UNIVERSITY OF CALIFORNIA, IRVINE

1981-82
General
Catalogue

Information Guide

Persons seeking information about UCI programs, services, and activities may call the following offices. In addition, please refer to page 20 for a directory of undergraduate advising personnel. Other campus numbers may be found in a local telephone directory or reached through the campus operator at (714) 833-5011, Monday through Friday, 8:00 a.m. to 5:00 p.m.

Office	Telephone (714)
Admissions	
Undergraduate	
General Information	833-6703
Counselor or Evaluator	833-6705
Graduate	833-6761
Medical	833-5388
Alumni	
UCI Alumni Association	833-6247
Associated Alumni	
UCI College of Medicine	634-0152
ASUCI	833-5547
Campus Tours	833-5832
Development and Affiliates	833-6424
Educational Opportunity Program	833-5410
Financial Aid	833-6261
Handicapped Student Services	833-6478
International and Nontraditional Student Services	833-7249
New Student Information Center	833-6345
Off-Campus Housing	833-7247
On-Campus Housing	833-6811
Public Information	833-6922
Relations with Schools and Colleges	833-5518
Sports Information	833-6931
Student Health	833-5301
Summer Sessions	833-5493
UCI Medical Center	634-6011
University Bookstore	833-7411
University Extension	833-5414
Veterans Student Services	833-6477
Vice Chancellor — Student Affairs	833-7253

Nondiscrimination Statement. The University of California, Irvine, in compliance with Executive Order 11246, as amended, Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, and the Vietnam Era Veterans' Readjustment Act of 1974, does not discriminate on the basis of race, color, national origin, religion, sex, age, or handicap in any of its policies, procedures, or practices. This nondiscrimination policy is applicable to employment and the provision of services. Inquiries regarding this policy may be directed to Carla R. Espinoza, Affirmative Action Officer, 117 Administration, University of California, Irvine; Irvine, California 92717, telephone (714) 833-5594.

Academic Calendar

Please read Catalogue pages 54-56 *and* the quarterly Schedule of Classes very carefully for detailed information on enrollment procedures and late service fees. The enrollment process consists of a number of steps in addition to the submission of enrollment materials. Medical students should consult the College of Medicine Office of Admissions and Records for the College of Medicine calendar.

Fall Quarter 1981

Submission of Enrollment Materials and Payment of Fees	
Undergraduate Students	
Continuing	May 26-August 28
New	July 15-August 28
Graduate Students	
Continuing	May 26-September 23
New	August 3-September 23
Quarter Begins	September 21
Academic Advising and Orientation	September 21-25
Instruction Begins	September 28
University Day	October 22
Thanksgiving Holiday	November 26-27
Instruction Ends	December 4
Final Examinations	December 7-11
Quarter Ends	December 11
Christmas Holiday	December 24-25
New Year's Holiday	December 31-January 1

Winter Quarter 1982

Submission of Enrollment Materials and Payment of Fees	November 23-December 4
Quarter Begins	January 4
Academic Advising and Orientation for New Students	January 4
Instruction Begins	January 5
Holiday	February 15
Instruction Ends	March 12
Final Examinations	March 15-19
Quarter Ends	March 19
Spring Holiday	March 22

Spring Quarter 1982

Submission of Enrollment Materials and Payment of Fees	March 1-12
Quarter Begins	March 24
Academic Advising and Orientation for New Students	March 24-26
Instruction Begins	March 29
Memorial Day Holiday	May 31
Instruction Ends	June 4
Final Examinations	June 7-11
Commencement	June 12
Quarter Ends	June 12

CONTENTS

University of California, Irvine
1981-82 General Catalogue
(USPS-646-660) Volume 15, Number 1, July 1981
University of California, Irvine is published four times a year by the Publications Office, University of California, Irvine; Irvine, California 92717. Second class postage paid at Santa Ana, California. *Postmaster:* please send address changes to the Publications Office, University of California, Irvine; Irvine, California 92717. Price $1.50; by mail $2.00. All announcements herein are subject to revision without notice.

INTRODUCTION TO UCI

Explanatory Notes

The UCI General Catalogue contains general administrative and academic information, as well as specific descriptions of schools and departments and the courses they offer.

Because the Catalogue must be prepared well in advance of the year it covers, changes in some programs inevitably will occur. Courses described in the Catalogue are subject to change without notice, and some listed courses are not offered each year. The quarterly Schedule of Classes, a publication available from the Registrar's Office shortly before enrollment begins each quarter, provides information on classes to be offered, instructors, enrollment restrictions (for example, major only), class hours, room assignments, and examination schedules. Students should consult the appropriate academic unit for current information. Admission to UCI does not guarantee admission to any particular course.

