; and the implications of contemporary transnational commodity flows. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 244A.

254H Seminar in Political Anthropology (4). Explores anthropological approaches to politics. Covers a range of issues and topics including: theories of culture, power, and hegemony; approaches to colonial and post-colonial relations of global inequality; and ethnographic approaches to the modern state. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 245A.

254I Studies in the National Order of Things (4). Examines how "the nation" has come to appear as an inevitable unit of the contemporary political and cultural order and how it shapes orders of knowledge. Themes: nation and gender; nationalism and colonialism; culture and citizenship; violence and racism. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 246A.

254J Global Urbanization (4). Examines the spread of cities worldwide in the twentieth century. What are the political and economic causes of this process? What are the social-cultural, political, economic effects? How is contemporary urbanization linked to global restructuring of other kinds? Prerequisites: graduate standing, consent of instructor. Same as Sociology 252 and Urban and Regional Planning U273.

254K Gender and Globalization (4). Teases out gender implications of transformations in global culture and political economy. By examining processes such as globalization of production and investment, spread of religious fundamentalisms, and extension of mass media throughout the world, maps out terrain for future ethnographic and theoretical work. Same as Anthropology 234B.

254L Approaches to Globalization (4). Historical and contemporary approaches to the world economy, emphasizing anthropological questions of culture, power, identity, inequality. Examines "neo-imperialism," "late capitalism," accumulation, global markets, urban space, the state, business and policy globalization discourse, "local" responses to and instantiations of the "global." Prerequisite: graduate standing or consent of instructor. Same as Anthropology 248A.

254M Law, Colonialism, and Nationalism (4). Origins and spread of law in colonial and nationalist contexts: law's role in constituting and policing difference. Recent theoretical approaches; property in things and people; human and indigenous rights; "customary" law; legal foundations of nationalism; resistance to/through law; globalization. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 246B.

254N Citizenship, Democracy, and Violence (4). Building on the discussion of works which formulate broader hypotheses about the relationship of culture and the control of violence, explores the dynamics of violence under democratic regimes in case studies either in Europe or in the Americas. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 248B.

METHODS AND STATISTICS

255A Research Design (4). Data collection, organization, and analysis in ethnographic or quasi-experimental settings, including interviewing, participant-observation, behavior observation, and questionnaires. Research design issues include sampling, longitudinal research, and comparative research. Emphasis on the integration of qualitative and quantitative data. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 223A and Sociology 220A.

255D Activist and Applied Research Methods (4). Surveys ways of linking academic social science research with social change. Feminist, activist, participatory, applied, and mass-media-oriented research projects are analyzed and evaluated in terms of scientific standards and effectiveness in bringing about social change. Prerequisites: graduate standing, consent of instructor. Same as Sociology 223A.

255E Contemporary Ethnography (4). Designed to explore the theoretical underpinnings, methodological dilemmas, and contemporary debates in ethnographic investigation. The goal is to provide a broad introduction to the theory and practice of ethnography and gain ethnographic research design and analysis of field data. Prerequisites: graduate standing, consent of instructor. Same as Sociology 223B.

255M-N Graduate Statistics I, II (4-4). Statistics with emphasis on applications in sociology and anthropology. Examines exploratory uses of statistical tools in these fields as well as univariate, bivariate, and multivariate applications in the context of the general linear model. Prerequisites: graduate standing, consent of instructor. Same as Sociology 221A-B and Anthropology 210A-B.

OTHER METHODOLOGY AND STATISTICS

256A Analysis of Relational Data (4). A practicum in social networks data analysis focusing on the special problems raised by data sets that embody relations. Log-linear and quadratic assignment procedures are stressed along with multidimensional scaling and other representational models. Prerequisites: graduate standing; consent of instructor. Same as Anthropology 222A, Social Science 201G and 241C, and Sociology 225A.

256K Participatory and Feminist Research (4). Methods of participatory research developed by feminists, Paulo Freire, and others. Non-hierarchical, focused on everyday experience, and action-oriented. Students do preliminary projects with community members; may focus on family and gender, racism and ethnicity, oppression in the workplace, or others. Prerequisites: graduate standing, consent of instructor. Same as Sociology 224A.

256L Analysis of Quantitative Field Data (4). The uses of quantitative data by field anthropologists and sociologists, including found data (e.g., government censuses and archives), and data from interviews, field censuses, surveys, and systematic elicitation. Hands-on work with existing data. Very elementary statistics and basic computer literacy assumed. Prerequisite: graduate standing or consent of instructor. Same as Anthropology 220A.

256M Comparative and Historical Sociological Methods (4). Topics include the logic of comparative and historical analysis techniques and the examination of exemplar works in representative problem areas. Prerequisites: graduate standing, consent of instructor. Same as Sociology 222A.

SPECIAL TOPICS IN SOCIAL RELATIONS

259A Special Topics in Social Relations (1 to 4). Prerequisite: graduate standing or consent of instructor. May be repeated for credit as topics vary.

MULTICULTURAL/INTERNATIONAL

270A Proseminar in Expressive Forms (4). A survey of the literature pertaining to the cultural and social analyses of expressive forms, with an emphasis upon general theoretical issues. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 210A.

271A-B-C Colloquium: Dominant American Culture (4-4-4). A three-quarter survey of the literature and interpretations of American institutions and lifeways—demography, population, and settlement patterns; family, education, and enculturation processes; law, politics, economics, and religion, science and technology; mass media and the popular arts. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 240A-B-C.

272A Origin and Evolution of Marxist Social Thought (4). Focuses on the genesis and evolution of Marxist social thought. The “systemic” method of Marx and Engles to questions of economic production and reproduction is compared and contrasted with modern world-system grand visions, feminist-theoretic approaches, and postmodern critiques. Prerequisites: undergraduate course in political theory or equivalent; graduate standing or consent of instructor.

273A Proseminar in Social Inquiry (4). A survey of the philosophy and conceptual and methodological tools of the social sciences, with emphasis on the problems of interdisciplinary research. Required of all first-year Comparative Culture doctoral students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 200A.

274A-B Colloquium: African-American Culture I, II (4-4). A two-quarter sequence which explores issues in African-American history and cultures, chiefly through the reading and discussion of major works dealing with those issues. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 241A-B.

274C-D Colloquium: Asian-American Culture I, II (4-4). Examines the experiences of Asians in the United States, primarily the Chinese, Japanese, Koreans, Asian Indians, Filipinos, and Vietnamese. Examines diversity among the various Asian groups within each ethnic group, and contrasts the Asian-American experience with other nonwhite minorities. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 244A-B.

274E-F Colloquium: Hispanic-American Culture I, II (4-4). The history and cultural background of contemporary Americans of Latin-American descent. Introduces students to major works in history, social sciences, and the arts that are essential for understanding this aspect of the U.S. socio-historical development. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 243A-B.

274G-H Colloquium: Native American Culture I, II (4-4). Historical and social science research literature on Native American cultures—predominantly Indian but also Aleut and Eskimo. Migration, historical position within the political economy; major legislation that pertains to Native Americans, race relations, demography, population movements, family, politics, religion, ceremonialism. Required of all Comparative Culture graduate students. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 242A-B.

275 A-B-C Methods of Social Inquiry I, II, III (4-4-4). **275A:** Focuses on qualitative methods including comparative historical research, participation observation, and interviewing techniques. **275B:** Concentrates on survey research techniques, including cross-cultural survey, sampling questionnaire construction and coding, and analysis of data. **275C:** Application of mathematical models to the analysis of the data. Required of all Comparative Culture graduate students emphasizing social inquiry. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 220A-B-C.

276A-B-C Seminar in Expressive Forms of American Culture I, II, III (4-4-4). Interpretations of expressive forms produced by U.S. cultural groups, together with significant examples of those expressive forms. Includes literature, visual arts, folklife and popular culture, myth and ritual. **276A:** Focuses on expressive forms of dominant American culture. **276B-C:** Deals with African-American, Asian-American, Hispanic-American, and Native American cultures. Prerequisite: graduate standing or consent of instructor. Formerly Comparative Culture 230A-B-C.

SPECIAL COURSES IN SOCIAL SCIENCE

290 Dissertation Research (4 to 12) F, W, S. May be repeated for credit. Prerequisite: consent of instructor.

291 Directed Reading Examination Preparation (4) F, W, S

298 Self-Directed Study (1 to 12) Summer. May not be applied toward residency requirements or toward total units required for a degree. May be repeated for credit. Prerequisite: graduate standing.

299 Independent Study (4) F, W, S. May be repeated for credit.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

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- James D. O'Brien, M.D. New York Medical College, *Assistant Clinical Professor of Medicine (Internal Medicine/Primary Care)*
- Jose A. Ocariz, M.D. University of Rosario (Argentina), *Associate Clinical Professor of Pathology*
- Diane O'Dowd, Ph.D. University of California, San Diego, *Associate Professor of Biological Sciences and of Anatomy and Neurobiology*
- Letitia Oliveros, M.D. University of Iowa, *Assistant Clinical Professor of Pediatrics*
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- Terrance F. Payne, M.P.H. University of California, Los Angeles, *Clinical Professor of Pediatrics*
- Daniel Pelot, M.D. Howard University School of Medicine, *Senior Lecturer in Medicine (Gastroenterology)*
- Ellena Peterson, Ph.D. Georgetown University, *Associate Professor of Pathology*
- Robert I. Pfeffer, M.D. Harvard Medical School, *Associate Professor of Neurology in Residence*
- Robert F. Phalen, Ph.D. University of Rochester, *Professor of Community and Environmental Medicine*
- Gary Phipps, M.D. Ohio State, *Associate Clinical Professor of Orthopedic Surgery*
- Anselmo Pineda, M.D. San Marcos University (Peru), *Associate Clinical Professor of Neurosurgery*
- Hubert C. Pirkle, M.D. Indiana University, *Professor Emeritus of Pathology*
- Robert W. Porter, M.D., Ph.D. Northwestern University Medical School, *Professor Emeritus of Surgery (Neurological) in Residence*
- Steven G. Potkin, M.D. Washington University, *Professor of Psychiatry and Human Behavior*
- Thomas Poulos, Ph.D. University of California, San Diego, *Professor of Molecular Biology and Biochemistry, Physiology and Biophysics, and Biological Sciences*
- Pamela E. Prete, M.D. Hahnemann Medical College, *Professor of Medicine (Rheumatology) in Residence*
- Henry W. Pribram, M.B., B.S. Cambridge University (England), *Professor Emeritus of Radiological Sciences*
- Michael D. Prislín, M.D. Georgetown University, *Professor of Clinical Family Medicine*
- Ralph E. Purdy, Ph.D. University of California, Los Angeles, *Professor of Pharmacology*
- Edward Quilligan, M.D. Ohio State University, *Professor Emeritus of Obstetrics and Gynecology*
- W. Leslie Quinlivan, M.B., B.S., University of London (England), *Professor Emeritus of Obstetrics and Gynecology*
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- Nilam S. Ramsinghani, M.B., B.S. Grant Medical College, *Department Chair and Associate Clinical Professor of Radiation Oncology*
- Virgil Raymundo, M.D. University of California, Irvine, *Assistant Clinical Professor of Medicine (Primary Care)*
- Louis Recher, M.D. University of Basel, *Professor Emeritus of Pathology in Residence*
- Varalakshmi Reddy, M.B., B.S. Osmania Medical College, *Assistant Clinical Professor of Pediatrics*
- J. Leslie Redpath, Ph.D. University of Newcastle (England), *Professor of Radiation Oncology and Community and Environmental Medicine*
- Cheryl L. Reid, M.D. University of Oklahoma, *Associate Professor of Medicine (Cardiology) in Residence*
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- W. Edward Robinson, M.D., Ph.D. Vanderbilt University, *Assistant Professor of Pathology and Microbiology and Molecular Genetics in Residence*
- Werner Roeck, Dipl. Eng. State School of Engineering, Hagen (Germany), *Clinical Professor of Radiological Sciences*
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- Gerald Roth, M.D. Columbia University, *Assistant Adjunct Professor of Radiological Sciences*
- James Roum, M.D., Ph.D. University of California, Irvine, *Assistant Professor of Medicine (Pulmonary/Critical Care)*
- Arthur Rubel, Ph.D. University of North Carolina, *Professor Emeritus of Family Medicine*
- Lloyd Rucker, M.D. University of Kentucky, *Clinical Professor of Medicine (General Internal Medicine and Primary Care)*
- Ervin P. Ruzics, M.D. University of Southern California, *Associate Clinical Professor of Surgery (Urology)*

- Boctor Said, Ph.D. City University of New York, *Assistant Adjunct Professor of Community and Environmental Medicine*
- Hamid M. Said, Ph.D. University of Aston (England), *Professor of Medicine (Gastroenterology), Physiology and Biophysics, and Pediatrics in Residence*
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- Jeffrey Sarmiento, M.D. Ross University, *Assistant Clinical Professor of Anesthesiology*
- Scott Sasse, M.D. University of Wisconsin, *Assistant Professor of Medicine (Pulmonary/Critical Care) in Residence*
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- Catherine S. Sassoon, M.D. Gadjah Mada University School of Medicine (Indonesia), *Associate Professor of Medicine (Pulmonary) in Residence*
- Steven L. Schandler, Ph.D. University of Southern California, *Adjunct Professor of Psychiatry and Human Behavior*
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- Michael Schneider, M.D. Case Western Reserve University, *Assistant Clinical Professor of Anesthesiology*
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- Sujata Tewari, Ph.D. McGill University (Canada), *Associate Professor of Psychiatry and Human Behavior and Biological Sciences*

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- Janis W. Thereault, M.D. University of Nebraska, *Assistant Clinical Professor of Anesthesiology*
- Charles Theuer, M.D. University of California, San Francisco, *Assistant Professor of Surgery*
- Leslie M. Thompson, Ph.D. University of California, Irvine, *Assistant Adjunct Professor of Biological Chemistry*
- William B. Thompson, Jr., M.D. University of Southern California, *Professor Emeritus of Obstetrics and Gynecology*
- Lauri D. Thrupp, M.D. University of Washington School of Medicine, *Professor Emeritus of Medicine (Infectious Diseases)*
- James A. Till, Ph.D. University of Iowa, *Associate Clinical Professor of Otolaryngology*
- Jeremiah G. Tilles, M.D. Harvard Medical School, *Associate Dean, College of Medicine, Chief of Infectious Diseases, and Professor of Medicine (Infectious Diseases) and Microbiology and Molecular Genetics*
- Jerome S. Tobis, M.D. Chicago Medical School, *Professor Emeritus of Physical Medicine and Rehabilitation*
- Jonathan M. Tobis, M.D. Albert Einstein College of Medicine, *Professor of Medicine (Cardiology) and Radiological Sciences*
- Simin Torabzadeh, M.D. Universidad Central del Este (Dominican Republic), *Assistant Clinical Professor of Medicine (Geriatrics)*
- Paul E. Touchette, Ed.D. Harvard University, *Adjunct Professor of Pediatrics and Psychiatry and Human Behavior*
- Craig V. Towers, M.D. University of Kansas, *Associate Professor of Obstetrics and Gynecology (Maternal-Fetal Medicine) in Residence*
- Hieu Nguyen Tram, M.D. Chicago Medical School, *Assistant Clinical Professor of Medicine (Internal Medicine/Primary Care)*
- Christopher Tran, M.D. University of California, San Francisco, *Assistant Clinical Professor of Radiological Sciences*
- Huy T. Tran, D. O. College of Osteopathic Medicine, Pomona, *Assistant Clinical Professor of Family Medicine*
- Bruce Tromberg, Ph.D. University of Tennessee, *Associate Professor of Surgery and Physiology and Biophysics in Residence*
- Martin C. Tynan, M.B.B.C.H. Trinity College (Ireland), *Assistant Clinical Professor of Orthopedic Surgery*
- Frederico E. Vaca, M.D. Creighton University, *Assistant Clinical Professor of Medicine (Emergency Medicine)*
- Stanley van den Noort, M.D. Harvard Medical School, *Department Chair and Professor Emeritus of Neurology*
- Duane J. Vajgt, M.D. University of California, San Francisco, *Assistant Clinical Professor of Radiological Sciences*
- Nosratollah D. Vaziri, M.D. Tehran University Medical School (Iran), *Chief of Nephrology and Chair (Acting) and Professor of Medicine (Renal Diseases)*
- Halvor Vermund, M.D. University of Minnesota, *Professor Emeritus of Radiological Sciences*
- Larry E. Vickery, Ph.D. University of California, Santa Barbara, *Professor of Physiology and Biophysics, Biological Sciences, and Biological Chemistry*
- Luis P. Villarreal, Ph.D. University of California, San Diego, *Professor of Biological Sciences and Neurology*
- Bruno Volk, M.D. University of Vienna, *Professor in Residence Emeritus of Pathology*
- Feizal Waffarn, M.B., B.S. Madras Medical College (India), *Associate Professor of Pediatrics (Neonatology) in Residence*
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- Akio Wakabayashi, M.D. University of Tokyo Medical School (Japan), *Professor Emeritus of Surgery (Thoracic)*
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- James L. Whittenberger, M.D. University of Chicago, *Professor in Residence Emeritus of Community and Environmental Medicine*
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- Laura Williams, M.D. Lufts University, *Assistant Clinical Professor of Family Medicine*
- Russell A. Williams, M.B. B.S. University of Sydney, *Professor of Surgery*
- Archie F. Wilson, M.D. University of California, San Francisco, Ph.D. University of California, Los Angeles, *Chief of Pulmonary Disease and Professor of Medicine (Pulmonary)*
- Samuel Eric Wilson, M.D. Wayne State University, *Department Chair and Professor of Surgery*
- Robert L. Winer, M.D. Case Western Reserve University, *Adjunct Professor of Medicine (Nephrology/Renal)*
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- Anne Wong, M.D. University of Pennsylvania, *Associate Clinical Professor of Anesthesiology*
- Corinne G. Wong, Ph.D. University of California, San Francisco, *Assistant Adjunct Professor of Ophthalmology*
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- Edward K. Wong, Jr., M.D. University of Southern California, *Associate Professor of Ophthalmology*
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- Nancy Wood, M.D. University of North Carolina, *Assistant Clinical Professor of Pediatrics*
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- Qun-Yong Zhou, Ph.D. Oregon Health Sciences University, *Assistant Professor of Pharmacology*
- Angyrios Ziogas, Ph.D. University of Southern California, *Assistant Adjunct Professor of Medicine (Epidemiology)*

OVERVIEW

The UCI College of Medicine became part of the University of California in 1965. Prior to this time it was known as the California College of Medicine which traces its roots to a private institution founded in 1896.

Mission Statement

The UCI College of Medicine is dedicated to advancing the knowledge and practice of medicine for the benefit of society. This mission is achieved through programs of excellence in:

Education: The College of Medicine is committed to provide educational programs of the highest quality to medical students, M.D./Ph.D. students, residents, fellows, allied health, and graduate academic students. Further, the College of Medicine's educational programs are designed to stimulate self-learning and critical inquiry and to exemplify those human values necessary to fulfill the professional commitments of a career in the health sciences.

Research: Excellence in research is an essential feature of the College of Medicine. Therefore, the College is committed to develop and maintain research programs in the health sciences which seek to advance basic scientific knowledge and the prevention, diagnosis, and treatment of human illness.

Clinical Care: Recognizing its responsibility to meet the educational needs of students and the diverse needs of the patient community, the College of Medicine is committed to programs of clinical excellence across the spectrum of patient care disciplines.

Service to the Public: As a publicly assisted institution, the College of Medicine is committed to serve the community as a vital resource of expertise and knowledge. The College further serves the public through the training of health professionals whose backgrounds reflect California's ethnic and cultural diversity and whose professional careers address California's health care needs.

Health Sciences Complex

The medical school facilities comprise a 121-acre site which has been designated the Health Sciences Complex. Twenty-nine acres have been developed to provide space for teaching, research, and patient care as well as offices for departmental administration.

The College's basic science instructional programs are located in modern, well-equipped, medical sciences buildings. These units provide space for first- and second-year classes, lecture halls, offices and laboratories for various basic and clinical departments, and a student center. Other buildings house the College's administration, laboratories, and student center.

In addition, the 40,000-square-foot Plumwood House is devoted to basic research in the fields of neurological disorders, diagnostic systems and reagents, and industrial bioreactors. In this facility, faculty from the Department of Biological Chemistry share laboratory space with corporate researchers.

Comprehensive outpatient services are available on campus through the Louis A. and Helen C. Gottschalk Medical Plaza and the Beckman Laser Institute and Medical Clinic. Housing one of the world's leading programs in medical laser technology, the Beckman Laser Clinic offers state-of-the-art treatment for cancer of the head, neck, and female reproductive system, cardiovascular disease, and ophthalmologic procedures.

The Plaza capitalizes upon the broad range of diagnostic and therapeutic programs of the College as well as the extensive clinical expertise of the faculty. The facility offers primary care and specialty services including: obstetrics and gynecology, pediatrics, dermatology, ophthalmology, cardiology, orthopedics, gastroenterology, and neurology. Special programs in diabetes, multiple sclerosis, Alzheimer's disease, and inflammatory bowel diseases

also are available. Also located in the Plaza is the Lon V. Smith Eye Clinic, which offers the latest in diagnostic health care for eye diseases, including computerized refraction analysis, glaucoma diagnosis, and ultrasound analysis of eye disorders.

WILLIAM J. GILLESPIE NEUROSCIENCE RESEARCH FACILITY

The William J. Gillespie Neuroscience Research Facility is the home of a core group of prominent scientists who integrate basic and clinical neuroscience as they seek the causes and cures for brain disorders and neurological diseases such as schizophrenia, epilepsy, and Alzheimer's disease. This facility is the first of five planned buildings in the Irvine Biomedical Research Center (IBRC) slated to be built on the UCI campus over the next two decades. IBRC is a landmark public-private collaboration between UCI and businesses involved in biomedical, biotechnological, and health care services. The center will enable UCI researchers and participating companies to work alongside one another, combining basic science, clinical study, and product development to find new approaches to the diagnosis and treatment of disease.

CHAO FAMILY COMPREHENSIVE CANCER CENTER

The Chao Family Comprehensive Cancer Center is the only National Cancer Institute-designated facility in Orange County and one of only 57 such centers in the country. Overall, more than 100 faculty members at the Cancer Center are involved in seven major research programs including everything from basic research that looks at how cancer cells grow to bone marrow transplantation to stem-cell therapy, a new way of harvesting marrow. The 56,000-square-foot facility provides an ideal setting for the practice of all the basic and clinical subspecialties involved in adult and pediatric oncology, including the application of the latest techniques for diagnosis and management of patients with cancer.

J. EDWARD BERK/ALUMNI MEDICAL EDUCATION CENTER

The College of Medicine recently opened a training facility for students and residents. The training center has eight fully functional physical examination rooms equipped with wall-mounted video cameras which feed directly into a main monitoring room. This equipment allows faculty to observe students and residents without being intrusive. The encounters can be recorded and viewed with the faculty member at another time in one of the two faculty development rooms. In addition, the training center also has a skills laboratory in which students learn the proper methods for gowning, giving injections, taking vital signs, and administering CPR.

The training center also houses "HARVEY," a full-sized Cardiology Patient Simulator specifically designed to demonstrate various cardiovascular disease findings. "HARVEY" can be used in conjunction with the UMedic Multimedia Computer Assisted Instruction system which is a self-learning computerized workstation. UCI is proud to be the first school on the west coast to utilize these multimedia systems in their curriculum.

UCI MEDICAL CENTER

The University of California Irvine Medical Center, located in the City of Orange, is a 462-licensed-bed, comprehensive medical care center. It is the principal clinical facility of the College of Medicine operated by the University. The medical faculty of the College of Medicine, together with the medical resident-physician staff, provide the professional care. Service are provided in medicine, surgery, obstetrics and gynecology, pediatrics, psychiatry, family medicine, dermatology, pathology, radiology, physical medicine and rehabilitation, ophthalmology, neurology, anesthesiology, orthopedics, geriatrics, oncology, neurosurgery, otolaryngology, and radiation oncology.

UCI Medical Center also has cardiac, pediatric, neonatal, respiratory, burn medical-surgery, and neurosciences intensive care units and more than 90 specialty outpatient clinics. It is the designated countywide Level I trauma center.

UCI FAMILY HEALTH CENTER—SANTA ANA

The UCI Family Health Center—Santa Ana is a state-of-the-art primary care facility, conveniently located near the Santa Ana Civic Center. The Center has two missions—health care delivery and medical education.

As a community clinic, the Family Health Center's multilingual physicians and staff are committed to providing quality healthcare to patients, including the medically underserved. It provides primary care services to people of all ages including family medicine, preventive care for children and adults, and specialty care in pediatrics and OB/GYN.

As an integral part of the UCI College of Medicine, the Family Health Center provides educational and training opportunities for medical and nurse practitioner students, including the UCI Family Medicine and Obstetrics and Gynecology residency training programs.

UCI FAMILY HEALTH CENTER—ANAHEIM

The UCI Family Health Center—Anaheim provides care for more than 20,000 outpatient visits annually and training programs for resident physicians in primary care, general internal medicine, and general and adolescent pediatrics. There are additional programs in gynecology, dermatology, general surgery, podiatry, neurology, ophthalmology, optometry, orthopedics, psychiatry, and multispecialty faculty practice. The Center provides training for medical students in their primary care, general pediatric, adolescent medicine, and geriatric medicine rotations and electives.

AFFILIATED HOSPITALS AND CLINICS

Additional major teaching and research programs of the College of Medicine are conducted at the Long Beach Veterans Affairs Medical Center (LBVAMC) and at Memorial Medical Center, Long Beach. Other academic programs are conducted in affiliation with San Bernardino County Medical Center, Fairview Developmental Center (Costa Mesa), Kaiser Foundation Hospital (Anaheim, Bellflower, and Riverside), Children's Hospital of Los Angeles, Metropolitan State Hospital (Norwalk), The City of Hope Medical Center (Duarte), Rancho Los Amigos Hospital (Downey), Western Medical Center (Tustin/Santa Ana), the Kern Medical Center (Bakersfield), Clínica Sierra Vista (Lamont), Hoag Memorial Hospital Presbyterian (Newport Beach), Lanterman Developmental Center (Pomona), Fountain Valley Hospital and Medical Center, Children's Hospital of Orange County, Good Samaritan (Los Angeles), and the Orange County Health Care Agency/Public Health Clinic.

College of Medicine Alumni Relations

Maureen Hausen, Assistant Director (949) 824-7155

The UCI College of Medicine is an outgrowth of what began in 1896 as the Pacific College of Osteopathy (PSO). Some years later PSO became the College of Osteopathic Physicians and Surgeons, which then became the California College of Medicine in 1962 and subsequently became part of the UC system in 1965. The Office of Alumni Relations provides programs and services for nearly 4,000 alumni of the College as well as for students. From financial support to Honor's Night awards, mentorships to reunions, the Office of Alumni Relations seeks to provide a cornerstone from which students and alumni can benefit from their relationships to one another and in so doing, strengthen the College of Medicine.

THE M.D. PROGRAM

Admission

All inquiries regarding admission programs and procedures of the UCI College of Medicine should be directed to:

**University of California, Irvine
College of Medicine
Office of Admissions
P.O. Box 4089
Irvine, CA 92697-4089**

Telephone: (949) 824-5388, (800) UCI-5388; World Wide Web: <http://www.ucihs.uci.edu/Departments/Medicaleducation/>.

The UCI College of Medicine is a member of the American Medical College Application Service (AMCAS). All students who seek entrance to medical school must first apply to AMCAS. Requests for applications should be submitted directly to:

**The American Medical College Application Service (AMCAS)
Association of American Medical Colleges
Section for Student Services
2501 M Street, N.W., Lobby 26
Washington, D.C. 20037-1300**

Applications may be submitted between June 1 and November 1 of the year preceding anticipated admission. Students who wish to apply to the College of Medicine should designate it on their AMCAS application form, and AMCAS will forward the application to the College.

Last year, the College received approximately 4,000 applications from AMCAS. From these, some 500 candidates were granted interviews, and 92 students were enrolled in the first-year class beginning in September.

Applications received by the College are reviewed by its 40-member Admissions Committee composed of basic science and clinical faculty, and medical students. Applications are initially screened on the basis of both the student's academic performance (GPA and MCAT scores) and on non-cognitive variables that reflect depth and breadth of life experience.

After initial screening, selected applicants are requested to submit additional materials which include letters of recommendation, supplemental information forms, and a nonrefundable application fee of \$40.

In addition to scholastic achievement, attributes deemed desirable in prospective students include leadership ability and participation in extracurricular activities, such as research and medically related experience, as well as community service. The Admissions Committee also looks for qualities considered valuable in a physician. These qualities include the intellectual and emotional capacity to provide comprehensive and continuing medical care, the ability to cope with disease and guide patients through a complex array of medical services, a commitment to sensitivity to individual patient needs, and a dedication to the advancement of the art, science, and practice of medicine.

Applicants may expect to receive notification about their admission status from the College any time from November until the beginning of the following fall term. The Admissions Committee maintains a list of alternate candidates for possible acceptance should a vacancy occur before the end of the first week of classes. Accepted applicants must return a written statement of their acceptance of the College's offer within two weeks after receipt of the notice of acceptance. No advance deposit to hold a position in the class is required of applicants. Students who are accepted sign a Statement of Intent to Register, but (in keeping with the recommendations of the Association of American Medical Colleges) are

free to withdraw prior to enrollment if their medical school or career choice changes.

Because the University of California is a state-assisted institution, preference is given to California residents who are U.S. citizens or permanent residents of the United States. The College does, however, participate in the student exchange program of the Western Interstate Commission for Higher Education (WICHE). Under this program, qualified legal residents of certain Western states without medical schools (Alaska, Idaho, Montana, and Wyoming) are considered along with California residents. The states of origin reimburse the State of California for the educational costs of students who are accepted.

To be eligible for this program, students must apply to WICHE certifying officers in their own states. For addresses of certifying officers, contact:

WICHE Student Exchange Program
P.O. Drawer P
Boulder, CO 80301-9752
(303) 541-0214

REQUIREMENTS FOR ADMISSION

First-year students may enter only in September of each year. Students can be considered for admission to the College of Medicine if they meet the following requirements:

- Completion of a minimum of three full years of undergraduate work with a superior scholarship record.** This work must total not less than 90 semester units or an equivalent number of quarter units that are acceptable for a bachelor's degree credit in an accredited institution of higher education. Candidates for admission may submit community college credit only to the extent granted on transfer to a four-year college or university. For purposes of evaluation, letter or numerical grades are preferred for course work, particularly for the required subjects listed below. Final enrollment into the first-year class at the College of Medicine is contingent upon evidence of satisfactory completion of all requirements and all courses listed as "in progress" on the AMCAS application (with a C grade or higher). Failure to meet requirements or falsification of information are grounds for rejection or dismissal.
- Completion of the following college course requirements prior to matriculation:**

	Semester Units	Quarter Units
One year of general chemistry	8	12
One year of organic chemistry	8	12
One year of physics	8	12
One and one-half years of biology	12	18
and/or zoology		
(NOTE: these courses must include one year of lower-division biology and/or zoology plus a half year of upper-division courses excluding botany.)		
One quarter of college level	2.7	4
calculus		
One semester/two quarters of	3	8
biochemistry (Can be taken in combination with molecular biology or genetics.)		

Applicants are strongly encouraged to have completed their basic science requirements at the time of application. In addition, premedical students are advised to take advantage of the intellectual maturation afforded by a well-rounded liberal arts education. English, the humanities, and the social and behavioral sciences are considered particularly important. The following courses are also recommended but not required: cell biology, genetics, physical chemistry, vertebrate embryology, and Spanish.

- Candidates must attain satisfactory scores on the Medical College Admission Test (MCAT).** An officially certified test score must be received by the College's Admissions Office before the candidate's application can be considered. Students applying to the 1999–2000 entering class must have taken the MCAT no earlier than April 1996 and no later than August 1998. Inquiries regarding the MCAT should be addressed to:

MCAT Program Office
P.O. Box 4056
Iowa City, IO 52243
(319) 337-1357

Medical Student Advisor System

The College's formal advisor system includes basic science advisors and career specialty advisors.

Basic Science Advisors

Robert Steele, Ph.D., Chair

(949) 824-7341

There are 12 basic science advisors. Six advisors are assigned on an every other year rotational basis to each incoming class and follow that class through their basic science years. The basic science advisors meet on a monthly basis to review students' academic progress, and to initiate interventional programs for students in academic difficulty and at academic risk. They also serve as a source of support and guidance for first- and second-year medical students.

Career Specialty Advisors

Deborah Stewart, M.D., Chair

(949) 824-8358

Associate Dean Student and Resident Affairs

Career specialty advisors are generally full-time College of Medicine faculty who are identified as knowledgeable about career and residency options in their field. They are available to students as career-choice consultants.

Peer Review and Peer Counseling Program

Deborah Stewart, M.D., Chair

(949) 824-8358

Associate Dean Student and Resident Affairs

The College of Medicine has an informal peer review process, aimed at early detection and assistance for medical students who are experiencing difficulty such as professional conduct problems, suspected impairment, violation of the honor code, or violation of any University policy, regulation, or rule. The Peer Review Committee is comprised of two representatives from each class, the student body co-presidents, and two advisory faculty members. The committee operates within guidelines set jointly by the College of Medicine administration and the student body. Cases involving serious professional misconduct are referred to the Dean's Office. The Peer Review Committee conducts hearings and may impose sanctions or provide assistance to the student.

The College is developing a Peer Counseling Program aimed at providing a confidential personal support system. It will allow students to seek assistance from peers in coping with the stress of balancing the demands of professional school and personal life. Peer counselors will receive initial and ongoing training and will serve as a "front-line" system, lending a helping hand and a listening ear to any student in need. However, students with ongoing problems and any major crises will be encouraged to seek professional help via existing campus and College of Medicine resources.

Medical Scholars Program

Marcia London Albert, Ph.D.

(949) 824-3415

Academic Skills Coordinator

The Medical Scholars Program (MSP), a student-driven effort, is an innovative, collegial study support program which was implemented in the fall of 1993. This program benefits all students in the College of Medicine and provides a special sense of community for first-year

students. A great deal of the informal knowledge concerning medical school is communicated through the components of MSP. Small groups of first-year students are led by second-year co-leaders who develop clinically relevant case-based problems for discussion covering material learned in first-year basic science courses. Fourth-year students serve as co-leaders for similar groups of second-year students. First-year discussion groups meet every other week, and groups for second-year students meet once per month. First- and second-year students also receive MSP study packets, which contain test questions and answers from the previous year, and are distributed prior to each examination.

A new MSP component is designed to meet the needs of third-year students as they face the challenges and transitions that are a part of this phase of their training. During their various clerkships, third-year students are assisted in four basic areas by fourth-year students: oral examinations, presentation of cases, written examinations, and clinical skills. These fourth-year students not only share their knowledge of the subjects, but also share information about appropriate study material, what to emphasize in studying, and test experiences. Both third- and fourth-year students benefit from participating in this program.

Medical Scientist Training Program (M.D./Ph.D.)

Alan Goldin, M.D., Ph.D., Chair

(949) 824-5264

Exceptionally well-qualified students interested in careers in academic medicine and with demonstrated research accomplishments may be considered for admission to the Medical Scientist Training Program (MSTP). Students in this program pursue a combined curriculum leading to an M.D. degree from the College of Medicine and a Ph.D. degree from any of the graduate programs at UCI. The program requires a minimum of seven years for completion, and students holding either degree are not eligible for MSTP. Additional information is available from the MSTP Coordinator's Office, (949) 824-5264.

Applicants must submit a supplementary application (available from the College of Medicine Office of Admissions) to the Medical Scientist Training Program when they are submitting their secondary application information to the College of Medicine. Students accepted into the program have the option of pursuing graduate study in any of the graduate programs at UCI. Although a specific graduate department need not be chosen at the time of admission, students are expected to have selected a field for their graduate studies. Financial support in the form of a fellowship, which includes a stipend as well as tuition and fees, is provided to a limited number of students each year. Applicants not accepted into MSTP may be considered separately for admission to the College of Medicine.

The M.D. Curriculum

The M.D. curriculum requires four years to complete. If special needs are identified, the time may be extended to five years.

The first and second years are scheduled on a modified quarter system. There is a 10-week vacation period between the first and second years; students may use that time for elective or research work in place of vacation. Between the second and third years is a five-week vacation, during which the United States Medical Licensing Examination (USMLE) will be administered. In the third year there are seven weeks vacation; students may use that time for electives. In the fourth year up to 11 weeks of vacation are allowed.

Under the recommendation of faculty supported committees, UCI's M.D. program continues to undergo curricular reform within all four years of instruction. The College of Medicine faculty view curriculum development as a continual process and feel that medical education must be the highest priority and that teaching innovations

must be encouraged and supported. The curriculum encourages medical students to become participants in their education process, facilitates active rather than passive learning, and encourages cooperative learning among students.

The faculty also feel that the curriculum should integrate basic and clinical sciences by bringing substantial clinical material into the early phases of medical education and bringing substantial basic science materials into the later phases of medical education (vertical integration of course material).

The College has achieved vertical integration of the curriculum with the development of the Patient-Doctor series. The Patient-Doctor courses are longitudinal multi-disciplinary experiences. Through Patient-Doctor I and II students begin clinical exposure during their first two years of instruction. During Patient-Doctor III and IV, students are given the opportunity to integrate basic and clinical science into a comprehensive forum and review major basic science topics through PCP conferences and patient workshops. These courses also include special interest topics such as death and dying, cultural competence, domestic violence, and many others.

Horizontal integration of the course material has been achieved through the development of multi-disciplinary courses including the Patient-Doctor series and Neurosciences. In addition, the second-year course directors have coordinated the instruction of materials among Pathology, Clinical Pathology, Pharmacology, and Patient-Doctor II.

The faculty and administration at the College of Medicine are committed to the process of curricular reform and foresee continual implementation of new programs to ensure that medical students receive current and innovative education.

To satisfy the requirements for the M.D. degree, each medical student must successfully complete the full curriculum (basic science, preclinical, clinical, and elective course work) with a passing grade and fulfill the National Board Examination requirement. After the second year, all students are required to take Step 1 of the United States Medical Licensing Examination. Students must pass both Step 1 and Step 2 of the Boards prior to graduation. In accordance with the College of Medicine policies and procedures, the examination may be taken a maximum of three times.

CURRICULAR POLICIES

The curricular policies of the College of Medicine are the responsibility of faculty committees. A listing of these policies, as well as information regarding registration, rules and regulations, grading procedures, and requirements for academic advancement, are contained in the *College of Medicine Handbook*, which is available from the Office of Medical Education and is distributed along with other policy statements to all students upon matriculation.

The College uses an Honors/Pass/Fail grading system for all students who entered after 1994.

Curricular Description

FIRST-YEAR CURRICULUM

No more than six hours of instruction are scheduled per day; of these six hours, no more than four are formal lectures. Course numbers are listed at the end of each description.

Gross Anatomy and Embryology

The structure of the human body is taught in Human Gross Anatomy and Embryology. Emphasis is placed on normal structure as it relates to function, with consideration of abnormal structures that may be revealed in a clinical setting. Gross Anatomy is taught through a regional approach, with an emphasis on laboratory dissections and demonstrations, augmented by lectures, radiographic films, discussions, and clinical correlate material. The course

includes a detailed consideration of embryological aspects of human development. (*Medicine 500*)

Biochemistry and Advanced Biochemistry

Students may choose between two courses in biochemistry. The basic course provides a general overview of classical biochemistry and molecular biology, including the structure and function of proteins, enzymology, metabolic pathways and their regulation, protein biosynthesis, the molecular mechanisms responsible for regulation at the transcriptional and translational levels, and molecular genetics. The advanced biochemistry course is taught in a problem-solving mode and is designed for more advanced students. It covers molecular genetics, including gene structure and function, as well as molecular and cellular biology. In addition, students from both courses attend lectures concerning aspects of physiological chemistry, such as mechanisms of blood clotting. A clinical correlate is held each week and all students give a seminar presentation. (*Medicine 504 and 506*)

Histology

Histology is designed to provide students with knowledge of the cellular and subcellular bases of medicine. Emphasis is placed on normal structure as a basis for function, with consideration of abnormalities of structures in clinical cases. Lectures, laboratory tutorials, and independent study address how cells are formed, how cells are combined to form tissues, and how tissues are combined to form organs. (*Medicine 503A-B*)

Neurosciences

Understanding the structure and function of the nervous system is the goal of the two-part Neurosciences course. In Neurosciences I, the structure and function of the central and peripheral nervous systems are studied at the cellular level; Neurosciences II studies the central nervous system at the systems level. Lectures, laboratories, and clinical correlates are presented to provide students with an understanding of normal brain function, with additional consideration of clinical cases in small group discussions. Corequisite: Physiology. (*Medicine 502A-B*)

Medical Genetics

Medical Genetics reviews the basic principles of human genetics related to disease. In addition to the clinical and laboratory methods, students are introduced to the legal, ethical, and social aspects of diagnosis and treatment of genetic disease. Prerequisite: Biochemistry. (*Medicine 511*)

Patient-Doctor I

The Patient-Doctor I (PDI) course is the first in a series of clinical courses focusing on professional role development. It is the prerequisite for PDII, III, and IV. The patient-doctor relationship is at the core of medical practice, guided by principles of medical ethics. PDI has four separate sections—Medical Interviewing, Behavioral Science, Medical Informatics, and Clinical Procedures and Skills—and they run concurrently. (*Medicine 519A-B-C*)

Introduction to Medical Physiology

This course consists of lectures, clinical correlates, and small group discussions of the classical concepts of vertebrate physiology, with emphasis on the function of normal tissues in humans. Specific topics related to cardiovascular, respiratory, renal, gastrointestinal, endocrine, exercise, and sexual physiology are presented. Prerequisite: Biochemistry. Corequisite: Neurosciences. (*Medicine 506A-B*)

Microbiology

This course deals with the biochemical and genetic properties of infectious agents, activities of toxins, chemotherapy, and the biochemistry and genetics of antibiotic resistance. A considerable portion of the course deals with the humoral and cellular basis of

immunity and the genetic control of the immune response. The course also includes an in-depth study of the biology of parasites and the structure and activity of viruses. Prerequisite: Biochemistry. (*Medicine 507A-B*)

First and Second Years:

Basic Science and Preclinical Course Work

First Year	Hours	Second Year	Hours
Gross Anatomy and Embryology	178	Clinical Pathology	134
Biochemistry	136	Mechanisms of Disease	130
Histology	70	Pathology	172
Neurosciences	130	Pharmacology	140
Physiology	200	Patient-Doctor II	316
Microbiology	200		
Medical Genetics	35		
Patient-Doctor I	86		

Third and Fourth Years:

Clinical Clerkships and Electives*

Clerkship Rotations		Electives and Core Clerkships	
Third Year	Weeks	Fourth Year	Weeks
Pediatrics	8	Radiology	3
Obstetrics and Gynecology	9	Neurosciences	4
Psychiatry	8	Senior Subinternship	4
Junior Medicine	10	Surgical Selectives (2)	4
Surgery/Surgery Selective	10	Nondesigned	13
Family Medicine	5†	Electives‡	
Patient-Doctor III	1	Musculoskeletal and Rehabilitation	4
		Patient-Doctor IV	1
		Intensive Care Unit	4
		Emergency Medicine	2

* The sequence of the third and fourth years varies.

† One-half day per week for 50 weeks.

‡ See the Electives section for detailed information.

SECOND-YEAR CURRICULUM

No more than seven hours of instruction will be scheduled each day, and of these no more than four are formal lectures.

Clinical Pathology

This course consists of lectures and laboratories covering the areas of hematology, blood bank, clinical chemistry, and microbiology. It provides students with a foundation for understanding the pathogenesis of a variety of disease states, as well as a foundation for the proper use of the laboratory for diagnosis and optimum patient management. Prerequisite: first-year curriculum. (*Medicine 509A-B*)

Mechanisms of Disease

A clinical case approach is used to focus on diagnosis and pathophysiology of disease. Prerequisites: Pathology, Clinical Pathology, Pharmacology, and Patient-Doctor II. Prerequisite: first- and second-year curriculum. (*Medicine 515*)

General and Systemic Pathology

This course deals with basic causes, mechanisms, and consequences of disease processes and with some applications of these considerations to clinical medicine. After an introduction to general types of disease processes, these processes are studied further as they affect specific organs and organ systems. Prerequisite: first-year curriculum. (*Medicine 508A-B*)

Medical Pharmacology

This course covers all the various classes of drugs that are used in medicine, particularly those used in specific or symptomatic treatment of disease states. Emphasis is on the mechanisms of action of drugs at the organ or system level and on their use in medicine. The course includes lectures that illustrate pharmacologic principles, supplemented by small group problem-solving sessions. Prerequisites: Biochemistry and Physiology. (*Medicine 517A-B*)

Patient-Doctor II

Patient-Doctor II (PDII) is a year-long multidisciplinary course which integrates taking the patient history and the physical examination with behavioral science, environmental medicine and toxicology, epidemiology, ethics, geriatrics, medical economics, medical informatics, nutrition, palliative care, and sexuality. Students work together in small groups to interview and examine standardized patients and pursue learning objectives derived from clinical cases. Prerequisite: first-year curriculum. (*Medicine 519A-B-C*)

THIRD-YEAR CURRICULUM

The third-year curriculum consists of six core rotations. For passage into the third year, students must successfully complete all first and second-year course work and take the USMLE Step 1 Examination. Third-year students may petition to enroll in fourth-year course work.

Obstetrics and Gynecology Clerkship

During this clerkship, students are taught the scientific and clinical basis of gynecology and obstetrics, including reproductive physiology, anatomy, fetal physiology, and pathology. Practical experience is offered in the management of normal and abnormal pregnancy and delivery.

Instruction is given in office and surgical gynecology. Students who have completed an introductory clerkship may then apply for an advanced elective that allows a progression of clinical responsibility both in operative obstetrics and office gynecology. This advanced period also may be devoted to an in-depth study of a subspecialty area such as gynecologic oncology, maternal-fetal medicine, reproductive endocrinology, and infertility. (*Medicine 524*)

General Surgery and Surgical Selective Clerkship

This clerkship provides students, as members of the surgical team, with an opportunity to study surgical patients in outpatient and hospital settings. Students acquire surgical knowledge, as well as develop skills in taking medical histories and conducting physical examinations. Emphasis is placed on the clinical evaluation, pathogenesis, diagnosis, and treatment of surgical diseases. Students spend six weeks on general surgery (three weeks each at UCI and LBVA Medical Centers).