Course Listings. Undergraduate courses are classified as "lower division" and "upper division." "Lower division" refers to courses numbered 1-99; "upper division" refers to courses numbered 100-199. Courses numbered 200 and above are graduate 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. Prerequisites for courses should be noted carefully; 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 course number usually designates a laboratory course.

The "(4)" or "(4-4-4)" designation following the course title indicates the unit credits toward the 180 quarter units needed to graduate. Each "4" represents four quarter units.

The letters F, W, or S after the course number and title indicate the quarter(s) in which the course will be offered: fall, winter, or spring. The word Summer appears if the course is offered in Summer Session, 1981. While efforts have been made to provide information on when a course is offered, such information is not always available in time for inclusion in the Catalogue. The designation (4) F, W, S indicates a single course offered each quarter which can be taken only once for credit; a (4-4-4) F, W, S designation indicates that credit may be earned in each quarter.

When a course is approved for satisfaction of the UCI breadth requirement, the breadth category is indicated by a roman numeral at the end of the course description. A description of the breadth requirement may be found on page 15.

THE UNIVERSITY OF CALIFORNIA

David S. Saxon **President**

The University of California 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.

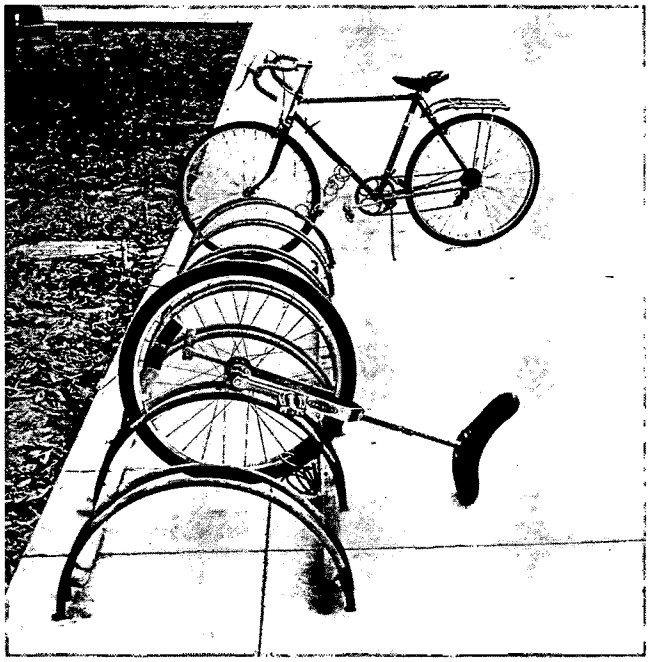
Today the University system includes nine campuses—Berkeley, Davis, Irvine, Los Angeles, Riverside, San Diego, San Francisco, Santa Barbara, and Santa Cruz. All of the campuses adhere to the same admissions guidelines and high academic standards, yet each one has its own distinct character. Among the campuses there are five medical schools, three law schools, and a school of veterinary medicine, as well as professional schools of business administration, education, engineering, oceanography, and many others. The University's libraries are among the finest in the United States.

In just over a century, the University has become one of the world's largest and most renowned centers of higher education. The faculty is internationally noted for its distinguished academic achievements. On its nine campuses, the University has a total of 15 Nobel laureates. National Academy of Science membership on all campuses numbers 195—greater than the total for 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 for adults in the arts, business, and professions.

Under contract with the U.S. Department of Energy and with support from other agencies, the University operates three national research facilities: the Lawrence Berkeley Laboratory adjoining the Berkeley campus, the Lawrence Livermore National Laboratory at Livermore, California, and the Los Alamos National Scientific Laboratory at Los Alamos, New Mexico. Other major research facilities include Lick Observatory, White Mountain Research Station for high-altitude research, Laboratory of Radio Astronomy, Bodega Marine Laboratory, Scripps Institution of Oceanography, Institute of Transportation Studies, Statewide Air Pollution Research Center, Space Sciences Laboratory, Hormone Research Center, and Philip L. Boyd Desert Research Center, among others.

One of the University's unique resources is its roster of University Professors. The University Professor title is reserved for certain distinguished faculty members who are recognized nationally and internationally as scholars and teachers of exceptional ability. A University Professor may visit a number of University of California campuses during the academic year, holding conferences with students and staff and speaking before general public audiences. A list of University Professors may be found on page 261.



University Administration. 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, appoint the Chancellors, Directors of major laboratories, Provosts, and Deans who administer the affairs of the individual campuses and other divisions of the University. Authority in academic matters is delegated by The Regents to the Academic Senate, which determines academic policy for the University as a whole.

The Board of Regents includes seven *ex officio* board members, and 18 regular members who are appointed by the Governor for 12-year terms after consultation with an advisory committee. In addition, The Regents appoint a student Regent for a one-year term as a voting Board member with full rights of participation. A constitutional amendment provides that "Regents shall be able persons broadly reflective of the economic, cultural, and social diversity of the State, including ethnic minorities and women." They shall have "full powers of organization and government, subject only to such legislative controls as may be necessary to ensure compliance with the terms of the endowments of the University and the security of its funds."

The President is executive head of the total institution. Each of the nine campuses has a Chancellor as its chief administrative officer. The Chancellor is responsible for the organization and operation of the campus, including academic, student, and business affairs. For the names of University Regents, Officers, and Chancellors, see page 260.

The Academic Senate, consisting of faculty and certain administrative officers, determines the conditions for admission and degrees, subject to the approval of The Regents, authorizes and supervises courses and curricula, and advises the University administration on the important matters of faculty appointments and promotions and budgets.

Students participate in policymaking at both the campus and Systemwide levels.

THE IRVINE CAMPUS

Daniel G. Aldrich, Jr. **Chancellor**

The University of California, Irvine has achieved distinction nationally and internationally because of the high quality of its programs, faculty, and alumni. The campus challenges its students both academically and personally and relies on the commitment, curiosity, imagination, and judgment of faculty and students to assure its continued intellectual and cultural vitality. Since the campus opened in 1965, enrollment has grown to approximately 10,200, including 7,700 undergraduate students, 1,400 graduate students, and 1,000 medical students and residents.

Academic Goals

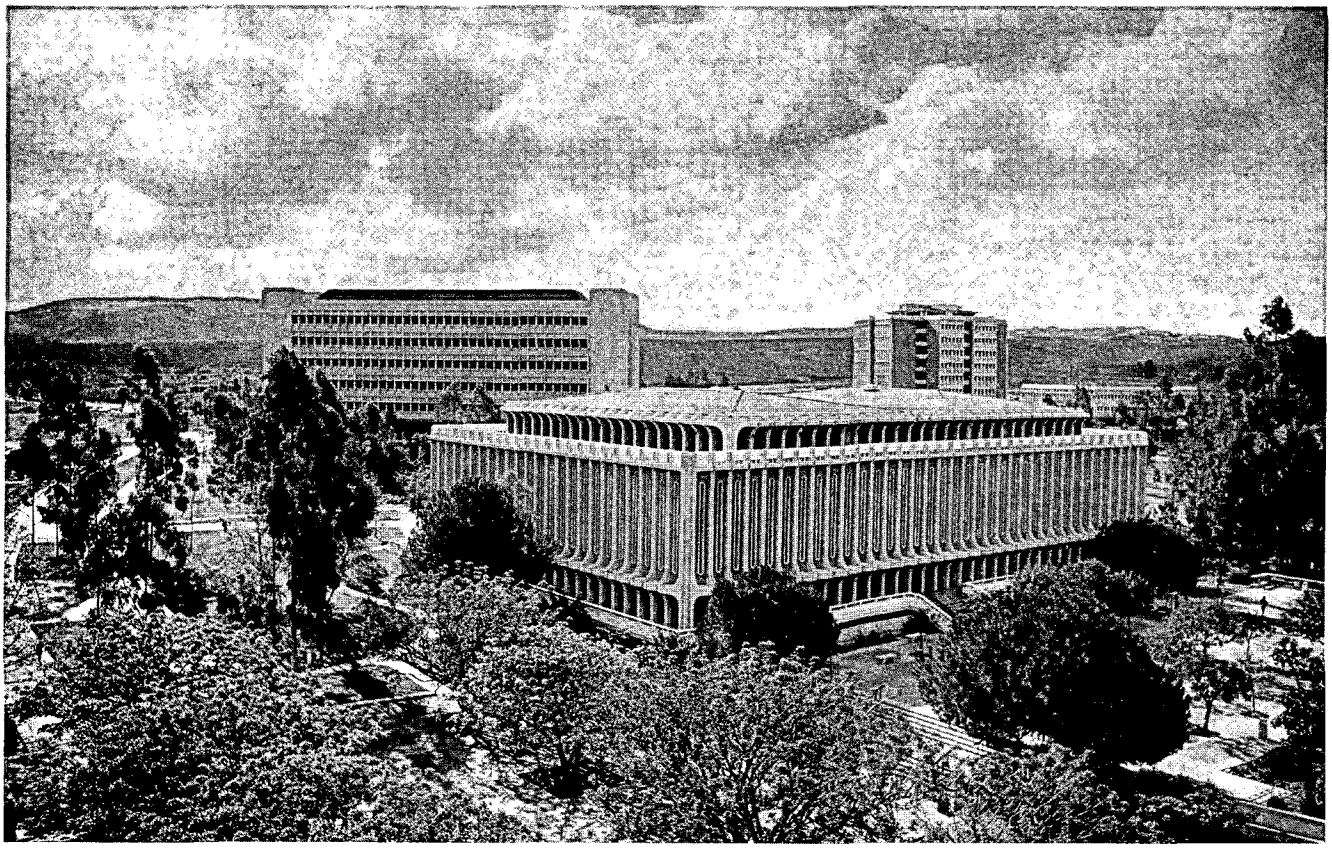
The University of California, Irvine offers programs designed to provide students with a foundation on which to continue developing their intellectual, aesthetic, and moral capacities. The programs and curricula are based on the belief that a student's *collective* university experience should provide understanding and insight which are the basis for an intellectual identity and life-long learning.