The objective of the surgical subspecialties core is to provide an opportunity for students to expand their skills and knowledge in the surgical field. Students spend two, two-week blocks on orthopedics, otolaryngology, ophthalmology, plastic surgery, anesthesiology, or urology. Students are required to complete two additional two-week surgical selectives during their senior year which were not previously taken. (*Medicine 526*)

Junior Medicine Clerkship

The clerkship occurs in a highly structured clinical environment. Students gradually assume responsibility for the care of patients, thereby enhancing their clinical, diagnostic, and procedural skills. Clinical vignettes and bedside teaching serve to round out the experience. (*Medicine 527*)

Pediatrics Clerkship

The pediatrics clerkship serves as an introduction to general pediatrics. Students rotate on the pediatric ward, pediatric ambulatory settings, and the newborn nursery. Subspecialty clinics, community, and adolescent medicine experiences also are included. During the clerkship, students refine their knowledge and skills in obtaining accurate historical data, performing physical examinations with pediatric patients, and developing appropriate diagnosis and management plans. The clerkship also stresses the relationship of the health of infants, children, and adolescents with regard to the integrity of the family unit. (*Medicine 528*)

Psychiatry Clerkship

This eight-week clinical clerkship provides an opportunity for hands-on experience in the process of recognizing, diagnosing, and treating mental illness using the latest neuropharmacological advances in brain research as well as more traditional psychotherapeutic approaches. Each student participates fully in patient care, clinical teaching, and conferences. There are several choices of clinical settings for the rotation, including adult in-patient psychiatry, consultation psychiatry, geriatrics, and a variety of ambulatory experiences. The sites include the UCI and LBVA Medical Centers where different patient populations are available. A required lecture series is presented on Wednesday afternoons at the UCI Medical Center. Students spend six weeks on the primary rotation with outpatient treatment as an integrated component. Two weeks of specialized experience in a substance abuse program is also part of the rotation. (*Medicine 529*)

Family Medicine Clerkship

This unique clerkship matches students with a primary care physician for the entire third year. Students attend a UCI clinic or a private physician's office for a half day per week where the principles of family medicine and primary care practice are taught. Each student becomes the primary care provider for a number of patients and continues to care for them throughout the clerkship. (*Medicine 597A-B-C-D-E*)

Patient-Doctor III

The Patient-Doctor III course provides students with an orientation week which emphasizes preparation for the clinical experience, a core curriculum which is based in the Family Medicine Clerkship, and coordination of the overall clinical curriculum experience. (*Medicine 520*)

FOURTH-YEAR CURRICULUM

During the fourth year, students participate in core clerkships as well as electives. Students must complete the third-year curriculum prior to enrolling in the fourth-year curriculum unless a petition is filed and approved with the department and the Medical Education Office.

Surgical Selective

The objective of the surgical subspecialty core is to provide an opportunity for students to expand their skills and knowledge in the surgical field. Students spend two, two-week blocks on orthopedics, otolaryngology, ophthalmology, plastic surgery, anesthesiology, or urology, which were not taken during the third year.

ICU Core Clerkship

This is a four-week rotation offered at the UCI Medical Center and the Long Beach VAMC medical and surgical intensive care units. Students function as subinterns, becoming integral members of the ICU team, and serve as primary caregivers under supervision. Course goals and objectives are: (a) to instruct students on the principles and management of critically ill and injured patients and on the perioperative and postoperative recovery in patients undergoing major surgical procedures; (b) to allow students the opportunity to

encounter and evaluate patients with multisystem organ dysfunction and postsurgical complications; and (c) to become familiar with the clinical management of shock, respiratory failure, and sepsis and to be able to assess and develop a rational therapeutic plan for the critically ill patient.

Neuroscience Clerkship

The clinical neurosciences clerkship emphasizes the development of student skills in neurological examination as well as the medical and surgical management of patients with brain, nerve, and muscle disease. (*Medicine 532*)

Radiology Clerkship

Radiological sciences is taught throughout the four years of medical school: anatomy courses, first year; Mechanisms of Disease course, second year; radiology electives and rotations, third and fourth years; and a required clerkship in the fourth year. Daily clinical film conferences, didactic lectures, ACR file learning laboratory, and Radiology teaching file and slide and book materials are available teaching instruments in radiology. Radiology conferences interrelate general medicine, surgery, and radiology. Emphasis is given to correlate clinical findings and use of imaging modalities for problem-solving and diagnosis and treatment, including an understanding of the risk/cost/benefit ratio involved in daily clinical practice. (*Medicine 533*)

Senior Subinternship

Students spend four weeks as subinterns during which time they carry the full ward responsibility of an intern on one-half the number of patients usually carried by an intern. The subinternship is designed to improve clerical competence and to prepare the students for the challenges and demands of the internship. Students may choose between subinternships in medicine, surgery, or pediatrics. (*Medicine 536, 537, 538, or 539*)

Musculoskeletal and Rehabilitation

Students obtain outpatient experience in common musculoskeletal disorders and rehabilitation. This includes a three-hour weekly lecture series and clinic experience. The clinics involve physical medicine and rehabilitation, orthopedics, and rheumatology and focus on practical aspects of outpatient care of common disorders.

Emergency Medicine

The objectives of this course is to introduce students to principles of acute care medicine. Students have the opportunity to evaluate patients and formulate effective testing and treatment strategies. Active participation in patient care and procedural skills are emphasized. The course consists of experiences in patient care, assigned readings from emergency medicine references, weekly conferences, and an end-of-rotation final. (*Medicine 630D*)

Patient-Doctor IV Clerkship

The objectives of this course are to provide an opportunity for students to integrate basic and clinical sciences in a single, comprehensive forum; to provide an opportunity to review major, basic science topics; to provide students with an opportunity to challenge their clinical and diagnostic skills; to provide students in the basic science years with an opportunity to observe their more senior fellow students in action, to see that clinical skills, reasoning, and opportunities are in the foreseeable future; to provide a forum for bringing together basic and clinical faculty for a school-wide, educational/academic event. (*Medicine 535*)

ELECTIVES

A total of 13 weeks in the medical curriculum are allotted for elective time. Depending upon their particular interests, needs, and goals, students may take a variety of elective courses consisting of at least 30 contact-hours per week beginning in the fourth year. Four of these weeks are devoted to medically related electives, which may include pediatrics or family medicine for students who take both their subinternship and ICU requirements in the surgical specialties. Two weeks are devoted to emergency medicine.

Electives must be approved by the clinical faculty advisor and the department chair. Students may take up to 20 weeks of course work (core/electives) at institutions other than UCI.

A listing of elective courses and descriptions can be found in the *Elective Book*, which is available in the Science Library (on campus), and the UCI Medical Center Library.

All questions regarding the curriculum, electives, or matters of records should be directed to:

University of California, Irvine
College of Medicine
Office of Medical Education
P.O. Box 4089
Irvine, CA 92697-4089

General information/records: (949) 824-6138; electives: (949) 456-7515; curriculum: (949) 824-4609.

Office of Educational Affairs

Alberto Manetta, M.D., Senior Associate Dean (949) 824-5798

The Senior Associate Dean for Educational Affairs, in cooperation with the Academic Senate faculty, has responsibility for administrative oversight of the educational program leading to the M.D. degree, the postgraduate residency programs, and continuing medical education programs provided for practicing physicians and allied health personnel. The Senior Associate Dean also has administrative oversight responsibility for the Office of Admissions and Outreach. The Medical Education division provides services for the M.D. program which include curriculum development, implementation, management, and evaluation. The Student Affairs division provides student support services which include academic advisement, learning skills counseling, psychological counseling, career counseling, and student records, and coordinates additional services offered through general University offices which include housing, student health, and disabled student services. The Associate Dean of Student Affairs also coordinates the services of the UCI Office of Financial Aid's satellite office at the College of Medicine.

Student Affairs

Deborah Stewart, M.D., Associate Dean (949) 824-8358
 Marianne Ross, Ph.D., Counseling Psychologist (949) 824-5932
 Marcia Albert, Ph.D., Academic Skills Coordinator (949) 824-3415

One of the primary goals of the Associate Dean for Student Affairs is to assist students in their personal and professional development by identifying and responding to issues and problems they encounter while pursuing their medical education. This is accomplished through student support services, student development workshops, and seminars. Support services available through Student Affairs are: workshops on stress management, interpersonal relationships, and assertiveness; career counseling; summer programs; training in communication skills and counseling techniques; academic monitoring; coordination of the faculty advisor program; assistance for students with special needs; and development of student programs such as a wellness curriculum, substance abuse awareness, and sexual harassment awareness.

Admissions and Outreach

Ralph E. Purdy, Ph.D., Associate Dean (949) 824-5388
 Peggy Harvey-Lee, Director (949) 824-4618
 Outreach Counselor (949) 824-8930

Among its primary functions the Office of Admissions and Outreach processes applications for admission; provides administrative support to the Dean's Admissions Committee; counsels prospective, current, and non-accepted applicants; and coordinates interview events and campus tours.

This office has a number of outreach-related functions including: community education (supporting local high school and college campuses in their science-related efforts and providing information concerning health care programs, health-related issues, and career opportunities); serves as the focus for medical student organizations, coordinating their activities with the needs of the community; and is responsible for the administration of the Post-Baccalaureate Program. For more information on these programs refer to the College of Medicine Support Programs section.

Financial Aid

James Miles, Director (949) 824-6476

UCI College of Medicine Financial Aid Office provides financial assistance and financial counseling services to entering and continuing medical students. The office secures, manages, and provides funds in the form of scholarships, grants, and loans to assist in meeting students' educational expenses.

The office coordinates financial aid application materials; tracks documents needed to complete an application; reviews and evaluates information provided by applicants; awards financial aid programs; and conducts research to determine basic educational expense budgets. It also provides students with information on policies and procedures, cost of attendance, and eligibility criteria.

In providing counseling services, the office advises students, reviews their individual circumstances, and provides financial assistance within financial aid program guidelines. It presents financial aid workshops for prospective and enrolled students to enhance their knowledge about financial aid programs and the application process, provides debt management counseling, and conducts entrance and exit interviews.

Medical Education

Alberto Manetta, M.D., Senior Associate Dean (949) 824-6197
 Lloyd Rucker, M.D., Assistant Dean, UCIMC (714) 456-5176
 Robert Wesley, M.D., Assistant Dean, LBVAMC (310) 494-5486
 Robin Kirchoff, Director (949) 824-4609

This office provides support related to curricular issues for departments, faculty, and students; serves as facilitators of new programs and curriculums and supports working committees during curriculum development; oversees calendar issues; maintains records on course materials and grading policies; provides support for the Committee on Educational Policies; oversees student registration and enrollment, student grade reporting, and transcripts; provides assistance to medical student organizations; serves as liaison with main campus organizations, student health insurance, and health clearance issues.

Learning Resource Center

Kenneth Longmuir, Ph.D., (949) 824-7781
 Assistant Dean Education and Curricular Resources

This office assists students in meeting their academic goals through the acquisition and integration of learning tools such as computer-aided instruction and curriculum data base and provides state-of-the art computer work stations designed to utilize the newest teaching technology such as video disk, patient simulation software, and USMLE preparation software. Students are also exposed to electronic communication and electronic searches and

can obtain information on improving their study skills, reducing test anxiety, time management, study plan organization, critical reading and reasoning, and test preparation and endurance.

Continuing Medical Education

Alberto Manetta, M.D., Senior Associate Dean (949) 824-6197
 Nancy Koehring, Director, (949) 824-6039
 Postgraduate Medical Education and Community Programs

The primary goal of the Continuing Medical Education program is to provide multi-disciplinary educational offerings which improve the quality of health care delivery. This is attained by providing continuing medical education through careful needs assessment and in-depth evaluation, resulting in programs which promote reinforcement of basic knowledge, acquisition of new skills, and the dissemination of current medical advances and research.

Graduate Medical Education

Kirk A. Keegan, Jr., M.D. (949) 824-6039
 Nancy Koehring, Director, (949) 824-6039
 Postgraduate Medical Education and Community Programs

The UCI College of Medicine Graduate Medical Education Training Programs attract medical students from prestigious medical schools nationwide. UCI offers 43 ACGME-approved residency and fellowship training programs. There are approximately 650 residents and fellows in these training programs. UCI Medical Center, the Veteran's Affairs Medical Center, Long Beach and Long Beach Memorial Medical Center are the integrated training sites for the residency programs. Other affiliations such as Kaiser Anaheim, Kaiser Riverside, Western Medical Center, City of Hope, Children's Hospital Los Angeles, and Rancho Los Amigos offer additional residents training in specialized fields.

College of Medicine Support Programs

The Office of Admissions and Outreach is designed to meet the challenges of California's changing demographics and to contribute to the College's goal of achieving a broad spectrum of diversity in the student population, and ultimately, in the medical profession. This office is responsible for the recruitment of targeted socioeconomically disadvantaged students who have the potential of service to the medically underserved communities in California. To reach this goal, Admissions and Outreach directs the following programs: Post-Baccalaureate Program, Premedical Conference, and workshops; Reapplicant Conference; support to medical student organizations; academic counseling, liaison with general campus support services, and recruitment workshops at other colleges and universities.

For additional information regarding these programs, contact the Office of Admissions and Outreach.

POSTGRADUATE EDUCATIONAL PROGRAMS

Residency Programs

The College of Medicine and its affiliated hospitals offer approximately 650 residency positions in almost all areas of medicine. Training levels range from first-year residencies through sixth-year-level subspecialty fellowships. Inquiries about specific programs should be directed to the Program Director as listed in the *Directory of Residency Training Programs*, published each year by the American Medical Association, or to the chair of the appropriate College of Medicine department.

All residency programs meet the formal standards of the Accreditation Council for Graduate Medical Education and the appropriate

specialty boards. UCI adheres to the Health Professions Educational Assistance Act of 1976, P.L. 94-484, Section 709, regarding shared-schedule residency training positions.

Residents in all programs rotate to the UCI Medical Center at some time. Residents in anesthesiology, dermatology, diagnostic radiology, therapeutic radiology, medicine, neurology, ophthalmology, pathology, surgery, physical medicine and rehabilitation, radiation oncology, and psychiatry also rotate to the Long Beach Veterans Affairs Medical Center (LBVAMC). Residents in medicine, obstetrics and gynecology, neurology, ophthalmology, pathology, pediatrics, physical medicine and rehabilitation, diagnostic radiology, and surgery also rotate to the Memorial Hospital Medical Center (MHMC), Long Beach. Residents may also spend periods of time at other affiliated hospitals and clinics.

ANESTHESIOLOGY

The Anesthesiology Residency Program offers training for residents at the postgraduate PG-2 to PG-4 levels. The residents spend three years in intensive clinical anesthesia training at LBVAMC and UCI Medical Center, with a one-month rotation at Children's Hospital of Los Angeles and a month of cardiac anesthesia at Cedars-Sinai Medical Center (Los Angeles). Training is offered in general anesthesia, regional anesthesia, cardiac anesthesia, pediatric anesthesia, trauma anesthesia, neurosurgical anesthesia, anesthesia for all other surgical subspecialties, dental anesthesia, obstetric anesthesia, intensive care, respiratory therapy, and treatment of pain syndromes and outpatient anesthesia. Residents in their fourth postgraduate year may elect to take three to six months of subspecialty training in obstetrical anesthesia, critical care medicine, pediatric anesthesia, pain management, cardiac anesthesia, or research.

DERMATOLOGY

The Dermatology Residency Program provides a strong foundation in clinical dermatology, as well as experience in investigative dermatology. All areas of dermatologic care and its subspecialties are included in the three-year program, which integrates the activities of outpatient and inpatient facilities of LBVAMC, UCI Medical Center, faculty offices, and other clinical settings.

EMERGENCY MEDICINE

The Emergency Medicine residency was established in 1988 and has full accreditation by the Residency Review Committee. The program has 18 residents, six for each of three post-graduate years. The UCI Medical Center Emergency Department is a high-acuity, Level I Trauma Center, and helicopter/paramedic base station, treating over 40,000 patients annually. Ten board-certified emergency medicine faculty provide 24-hour patient care and supervision of residents and medical students. The Division of Emergency Medicine is active in public affairs, community service, and research in the areas of prehospital care, instructional methods, health policy, critical care technology, and infectious disease, among others.

FAMILY MEDICINE

The Family Practice Residency Program aspires to train competent family physicians who are prepared for practice in a setting of economic, ethnic, and cultural diversity. The program combines strong clinical rotations with ongoing training in family medicine that emphasizes behavioral medicine, cross-cultural medicine, preventive medicine, and geriatrics. Interest in health care for the medically underserved is encouraged.

INTERNAL MEDICINE

The resident positions are divided into a traditional three-year track with special emphasis on primary care and a preliminary tract. Residents spend the majority of their time at the UCI Medical Center and LBVAMC. They also rotate to Memorial Medical Center.

Teaching is done primarily by full-time faculty within the Department of Medicine. Subspecialty fellowships are offered in basic and clinical immunology, cardiology, endocrinology and metabolic diseases, gastroenterology, hematology/oncology, infectious disease, nephrology, primary care, pulmonary disease, rheumatology, and occupational medicine.

NEUROLOGY

The Neurology Residency Program emphasizes the education and training of neurologists to meet the clinical needs of their patients by using both traditional methods and new techniques, some of which have been developed at the UCI Medical Center. Training takes the form of graded responsibility for inpatient care, regular outpatient clinical responsibilities, and rotations in associated neurological specialties. The Department strongly believes that an understanding of basic research methods is essential for the training of clinicians who will deal with the diversity of clinical problems in modern neurology. Thus, during the three-year training program, residents have the opportunity to participate in a variety of ongoing basic and clinical research projects within the Department.

OBSTETRICS AND GYNECOLOGY

This four-year program provides a solid foundation of reproductive pathophysiology in the obstetric, gynecologic, endocrinologic, and oncologic aspects of women's health care. Based on this foundation, training continues with progressive resident responsibility for operative and medical management and surgical techniques. While predominantly clinical in scope, the program is strongly flavored by academic and research exposure. Training is provided in general obstetrics and gynecology with rotations in the subspecialties of perinatology, oncology, and endocrinology. There are six resident positions available each year in this four-year training program.

OCCUPATIONAL MEDICINE

This residency program is offered by the Division of Occupational Medicine, Department of Medicine. It is intended for physicians who are seeking certification by the Board of Preventive Medicine. A prerequisite to participation is a minimum of one year of postgraduate clinical training in a primary care discipline. The objective of the Program is the training of physicians in the fields of occupational medicine and industrial medical care. The resident is provided an academic foundation in occupational medicine, industrial hygiene, environmental toxicology, and epidemiology, in addition to practical experience in preventive medicine as it is applied to employed persons. This two-year program includes didactic training and clinical and field experience in occupational health and safety. Upon completion of training, the resident is qualified to enter the specialty practice of occupational medicine in an industrial setting, in private practice, in a government agency, or in an academic institution.

OPHTHALMOLOGY

The three-year Ophthalmology Residency Program provides extensive clinical experience in conjunction with yearly basic research projects. The Department focuses on the total care of the patient, and training in a broad spectrum of disease and/or injury is coupled with an increasing level of responsibility in patient management. Surgical experience is provided in the full range of ophthalmic subspecialties, and residents also receive instruction and practical application in the newest laser surgical techniques as well as the use of state-of-the-art diagnostic equipment.

ORTHOPAEDIC SURGERY

The Department of Orthopaedic Surgery Residency Program is a four-year training program which follows an internship year in the Department of Surgery. The program is designed to provide exposure and experience in all areas of orthopaedics including trauma, reconstructive and joint replacement surgeries, pediatric orthopaedics, spine surgery, sports medicine, foot surgery, and rehabilitation. It is structured for maximum resident participation and minimizes private hospital rotations. The program's teaching hospitals include UCI Medical Center, LBVAMC, Children's Hospital of Orange County, Sports Medicine-Kerlan Jobe in Inglewood, Rancho Los Amigos Hospital in Downey, and Kaiser Permanente Medical Center in Anaheim. There are four resident positions available each year.

OTOLARYNGOLOGY—HEAD AND NECK SURGERY

The Department of Otolaryngology—Head and Neck Surgery offers a four-year residency program providing extensive clinical experience in conjunction with an academic approach to resident research projects. One year of general surgery training is required. The four-year program provides a breadth of training in otological surgery, head and neck surgery, facial plastic surgery, and nasal and paranasal sinus surgery. Residents receive an extensive clinical experience at UCI Medical Center, LBVAMC, and Kaiser Foundation Hospital—Anaheim.

This training is targeted to be of the caliber necessary for young surgeons to embark upon an academic career. This training is excellent for those going into private practice as well.

PATHOLOGY

The Department of Pathology offers a residency training program covering all areas of anatomic and clinical pathology. The program is affiliated with Memorial Medical Center, Long Beach and LBVAMC. The training for the combined anatomic and clinical pathology program consists of six months training in both anatomic and clinical pathology each year. The first two years consist of a core program providing exposure to each of the subspecialty areas of clinical pathology as well as surgical pathology, autopsy pathology, and cytopathology. The program is flexible to permit concentrated study in one of the subspecialties of clinical pathology or in straight anatomic pathology during the last two years.

Ample opportunities for research and teaching exist for individuals wishing an academic career. The opportunity for excellent preparation is also provided for individuals planning on a private practice in a community hospital.

PEDIATRICS

The Pediatric Residency Program emphasizes the interrelationship of patient care, didactic teaching, and research in the training of the pediatric resident physician. The focus of the Department is on the total care of the child from birth through young adulthood. A strong clinical and educational foundation is provided through experiences in a broad spectrum of disease and/or injury as well as training in biosocial pediatrics, preventive health care, and community resources.

The program offers variety and depth due to the diversity of the Department's two major teaching hospitals—the UCI Medical Center and the Miller Children's Hospital (located at Memorial Hospital Medical Center, Long Beach). The faculty at these institutions provide a comprehensive teaching program in general pediatrics and cover the full range of pediatric subspecialties. The care of children seen through the two hospitals represents a cross-section of racial, cultural, and socioeconomic groups from a local population of more than 2.5 million. Thus, pediatric residents are exposed to a wide range of problems presented in settings ranging from intensive care to supervised office-based practice.

PHYSICAL MEDICINE AND REHABILITATION

The Department of Physical Medicine and Rehabilitation offers a three-year residency for applicants who have completed a one year internship. The focus is on the diagnosis and comprehensive treatment and care of patients with neuromusculoskeletal or cardiopulmonary disabilities, from newborns to the elderly. Residents are also involved in research and medical student teaching.

PSYCHIATRY

The Psychiatry Residency Program is a four-year program that fosters individuality, academic excellence, and broad patient experience. The core curriculum includes basic seminars, adult inpatient and outpatient psychiatry, child psychiatry, medicine, neurology, emergency psychiatry, consultation and liaison psychiatry, forensic psychiatry, psychopharmacology, and substance abuse. Residents spend time at the UCI Medical Center, private facilities, LBVAMC and a State hospital, all of which provide a broad base and mix of experience in psychopathology. A wide variety of elective courses and experiences are available in this flexible, eclectic program. All residents are expected to complete a research project of high quality prior to completion of the program.

RADIOLOGICAL SCIENCES (DIAGNOSTIC RADIOLOGY)

The Department of Radiological Sciences has 28 residents training for certification in diagnostic radiology. The program is based at the UCI Medical Center and integrated with LBVAMC, and MHMC. Residents rotate through all three institutions.