An important aspect of the educational approach at UCI 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 fine 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.

The Irvine campus provides an atmosphere conducive to creative work and scholarship at all levels, to the exploration of the accumulated knowledge of mankind, and to the development of new knowledge through basic and applied research. Along with these objectives, Irvine 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

Instruction and research programs at UCI focus on fundamental areas of knowledge, while at the same time provide for interdisciplinary and professional study. Five basic Schools represent five fundamental areas of knowledge: Biological Sciences, Fine Arts, Humanities, Physical Sciences, and Social Sciences. Programs covering interdisciplinary and professional studies are offered in the Department of Information and Computer Science, the Program in Social Ecology, the School of Engineering, the Graduate School of Management, and the Office of Teacher Education. The College of Medicine provides educational programs for medical and health sciences graduate students, medical residents, and practicing physicians. Programs in physical education, recreation, and intercollegiate athletics are provided by the Department of Physical Education.



The Office of Academic Affairs is responsible for all programs of instruction and research. Matters of educational policy, including approval of programs, courses, and grades, are the responsibility of the Irvine Division of the Academic Senate. The Irvine Division is part of the Academic Senate of the University of California.

Accreditation

The University of California, Irvine 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 Civil, Electrical, and Mechanical Engineering options of the School of Engineering are accredited by the Accreditation Board for Engineering and Technology; the M.D. program of the College of Medicine is accredited by the Liaison Committee of the Association of American Medical Colleges and the American Medical Association; and the credential programs of the Office of Teacher Education are approved by the Commission for Teacher Preparation and Licensing.

Affirmative Action Office

The UCI Affirmative Action Office develops and supports programs which promote affirmative action and equal opportunity in University employment, services, and education for qualified minorities, women, handicapped persons, and Vietnam Era veterans. Additionally, the Office implements systems and procedures designed to facilitate compliance with Titles VI and VII of the 1964 Civil Rights Act and Title IX of the Educational Amendments to the Act.

The Office is responsible for assuring fair and equal treatment in University admissions policies, educational programs and activities, and in both undergraduate and graduate student affirmative action programs. The Office also coordinates student affirmative action plans. For further information, contact the UCI Affirmative Action Office, 117 Administration, (714) 833-5594.

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 1,500 acres of coastal foothills near Newport Beach, UCI lies amid rapidly growing residential communities and a dynamic national and multinational business and industrial complex that affords many employment opportunities. Even so, from the main campus entrance at Gateway Plaza, the campus is seen as an oasis of green—a natural arboretum planted with trees and shrubs from all over the world. Adjacent to the campus lies UCI's outdoor laboratory, the San Joaquin Freshwater Marsh Reserve, which is home to a wide variety of migratory and nonmigratory water fowl and other wildlife.

The UCI Medical Center, located in the City of Orange on a 31-acre site, is a major teaching hospital for the College of Medicine. As part of a major renovation program, the Medical Center opened a six-level Medical Center Tower in spring 1981 to provide space for many of the varied activities at this comprehensive health education, service, and research facility.

Within a few miles of the campus are major department stores; branches of classic European, San Francisco, and New York shops; dozens of outstanding restaurants, many offering a variety of cuisines from other countries; and major hotels. Cultural opportunities in the county include repertory theatres, orchestras, choral groups, dance companies, galleries, and museums. The John Wayne Airport, third busiest in the nation, is two miles from campus.

Yet, in part, the Irvine area retains some of its traditional character as a beach—although not a sleepy—resort. The Portuguese dory fishing fleet at Newport, one of the last private fleets on the West Coast, comes ashore every morning and evening to sell the day's catch, and the sun and surf crowd mingle with the art and artisan crowd at Laguna Beach during the summer and winter festivals. The temperate, Mediterranean climate stimulates year-round water-oriented activities such as windsurfing, sailing, and tidepooling. The spring, summer, fall, and winter find students—many of whom live in the nearby beach communities of Balboa Island, Balboa Peninsula, and Newport Beach—enjoying the warm sun and gentle sea breezes. Boating enthusiasts set sail in Newport Bay in 14- to 30-foot sailboats or in canoes, both available from the UCI Sailing Club. Local mountain and desert recreation areas are within easy reach, and the UCI Cooperative Outdoor Program provides low-cost rental equipment for hiking, and skiing, and instruction for other recreational pursuits. The metropolitan attractions of Los Angeles and San Diego are an hour's drive from the campus.

Bus transportation between the campus and major housing areas, shopping centers, and beaches is convenient, and bicycling is popular. Both the campus and the surrounding communities are designed to encourage bicycle traffic, and trails connect UCI to many student housing areas and to the waterfront areas of Newport Beach.

Instructional and Research Facilities

University Library

The UCI Library is a component of the extensive University of California Library system, whose libraries contain more than 15 million volumes. These libraries are committed to a resource-sharing plan which will strengthen the resource base and usefulness of UCI's own library system. Established in 1963, the UCI Library collection has been carefully selected and developed in conjunction with the campus academic plan. The UCI Library system includes the Main Library, the Physical Sciences Library, and the Biomedical Library. This important resource for study, teaching, and research contains approximately one million volumes, including almost 12,000 currently active serials subscriptions. Except for those materials which comprise the Medical Center Branch Library, all of these volumes are housed on the general campus. In addition, a student may request books from other University of California libraries and from national and international libraries.

The Main Library is designed to provide maximum shelving and reader space. With the exception of materials housed in special units, all periodicals and books are on open shelves and easily accessible to all readers. The following Library departments provide specialized services to the users of the Main Library.

The Reference Department contains an open-shelf collection numbering some 25,000 volumes. Librarians in the Reference Department assist in the use of the reference tools and are prepared to find answers for a wide variety of library and campus questions. Informal instruction and guides designed for specific service areas are available. Formal instruction is offered through a course which introduces students to library research techniques (Humanities 75: Biblio Strategy). Bibliographical sessions for classes can be arranged by application at the Reference Desk.

The Government Publications Department contains a collection of over 400,000 publications issued by the U.S. government, Canada, the State of California, and international organizations. This department also contains the Orange County Public Affairs Collection, a resource of current documents on local affairs issued by both governmental and nongovernmental agencies.

The Department of Special Collections contains noncirculating holdings of rare books and early printed works, noteworthy or finely printed editions, exceptionally costly or fragile items, and manuscripts. Special subject collections include French literature of the seventeenth and eighteenth centuries, the René Wellek collection of the history of criticism, California history and literature, British naval history, contemporary poetry, dance, historical costume, and political pamphlet literature.

The University Archives, which shares quarters with the Department of Special Collections, is the official repository for records having permanent value in documenting the history of the UCI campus. These include publications and other records of administrative and academic units, student organizations, and campus support groups.

The Learning Resources Center collects, organizes, and makes available to library users nonprint materials which support campus academic programs. The Center also houses the David S. Saxon collection of recorded music which contains cassette tapes of classical and other music. The Center provides a playback area which allows for on-site consultation of materials in its collection. Terminals connected to campus computers are also available, along with an audio cassette tape duplication service and a media classroom. The Center provides a media reference and advisory service to the campus, and arranges for the rental of films used for instructional purposes on campus. A collection of film classics is also retained here.

The Serials Department includes a reading room in which current periodical and journal issues are on display. This department also provides reference service on microform collections housed in the microform room. This room is equipped with a variety of microform readers and has facilities for copying from microfilm and microfiche.

The Main Library Copying Service, supplemented by coin-operated copying machines, makes it possible to obtain reproduction service at all times when the Main Library is open.

Required or collateral reading materials are placed in the Reserve Book Room by faculty members for their students. Reserve materials circulate for short periods of time and are listed on computer-produced lists by course numbers.

Other Main Library facilities include group study rooms, coin-operated typewriters, individual study seating, book lockers, and rooms containing study aids for blind and partially sighted students. When the University is in session, the Main Library is open 90 hours per week.

The Physical Sciences Library is located in the Physical Sciences Building, and contains over 54,000 volumes on mathematics, physics, astronomy, and chemistry. The collection includes over 1,000 current serial titles. Hours of service are the same as those in the Main Library, and copying services are available.

The Biomedical Library (formerly the Medical Sciences Library) is located in the College of Medicine, and contains a collection of some 104,000 volumes of medical and biological literature, with subscriptions to 1,600 serial titles. Among the audiovisual services provided are microform reader/printers, video tape players, and slide projectors with tape players. Access is also provided for over 100 data bases for general information as well as Medline. The Biological Sciences branch of the Biomedical Library is located in the Science Lecture Hall, with a large collection of current journals. In addition, the Library for the Museum of Systematic Biology, which is located in the Engineering Building, provides a reference collection for systematic biology and for the identification of plants and animals.

The Medical Center Library is located at the University of California Irvine Medical Center. Its collection includes 25,000 volumes and 700 current serial subscriptions. This library serves primarily as the library for the Medical Center and is part of the campus library resources.

Modern methods for increasing the speed and efficiency of library service have been or are being installed throughout the UCI Library system. The Library subscribes to a computer-based cataloging service which enables it to make books available rapidly. A computer-based circulation system is installed in all libraries. On-line literature searching services are offered in a variety of machine-readable data bases. Information on this service may be obtained at the reference desks in all libraries.