The objectives of the program are (1) to provide individuals with a solid background in all modalities of imaging, (2) to provide an atmosphere conducive to research and to encourage opportunities for residents to participate in research work with physicians and scientists, and (3) to provide elective periods in which residents can work in given areas of the Department to increase their expertise or work on research projects during their residency training.

The residency program includes specialized training in interventional radiology, ultrasonography, nuclear medicine, computerized tomography, magnetic resonance imaging, and spectroscopy, as well as opportunities to participate in major research programs conducted in the Department. All residents are expected to complete at least one major paper during the program.

Candidates are accepted only at the postgraduate-2 level for a four-year program. Fellowships are available for an additional year in specialized areas following the successful completion of the residency. The newest technologies in the field of radiological sciences are available at UCI Medical Center and the College's affiliated institutions.

RADIATION ONCOLOGY

The Residency Training Program in Radiation Oncology is designed to prepare suitably qualified applicants for academic and clinical practice careers in radiation oncology. Candidates enter a four-year program which includes clinical experience, didactic lectures, and integrated research experience. Unique opportunities exist for training in the use of interstitial and intracavitary treatment using radionuclides and specially designed applicators. An elective rotation may be taken in related branches of medicine (e.g., medical oncology, surgical pathology, gynecologic oncology) or at other radiation oncology departments. The Program includes rotations at three participating hospitals: UCI Medical Center, LBVAMC, and MHMC.

SURGERY

The philosophy underlying all aspects of surgical training is that surgery is best learned, taught, and practiced as applied clinical physiology. Operative techniques and applied anatomy receive appropriate attention. Major portions of clinical experience, teaching, conferences, research, and patient care are oriented toward understanding and correcting disordered human biology. The surgical specialty involves more years of training than other medical disciplines due to the breadth of diseases and complexity of pathophysiology involved in surgery. The Department offers residencies in general surgery, neurological surgery, orthopedic surgery, plastic surgery, and urology.

GRADUATE ACADEMIC PROGRAMS

The College's basic medical science departments of Anatomy and Neurobiology, Biological Chemistry, Microbiology and Molecular Genetics, and Physiology and Biophysics participate jointly with the School of Biological Sciences in offering graduate instruction leading to the M.S. and Ph.D. degrees in Biological Sciences. The Departments of Community and Environmental Medicine, Radiological Sciences, and Pharmacology offer M.S. and Ph.D. programs. In addition, the Department of Pediatrics offers an M.S. degree in Genetic Counseling.

Application materials may be obtained by writing to the individual graduate programs or the:

University of California, Irvine
Office of Research and Graduate Studies
120 Administration Building
Irvine, CA 92697-3175
(949) 824-7295

Anatomy and Neurobiology

364 Medical Surge II; (949) 824-6050
 E-mail: anatomy@uci.edu
 World Wide Web: <http://www.uci.edu/~anatomy/>
 Richard T. Robertson, **Department Chair**

Faculty

Tallie Z. Baram: Developmental neurobiology of seizures; CNS mechanisms of stress response
 Robert H. Blanks: Vestibular physiology and anatomy
 Ralph A. Bradshaw: Growth factor action; signal transduction; protein processing
 Anne L. Calof: Developmental neurobiology; molecular mechanisms of neurogenesis and programmed cell death
 James H. Fallon: Neuronal growth factors and neurotransmitter interactions
 Christine M. Gall, *Department Vice Chair*: Regulation of neuronal gene expression; neurotropic factors
 Roland A. Giolli: Experimental neuroanatomy; visual system
 Edward G. Jones: Sensory-motor anatomy and physiology
 Glenn H. Kageyama: Development of oxidative metabolism in the brain
 Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
 Leonard M. Kitzes: Auditory system physiology and development
 Frances M. Leslie: Effects of drugs of abuse on central nervous system development
 W. Ian Lipkin: Molecular/cellular biology of neurotropic viruses; Borna disease virus; animal models for neuropsychiatric diseases; viral vectors for targeted CNS delivery
 Diane K. O'Dowd: Regulation of neuronal excitability; development of functional synaptic connections
 Charles E. Ribak: Neurocytology; neurotransmitters; neuronal circuitry
 Richard T. Robertson: Developmental neurobiology; forebrain development
 Martin A. Smith: Cellular and molecular mechanisms of synapse formation
 Ivan Soltesz: Molecular and cellular neurobiology
 John E. Swett (Emeritus): Peripheral nervous system, spinal cord, pain mechanisms
 John H. Weiss: Mechanisms of neural degeneration

Research programs in the Department of Anatomy and Neurobiology focus on the neurosciences. Faculty interests range across the broad field of neuroscience research, including cellular and molecular neurobiology, mechanisms of development, ion channel physiology, experimental neuroanatomy, structure and function of sensory and motor systems, and response to injury and regeneration. The Department maintains facilities for electron microscopy, laser confocal microscopy, and computer-based imaging and informatics. Students performing graduate work in the Department are encouraged to become proficient in multiple areas of study using interdisciplinary techniques.

The Department offers graduate training in neuroscience under the auspices of the School of Biological Sciences in conjunction with the combined program in Molecular Biology, Genetics, and Biochemistry (MBGB), which is described in a previous section. The program leads to the Ph.D. degree in Biological Sciences. In concert with several other departments, a combined neuroscience core curriculum has been developed which includes course offerings in systems neurobiology, neurophysiology, and cellular, molecular, and developmental neurobiology. These are recognized courses that may be taken as complete or partial fulfillment of the elective requirements of the MBGB program. Students wishing to enter the Department's graduate program are encouraged to include some or all of these courses during their first and second years in the combined program.

Students admitted into the MBGB program who subsequently select a focus in the Neurobiology track and a research advisor in the Department, begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students are required to attend departmental seminars and participate in the Department's Journal Club. The dissertation research topic is chosen by the student in consultation with the research advisor. The majority of the third and fourth years are devoted to research. By the end of the third year, students take their advancement-to-candidacy examination by presenting and defending a proposal for specific dissertation research. Students are expected to graduate within five years of entering the program.

Course descriptions may be found in the School of Biological Sciences section.

Biological Chemistry

Building D, Room 240, Medical Sciences I; (949) 824-6051
 Suzanne B. Sandmeyer, **Department Chair (Acting)**

Faculty

Stuart M. Arfin: Protein processing and turnover; functions of ubiquitin
 Deborah L. Grady: Mapping and sequence analysis of the human genome
 Chris L. Greer: RNA processing and nuclear export; tRNA gene expression
 Murray Korc: Alterations in signal transduction pathways in human disease
 Haoping Liu: Signal transduction, cell cycle regulation, hypha development in yeast
 Calvin S. McLaughlin: Macromolecule biosynthesis; control of cell division
 Frank Meyskens: Biology of melanoma
 Masayasu Nomura: RNA polymerase I; nucleolus and ribosome synthesis; nuclear transport and function
 Robert K. Moyzis: Chromosome structure and gene expression
 Suzanne B. Sandmeyer: Retrovirus-like elements in yeast
 Robert E. Steele: Molecular biology of *Hydra* development
 Leslie M. Thompson: Molecular/biochemical analysis of skeletal dysplasias and Huntington's Disease
 Kyoko Yokomori: Gene expression and chromatin structure

Faculty research interests in the Department of Biological Chemistry focus on the structure and function of chromosomes, signal transduction and its role in cell growth control, regulation of gene expression (transcription, RNA splicing, protein synthesis, and protein localization), and the molecular basis of development. Genome sequencing projects are making it possible for faculty to exploit

information learned about gene function in model organisms for understanding human disease processes. Students are exposed to technical expertise in all facets of current research in molecular biochemistry from protein chemistry to genetic engineering and gene mapping.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year. Students are required to attend and participate in the departmental research seminar and are required to attend departmental seminars. In addition, students are required to complete two advanced-level graduate courses subsequent to entering the Department's Ph.D. concentration. In the third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Course descriptions may be found in the School of Biological Sciences section.

Several faculty within the Department also are members of the graduate program in Protein Engineering, which is described in the School of Biological Sciences section.

Environmental Toxicology

367C Medical Surge II; (949) 824-4769

Daniel B. Menzel, **Department Chair**

Ronald C. Shank, **Graduate Program Director**

Faculty

Dean B. Baker: Environmental medicine and clinical toxicology;

epidemiology; clinical effects of heavy metals, pesticides, and hazardous waste

Kenneth M. Baldwin: Exercise physiology and muscular stress

Stephen C. Bondy: Neurotoxicology; biochemical changes in membranes resulting from toxic exposures

Byung H. (Ben) Choi: Mechanisms in chemical pathology; toxicology of heavy metals in the central nervous system

Anumantha Kanthasamy: The role of neurotoxicants in the onset and progression of neurodegenerative disorders, especially Parkinson's disease

Yutaka Kikkawa: Pulmonary free radical biology; cytochrome P-450 enzyme system; relationship to toxicity of environmental pollutants, oxygen toxicity and ARDS; evaluation of sexual differentiation after neonatal insults with xenobiotics and hyperoxia

Michael T. Kleinman: Uptake and distribution of inhaled toxic materials in the respiratory tract; effects of air pollutants on cardiopulmonary function

Calvin S. McLaughlin: Biochemical toxicology and regulation of protein synthesis; mechanisms of action of mycotoxins including trichothecenes

Daniel B. Menzel: Toxicokinetics and mechanisms of carcinogenesis; biochemical toxicology

Betty H. Olson: Environmental microbiology and water chemistry; public policy issues in environmental toxicology

Robert F. Phalen: Biophysics, aerosol science, and inhalation toxicology; toxicity of mixtures of particles and gases, lung defenses, and particle deposition in airways.

Bector Said: DNA modification by successive exposure to multiple carcinogens; gene cloning to produce a protein to serve as a biomarker for cervical and breast cancer

Ronald C. Shank: Biochemical mechanisms in toxic tissue injury with emphasis on chemical carcinogenesis; application of tools of molecular biology to study cytotoxicity

The Department of Community and Environmental Medicine provides training in environmental toxicology, culminating with the award of the degree of Master of Science or Doctor of Philosophy in Environmental Toxicology. The program in Environmental Toxicology provides students with the knowledge and skills necessary and appropriate to teach and/or conduct basic and applied research

programs in inhalation/pulmonary toxicology, environmental carcinogenesis, biochemical neurotoxicology, chemical pathology, phototoxicity, toxicology of natural products, and toxicokinetics.

Toxicology involves scientific study of the entry, distribution, bio-transformation, and mechanism of action of chemical agents harmful to the body. The program interprets environmental toxicology as the study of the effects and mechanisms of action of hazardous chemicals in food, air, water, and soil, in the home, workplace, and community, and considers experimentally and theoretically such diverse research problems as: (1) new scientific approaches to toxicological evaluation of environmental chemicals such as air and water pollutants, food additives, industrial wastes, and agricultural adjuvants; (2) mechanisms of action in chemical carcinogenesis and mutagenesis; (3) the molecular pathology of tissue injury in acute toxicity; and (4) scientific principles involved in extrapolating from laboratory animal data to expected effects on human health in environmental exposures.

Students entering the program have varied backgrounds, including chemistry, biology, and physiology. The curriculum is based on a foundation of basic and health sciences with applications of scientific principles to environmental problems. Formal course work is enriched by a strong commitment to student-professor interaction throughout the program. An important and integral part of the learning process is an early and intensive involvement of the student in ongoing original research projects in environmental toxicology, especially inhalation/pulmonary toxicology, chemical carcinogenesis, biochemical toxicology, chemical pathology, and neurotoxicology.

In addition to meeting the general admission requirements set by the Office of Research and Graduate Studies, applicants must be admitted by an Admissions Committee composed of faculty members from the Department of Community and Environmental Medicine. Candidates are selected on the basis of a balanced evaluation of the following criteria: (1) prior scholastic performance, including a consideration of grade point average, course load, nature of courses taken, and college attended; (2) recommendations by professors and others; (3) scores on the Graduate Record Examination; the Subject Test in either Biology or Chemistry is strongly recommended; (4) an interview by the Admissions Committee, when feasible; and (5) experience in undergraduate research. The applicant must have received a bachelor's degree in a biological or physical science, in a premedical curriculum, or have an acceptable equivalent. Applicants with a bachelor's degree in engineering may qualify for admission into the program if they have had sufficient training in the biological and physical sciences.

Undergraduate preparation of applicants should include six quarter units in general biology, zoology, bacteriology, or anatomy; 12 quarter units in mathematics, including calculus through vector analysis and differential equations; 12 quarter units of chemistry, including four quarter units of organic chemistry; 12 quarter units of physics, including optics; and four quarter units in molecular biology or biochemistry. Outstanding applicants who lack one or two of these prerequisites may be given an opportunity to take the required course(s) either before admission or during the first year in the graduate program; in such circumstances, none of these undergraduate courses may be used to satisfy the program elective or core course requirements. Upper-division or graduate science courses may be considered as substitutes for the above prerequisites by the Admissions Committee.

The graduate core curriculum for the Ph.D. degree includes Environmental Toxicology 201, 206A-B, 207, 298A-B-C, and 16 units from an approved elective pool. This pool consists of Environmental Toxicology 202, 204, 212, 220, 230; Physiology 206A-B; Anatomy 203A-B; Molecular Biology and Biochemistry 203, 204; and Developmental and Cell Biology 231B. Ph.D. students must

also fulfill comprehensive examination, qualifying examination, teaching, and research dissertation requirements.

Requirements for the M.S. degree may be satisfied in one of two ways: Under Plan I, students complete the core program (Environmental Toxicology 201, 206A-B, 207, 298A-B, 299A-B-C, and eight units from the approved elective pool) with an average grade of B or better, and, under the direction of a faculty advisor, prepare a thesis that is acceptable to the thesis committee. Under Plan II, students complete the core program (Environmental Toxicology 201, 206A-B, 207, 290A-B-C, 298A-B-C, and eight units from the approved elective pool) with an average grade of B or better, prepare a scholarly paper based on individual study in an area of toxicology under the supervision of a faculty member, and satisfactorily pass the written comprehensive examination.

Opportunities for individual training and independent research experience exist in inhalation and pulmonary toxicology, atmospheric chemistry and aerosol science, chemical carcinogenesis, neurochemistry, biochemical toxicology, toxicology of naturally occurring compounds, exercise physiology and stress, chemical pathology, and environmental microbiology and chemistry.

Research grants and contracts are available to support qualified students as research assistants.

GRADUATE COURSES IN ENVIRONMENTAL TOXICOLOGY

201 Principles of Toxicology (4) F. Problem solving to demonstrate principles of toxicology; quantitative dose-response relationship; toxicant-target (receptor) interaction emphasizing interspecies differences in Ah receptor and dioxins; complete *in vivo* metabolism of xenobiotics by mammalian systems; integration of organ responses to toxic agents.

202 Environmental Toxicology (4) W. Analysis of real problems involving toxic chemicals and the human food, air, and water supplies, occupational exposures, and life styles. Formal problems will be considered by small groups of students and discussed by the class. Prerequisite: Toxicology 201.

204 Neurotoxicology (4) F, even years. The effects of various harmful chemicals upon nervous system function. Emphasis given to the molecular events underlying neurological damage and to the relation of such processes to basic mechanisms of neurobiology.

206A-B Target Organ Toxicity (6-6) F, W. Analysis of responses occurring in twelve organ systems of humans exposed to environmental chemicals at toxic levels; distinctive cellular and tissue structure and physiological function; toxicological responses discussed in terms of phenomena, mechanisms of action, and methods of study.

207 Experimental Design and Interpretation of Toxicology Studies (2) W. Introduction to methods of structuring toxicology experiments and analyzing data including experimental design, data distributions, sample sizes, hypothesis testing, linear regression, analysis of variance, multiple comparison testing, and non-parametric tests.

212 Inhalation Toxicology (4) S, odd years. The principles and practice of laboratory inhalation toxicology. Topics include aerosols, gases, respiratory tract structure and function, lung defenses, aerosol deposition exposure techniques, characterization of exposure atmospheres, experimental designs, animal models, and regulations and guidelines.

220 Industrial Toxicology (4) F. Analysis of responsibilities toxicologists have in industry, including product safety, generating material safety data sheets, animal testing, ecotoxicological testing, risk/hazard communication, and assisting industrial hygienists and occupational physicians; emphasis on interdisciplinary nature of industrial toxicology and communication skills. Prerequisite: Environmental Toxicology 206A-B.

230 Chemical Mutagenesis and Carcinogenesis (4) F. Molecular mechanisms in carcinogenesis; structure-activity relationships; DNA repair; multi-stage models; proto-oncogenes and oncogenes; experimental bases for mechanisms; mutagenicity and carcinogenicity testing. Prerequisites: graduate standing, Environmental Toxicology 201, and Molecular Biology and Biochemistry 203.

290 Independent Study in Environmental Toxicology (4) F, W, S. With consent from a faculty member who will supervise the program, a student may receive credit for individual study in some area of toxicology, culminating in the completion of a scholarly paper on the subject. May be repeated for credit as the topics vary.

297 Advanced Topics in Occupational Toxicology (2) F, W, S. Discussions with clinical and research faculty in environmental toxicology and occupational medicine on current toxicology problems in the workplace and critical review of current publications in the field. Journal club/seminar format.

298A-B-C Environmental Toxicology Seminar (2) F, W, S. Presentation and discussion of current research problems and issues by students, postdoctoral fellows, faculty, and guests, covering the broad research and policy areas of environmental toxicology. Satisfactory/Unsatisfactory only. Open to Environmental Toxicology graduate students only.

299 Research Problems (1 to 12) F, W, S. Research work for the M.S. thesis or Ph.D. dissertation.

Genetic Counseling

Building 27, Route 81, UCI Medical Center; (714) 456-5789

Maureen Bocian, **Division Chief**

Ann P. Walker, **Graduate Program Director**

Faculty

Maureen Bocian: Heterogeneity and variability in genetic syndromes; new syndrome identification; skeletal dysplasias; neurofibromatosis

John Jay Gargus: Genetic metabolic diseases; molecular genetics of cell membrane disorders

Moyra Smith: Development and chromosomal assignment of DNA probes for human genes; linkage and gene mapping in neurogenetic disorders; genetics and regulation of alcohol metabolizing enzymes

M. Anne Spence: Population and quantitative genetics; linkage and mapping

Kathryn Steinhaus: Prenatal genetic diagnosis

Ann P. Walker: Genetic counseling; delivery of genetic services; computer uses in clinical genetics; genetics education; cancer genetics

The Division of Human Genetics in the College of Medicine's Department of Pediatrics offers graduate education leading to the Master of Science degree in Genetic Counseling. Graduates of the program are prepared to function as members of genetics teams engaged in providing clinical services, teaching, and research. Other roles for program graduates may include employment in local, state, or federal genetics programs, in categorical disease foundations, or in public education.

Division faculty and staff are involved in teaching, research, and patient service. Clinical activities include evaluation, early ascertainment, prenatal diagnosis, prevention, and management of genetic disorders, birth defects, and developmentally disabling conditions. Among faculty research interests are gene mapping and linkage analysis using DNA probes and quantitative methods; delineation of new malformation and chromosomal syndromes; late-onset single-gene disorders; the incidence and perception of genetic disease, birth defects, and developmental disabilities in underserved ethnic populations; factors in the etiology of chromosomal abnormalities and congenital malformations; the cytogenetics of cancer and sexual differentiation; psychosocial issues in genetic disease and prenatal diagnosis; and delivery of genetic services.

During the six to eight academic quarters of the program, students must complete a sequence of core courses in medical genetics, biochemical and molecular genetics, cytogenetics, child development, counseling issues and techniques, research methodology, ethical issues, and community resources. Experiential professional training occurs concurrently with formal course work in a variety of clinics at the UCI Medical Center and affiliated hospitals, in the prenatal diagnosis program, in the cytogenetics laboratory, and in certain community agencies. Participation in these and other divisional and departmental professional and educational activities such as lectures, seminars, Pediatric and Obstetrics Grand Rounds, cytogenetics rounds, and research, counseling, and patient management conferences is expected throughout the program.

Completion of the program requires a minimum of 58 quarter units of credit, a research thesis which should be publishable, and demonstration of satisfactory professional skills in genetic counseling. The program director serves as faculty advisor to students, although teaching and supervision of professional experiential training is shared among all division faculty and staff, who frequently review student progress. In the second year, development of professional skills can be individualized according to the student's needs and interests. It is anticipated that graduates will be eligible for American Board of Genetic Counseling certification within a year of completing the program.

Recommended undergraduate preparation includes course work in the biological and social sciences, especially in genetics, biochemistry, psychology, and human development. Course work in statistics is desirable. Facility in Spanish or a Southeast Asian language is a considerable asset. Extracurricular and/or employment experiences which provide evidence of the student's maturity, interpersonal skills, and promise as a genetic counselor figure prominently in the admissions decision. References should speak to these qualities as well as to the academic qualifications of the applicant. Graduate Record Examination (GRE) General Test scores must be submitted and Subject Test scores will be considered if they are available.

Applications are accepted for the fall quarter only and must be completed by February 1. Because of keen competition for places in the program, a two-stage admissions process is employed, with approximately one-fifth of the applicants being invited for interviews at UCI following an initial review of applications by the faculty. Interviews usually are conducted from March through mid-April, and the final selection is made from among the interviewed candidates by late April.

GRADUATE COURSES IN GENETIC COUNSELING

200A Introduction to Medical Genetics and Cytogenetics (4) F. Lecture, three hours. Covers current concepts regarding mitosis, meiosis, the cell cycle, and chromosome ultrastructure and function. Clinical disorders caused by chromosomal aneuploidy, duplication, and deletion, and principles of Mendelian, chromosomal, and multifactorial and nontraditional inheritance are presented and illustrated.

200B Quantitative Genetics, Genetic Screening, Teratology (4) W. Lecture, three hours; cytogenetics conference, one hour. Quantitative aspects of human genetics, including population studies, linkage analysis, and genetic risk determination. Principles and techniques of prenatal, neonatal, and heterozygote screening. Pregnancy, delivery, and pre- and postnatal growth and development, with attention to reproductive and fetal effects of drugs, radiation, and other environmental factors. Prerequisite: 200A. Genetic Counseling 200B and 200F may not both be taken for credit.

200C Human Genetic Disorders (4) S. Lecture, three hours; cytogenetics conference, one hour. Reviews a wide variety of genetic diseases, syndromes, and malformations from the standpoints of inheritance, diagnosis, natural history, and management. Prerequisites: 200A and 200B.

200D Disorders Due to Inborn Errors of Metabolism (4) F or W (alternate years). Lecture, three hours. Aspects of biochemistry and metabolism are reviewed with special emphasis on genetic abnormalities which lead to inborn errors of metabolism. Diagnostic procedures, heterozygote detection, treatment, counseling issues, and prenatal diagnosis are reviewed. Prerequisite: 200A or consent of instructor.

200E Molecular Genetics (4) S (alternate years). Lecture, two hours. The derivation of different types of DNA probes and DNA libraries, restriction endonuclease polymorphisms, assignment of genes to chromosomes, and genetic linkage. Particular emphasis is placed on the use of recombinant DNA technologies and genetic linkage analysis for diagnosis of human genetic disease. Prerequisite: 200A, 200D, or consent of instructor.

200F Quantitative Genetics (2) W. Quantitative aspects of human genetics, including population studies, segregations analysis, and genetic risk determination. Prerequisite: 200A or consent of instructor. Genetic Counseling 200F and 200B may not both be taken for credit.