Interlibrary loan service is available on a national and international basis to all faculty, students, and staff. Bus service to UCLA is offered Monday through Saturday for faculty and students who need to use the UCLA libraries.

Computing Facility

The Computing Facility provides interactive and batch computing services to students, faculty, and staff on three multi-user computer systems (a Xerox Sigma-7, a Digital Equipment Corporation DECsystem-10, and a DEC PDP-11/45) and a dozen single-user graphic microcomputer systems (Terak 8510/a's). Computing at UCI is distinguished by the commitment to make computing an integral part of the academic programs at both the undergraduate and graduate levels, and by the commitment to extensive use of interactive computing. Approximately 40 percent of the students are involved with some form of instructional computing every year. The Facility can serve more than 140 interactive users simultaneously on its three multi-user systems.

A data communications network provides access to any of these three systems from over 150 terminals available to students in public terminal areas. The network also serves private offices throughout the campus and can support access to departmental computers used in various research projects.

A wide variety of programming languages and applications packages is available to users. Limited capabilities are available for remote computing at other campuses and laboratories of the University. The Facility provides orientation sessions and instructional seminars on various aspects of using the local systems. Regular instruction in programming and other aspects of computing is provided by the Department of Information and Computer Science, other academic units, and University Extension.

Information about campus computing services is available at the Computing Facility's Office of Production Services, 364 Computer Science Building.

Education Abroad Program

Qualified UCI students who desire to live and study in a foreign country for one year are eligible to apply for the UC Education Abroad Program (EAP). Study abroad allows students to experience vastly different cultures and contrasting patterns of thinking while making progress toward a UC degree. Students pay for normal UC fees as well as for room and board, transportation, and books. Usually students selected for the program have had two years of college-level language preparation. In addition, EAP participants are enrolled in an intensive language course during the first several weeks abroad, followed by regular courses at the host university. Universities participating in the Education Abroad Program are located in Austria, Brazil, Egypt, France, Germany, Ghana, Hong Kong, Israel, Italy, Japan, Kenya, Mexico, Norway, Peru, Spain, Sweden, Togo, the United Kingdom and Ireland, and the USSR.

For further information please contact the Education Abroad Program, (714) 833-6343.

Laser Microbeam Program

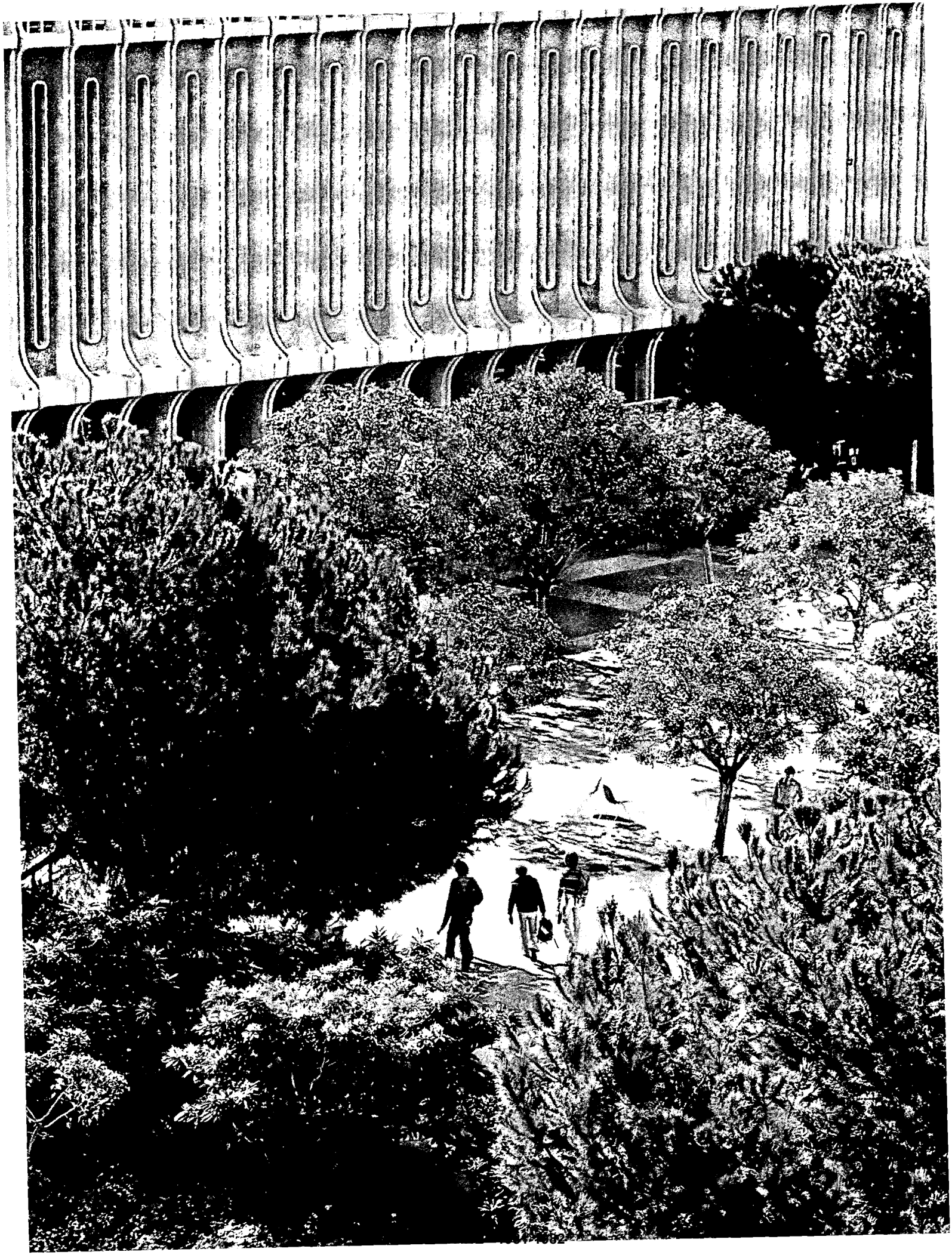
The Laser Microbeam Program (LAMP) was established on the Irvine campus in 1979 as a national facility in the area of laser microbeam biotechnology. LAMP functions as a research, training, and service facility, and provides interaction between the laser industry and the academic biomedical research community. The facility serves as a resource to promote research in cell biology, developmental biology, neurobiology, genetics, and oncology. Microsurgery is performed at subcellular, cellular, and tissue levels. The program is conducted in the School of Biological Sciences and is funded through a grant from the Biotechnology Resources Program of the National Institutes of Health.