200G Hereditary Cancer Counseling (4) S. Elements of genetic counseling for hereditary cancer. Cancer biology: genetic mechanisms and environmental influences in carcinogenesis; tumor pathology; cancer epidemiology and gene mapping. Diagnosis, prevention, surveillance and treatment for inherited cancers. Psychosocial, ethical, and legal aspects of cancer risk assessment. Prerequisites: Genetic Counseling 200A, 200B.

200L Cytogenetics Laboratory (4) W, S, Summer. Laboratory, 10 hours/week. A practicum introducing methods of specimen collection, short-term lymphocyte and bone marrow culture, long-term fibroblast and amniocyte culture, harvesting and slide preparation, chromosome staining, microphotography, and darkroom techniques. Microscopic chromosome analysis, photographic karyotyping, and the appropriate use of cytogenetic nomenclature are emphasized. Open only to Genetic Counseling students.

201A Introduction to Genetic Counseling (2) F. Seminar and fieldwork. By observing genetics evaluations, consultations, and patient management conferences, and through directed readings and discussions, students are introduced to the process of diagnosis, management, and counseling for genetic disease. Psychosocial issues in genetics are emphasized; instruction includes interviewing techniques, pedigree construction, and various other clinical skills. Corequisite: Genetic Counseling 202A. Open only to Genetic Counseling students.

201B Clinical Rotation I (4) W, S, Summer. Fieldwork. Provides extensive supervised experience in history taking, interviewing, and psychosocial assessment in the clinical genetics setting. Students independently perform telephone, office, and home-visit intake interviews, participate in counseling, and present cases at patient management conferences. Open only to Genetic Counseling students.

201C Clinical Rotation II (4) S, Summer. Fieldwork. Provides further supervised experience in genetic counseling, case management, clinic administration and organization, and the use of community resources. Emphasis is on sharpening counseling skills and on developing a professional identity and code of ethics. Open only to Genetic Counseling students.

201D Prenatal Diagnosis Counseling (4) Summer. Fieldwork. A practicum with extensive supervised experience in prenatal diagnosis counseling which provides the student with the opportunity to conduct genetic counseling sessions semi-independently and to further develop clinical skills. Open only to Genetic Counseling students. Prerequisites: 200A, 200B, and 200C.

202A Counseling in Human Genetics: Theory and Methods (3) F. Theoretical approaches, counseling models and methods, and bio-psychosocial assessment strategies are examined in the context of genetic counseling. Contract-setting, working alliance, the use of self and evaluation methods. Beginning counseling and peer supervision skills are practiced in class. Open only to Genetic Counseling students.

202B Community Resources (2) W. Lectures, guest speakers, and community visits acquaint the genetic counselor with public and private health care and funding agencies, parent support and advocacy groups, and other resources available to assist individuals and families confronted with genetic disorders, developmental disabilities, and birth defects. Open only to Genetic Counseling students.

202C Ethical Issues in Human Genetics (2) S. Explores major social, legal, and ethical issues in genetic counseling including those arising in genetic screening, prenatal diagnosis, informed consent, privacy and confidentiality, rights of the disabled, new genetic and reproductive technologies, treatment, and access to services. Prerequisite: consent of instructor.

203 Child Development for Genetic Counselors (4) S (alternate years). Overview of normative human development from conception through adolescence. Impact of genetic disease and/or developmental disability at various stages of cognitive, perceptual, motoric, social, and emotional development. Family dynamics and issues of separation/individuation, sexual identity formation, and teen pregnancy issues. Open only to Genetic Counseling students. Formerly Genetics 203A and 203B.

204 Professional Skills Development (4) F, W, S. Hones and augments existing competencies in genetic counseling through ongoing clinical experiences. Students develop skills in use of computers for genetics applications, provision of community and professional education, and clinic administration. Further experience in genetics laboratories or specialty clinics may be elected by students. Open only to Genetic Counseling students.

295 Master's Thesis Research and Writing (2 to 8) F, W, S. Tutorial. Under the supervision of one or more faculty members, the student designs and conducts a research project or completes a case report. A problem in the cytogenetics, biochemical, clinical, psychosocial, or behavioral areas of medical genetics may be investigated. Prerequisite: consent of instructor.

Microbiology and Molecular Genetics

Building B, Room 240, Medical Sciences I; (949) 824-5261

Bert L. Semler, **Department Chair**

Faculty

Alan G. Barbour: Microbial pathogenesis
Dennis D. Cunningham: Proteases and protease nexins: regulation of neural cells
Alan L. Goldin: Molecular analysis of ion channel function
Sidney H. Golub: Cellular immunity and tumor biology
George A. Gutman: Potassium channel and immunoglobulin super-family genes
G. Wesley Hatfield: Effects of DNA topology on transcription
W. Ian Lipkin: Molecular/cellular biology of neurotropic viruses; Borna disease virus; animal models for neuropsychiatric diseases; viral vectors for targeted CNS delivery
W. Edward Robinson: Molecular pathogenesis of Lentivirus infection and drug discovery against HIV
Suzanne B. Sandmeyer: Molecular genetics of a position-specific yeast retrovirus-like element
Rozanne M. Sandri-Goldin: Regulatory functions of a post-transcriptionally acting herpes virus protein
Michael E. Selsted: Host defense systems in phagocytic leukocytes and mucosal epithelium
Bert L. Semler: Replication of picornavirus RNAs; RNA-protein and protein-protein interactions
Eric J. Stanbridge: Tumor suppressor genes and oncogenes in human cancer
Marian L. Waterman: Regulation of transcription in human T lymphocytes

The Department of Microbiology and Molecular Genetics provides advanced training to individuals interested in the regulation of gene expression and the structural and functional properties of proteins encoded by these genes. The research interests of the Department focus on the molecular biology and genetics of viruses, bacteria, and yeast; the fundamentals of the immune response; the molecular biology of cultured animal cells; the genetic basis of cancer; and the genetics and physiology of infectious agents.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

Participation in the Department's seminar series and completion of at least one advanced topics course per year for three years are expected of all students. In their third year, students take the advancement-to-candidacy examination for the Ph.D. degree by presenting and defending a proposal for specific dissertation research. Completion of the Ph.D. normally requires five years of graduate study.

Course descriptions may be found in the School of Biological Sciences section.

Pharmacology and Toxicology

360 Medical Surge II; (949) 824-7651

Larry Stein, **Department Chair**

Olivier Civelli, **Graduate Program Director**

Faculty

James D. Belluzzi: Neuropharmacology of reinforcement and memory; operant conditioning of single neurons; dopaminergic mechanisms in stimulant abuse
Stephen C. Bondy: Mechanisms of neural regenerative responses to neurological insults
Olivier Civelli: Molecular biology of G protein-coupled receptors; search for novel neurotransmitters and neuropeptides; pharmacological and behavioral characterizations of the novel neurotransmitters and neuropeptides
Sue Piper Duckles: Pharmacology and physiology of vascular smooth muscle; regulation of cerebral circulation, pharmacology of the autonomic nervous system
Frederick J. Ehler: Muscarinic receptor coupling mechanisms; subtypes of muscarinic receptors
Kelvin W. Gee: Pharmacology of allosteric modulators of the GABA_A receptor
Diana N. Krause: Cerebrovascular and neurotransmitter pharmacology; regulation of the blood-brain barrier
Frances M. Leslie: Effects of drugs of abuse on central nervous system development
Ellis R. Levin: Neuroendocrinology and neurobiology of hypothalamic peptides; molecular biology of atrial natriuretic peptides and their receptors
Ralph E. Purdy: Vascular neurotransmitter receptors, second messengers and signal transduction
Larry Stein: Neurochemistry of reward, punishment, and long-term memory
Qun-Yong Zhou: Molecular mechanisms of dopamine receptor signaling; developmental and behavioral consequences in transgenic mice with perturbed dopamine signaling

Graduate instruction and research in pharmacology leading to the M.S. and Ph.D in Pharmacology and Toxicology is offered by the Department of Pharmacology. The Department is engaged in a broad scope of research activity. Faculty research interests include the mechanisms of action and effects of drugs on the nervous system and on behavior, on skeletal muscle, heart and blood vessels, and on basic processes in these tissues.

Prerequisites for admission include a background in the physical and biological sciences which includes courses in mathematics, physics, chemistry, and biochemistry, including laboratory experience. The Graduate Record Examination and Subject Test in Biology or Chemistry are required. Primary emphasis in the Department's graduate program is placed on training leading to the Ph.D. in Pharmacology; under exceptional circumstances a student may be admitted initially into the M.S. program.

The graduate core program includes Pharmacology 241A-B, 252, 253, 254, 255, 256, and 257, quarterly participation in Pharmacology 298, and any additional elective courses assigned by faculty advisors. The major additional requirement for the Ph.D. is the satisfactory completion and oral defense of a dissertation based on original research carried out under the guidance of a faculty member. All candidates for the Ph.D. degree are required to engage in research activities throughout the course of their academic programs. This requirement applies to all students whether or not they are compensated for such services. An appointment as a research assistant is awarded on the basis of scholarship and not as compensation for services rendered. Before advancing to candidacy each student must pass a written qualifying examination to determine the student's competence in pharmacology or pharmacology and toxicology. The full-time student is expected to pass the written qualifying examination by the eighth quarter and the oral qualifying examination for the Ph.D. by the eleventh quarter. All requirements for the Ph.D. degree should be completed within four to five

years. For more information, contact the Graduate Advisor, Department of Pharmacology.

GRADUATE COURSES IN PHARMACOLOGY AND TOXICOLOGY

210 Chemical Neuroanatomy (4). Lecture, two hours; seminar, two hours. Organization of the nervous system, especially with respect to chemical identity of elements, for students of pharmacology. Major cell types, methods of study, ultrastructure, synaptic organization of functionally defined systems, localization of chemically defined cells and receptors, and brain development.

241A-B Medical Pharmacology (6-6) F, W. Lecture, eight hours. Mechanism of action, toxicology, and usage of chemical agents in medical practice. Dose-response and time relationships, absorption, metabolism, excretion, and differences in systematic and species response. Poisons, principles of toxic action, and toxicity evaluation. Sources of toxicants in the environment. Prescription writing. Prerequisites: Physiology and Biophysics 206A-B and Molecular Biology and Biochemistry 210A-B.

248A-B-C Advanced Topics in Pharmacology (4-4-4). Lecture, conferences, seminars, four hours. A detailed study of important areas of pharmacology integrating biochemical, pathological, physiological, behavioral, and clinical aspects with emphasis on mechanism of action of drugs. Prerequisites: Pharmacology 241A-B.

252 Neurotransmitter and Drug Receptors (6) W. Lecture, three hours. Seminar, three hours. Evolution of the receptor concept, analysis of receptor properties by bioassay methodology, receptor binding studies, solubilization and purification of receptors, electrophysiologic analysis of receptor channels, and cell biology of receptors.

253 Pharmacology of the Cardiovascular System (4) S. Lecture, one hour; seminar, two hours. Important aspects of cardiovascular pharmacology including adrenergic neurotransmission and the pharmacology of calcium; neuronal uptake, storage, and release of catecholamines; postsynaptic α -1 and α -2 adrenergic receptors; calcium entry and intracellular release; calcium channel agonists and antagonists; calmodulin; inositol phosphate mechanisms. Prerequisite: consent of instructor.

254 Methods in Pharmacology (4 to 12) Summer. Lecture, four hours; laboratory, eight hours. Isolated tissues for receptor characterization, autoradiography, tissue culture, electrophysiological measurements, behavioral assays, radioligand binding methods, chromatography, centrifugation and other methods for subcellular tissue preparation, small animal handling, synaptosomes, and isolated tissues for the study of neurotransmission. May be taken for credit three times with consent of instructor. Letter grade only the first time taken, Satisfactory/Unsatisfactory only thereafter.

255 Central Nervous System Pharmacology: Disease Processes (4) S. Seminar, two hours. The molecular mechanisms and pharmacology of brain diseases. Includes review of Alzheimer's disease, diseases of the basal ganglia, pharmacology of drug abuse, and the pharmacology of memory. Prerequisite: consent of instructor.

256 Experimental Design for Pharmacologists (1) F, W, S. Lecture, one hour; discussion, one hour; laboratory, one hour. Population and sample statistics, hypothesis testing, analysis of variance, nonparametric statistics, experimental design, power, and the use of statistical computer software. Prerequisite: Pharmacology 252 or consent of instructor.

257 Ethics in Research (1) F, W, S. Lecture, one hour; discussion, one hour. Ethical conduct in research including data handling, authorship, conflict of interest, animal rights, handling of misconduct. Prerequisite: Pharmacology 299 or consent of instructor. Satisfactory/Unsatisfactory grading only. May be taken for credit two times.

298 Seminar (2) F, W, S. Presentation and discussion of current problems and methods in teaching and research in pharmacology, toxicology, and therapeutics.

299 Research (1 to 12) F, W, S

Department of Physiology and Biophysics

Building D, Room 340, Medical Sciences I; (949) 824-5863

Janos K. Lanyi, **Department Chair**

Faculty

Nancy L. Allbritton: Signal transduction by second messengers and protein kinases

Kenneth M. Baldwin: Developmental, hormonal, and exercise factors regulating striated muscle gene expression

Michael E. Barish: Astroglial modulation of the differentiation of voltage-gated potassium currents; mechanisms of intracellular Ca^{2+} release

Ralph A. Bradshaw: Structure and function of polypeptide growth factors and their receptors; mechanisms of protein turnover

Michael D. Cahalan: Ion channels and Ca^{2+} signaling in the immune system

Vincent J. Caiozzo: Cellular and molecular mechanisms regulating the mechanical properties of skeletal muscle

K. George Chandy: Molecular biology of ion channels and their role in immune cells

Jill Cupp-Vickery: X-ray crystallographic studies on enzymes involved in antibiotic biosynthesis

J. Jay Gargus: Molecular analysis of membrane signaling proteins

Alan L. Goldin: Molecular biology of neural channels and receptors

George A. Gutman: Molecular and evolutionary studies of immunoglobulin and ion channel genes

Harry T. Haigler: Structure, function, and topography of annexin calcium binding proteins on membranes

James E. Hall: Biophysics of membrane channels, gap junctions and water channels

Frances A. Jurnak: Macromolecular crystallography; biochemical and structural studies of a model G protein; EF-Tu; structure/function of plant virulence factors

Janos K. Lanyi: Transport and energy coupling in the membrane of *Halobacterium salinarum*

Shin Lin: Cellular and molecular biophysics of proteins involved in membrane-associated cytoskeletal functions and signal transduction

Kenneth J. Longmuir: Intracellular metabolism, sorting, and transport of lipid in mammalian cells; membrane fusion

Hartmut Luecke: Protein crystallography; structure and function of membrane-associated proteins

Alexander McPherson: X-ray diffraction analyses of enzymes, viruses; antibodies and protein-nucleic acid complexes; crystallization methods; microgravity crystallization

Paul A. Negulescu: Physical requirements for T-cell activation; G-protein coupled receptor activation linked to B-lactamase expression

Thomas L. Poulos: Protein crystallography; protein engineering; heme enzyme structure and function

Hamid M. Said: Cellular and molecular mechanisms and regulation of intestinal and renal vitamin transporters

Ivan Soltesz: Plasticity and modulation of inhibitory synaptic neurotransmission

Bruce J. Tromberg: Optical spectroscopy of tissues and cells

Larry E. Vickery: Molecular chaperones and protein folding; protein engineering

Stephen H. White: Protein folding in membranes; peptide-bilayer interactions; membrane structure

The Department of Physiology and Biophysics offers research opportunities in the molecular biophysics of membranes and proteins, ion channels and signal transduction, endocrinology, molecular and cell biology, developmental neurobiology, and exercise physiology.

The Department offers graduate study under the auspices of the School of Biological Sciences and in conjunction with the program in Molecular Biology, Genetics, and Biochemistry, which is described in a previous section. Students admitted into the combined program who select a research advisor in the Department begin following the departmental requirements for the Ph.D. at the beginning of their third year.

The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students participate in a literature review course designed to strengthen research techniques and

presentation skills and attend the weekly Department colloquium. During the third year, each student presents a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee examines the student's qualifications for the successful conduct of doctoral dissertation research. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination. Interdisciplinary dissertation research involving more than one faculty member is encouraged. Students who have met all necessary prerequisites should be able to complete the Ph.D. in five years.

Information on course descriptions may be found in the School of Biological Sciences section.

Several faculty within the Department also are members of the graduate program in Protein Engineering, which is described in the School of Biological Sciences section.

Radiological Sciences

140B Medical Sciences I; (949) 824-5904

Anton N. Hasso, **Department Chair**

Sabee Molloi, **Graduate Program Director**

Faculty

Anne-Line Anderson: Development of radiopharmaceuticals; quantitative structure-activity relationships

Zang-Hee Cho: Multidimensional imaging; NMR tomography, and positron emission tomography

Fred Greensite: Magnetic Resonance Imaging; quantitative electrocardiography

Anton N. Hasso: Magnetic Resonance Imaging of the brain, spine, head, and neck; high-resolution Computed Tomography applications in imaging

Joie P. Jones: Ultrasonic tissue characterization; ultrasonic imaging; general applications of ultrasonic technology; the propagation and scattering of ultrasonic pulses in inhomogeneous media; biological effects of ultrasound; acoustical microscopy

Sabee Molloi: Digital radiography; application of digital subtraction angiography to cardiac imaging; digital image processing; coronary artery flow measurement

Orhan Nalcioğlu: Imaging physics with specific applications to digital radiography, CT, NMR tomography, and magnetic resonance spectroscopy

J. Leslie Redpath: Cellular and tissue radiobiology including mechanisms of chemical modification of radiation damage; oncogenic cell transformation; genetic aspects of cellular sensitivity

Werner Roeck: Engineering aspects of radiographic imaging systems; digital radiography; x-ray tube design

The Department of Radiological Sciences offers graduate programs of advanced study leading to the M.S. and Ph.D. degrees. Both programs are oriented toward the education and training of the superior student who has the potential and desire to become a creative and productive member of the medical or medical-related communities. The primary concentration of the program is in medical imaging.

Medical imaging involves the study of the interaction of all forms of radiation with tissue and the development of appropriate technology to extract clinically useful information from this interaction process. Such information is most often displayed in an image format. Medical images can be as simple as a projection image as first produced by Roentgen nearly 100 years ago and utilized today as a simple chest x-ray, or as complicated as a computer reconstructed image, as produced by Computerized Tomography (CT) using x-rays, or by Magnetic Resonance Imaging (MRI) using intense magnetic fields. Medical imaging is an exciting and rapidly developing area of research which is continuing to revolutionize diagnostic medicine. It provides students with the rare opportunity to conduct research which will directly, and sometimes immediately, benefit humankind.

The graduate program has a broad-based, interdisciplinary curriculum which places heavy emphasis on research and is designed to provide the student with a comprehensive and integrated knowledge of medical imaging in addition to an exceptionally high level of competence in one or more subspecialties. By utilizing the training received in medical imaging and its various modalities, as well as in medical physics, bioengineering, radiobiology, and radiological engineering, the student should be prepared for a wide range of career opportunities in university, hospital, or industrial settings upon completion of this program. Prospective students should be aware that the program is demanding and requires a broad base of knowledge in a variety of the conventional disciplines.

The Department of Radiological Sciences has well-equipped research laboratories in imaging physics, radiation physics, radio-pharmacy, and radiological engineering located on campus and at the hospitals associated with UCI. Prospective students with particular or well-defined research interests are encouraged to contact faculty members to discuss research opportunities.

Admission to the graduate program is by the Dean of Graduate Studies upon recommendation of the Department and is based upon letters of recommendation, Graduate Record Examination scores, previous scholarship, and other qualifications. Details of the application process and information about financial support and university housing are described in the booklet *Graduate Application for Admission* which is available from the Department or from the Office of Graduate Studies. This booklet also contains the appropriate application forms which must be completed by the prospective student.

The application deadline for fall quarter admission for graduate study in Radiological Sciences is June 1 of the same year. However, to receive full consideration for financial assistance, fall quarter applications should be completed by February 1. Applications for the winter and spring quarters will be accepted only under special circumstances. In addition to the usual University fellowships, the Department of Radiological Sciences offers a limited number of departmental fellowships for which entering students can be considered. Since the Department does not offer an undergraduate program of study, no teaching assistantships are available through the Department. Research assistantships may be available to advanced students.

Applicants to the program should have a strong background in physics and mathematics. Some course work in the biological sciences would also be helpful, particularly an introductory course in physiology and/or anatomy. Since most students will need some additional work in one or more disciplines, the program allows for the correction of minor deficiencies during the first year, as determined by Departmental review. Although the program of study is vigorous, it is also sufficiently flexible to allow for a wide range of interests and objectives.

Students currently in the program generally have undergraduate degrees in either physics or electrical engineering. The UCI bachelor's degree program in physics with a concentration in biomedical physics is an ideal prerequisite for graduate study in Radiological Sciences.

Requirements for the M.S. degree may be satisfied in one of two ways. Under Plan I, the student completes the Radiological Sciences core program with an average grade of B or above and under the direction of a faculty advisor also prepares a thesis that is acceptable to the thesis committee. Under Plan II, the student completes the core program plus a minimum of eight additional credits (all with an average grade of B or above) in a given area of specialization and satisfactorily passes the oral and written comprehensive examinations at the M.S. level.

Requirements for the Ph.D. degree may be divided into four stages. First, the student must complete the core program and take additional course work as recommended by the Graduate Committee, all with a grade of B or above. Second, the student must pass a written qualifying examination given at the end of the first full year of study. This examination, normally given in September before the beginning of the fall quarter, consists of five parts: radiation physics, x-ray (including CT), nuclear medicine, magnetic resonance imaging, and ultrasound. A student who fails the qualifying examination may repeat it at a later regularly scheduled time. Only one such repeat examination is allowed. Third, within a year after passing the qualifying examination, the student must present a detailed dissertation research proposal to a five-person candidacy committee appointed by the Dean, upon the recommendation of the graduate committee, proposed by the student and the student's advisor. Following the unanimous approval of the candidacy committee, the student will be advanced to candidacy. The attainment of candidacy status signifies that all preparatory work has been completed and that full attention may be given to the dissertation research. Finally, the student must prepare and defend, in a final oral examination a dissertation representing original research in the student's principal field of study. The dissertation, conducted under the direction of the doctoral committee, represents the major element in the doctoral program; it must be a significant contribution to the field and is expected to demonstrate critical judgment, intellectual synthesis, and creativity. The doctoral committee is a three-member subset of the candidacy committee and is chaired by the faculty member responsible for providing primary guidance of the student's dissertation. The doctoral committee supervises the student's research program, approves the dissertation, and conducts the final oral examination.

Prospective students interested in applying to the graduate program in Radiological Sciences should contact the University of California, Irvine, Director of Graduate Studies, Department of Radiological Sciences, 140B Medical Sciences I, Irvine, CA 92697-5000; telephone (949) 824-5904.

GRADUATE COURSES IN RADIOLOGICAL SCIENCES

201A-B Fundamentals of Imaging Physics (4-4) F, W. Lecture, three hours. A unified approach to the mathematical and physical properties of medical imaging.

203 Engineering Principles of Radiographic Systems (2) F. Laboratory, six hours. Laboratory in the engineering aspects of radiographic systems and equipment. Prerequisite: consent of instructor.

240 Introduction to Radiation Biology (4) W. Lecture, three hours. An introduction to radiation biology at the molecular, cellular, and tissue level. Relevance of radiation biology to radiation therapy, diagnostic radiology, nuclear medicine, and ultrasound.

252 Principles of Radiation Protection (4) S. Lecture, three hours. Natural and artificial sources of radiation exposure; guides for radiation protection.

255 Laboratory in Radiation Detection and Protection (2) S. Laboratory, six hours. Laboratory in the detection, measurement, and protection of radiation.

260A-B-C-D Principles of Medical Imaging (4-4-4-4) F, W, S. Lecture, three hours. The application of various imaging techniques and principles of physics and engineering to medicine. Prerequisites: Radiological Sciences 201A-B and 203.

265A-B-C-D Laboratory in Medical Imaging (2-2-2-2) F, W, S. Laboratory, six hours. Laboratory involving the various imaging techniques used clinically or under development.

267 Electronics for Nuclear Magnetic Resonance Instrumentation (2) W. Laboratory, six hours. Laboratory involving the electronic details of NMR imaging.

270A-B Physical Acoustics (4-4) F, W. Lecture, three hours. The physical principles of acoustics and mechanical radiation, especially at ultrasonic frequencies. Topics include radiation fields; propagation in layered media; generation and detection of acoustical waves; ultrasonic propagation in gases, liquids and solids; nonlinear acoustics; environmental, architectural, underwater and medical acoustics; physical models of tissue. Prerequisite: consent of instructor.

272 Detection and Dosimetry of Ionizing Radiation (4) S. Lecture, three hours. Principles and methods of ionizing radiation detection; measurement of energy and intensity; instruments and techniques. Physical basis of radiation dose measurement; exposure and absorbed dose in tissue; dose, dose rate and microdose distributions, and biological effectiveness.

288 Principles of Radiopharmaceuticals (3) F. Lecture, two hours. Production of medical radioisotopes, including generator systems. Chemistry, labeling techniques, quality control, and pharmacology of radiopharmaceuticals. Prerequisite: consent of instructor.

290 Seminar in Radiological Sciences (2) F, W, S. Seminar, two hours. Directed review and discussion of recent advances in areas of current interest. Presentations are given by students, faculty, and invited speakers.

292 Independent Study (variable) F, W, S. Individual study or research under the direction of a faculty member.

295A-B-C Clinical Workshop in Radiological Sciences (2-2-2) F, W, S. Laboratory, six hours. Clinical experience in the various areas of radiological sciences including general diagnosis, nuclear medicine, ultrasound, MRI, and interventional vascular work.

298 Master of Science Thesis Research (variable) F, W, S. Individual research under the supervision of a faculty member directed toward completing the thesis required for the M. S. degree in Radiological Sciences.

299 Doctor of Philosophy Dissertation Research (variable) F, W, S. Individual research under supervision of a faculty member directed toward completing the dissertation required for the Ph.D. degree in Radiological Sciences.

APPENDIX

University Officers

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

Regents Ex Officio

Governor of California and President of The Regents: Pete Wilson
Lieutenant Governor of California: Gray Davis
Speaker of the Assembly: Antonio R. Villaraigosa
State Superintendent of Public Instruction: Delaine Eastin
President of the Alumni Association of the University of California:
Judith Willick Levin
Vice President of the Alumni Associations of the University of
California: Charles J. Soderquist
President of the University: Richard C. Atkinson

Appointed Regents¹

William T. Bagley (2002)
Carol Chandler (2009)
Frank W. Clark, Jr. (2000)
Ward Connerly (2005)
John Davies (2004)
John F. Hotchkiss (2009)
S. Sue Johnson (2002)
Meredith Khachigian (2001)
Howard H. Leach (2001)
David S. Lee (2006)
Velma Montoya (2005)
S. Stephen Nakashima (2004)
Ralph Ochoa (2000)
Gerald L. Parsky (2008)
Peter Preuss (2008)
Tom Sayles (2006)
Max Espinosa (7/1/98–6/30/99)

Regents-Designate²

Irene Miura
David Willmon

¹ Regents, except ex-officio Regents and the student Regent, are appointed by the Governor to 12-year terms commencing on March 1. Ex-officio Regents serve by virtue of their elected or appointed positions; the student Regent is appointed by the Regents to a one-year term commencing on July 1.

² One-year terms expiring June 30.

Faculty Representatives to The Regents

Aimee Dorr
Sandra J. Weiss

Principal Officers of The Regents

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Treasurer: Patricia A. Small
Secretary: Leigh Trivette

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Provost and Senior Vice President–Academic Affairs: C. Judson King
Senior Vice President–Business and Finance: V. Wayne Kennedy
Vice President–University and External Relations: Bruce B. Darling
Vice President–Health Affairs: Cornelius L. Hopper
Vice President–Agriculture and Natural Resources: W. R. Gomes
Vice President–Clinical Services Development: William H. Gurtner
Associate to the President: Janet E. Young

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Chancellor at Davis: Larry N. Vanderhoef
Chancellor at Irvine: Ralph J. Cicerone
Chancellor at Los Angeles: Albert Carnesale
Chancellor at Riverside: Raymond L. Orbach
Chancellor at San Diego: Robert C. Dynes
Chancellor at San Francisco: J. Michael Bishop
Chancellor at Santa Barbara: Henry T. Yang
Chancellor at Santa Cruz: M. R. C. Greenwood

UCI OFFICERS

Chancellor

Ralph J. Cicerone

Executive Vice Chancellor

Sidney H. Golub

Vice Chancellor Administrative and Business Services

Wendell Brase

Vice Chancellor Research and Dean of Graduate Studies

Frederic Yui-Ming Wan

Vice Chancellor Student Services

Manuel N. Gómez

Vice Chancellor University Advancement

Thomas R. Moebus

Executive Director of the Medical Center

Mark R. Laret

UCI DEANS AND CHAIRS OF INDEPENDENT ACADEMIC UNITS

Dean of the School of the Arts

Jill Beck

Dean of the School of Biological Sciences

Shin Lin

Dean of the School of Engineering

Nicolaos Alexopoulos

Dean of the School of Humanities

Karen R. Lawrence

Dean of the Graduate School of Management

David H. Blake

Dean of the School of Physical Sciences

to be announced

Dean of the School of Social Ecology

Daniel S. Stokols

Dean of the School of Social Sciences

William R. Schonfeld

Dean of the College of Medicine

Thomas C. Cesario

Dean of the Division of Undergraduate Education

James N. Danziger

Vice Chancellor Research and Dean of Graduate Studies

Frederic Yui-Ming Wan

Chair of the Department of Education

Louis F. Mirón

Chair of the Department of Information and Computer Science

Michael J. Pazzani

UCI ADMINISTRATORS

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Associate Executive Vice Chancellor: William H. Parker

Associate Executive Vice Chancellor Academic Personnel:

Herbert P. Killackey

Assistant Executive Vice Chancellor-Interim Director Equal Opportunity and Diversity: R. Ronald Wilson

Assistant Executive Vice Chancellor for Continuing Education and Director of University Extension and Summer Sessions:

Philip Nowlen

Assistant Executive Vice Chancellor Resource Management and Analysis: Roy E. Dormaier

Acting University Ombudsman: Janis Schonauer

University Librarian: Gerald J. Munoff

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Faculty Assistant to the Executive Vice Chancellor: Lyman W. Porter

Associate Vice Chancellor/Controller Administrative and Business Services: Sandra Lier

Assistant Vice Chancellor Accounting and Fiscal Services: Stephen G. Garcia

Assistant Vice Chancellor Administrative Computing Services: David L. Tomcheck

Assistant Vice Chancellor Design and Construction Services: Rebekah Gladson

Assistant Vice Chancellor Facilities Management: Larry R. Givens

Assistant Vice Chancellor Human Resources: Lon A. Orey

Associate Vice Chancellor Communications and Technology: Charles E. Wright

Associate Vice Chancellor Research: Frances M. Leslie

Associate Dean of Graduate Studies: Mary C. Gilly

Associate Vice Chancellor Student Services: Charles R. Pieper

Assistant Vice Chancellor Counseling and Health Services: Thomas A. Parham

Assistant Vice Chancellor Enrollment Services: Juan Francisco Lara

Assistant Vice Chancellor Student Services: Bernadette M. Strobel-Lopez

Dean of Students: Sally K. Peterson

Associate Vice Chancellor University Advancement: James Asp

Assistant Vice Chancellor Advancement and Executive Director of Development: Regina Fodor

Assistant Vice Chancellor Communications: Richard Elbaum

Assistant Vice Chancellor Finance and Administration: Kathleen Kunz

Assistant Vice Chancellor Government Relations: Ruthann Baker

For a complete list of UCI administrators, please refer to the *University of California Telephone Directory* or the *UCI Campus and Medical Center Directory*.

University ProfessorsJ. Michael Bishop, University Professor Emeritus
University of California, San FranciscoE. Margaret Burbidge, University Professor Emerita
University of California, San DiegoMarvin L. Cohen, University Professor
University of California, BerkeleyDonald Cram, University Professor Emeritus
University of California, Los AngelesGerard Debreu, University Professor Emeritus
University of California, BerkeleyRobert B. Edgerton, University Professor
University of California, Los AngelesSandra M. Farber, University Professor
University of California, Santa CruzM. Frederick Hawthorne, Professor of Chemistry and Biochemistry
University of California, Los AngelesRichard M. Karp, University Professor Emeritus
University of California, BerkeleyMurray Krieger, University Research Professor
University of California, IrvineYuan Tseh Lee, University Professor Emeritus
University of California, BerkeleyGlenn Seaborg, University Professor Emeritus
University of California, BerkeleyJonathon S. Singer, University Professor Emeritus
University of California, San DiegoNeil Smelser, University Professor Emeritus
University of California, BerkeleyEdward Teller, University Professor Emeritus
Lawrence Livermore National LaboratoryCharles Townes, University Professor Emeritus
University of California, BerkeleySherwood Washburn, University Professor Emeritus
University of California, BerkeleyJohn R. Whinnery, University Professor Emeritus
University of California, BerkeleyHayden White, University Professor
University of California, Santa Cruz**UCI Nobel Laureates**

Frederick Reines
UCI Distinguished Professor Emeritus of Physics
Nobel Prize in Physics, 1995

F. Sherwood Rowland
Research Professor of Chemistry and Earth System Science and
Bren Chair
Nobel Prize in Chemistry, 1995

UCI Endowed Chairs

Daniel G. Aldrich, Jr. Chair

Ralph J. Cicerone, Chancellor and Professor of Earth System Science and Chemistry

Arnold and Mabel Beckman Chair in Laser Biomedicine

Michael W. Berns, Professor of Surgery, Cell Biology, Ophthalmology, Radiology, and Management

Grace Beekhuis Bell Chair in Biological Chemistry

Masayasu Nomura, Professor of Biological Chemistry, Microbiology and Molecular Genetics, and Biological Sciences

Bren Chairs

Francisco J. Ayala, Founding Director of the Bren Fellows Program and Professor of Ecology and Evolutionary Biology and of Philosophy

F. Sherwood Rowland, Research Professor of Chemistry and Earth System Science

Robert Gumbiner Chair in Health Care Management

Paul J. Feldstein, Professor of Management and Social Ecology

Walter B. Gerken Chair in Enterprise and Society

Richard B. McKenzie, Professor of Management and Economics

Clifford and Elaine Heinz Chair in the Economics and Public Policy of Peace

Martin C. McGuire, Professor of Economics and Management

Irving H. Leopold Chair in Ophthalmology

Richard H. Keates, Professor of Ophthalmology

Dorothy J. Marsh Chair in Reproductive Biology

Philip J. DiSaia, Chief of Gynecology and Gynecologic Oncology and Professor of Obstetrics and Gynecology and of Radiological Sciences

Della Martin Chair of Psychiatry

William E. Bunney, Jr., UCI Distinguished Professor of Psychiatry and Human Behavior and Pharmacology

Eric L. and Lila D. Nelson Chair in Neuropharmacology

Olivier Civelli, Professor of Pharmacology

Danette Shepard Chair in Neurological Science

Tallie Z. Baram, Professor of Pediatrics, Neurology, and Anatomy and Neurobiology

Teller Family Chair in Jewish History

Daniel Schroeter, Director of the Minor in Religious Studies and Associate Professor of History

Thomas T. and Elizabeth C. Tierney Chair in Peace Studies

Patrick Morgan, Director of Global Peace and Conflict Studies and Professor of Political Science

UC Presidential Chair

Peter M. Rentzepis, Professor of Chemistry

Drew, Chace, and Erin Warmington Chair in the Social Ecology of Peace and International Cooperation

Helen Ingram, Professor of Social Ecology and of Politics and Society

UCI Distinguished Professors

William E. Bunney, Jr., Distinguished Professor of Psychiatry and Human Behavior, Pharmacology, and Psychobiology

David Easton, Distinguished Research Professor of Political Science

Harry Eckstein, Distinguished Professor Emeritus of Political Science

R. Duncan Luce, Director of the Institute for Mathematical Behavioral Sciences and Distinguished Professor Emeritus of Cognitive Sciences and Economics

Ricardo Miledi, Distinguished Professor of Psychobiology and Molecular Biology and Biochemistry

J. Hillis Miller, Distinguished Professor of English and Comparative Literature

Larry E. Overman, Distinguished Professor of Chemistry

Frederick Reines, Distinguished Professor Emeritus of Physics

Brian Skyrms, Director of the Emphasis and Minor in the History and Philosophy of Science and Distinguished Professor of Philosophy and Economics

George Sperling, Distinguished Professor of Cognitive Sciences and Biological Sciences

College of Medicine Distinguished Professor

J. Edward Berk, Distinguished Professor Emeritus of Medicine

UCI Faculty Membership in Major U.S. Learned Societies

American Academy of Arts and Sciences: 31

American Association for the Advancement of Sciences: 71

American Physical Society: 19

American Psychological Association: 14

National Academy of Engineering: 1

National Academy of Sciences: 18

National Academy of Sciences–Institute of Medicine: 4

UCI Academic Senate Distinguished Faculty

Distinguished Faculty Lectureships for Research

1998: Donald McKayle, Department of Dance, “The Symbolic Language of Dance”

1998: Peter M. Rentzepis, Department of Chemistry, “The Making of a Molecular Computer”

1997: David Easton, Department of Politics and Society

1996: John J. Wasmuth, Departments of Biological Chemistry, Pediatrics, and Psychiatry and Human Behavior

1995: Chen S. Tsai, Department of Electrical and Computer Engineering, “The Versatile Photon: Express Messenger of the Information Superhighway”

1994: R. Duncan Luce, School of Social Sciences, “Mathematical Psychology: an Oxymoron or Not?”

1993: Eric Stanbridge, Department of Microbiology and Molecular Genetics, “Cancer and Our Genes: the Seeds of Our Own Destruction”

1992: J. Hillis Miller, Department of English and Comparative Literature, “Thinking Like Other People”

1991: A. Kimball Romney, Department of Anthropology, “Cultural Consensus and Social Intelligence”

- 1990: Lyman W. Porter, Graduate School of Management, "Organizations and Their Employees: How Sound Are the Marriage Contracts"
- 1989: Norman Rostoker, Department of Physics, "Research on Future Energy Sources"
- 1988: Robert W. Taft, Department of Chemistry, "Attempts to Understand and Treat the Loves and Hates of Organic Molecules"
- 1987: Carl W. Cotman, Department of Psychobiology, "The Self-Repairing Brain: Implications for Alzheimer's Disease"
- 1986: Donald Heiney, Department of English and Comparative Literature, "Fiction: The Double Domain of the Nineteenth-Century Crisis"
- 1985: James L. McGaugh, Department of Psychobiology, "Making Memories"
- 1984: John Johnston, Department of Economics, "Economists and Their Crises"
- 1983: Murray Krieger, Department of English and Comparative Literature, "Words About Words About Words: The What and Why of Literary Theory"
- 1982: Kivie Moldave, Department of Biological Chemistry, "The Fault, Dear Brutus, Lies Not in the Stars but in Our Genes"
- 1981: Gilbert L. Geis, School of Social Ecology, "The Crime Inter-venor: Samaritan or Superman?"
- 1980: Jaime E. Rodríguez, Department of History, "Down from Colonialism: Mexico's Nineteenth-Century Crisis"
- 1980: Seymour Menton, Department of Spanish and Portuguese, "Many years later, as he faced the firing squad, Colonel Aureliano Buendia was to remember that distant afternoon when his father took him to discover ice." (Gabriel Garcia Marquez, *One Hundred Year of Solitude*)
- 1979: Frederick Reines, Department of Physics, "The Neutrino: From Poltergeist to Particle"
- 1978: Arthur J. Marder, Department of History, "Bravery Is Not Enough: The Rise and Fall of the Imperial Japanese Navy, 1941-45"
- 1977: F. Sherwood Rowland, Department of Chemistry, "Chemistry and the Environment"
- 1976: H. Colin Slim, Department of Music, "The Prodigal Son at the Whores: Music, Art, and Drama"

Distinguished Faculty Lectureships for Teaching

- 1998: William R. Schonfeld, Dean of the School of Social Sciences, "The Ivory Tower: Relic from the Past or Ambition for the Future"
- 1997: Medhat A. Haroun, Department of Civil and Environmental Engineering, "Earthquakes and California: Are We At Risk and What Are We Doing About It?"
- 1996: Lynn Mally, Department of History, "Seeing Through History: Visual Evidence in Teaching"
- 1995: Imran S. Currim, Graduate School of Management, "Consumer Choice"
- 1994: Michael P. Johnson, Department of History, "The Politics of Teaching"
- 1994: Philip J. DiSaia, Department of Obstetrics and Gynecology, "The Aging Woman"
- 1993: Gary W. Evans, School of Social Ecology, "The Improvement of Teaching in the University Environment"
- 1992: James H. Mulligan, Department of Electrical and Computer Engineering, "The Quest for Excellence in Educating Engineering Professionals"

- 1991: Thomas A. Standish, Department of Information and Computer Science, "A Grand Challenge Problem for Education: Empowering Graduating Seniors to Write Well"
- 1990: Robert T. McIver Jr., Department of Chemistry, "Those Marvelous Machines: The Role of Scientific Instruments"
- 1989: John C. Rowe, Department of English and Comparative Literature, "Crisis and Criticism in the Humanities"
- 1988: James N. Danziger, Department of Politics and Society, "Knowing Noes and Wise Whys"

Daniel G. Aldrich Jr. Distinguished University Service Award

- 1997: James N. Danziger, Department of Political Science and Dean of Undergraduate Education
- 1997: Ellen Greenberger, School of Social Ecology
- 1996: Dennis J. Aigner, Dean of the Graduate School of Management
- 1995: Michael Butler, Former Dean of Undergraduate Studies, Director of the UCI Farm School, and Department of Cognitive Sciences
- 1994: Leslie W. Rabine, Department of French and Italian and Program in Women's Studies
- 1993: Murray Krieger, Department of English and Comparative Literature
- 1993: J. Edward Berk, Department of Medicine
- 1992: Louis A. Gottschalk, Department of Psychiatry and Human Behavior
- 1991: Spencer C. Olin, Department of History
- 1991: Julius Margolis, Department of Economics

Distinguished Assistant Professor Award for Research

- 1997-98: Judith Stepan-Norris, Department of Sociology
- 1997-98: Keith A. Woerpel, Department of Chemistry
- 1996-97: Liisa H. Malkki, Department of Anthropology
- 1996-97: Susan E. Trumbore, Department of Earth System Science
- 1995-96: Ann Blair, Department of History
- 1995-96: Kei-Yeung (Sunny) Siu, Department of Electrical and Computer Engineering
- 1994-95: Alec Stone, Department of Political Science

Distinguished Assistant Professor Award for Teaching

- 1997-98: Stanley B. Grant, Department of Civil and Environmental Engineering
- 1996-97: Rhona Berenstein, Program in Film Studies
- 1995-96: Etel Solingen, Department of Politics and Society
- 1994-95: Julia Reinhard Lupton, Department of English and Comparative Literature

Principles of Community

UCI is a multicultural community of people from diverse backgrounds. Our activities, programs, classes, workshops, lectures, and everyday interactions are enriched by our acceptance of one another, and we strive to learn from each other in an atmosphere of positive engagement and mutual respect.

Our legacy for an increasingly multicultural academic community and for a learning climate free from expressions of bigotry is drawn from the United States and California Constitutions, and from the charter of the University of California which protects diversity and reaffirms our commitment to the protection of lawful free speech. Affirmation of that freedom is an effective way of ensuring that acts of bigotry and abusive behavior will not go unchallenged within the University. Tolerance, civility, and mutual respect for diversity of background, gender, ethnicity, race, and religion are as crucial within our campus community as are tolerance, civility, and mutual respect for diversity of political beliefs, sexual orientation, and physical abilities. Education and clear, rational, and vigorous challenges are positive responses to prejudice and acts of bigotry.

The University's nondiscrimination policy, in compliance with applicable federal and state law, covers treatment in University programs and activities as well as admission and employment. UCI expects all those affiliated with it to adhere to the letter and the spirit of University nondiscrimination policies and related federal and state laws.

Allegations of physical abuse, threats of violence, or conduct that threatens the health or safety of any person on University property or in connection with official University functions will be investigated promptly and, where found to exist, appropriate actions will be taken in accordance with University policy. (See Section 102.08 of the *Policies Applying to Campus Activities, Organizations, and Students*.)

All who work, live, study, and teach at UCI are here by choice and, as part of that choice, should be committed to these Principles of Community which are an integral part of the guidelines by which the University community can successfully conduct its affairs.

Student Conduct and Discipline

Students enrolling in the University are expected to assume an obligation to conduct themselves in a manner compatible with the University's function as an educational institution. A handbook is available which sets forth standards of conduct expected of UCI students. *Policies Applying to Campus Activities, Organizations, and Students* lists rules concerning conduct and related matters, as established by the policies of the Regents and the President of the University and also incorporates campus regulations. Copies are available from the Dean of Students, located in the UCI Student Center, and the Assistant Executive Vice Chancellor—University Ombudsman, located in 255 Administration Building.

Academic Honesty

The UCI Academic Senate Policies on Academic Honesty were approved by the Irvine Division on June 2, 1988; revised on December 12, 1996; revision effective October 1, 1997.

A. PREAMBLE

The University is an institution of learning, research, and scholarship predicated on the existence of an environment of honesty and integrity. As members of the academic community, faculty, students, and administrative officials share responsibility for maintaining this environment. It is essential that all members of the academic community subscribe to the ideal of academic honesty and integrity and accept individual responsibility for their work. Academic dishonesty is unacceptable and will not be tolerated at the University of California, Irvine. Cheating, forgery, dishonest conduct, plagiarism, and collusion in dishonest activities erode the University's educational, research, and social roles. They devalue the learning experience and its legitimacy not only for the perpetrators but for the entire community.

B. RESPONSIBILITIES

All members of the academic community have a responsibility to ensure that scholastic honesty is maintained.

Faculty have primary responsibility for:

1. Upholding and enforcing universitywide principles of academic honesty and integrity and explaining clearly these principles including any qualifications which may be operative in the classes they are teaching.
2. Minimizing opportunities for academic misconduct in their courses.
3. Confronting students suspected of academic dishonesty in a way that respects student privacy.
4. Affording students accused of academic misconduct the right to appeal any resulting disputes to disinterested parties for hearing and resolution.
5. Assigning an appropriate grade to a student who engages in academic dishonesty.
6. Reporting all instances of academic dishonesty to appropriate Associate Deans.
7. Protecting the anonymity of any student reporting an incident of academic dishonesty to the extent permitted by due process required for the accused and other legal requirements.