Natural Land and Water Reserves System

The University of California manages and maintains a system of more than 20 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. The Irvine campus is responsible for two Reserves: the San Joaquin Freshwater Marsh Reserve and the Burns Piñon Ridge Reserve.

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 Irvine 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 as many as 90 species of birds in the Reserve, a major stopping point on the Pacific Flyway.



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.

Irvine Arboretum

The 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, and a native flora section. The Arboretum maintains a program 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.

Museum of Systematic Biology

The Museum of Systematic Biology is a scientific resource charged with cataloging and maintaining specimens of local plants and animals. Its holdings, totaling over 120,000 specimens, provide environmental scientists and students of ecology with information about the occurrence, identification, and distribution of the species living in our immediate environment. In addition to its general holdings, the Museum is custodian for three outstanding special collections: the Sprague Conchological Collection, the Cassady-Lewis Herpetological Collection, and the Rudkin Lepidopteran Collection.

UCI Medical Center and Community Clinics

The UCI Medical Center (UCIMC) is a fully accredited general and emergency care hospital located in the City of Orange. UCI College of Medicine faculty and resident physicians are the professional staff for medical services at the Center; a full complement of inpatient and outpatient services in virtually all medical specialties is offered. The Medical Center is also the designated Countywide Level I tertiary trauma referral center.

The Center serves as a principal facility for teaching and research programs for medical students, providing them with direct involvement in patient care. Licensed for 493 beds, the Medical Center currently handles 17,000 inpatient admissions, 143,000 outpatient visits, and 45,000 adult and pediatric emergency visits.

A major redevelopment program is underway at the Medical Center to provide an enhanced professional, functional, and a more attractive environment for patient care and educational programs. In spring 1981, the six-level Medical Center Tower opened; it houses diagnostic radiology services, emergency and trauma facilities, obstetrical facilities, and private and semi-private patient rooms. The redevelopment program includes plans for renovating existing buildings, removing out-dated structures, and constructing new facilities, including a medical library. The library is planned as the first component of a proposed modular facility system that will include buildings for inpatient and outpatient diagnostic services and for instructional and research programs.

UCI clinical facilities also include the Community Clinic of Orange County (CCOC) in Santa Ana and the North Orange County Community Clinic (NOCCC) in Anaheim. Both clinics provide educational experiences and patient services in primary care.

Important components of UCI's medical education and research programs are also conducted at affiliated hospitals and clinics, in particular, the Veterans Administration Medical Center, Long Beach; Memorial Hospital Medical Center, Long Beach; and Childrens Hospital of Orange County.

For further information about University-operated clinical facilities and other facilities associated with the UCI Clinical Services System, see the College of Medicine section.

Supplementary Educational Programs

Summer Sessions

Two summer sessions are held on the Irvine campus. Session I is from June 21 to July 28, 1982. Session II is from August 2 to September 4, 1982. Students may enroll in either session or both sessions. Those who enroll in both 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 sessions is planned, supplemented by experimental offerings available only during the summer. Admission is open to all university students, to high school graduates, to qualified applicants over 18 years of age, and to 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.