Students have responsibility for:

1. Refraining from cheating and plagiarism.
2. Refusing to aid or abet any form of academic dishonesty.
3. Notifying professors and/or appropriate administrative officials about observed incidents of academic misconduct. The anonymity of a student reporting an incident of academic dishonesty will be protected.

C. WHAT IS ACADEMIC DISHONESTY?

Academic dishonesty includes but is not limited to the following examples:

Cheating

1. Copying from others during an examination.
2. Communicating exam answers with other students during an examination.
3. Offering another person's work as one's own.
4. Taking an examination for another student or having someone take an examination for oneself.
5. Sharing answers for a take-home examination or assignment unless specifically authorized by the instructor.
6. Tampering with an examination after it has been corrected, then returning it for more credit.
7. Using unauthorized materials, prepared answers, written notes or information concealed in a blue book or elsewhere during an examination.
8. Allowing others to do the research and writing of an assigned paper (including use of the services of a commercial term-paper company).

Dishonest Conduct

1. Stealing or attempting to steal an examination or answer key from the instructor.
2. Changing or attempting to change academic records without proper sanction.
3. Submitting substantial portions of the same work for credit in more than one course without consulting all instructors involved.
4. Forging add/drop/change cards and other enrollment documents, or altering such documents after signatures have been obtained.
5. Intentionally disrupting the educational process in any manner.
6. Allowing another student to copy off of one's own work during a test.

Plagiarism

Plagiarism is intellectual theft. It means use of the intellectual creations of another without proper attribution. Plagiarism may take two main forms, which are clearly related:

1. To steal or pass off as one's own the ideas or words of another.
2. To use a creative production without crediting the source.

Credit must be given for every direct quotation, for paraphrasing or summarizing a work (in whole, or in part, in one's own words), and for information which is not common knowledge.

Collusion

Any student who knowingly or intentionally helps another student perform any of the above acts of cheating or plagiarism is subject to discipline for academic dishonesty.

D. PROCEDURES FOR DEALING WITH INCIDENTS OF ACADEMIC DISHONESTY

Many, perhaps most, incidents of academic dishonesty involve accusations which are based on clear evidence and which are not contested by the accused student. In such cases, if the infraction is relatively minor and there is no indication that the accused student has previously been involved in such incidents, it is most appropriate that the matter be resolved between the student and the faculty member. When this occurs, it is nevertheless important that a written report of the incident be filed to ensure that penalties assessed are commensurate with the offense and that repeated infractions be detected and dealt with appropriately.

More serious incidents and repeat offenses which call for stronger disciplinary action, may result in campuswide sanctions, in addition to the actions imposed by a faculty member. In such cases, these sanctions, as described in Section 105.00 of the *Policies Applying to Campus Activities, Organizations, and Students*, will be administered by the Academic Associate Deans or the Office of the Dean of Undergraduate Education or Graduate Studies.

Finally, whenever an accusation of academic dishonesty or a grade given by a faculty member is contested by an accused student, the student has recourse for mediation of the dispute. Processes for mediation resolution and/or an investigation may be requested by the student or the Associate (Undergraduate or Graduate) Dean of the faculty member's school through the Office of the Ombudsman. In incidents where a campuswide sanction has been imposed, the student can request a hearing with the appropriate Committee on Academic Honesty which will be convened by the Office of either the Dean of Undergraduate Education or the Dean of Graduate Studies, depending on the status of the accused student.

The procedures outlined here are designed to institute a system that recognizes that many cases of academic misconduct are best resolved solely between the student and faculty member involved, while it provides for appropriate handling of serious and repeated offenses and guarantees a fair hearing to an accused student.

Authority of Faculty Members

When a faculty member has evidence of student academic dishonesty, the faculty member must present the evidence to the student in a private meeting or communicate with the student by some other means. The faculty member must initiate this communication with the student within 15 calendar days of discovering evidence of academic dishonesty and evaluating the relevant work. The faculty member then has the authority to impose only one or more of the following:

1. Issue a reprimand to the student with letter of explanation to the student's file.
2. Require repetition of the questionable work or examination with letter of explanation to the student's file.
3. Reduce the grade to an 'F' or zero, if appropriate, on the questionable work or examination with written notification to the student and a letter of explanation to the student's file.
4. Assign the student a failing grade in the course with letter of explanation to the student's file.

It is essential that any such action be reported in writing to the student in a letter from the faculty member. Copies of this letter must also be sent to (a) the Associate Dean of the faculty member's school, (b) the Associate Dean of the student's school, who will maintain a file of cases of academic misconduct involving students enrolled in that school, and (c) the Office of the Dean of Undergraduate Education or Dean of Graduate Studies, as appropriate. The faculty member is strongly encouraged to consult with the Associate (Undergraduate or Graduate) Dean of his or her school before the letter is drafted. Reference to (or a copy of) the UCI Academic Senate Policies on Academic Honesty should be included in the letter. If action (4) is taken, the faculty member is responsible for making certain that the failure is recorded by the Registrar on the student's permanent academic record. Careful documentation of the incident must be maintained by the faculty member in the event that his or her actions in the case should later be subject to review.

Responsibilities of the Academic Associate Deans

1. The Associate (Graduate or Undergraduate) Dean of either the accused student's school or of the faculty member's school may impose campuswide sanctions. Sanctions imposed by Associate Deans are final unless the student requests a hearing within 15 calendar days of notification. The 15-day period starts from the time the Associate Dean has notified the student of the discipline or has notified the student of the hearing and appeal process by providing a copy of this policy, whichever comes later. It is recommended that each case be brought to a final resolution within 90 days of instruction.
2. The Associate Dean (or equivalent official) of each school is responsible for maintaining confidential records concerning academic dishonesty of students enrolled in that school. All letters reporting faculty-imposed academic penalties for academic misconduct will be included in these files.
3. The Associate Dean of the accused student's school will be responsible for identifying all incidents which represent repeated offenses by a student and may impose a campuswide sanction because of repeat offenses.
4. Associate Deans are required to notify the student of the hearing and appeal process and provide the student a copy of this policy. If an Associate Dean suspects grounds for a grievance involving discrimination, the student should be referred to Part 3 of *The Manual of the Irvine Division of the Academic Senate*, "Student Academic Grievance Process" (which is limited to allegations of discrimination).
5. In those classes where academic dishonesty continues to be a problem and the faculty member or another university official has already been approached by the student(s) from the class, the Associate Dean will consult with the appropriate faculty member to address the problem.
6. Students who have on file recorded acts of academic dishonesty, as defined by the *Policies Applying to Campus Activities, Organizations, and Students*, may be excluded by the Associate Deans from consideration for academic honors at graduation.
7. In those situations where a campuswide sanction is imposed and the student requests a hearing, the Associate Dean will forward to the Committee on Academic Honesty the materials which led him or her to impose the sanction. In addition, the Associate Dean will appear before the Committee to discuss the case upon request of the Committee.

Student Hearings

When any student accused of academic dishonesty wishes to contest a sanction imposed by a faculty member, the student may, within a 15-day period, request mediation by writing to the Associate Dean of the faculty member imposing the sanction or to the Ombudsman. However, it should be understood that all grades are ultimately the responsibility of faculty. The period is 15 calendar days and starts from the time the Associate Dean has notified the student of the discipline or has notified the student of the hearing and appeal process by providing a copy of this policy, whichever comes later.

When a campuswide sanction is imposed, the affected student may, within 15 days of notification, request a hearing before the Committee on Academic Honesty. Students considering a hearing in response to campuswide sanctions for alleged academic misconduct are urged to contact the Associate Dean of their academic school and/or the University Ombudsman concerning possible sources of advice and assistance. Students should be advised regarding the grounds for appeal as specified in section 103.11 of the *Policies Applying to Campus Activities, Organizations, and Students*.

Role of the Ombudsman

The services of the Ombudsman may be requested at any time by the student, the faculty member, or the Associate Dean. The role of the Ombudsman is to assist in conflict resolution, mediate the dispute, perform an informal investigation of the case, and clarify policies and procedures for anyone involved.

In those incidents where imposition of a campuswide sanction is a consideration and the student has requested a hearing, the case will be referred to the Office of the Ombudsman. An investigation may be conducted by the Ombudsman who will then confer with the Associate Dean and the accused student. However, the findings of the Ombudsman will not be forwarded to the Committee on Academic Honesty. The case may be referred by either the student or the Ombudsman to either the Dean of Undergraduate Education or the Dean of Graduate Studies, as appropriate, who will be responsible for convening the Committee on Academic Honesty.

Students should always be informed by the Associate Dean of their school of their right to secure the assistance of the Ombudsman in understanding and addressing the problem or issue.

Role of the Deans of Undergraduate Education and Graduate Studies

Whenever an incident of academic misconduct is referred to the Office of the Dean of Undergraduate Education or the Dean of Graduate Studies by the student or the Ombudsman, a representative of the appropriate offices will meet with the student and, if requested, explain the process and arrange the time and place of a hearing before the appropriate (Undergraduate or Graduate) Committee on Academic Honesty. The appropriate Dean will maintain a record of all cases of academic dishonesty reported by the respective Associate Deans.

Formal resolution by the appropriate Committee on Academic Honesty may result in the imposition by the Dean of Undergraduate Education or the Dean of Graduate Studies of one or more of the sanctions described in section 105.00 of the *Policies Applying to Campus Activities, Organizations, and Students*, including suspension or dismissal from the University.

E. COMMITTEE ON ACADEMIC HONESTY

1. Jurisdiction of the Committees on Academic Honesty

There will be two Committees on Academic Honesty. One Committee will hear cases of campuswide sanctions on undergraduate students while the other will hear graduate student cases. The Committees can reduce, affirm, or increase sanctions.

2. Composition of the Committees on Academic Honesty

The Committees on Academic Honesty will be standing administrative committees composed of two faculty, two students, and a representative of either the Dean of Undergraduate Education or Dean of Graduate Studies, as appropriate. Terms of faculty members will be two years. One faculty member will be appointed annually by either the Dean of Undergraduate Education or Graduate Studies, as appropriate for the particular committee. To ensure continuity, terms will be staggered; during the first year of operation only, one faculty member will be appointed for a one-year term. One additional faculty member will be appointed to serve as an alternate to each of the Committees. The two students shall serve for one year and will be appointed by either ASUCI or AGS as appropriate to the specific committee. One additional student member will be appointed to serve as an alternate to each of the Committees.

3. Role of the Associate Dean

The Associate Dean will forward to the committee the evidence which led to his or her decision to impose the campuswide sanction. In addition, the Associate Dean will appear before the Committee to comment on the case if the Committee wishes.

4. Hearings

- If the student requests a hearing, the Dean of Undergraduate Education or the Dean of Graduate Studies shall schedule a hearing of the case before the appropriate Committee. Written notice must be given to the parties involved regarding the date, time, and place of the hearing.
- The chair will be elected by the membership of the committee. The chair will rule on all questions of procedure, the admission or exclusion of evidence, and the need to call witnesses for additional testimony. Hearings shall be held in accordance with generally accepted standards of procedural due process.
- Hearings will be closed unless the parties involved agree to an open hearing. Every effort must be made by all parties to maintain confidentiality during the process.
- Hearings shall be held following the provisions in sections 103.11. (5, 6, and 8) of the *Policy on Student Conduct and Discipline*, except that the role of the Dean of Students shall be filled by the Dean of Undergraduate Education or Graduate Studies, depending on the status of the student.

5. Report of the Committee on Academic Honesty

After the hearing the Committee shall arrive at a decision. When a decision is reached, the student and the appropriate Academic Associate Dean will be informed of the judgment.

6. Final Appeal

If the campuswide sanction is upheld by the Committee, the report of the Committee and all supporting evidence can be sent for a final level of review at the request of the student. If the accused student is an undergraduate, the case will be reviewed by the Dean of Graduate Studies. If the accused student is a graduate student, the case will be reviewed by the Dean of Undergraduate Education. This final review process can only result in decreasing the sanctions imposed on the student or leaving them unchanged. There are no further appeals or processes.

7. Implementation

Once the judgment has been rendered the Dean of Undergraduate Education or Graduate Studies will implement the judgment in the form of a letter to the student as well as initiate any other necessary administrative actions.

F. MAINTENANCE OF DISCIPLINARY RECORDS

Records relating to academic dishonesty will be maintained by the Associate Deans and the Offices of the Deans of Undergraduate Education and Graduate Studies to promote consistency of penalties for a given offense and to ensure appropriate action against repeat offenders. Records will normally be destroyed after five years, unless the Associate Dean determines in any particular case that there is good reason to extend the period of retention. In order to ensure that minor and nonrecurring infractions do not negatively impact a student's career beyond UCI, any student may petition the Associate Dean of his or her academic school to have relevant academic disciplinary records expunged after the record is two years old or upon graduation, whichever comes first. The Associate Dean has sole authority to consider and to grant or deny such petitions. The University will release a student's disciplinary records to potential employers, governmental agencies, other educational institutions, or other organizations or individuals only if authorized to do so by the student in question or if compelled by law. Any record expunged by the Associate Dean will also be erased in the Dean of Undergraduate Education or Graduate Studies Offices.

ADDITIONAL INFORMATION

This policy is intended to focus solely on issues related to academic dishonesty. Certain details of the implementation of procedures specified here can be found in the UCI publication *Policies Applying to Campus Activities, Organizations, and Students*, available free of charge from the Office of the Ombudsman, Room 255 Administration, and the Office of the Dean of Students, first floor, Student Center.

Anti-Hazing Compliance

The State of California and the University of California have expressly and repeatedly asserted their opposition to hazing and preinitiation activities which do not contribute to the positive development and welfare of the individuals involved. In January 1988, the Education Code of the State of California was modified to reflect changes to the State's anti-hazing statute. In accordance with the revised Education Code, students are advised of the following:

Education Code 32050

As used in this article, hazing includes any method of initiation or preinitiation into a student organization or any pastime or amusement engaged in with respect to such an organization which causes, or is likely to cause, bodily danger, physical harm, or personal degradation or disgrace resulting in physical or mental harm, to any student or other person attending any school, community college, college, university, or other educational institutions in this state; but the term "hazing" does not include customary athletic events or other similar contests or competitions.

Education Code 32051

No student, or other person in attendance at any public, private, parochial, or military school, community college, college, or other educational institution, shall conspire to engage in hazing, participate in hazing, or commit any act that causes or is likely to cause bodily danger, physical harm, or personal degradation or disgrace resulting in physical or mental harm to any fellow student or person attending the institution.

The violation of this section is a misdemeanor, punishable by a fine of not less than one hundred dollars (\$100), nor more than five thousand dollars (\$5,000), or imprisonment in the county jail for not more than one year, or both.

Education Code 32052

Any person who participates in the hazing of another, or any corporation or association which knowingly permits hazing to be conducted by its members or by others subject to its direction or control, shall forfeit any entitlement to State funds, scholarships, or awards which are enjoyed by him, by her, or by it, and shall be deprived of any sanction or approval granted by any public educational institution or agency.

Copies of Sections 32050 through 32052 as well as UCI's policies regarding hazing are available from the Office of the Dean of Students, UCI Student Center.

Computer-Use Policy

The University of California, Irvine (UCI) provides computing resources and worldwide network access to members of the UCI electronic community for legitimate academic and administrative pursuits to communicate, access knowledge, and retrieve and disseminate information. As members sharing these resources, we also share the rights and responsibilities of their use. This document describes the shared rights and responsibilities as well as the consequences of misuse. *Please read it as you are responsible for knowing and following these policies.* We welcome your use of campus computing resources and your cooperation.

Rights and Responsibilities

Worldwide, open-access electronic communication is a privilege, and continued access requires that users act responsibly. Users should be able to trust that the products of their intellectual efforts will be safe from violation, destruction, theft, or other abuse. As a user sharing computing resources, you must respect and value the rights and privacy of others, respect the integrity of the systems and related physical resources, and observe all relevant laws, regulations, and contractual obligations. You are responsible to refrain from acts that waste resources, prevent others from using them, harm resources or information, or abuse other people. To help protect your files, you are responsible for setting passwords appropriately and keeping your password confidential by not giving it to another person.

Most UCI owned computers are under the control of a system administrator or lab manager. Like you, these administrators are expected to respect the privacy of computer system users. However, UCI computer system administrators may access user files or suspend services on the systems they manage without notice as required to protect the integrity of computer systems or to examine accounts that are suspected of unauthorized use, misuse, or have been corrupted or damaged. This includes temporarily locking vulnerable accounts, removing hung jobs, reprioritizing resource intensive jobs, and more.

Many UCI departments have their own computing and networking resources and policies. When accessing computing resources, users are responsible for obeying both the policies set forth in this general computing document and the policies of the other departments. Users are also responsible for obeying policies of off-campus network services accessed from UCI.

Examples of Misuse

Examples of misuse include, but are not limited to, the activities on the following list:

- Running or installing on any computer system or network, or giving to another user, a program intended solely for the purpose of damaging or placing excessive load on a computer system or network. This includes, but is not limited to, computer viruses, Trojan horses, worms, bots, flash programs, or password cracking programs.
- Attempting to circumvent data protection schemes or uncover security loopholes without prior written consent of the system administrator. This includes creating and/or running programs that are designed to identify security loopholes and/or intentionally decrypt secure data.
- Using computers or electronic mail to act abusively toward others or to provoke a violent reaction, such as stalking, acts of bigotry, threats of violence, or other hostile or intimidating "fighting words." Such words include those terms widely recognized to victimize or stigmatize individuals on the basis of race, ethnicity, religion, sex, sexual orientation, disability, for example.
- Posting on electronic bulletin boards or web pages materials that violate the University's codes of conduct. This includes posting information that is slanderous or defamatory in nature or displaying graphically disturbing or sexually harassing images or text in a public computer facility or location that are in view of other individuals.
- Attempting to monitor or tamper with another user's electronic communications or reading, copying, changing, or deleting another user's files or software without the explicit agreement of the owner.
- Violating terms of applicable software licensing agreements or copyright laws.
- Using the campus network to gain unauthorized access to any computer system.
- Using a computer account or obtaining a password that you are not authorized to use, or allowing anyone else to use your own account.
- Masking the identity of an account or machine. This includes sending mail that appears to come from someone else.
- Performing an act without authorization which will interfere with the normal operation of computers, terminals, peripherals, networks, or which will interfere with others' ability to make use of the resources.
- Using your account for any activity that is commercial in nature not related to your work at UCI, such as consulting services, typing services, developing software for sale, advertising products, and/or other commercial enterprises for personal financial gain.
- Deliberately wasting computing resources, such as playing games (for example, MUDS or IRC) while someone else is waiting to use the computer for UCI related work, sending chain letters, spamming newsgroups, treating the printer like a copy machine, storing or moving large files which could compromise system integrity or preclude other users right of access to disk storage, and more.

Consequences of Misuse

Misuse of computing, networking, or information is unacceptable, and users will be held accountable for their conduct. Serious infractions can result in temporary or permanent loss of computing and/or network privileges, student judicial affairs review and discipline, and/or Federal or State legal prosecution. California Penal Code Section 502 makes certain computer abuses a crime (such as illegal reproduction of software protected by U.S. copyright law), and penalties can include a fine and/or imprisonment. Files may be subject to search under proper authorization.

Minor infractions of this policy, such as poorly chosen passwords, overloading systems, excessive disk space consumption, are typically handled internally to the department in an informal manner. More serious infractions such as abusive behavior, account invasion or destruction, attempting to circumvent system security, are handled formally through the Office of the Dean of Students or by other appropriate officials.

For More Information

For more information, contact the Office of Academic Computing, E2130 Engineering Gateway Building, telephone (949) 824-6116, or send electronic mail to oac@uci.edu. Also, students may want to read the *Policies Applying to Campus Activities, Organizations, and Students*, which is available from the Office of the Dean of Students, Student Center.

Acknowledgements

This document has been adapted in part from the UCI ICS Department, UC Berkeley, and UC Davis computer-use policies.

Student Records

The University of California campuses maintain various types of records pertaining to students; some are maintained for academic purposes; others, such as hospital and employment records, are maintained for other specific purposes. Student records—that is, those pertaining to students in their capacity as students—include but are not limited to academic evaluations, transcripts, test scores and other academic records, general counseling and advising records, disciplinary records, and financial aid records. At UCI, an "applicant" becomes a "student" at the time of submission of the Statement of Intent to Register form.

The disclosure of information from student records is governed in large measure by the Federal Family Educational Rights and Privacy Act of 1974, by the State of California Education Code, and by University policy and procedures implementing these laws which protect the student's right of privacy, provide safeguards for the confidentiality of student records, and permit students access to their own records.

Pursuant to the Federal Family Educational Rights and Privacy Act of 1974 and the University of California Policies Applying to the Disclosure of Information from Student Records, students at the University have the following five rights:

1. to inspect and review records pertaining to themselves in their capacity as students;
2. to inspect records maintained by the campus of disclosure of personally identifiable information from their student records;
3. to seek correction of their student records through a request to amend the records or a request for a hearing;
4. to file complaints with the Department of Health and Human Services regarding alleged violations of the rights accorded them by the Act; and
5. to have withheld from disclosure, in the absence of their prior consent for release, personally identifiable information from their student records, with exceptions as noted in the University student records policies.

NOTE: *There are instances in which information can be disclosed without prior written consent of the student. University officials may require access to student records in the course of the performance of their assigned duties. Further, confidential information can be disclosed without prior written consent of the student (a) in connection with conditions of certain financial aid awards; (b) when the campus is complying with a judicial order or subpoena; and (c) when authorized federal or State officials are conducting an audit or evaluation of federally supported educational programs. There are also other situations in which the University is required to disclose information. See Policies Applying to Campus Activities, Organizations, and Students for a list of exceptions.*

Normally, the campus will release the following as personally identifiable information which can be made public:

Student's name;
Address (campus, local, and/or permanent) and telephone numbers;
Date and place of birth;
Major field of study, dates of attendance, number of course units in which enrolled, degrees and honors received;
Most recent previous educational institution attended;
Participation in officially recognized activities, including intercollegiate athletics;
Name, weight, and height of participants on intercollegiate University athletic teams.

However, students have the right to refuse to permit any or all of these categories to be designated public information with respect to themselves. (See the NOTE above.)

If a student requests that information from his or her records not be regarded as public information, then the information will not be released to anyone without the written consent of the student. The student should be aware of the important implications of exercising this right. For example, if a request is made to withhold from disclosure a student's name and degrees and honors received, the campus cannot release for publication information on any honors received by the student, such as election to Phi Beta Kappa, and cannot include the student's name and degree earned in the campus commencement program without the written consent of the student. Similarly, if a request is made to withhold from disclosure a student's name and dates of attendance, a student's status as a student cannot be verified for potential employers without the written consent of the student. Further, if a student's last instruction to the campus was to withhold from disclosure the degree granted to that student and the date on which the degree was conferred, that information cannot be confirmed for a third party in connection with the appointment of that graduate to a new position or in connection with an honor that individual received without the written consent of the student.

Students wishing to restrict release of public information should contact the Registrar's Office for instructions on how to do so. Questions regarding the rights of students under the University policies and the federal law should be directed to the Assistant Executive Vice Chancellor-University Ombudsman, 255 Administration.

It is extremely important for each student to keep the Registrar's Office currently informed as personal data changes occur to assure that accurate and complete records are maintained.

Students are informed annually of their rights under the University's student records policies and the federal Act. Copies of the Act and University and campus policies are available for review in the Reference Room, Main Library. In addition, University policies are published in *Policies Applying to Campus Activities, Organizations, and Students*, copies of which are available in the Office of the Dean of Students and on the World Wide Web at http://www.students.uci.edu/~students/JUDICIAL/uci_policy.html.

Complaints regarding alleged violation of the rights accorded students by the federal Act may be filed with the Family Educational Rights and Privacy Act Office (FERPA), Department of Education, 4511 Switzer Building, Washington, D.C. 20202.

Types and locations of major student records maintained by the campus are listed in the following table; consult the Campus Directory or building directories for room numbers.

Type of Record	Location of Record	Responsible Official
School, department, or program	Administrative office for particular unit	Dean, Chair, or Director
Admissions—Undergraduate	Administration	Director, Admissions and Relations with Schools
Admissions—Graduate	Administration	Dean, Graduate Studies
Admissions—College of Medicine	Med. Sci. I	Director, Admissions
Career Center	Student Services I	Director, Career Center
Child Care Services	Early Childhood Education Center	Director, Child Care Services
Counseling	Student Services	Director, Counseling Services
Dean of Students	Student Center	Dean of Students
Disability Services	Disabled Student Center	Director, Disability Services
Education Abroad Program	Student Services	Coordinator, EAP
Financial Aid	Administration	Director, Financial Aid
Financial Services (Cashier, Collections)	Administration	Manager, Financial Services
Housing	Housing Administrative Services	Director, Housing
International Services	Administration	Assistant Dean, International Students
Learning and Academic Resource Center	Fourth Floor, Social Science Tower	Director, Learning and Academic Resource Center
Ombudsman Services	Administration	University Ombudsman
Parking	Public Services Facility	Parking Supervisor
Placement Testing Program	Student Services I	Director, Testing, Research, and Evaluation
Registrar—Graduate/Undergraduate	Administration Med. Sci. I	Registrar Assistant Deputy Registrar
College of Medicine	Administration	Director, Admissions and Relations with Schools
Relations with Schools	Administration	Director, Admissions and Relations with Schools
Student Academic Advancement Services	Student Services	Director, Student Academic Advancement Services
Student Conduct	Student Center	Dean of Students
Student Health	Student Health Center	Director, Student Health
Summer Session	University Extension	Director, Summer Session
Undergraduate Education	Administration	Dean, Undergraduate Education
University Extension	University Extension	Dean, University Extension
Veterans	Administration	Coordinator, Veterans Student Services
Incidental Records (minutes of various committees, copies of correspondence in offices not listed above, and other records not listed)	Administration	Vice Chancellor Student Services, or other Student Services officials

Graduation Rates by Ethnicity and Gender

The information below is provided by UCI's Office of Analytical Studies and Information Management in compliance with the Student Right-to-Know and Campus Security Act of 1990 (Public Law 101-542).

Gender and Ethnicity	Fall 1991 All Entering Freshmen			Fall 1991 All Entering Athletically Aided Freshmen		
	E ¹	G ²	GR ³	E ¹	G ²	GR ³
Men						
Nonresident Alien	15	6	40%	2	1	50%
African American	9	6	67%	3	3	100%
American Indian	5	2	40%	0	0	0%
Asian	556	426	77%	0	0	0%
Hispanic	83	61	73%	1	0	0%
Other/Unknown	73	51	70%	0	0	0%
White	334	232	69%	4	2	50%
Total	1,075	784	73%	10	6	60%
Women						
Nonresident Alien	19	18	95%	0	0	0%
African American	20	14	70%	1	1	100%
American Indian	6	4	67%	0	0	0%
Asian	647	516	80%	0	0	0%
Hispanic	109	70	64%	0	0	0%
Other/Unknown	54	38	70%	0	0	0%
White	393	292	74%	11	7	64%
Total	1,248	952	76%	12	8	67%
Total Entering Freshmen						
Nonresident Alien	34	24	71%	2	1	50%
African American	29	20	69%	4	4	100%
American Indian	11	6	55%	0	0	0%
Asian	1,203	942	78%	0	0	0%
Hispanic	192	131	68%	1	0	0%
Other/Unknown	127	89	70%	0	0	0%
White	727	524	72%	15	9	60%
Total	2,323	1,736	75%	22	14	64%

E¹ = Entered; G² = Graduated; GR³ = Graduation Rate.

NOTE: UPHSS, Department of Education credential students, and visitors are excluded.

Source: OASIM Student Tracking System, 1-98 updates.

Cumulative Graduation Rates by Intercollegiate Sport

Fall 1991 entering freshmen who received athletically related financial aid.

Entering Group	E ¹	G ² MEN	GR ³	E ¹	G ² WOMEN	GR ³
Baseball*						
Nonresident Alien	0	0	0%			
African American	0	0	0%			
American Indian	0	0	0%			
Asian	0	0	0%			
Hispanic	0	0	0%			
Other/Unknown	0	0	0%			
White	2	0	0%			
Total	2	0	0%			
Basketball						
Nonresident Alien	0	0	0%	0	0	0%
African American	2	2	100%	1	1	100%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	0	0	0%	0	0	0%
Other/Unknown	0	0	0%	0	0	0%
White	0	0	0%	4	3	75%
Total	2	2	100%	5	4	80%
Track/Cross Country						
Nonresident Alien	0	0	0%	0	0	0%
African American	0	0	0%	0	0	0%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	0	0	0%	0	0	0%
Other/Unknown	0	0	0%	0	0	0%
White	0	0	0%	1	1	100%
Total	0	0	0%	1	1	100%
Other and Mixed Sports						
Nonresident Alien	2	1	50%	0	0	0%
African American	1	1	100%	0	0	0%
American Indian	0	0	0%	0	0	0%
Asian	0	0	0%	0	0	0%
Hispanic	1	0	0%	0	0	0%
Other/Unknown	0	0	0%	0	0	0%
White	2	2	100%	6	3	50%
Total	6	4	67%	6	3	50%

E¹ = Entered; G² = Graduated; GR³ = Graduation Rate.

*Baseball was disestablished as a UCI intercollegiate sport at the conclusion of the 1991-92 academic year.

NOTE: UPHSS, Department of Education credential students, and visitors are excluded.

Source: OASIM Student Tracking System, 1-98 updates.

Crime within the UCI Community

While crimes do occur within the UCI community (campus and Medical Center), the rates of both violent crime and property crime have remained low. Burglary and theft (including automobiles and bicycles) are the most prevalent crimes reported.

The following data are provided in compliance with the Federal Student Right-to-Know and Campus Security Act of 1990 (Public Law 101-542), and similar California legislation (AB 3918 and 1094).

Additional data, along with required campus policy and program information, are published annually in September by the UCI Police Department in the *Crime Awareness Bulletin*, which is distributed to new and continuing students, as well as to faculty and staff, at both the campus and the Medical Center. When a serious threat to the UCI community exists, informational crime bulletins are posted and circulated.

SAFETY TIPS

Day and night, no matter where students go, they should be aware of their surroundings, should exercise good common sense, and should use safety precautions as they would elsewhere. UCI provides a Campus Escort Service, which is available by contacting the UCI Police Department at (949) 824-5223.

Theft is the most common security problem. Students living on campus should keep their doors locked at all times. In offices, valuables should be kept locked up. Doors to laboratories and buildings should be locked by the last person to leave. The presence of unknown visitors should be reported to the UCI Police Department. Vehicles (including bicycles) should be locked when parked.

TO REPORT AN INCIDENT

On campus, dial 9-1-1 for a police, medical, or fire emergency, or should use the emergency call boxes (identified by the blue light on the box) located around the ring mall, in parking structures, and in other parking areas. At the Medical Center, dial (714) 456-6123 for a police emergency or (714) 456-6234 to report a fire or medical situation.

UCI police officers are duly sworn State peace officers. They are armed and possess the same legal authority as do the municipal and county police agencies. They enforce the law, arrest violators, investigate accidents, and provide a full range of police-related services, including immediate response to medical aid situations and fire emergencies.

POLICIES ON SUBSTANCE ABUSE AND WEAPONS

UCI is designated a drug-free environment, and only under certain conditions is the consumption of alcohol permitted. State laws and University policies are enforced, and violators are subject to disciplinary action, criminal prosecution, fine, and imprisonment.

Section 626.9 of the California Penal Code makes it a felony to bring or to possess a firearm on the grounds, or within buildings (including private residences), of the University of California.

UCI CRIME STATISTICS: 1995-97

Campus Offense	1995		1996		1997	
	Reported	Cleared	Reported	Cleared	Reported	Cleared
Homicide	0	0	0	0	0	0
Rape	0	0	2	2	1	1
Attempted Rape	0	0	1	0	1	1
Sexual Offense – nonviolent	8	1	5	0	4	3
Robbery	1	0	0	0	1	1
Aggravated Assault	11	9	7	6	11	11
Burglary	41	3	58	4	45	2
Hate Crimes	1	1	4	0	1	1
Motor Vehicle Theft	26	17	40	30	21	15
Simple Assault	17	16	17	17	12	10
Theft	676	25	527	74	409	35
(includes bicycles)						
Vandalism	88	2	59	1	58	0
Drug/Narcotics Offenses	21	21	40	40	3	3
Weapons Offenses	20	13	14	14	14	13
Alcohol	27	17	46	46	36	36

Medical Center Offense	1995		1996		1997	
	Reported	Cleared	Reported	Cleared	Reported	Cleared
Homicide	0	0	0	0	0	0
Rape	1	1	0	0	0	0
Attempted Rape	0	0	0	0	0	0
Sexual Offense – nonviolent	7	1	2	1	2	1
Robbery	0	0	0	0	0	0
Aggravated Assault	6	5	6	6	2	2
Burglary	22	1	10	1	19	0
Hate Crimes	1	1	0	0	1	1
Motor Vehicle Theft	22	13	5	5	17	13
Simple Assault	8	8	4	4	19	18
Theft	290	10	112	11	133	6
(includes bicycles)						
Vandalism	50	1	20	1	11	3
Drug/Narcotics Offenses	40	36	32	32	68	67
Weapons Offenses	17	16	8	5	16	16
Alcohol	31	31	24	24	39	39

NOTE: UCI crime statistics as reported in the *Catalogue* are taken from UC Systemwide Police statistics which are reported and compiled on a monthly basis throughout the calendar year. UCI crime statistics as reported in the Campus Crime Awareness Bulletin are compiled and reconciled at year end and will denote crimes that were cleared at a later date and/or reflect cases that were determined to be unfounded.

Salary and Employment Information

Field of Study	Degree Level of Graduates		
	Bachelor's	Master's	Doctorate
	Average Annual Salary *		
Arts	\$ 23,428	\$ —	\$ —
Biological Sciences	25,868	27,414	47,031
Computer Science	37,215	44,331	63,058
Engineering	39,546	46,140	59,010
Humanities	25,078	30,020	31,779
Management	—	49,161	57,850
Physical Sciences	33,947	39,303	57,014
Social Sciences	25,103	30,993	37,650

* Source: A national survey conducted by the National Association of Colleges and Employers, representing the average range of offers as of September 1997 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.

Nondiscrimination Policy Statements

Student-Related Matters. The University of California, in accordance with applicable Federal and State law and University policy, does not discriminate on the basis of race, color, national origin, religion, sex, disability, age, medical condition (cancer-related), ancestry, marital status, citizenship, sexual orientation, or status as a Vietnam-era veteran or special disabled veteran. The University also prohibits sexual harassment. This nondiscrimination policy covers admission, access, and treatment in University programs and activities.

Inquiries regarding the University's student-related nondiscrimination policies may be directed to: University of California, Irvine, Assistant Executive Vice Chancellor, Office of Equal Opportunity and Diversity, 524 Administration Building, Irvine, CA 92697-1125; telephone (949) 824-5594.

Employment Practices. The University of California, in accordance with applicable Federal and State law and University policy, prohibits discrimination against or harassment of any person employed by or seeking employment with the University on the basis of race, color, national origin, religion, sex, physical or mental disability, medical condition (cancer-related), ancestry, marital status, or age. The University of California also prohibits discrimination on the basis of sexual orientation, status as a Vietnam-era veteran or special disabled veteran, or, within the limits imposed by law or University policy, on the basis of citizenship.

In conformance with applicable law and University policy, the University of California is an equal opportunity employer. The University develops an affirmative action plan as required by federal regulations for underrepresented minorities and women, for persons with disabilities, and for Vietnam-era veterans and special disabled veterans. The University of California is committed to "good faith" efforts to rectify discrimination patterns or practices which result in underutilization.

Inquiries regarding the University's equal employment opportunity policies regarding academics, staff, and management may be directed to: University of California, Irvine, Assistant Executive Vice Chancellor, Office of Equal Opportunity and Diversity, 524 Administration Building, Irvine, CA 92697-1125; telephone (949) 824-5594.

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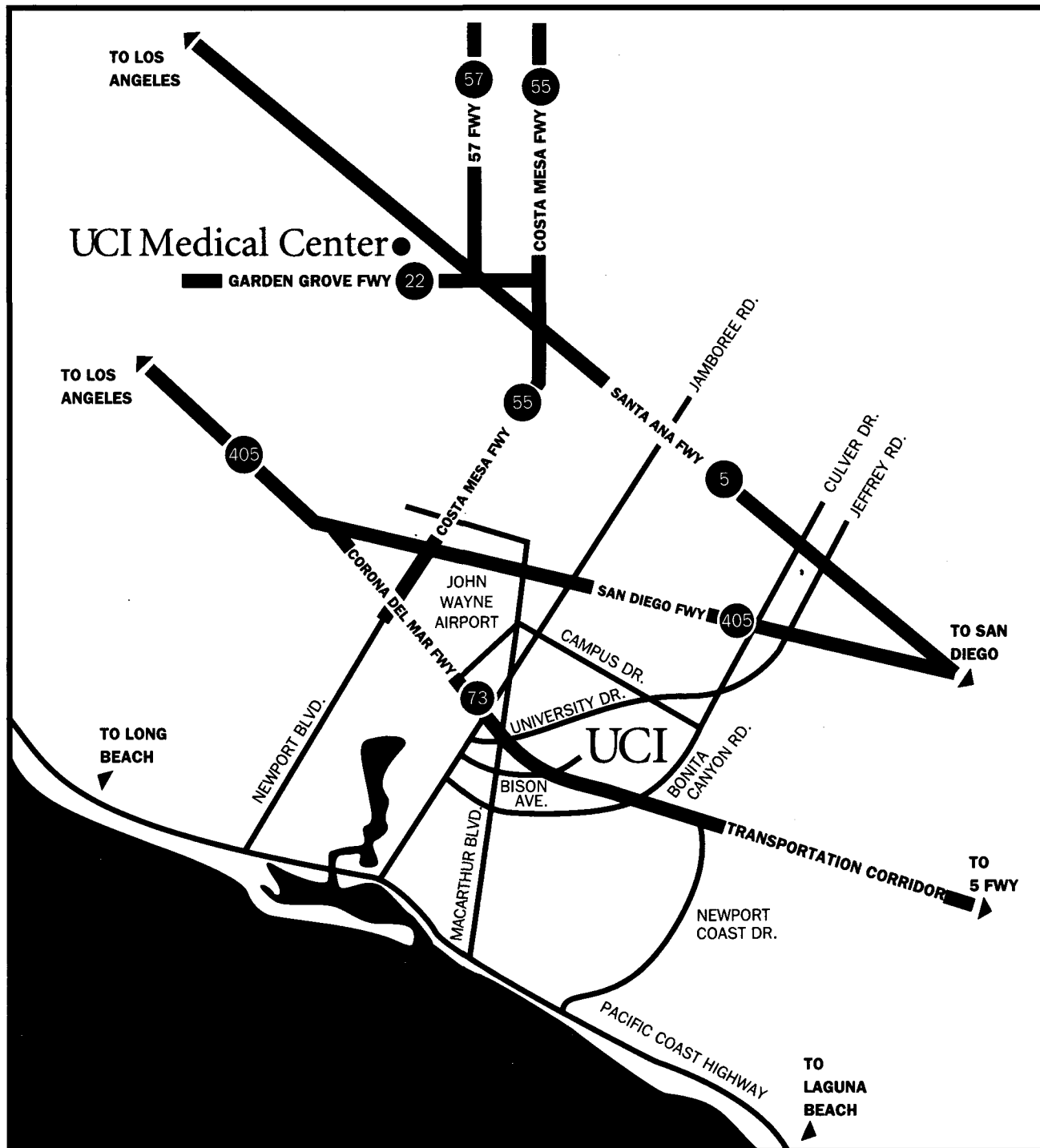
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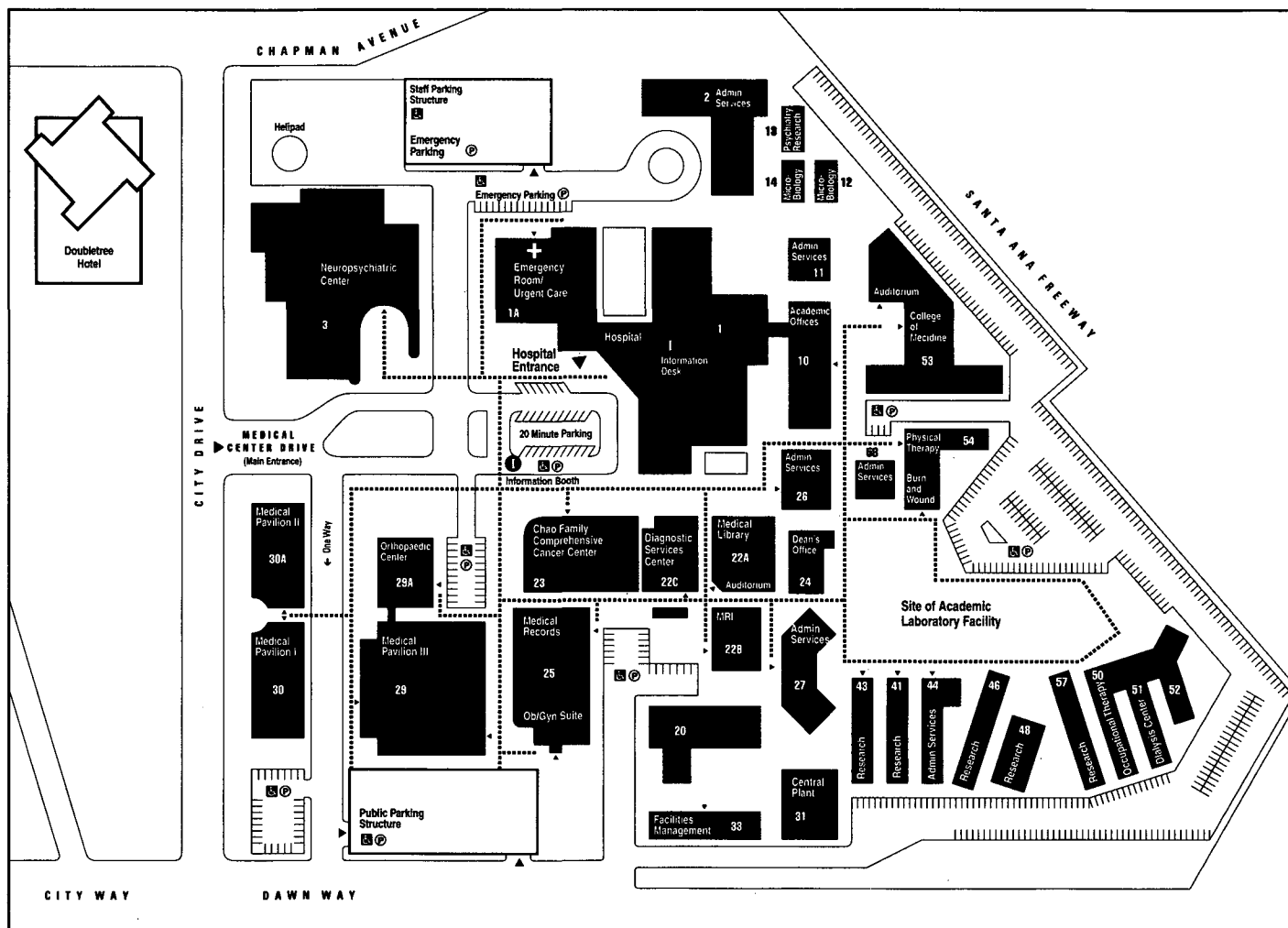
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UCI Campus Map, March, 1998. This map supercedes all previous campus maps.

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 7 Public Services (C9)
 20 Verano Preschool (C9)

21 American Heart Association (B9)
 22 Infant/Toddler Center (B10)
 23 Early Childhood Education Center (B10)
 24 Farm School/Barn (C11)
 25 Extended Day Center (C10)
 26 Children's Center (C10)
 30 University Montessori School (F10)
 31 Faculty/Staff Housing Office (G8)
 32 University Club (F7)
 40 Electrical Substation (H6)
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 60 Founders' Court (E6)
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 502 Biological Sciences I (Steinhaus Hall) (E6)
 503 Biological Sciences II (F6)
 506 Qureshey Research Laboratory (F6)
 512 Bonney Research Laboratory (F5)
 514 Greenhouse (E5)
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 516 Theoretical Neurobiology Facility (F5)
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 613 Humanities Trailer Complex (E5)
 615 Disability Services (E5)
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 712 Art Gallery (D5)
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 715 Drama Department and Art History (D5)
 718 Orchestra Rehearsal Hall (D5)
 720 Sculpture and Ceramic Studios (D5)
 721 School of the Arts Dean's Office (D5)
 722 Painting and Video Studios (D5)
 723 Production Studio (E5)
 724 School of the Arts Student Affairs (D5)
 725 Studio Four (D5)
 800 Cafe Med (F5)
 802 Berk/Alumni Medical Education Center (F5)
 810 Medical Surge I (G4)
 811 Medical Sciences B (G5)
 812 Medical Surge II (F4)
 813 Medical Sciences A (G5)
 815 Vivarium Administrative Offices (G5)
 817 Beckman Laser Institute (G5)
 820 Gottschalk Medical Plaza (G4)
 821 Medical Sciences C (G5)
 825 Medical Sciences D, Cheney Building (G4)
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 Las Lomas (G8)
 Mesa Court (D5)
 Middle Earth (E8)
 Palo Verde (E10)
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 Verano Place (C10)

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Admissions		
College of Medicine	200 Medical Education Building	824-5388
Graduate	120 Administration Building	824-6761
Undergraduate Admissions and Relations with Schools	204 Administration Building	824-6703
Associated Students	200 UCI Student Center	824-5547
Bookstore, UCI	UCI Student Center	824-B00K
Campus Tours	204 Administration Building	824-6703
Career Center	100 Student Services I	824-6881
Dean of Students	UCI Student Center-First Floor	824-5181
Disability Services	100 Disability Services Building	824-7494
Financial Aid	102 Administration Building	824-6262
Housing	209 Administration Building	824-7247
International Center	201 Student Services I	824-7249
Registrar	215 Administration Building	824-6124
Student Health	Student Health Service	824-5304
Summer Sessions	UCI Extension	824-5493
Transfer Student Services	204 Administration Building	824-6703
UCI Medical Center	101 The City Drive Orange, CA 92868	(714) 456-6011
Veterans Student Services	100 Student Services I	824-6477
Vice Chancellor Student Services	405 Administration Building	824-7985



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