Information regarding Summer Session may be obtained from the Summer Session Office in the Irvine Town Center Building, (714) 833-5493. Application forms and course listings are available in March.

University Extension

University Extension offers more than 1,200 courses and special programs each year, many of them innovative and experimental in content, format, and teaching methods. Extension programs are designed for those adults in the community who wish to continue their education on a part-time basis for professional and career advancement, for expansion of cultural horizons, for development of scientific literacy, for growth in personal awareness and human interrelationships, and for enhanced understanding of the great issues of modern society.

Utilizing the resources of the University, Extension offers credit and noncredit courses, seminars, conferences, lecture series, and certificate programs. Educational and career counseling is available to men and women through the Extension-sponsored Women's Opportunities Center, (714) 833-7128. University Extension programs are supported by fees charged to students. A free catalogue may be obtained from the University Extension Office in the Irvine Town Center Building, (714) 833-5414.

Air Force ROTC

Through arrangements with Loyola-Marymount University, the University of California, Los Angeles (UCLA), and the University of Southern California, two-, three-, and four-year Air Force Reserve Officers Training Corps (AFROTC) programs are available to all qualified UC Irvine students. Academic units earned in this program are counted as elective units toward fulfillment of UCI graduation requirements. Successful completion of the AFROTC program leads to a commission as a Second Lieutenant in the Air Force. Two- and three-year scholarships are available to qualified students on a competitive basis. Four-year scholarships for incoming students must be applied for before December 15 in the year prior to entering college. All scholarship recipients receive full tuition (UC Educational and Registration Fees), required fees and books, and $100 a month. All qualified cadets are provided 25 hours of flying lessons during their final year in the program. To receive a brief descriptive pamphlet summarizing the three programs, ask at the UCI Admissions Office, 245 Administration Building.

University Relations Office

University Relations is the primary office responsible for coordinating campus-community relations. Its purpose is to increase public awareness, understanding, and support of the University's teaching, research, and public service programs. University Relations activities include public relations, development, alumni, governmental relations, and the speakers bureau.

The University Relations Office, working closely with The UCI Foundation, plans and administers an institutional advancement program which encourages private contributions from individuals, corporations, and foundations. Inquiries regarding gifts and bequests should be directed to The UCI Foundation. A principal community support group is the UCI Chancellor's Club. This organization of community leaders provides important unrestricted, private financial assistance to the campus. The Friends of UCI, which has played an important role in the history of the campus, sponsors community relations events and programs. The UCI Alumni Association, founded in 1968, is a separately incorporated nonprofit organization which provides assistance to the campus, including, for example, student financial aid and emergency loans, career planning assistance to students, and formal recognition of the outstanding research and creative achievements of undergraduate and graduate students. Other organizations under the umbrella of The UCI Foundation are Industrial Associates, Associated Alumni of the UCI College of Medicine, Friends of the Library, UCI Town and Gown, Parents Organization, UCI Faculty Wives Association, UCI Sports Associates, Medical Faculty Wives, and UCI Medical Center Auxiliary.

For information regarding any of these organizations and their activities, please call:

UCI Foundation	(714) 833-6424
UCI Alumni Association	(714) 833-6247
University Relations	(714) 833-7324

DEGREES AND GENERAL REQUIREMENTS

DEGREES

Areas of Undergraduate Study

Undergraduate students may major in any of the B.A. or B.S. programs on the Degree List. In association with these majors, UCI offers numerous areas of concentration. The following comprehensive list of available areas of study includes *both* majors and concentrations. Please refer to the appropriate Catalogue sections (each area below is covered in the Index) for complete information regarding any area of study.

American Studies
  See Comparative Culture
Anthropology
Applied Ecology
Art
  History of Art
  Studio Art
Bilingualism and English as a Second Language
Biological Sciences
Chemistry
Classical Civilization
Classics
Cognitive Linguistics
Comparative Culture
  (Cross-Cultural and Interdisciplinary)
Comparative Literature
Computer Science
  See Informaton and Computer Science
  For Computer Engineering see Electrical Engineering
Creative Writing
Criminal Justice
  (Criminology and Criminal Law)
Culture Studies
  See Comparative Culture
Dance
Developmental and Cell Biology
Drama
Ecology and Environmental Biology
Ecology and Evolutionary Biology
Economics
Engineering
  Civil
  Electrical
  Mechanical
  Environmental (with Civil or Mechanical only)
English
  Literature—principally English and American (See Literary Criticism)
  Writing
Environmental Analysis
Ethnic Studies
  See Comparative Culture
Film Studies
Fine Arts (General Interdisciplinary)
French
  Culture and Civilization
  Linguistics
  Literature
Geography
German
  Linguistics
  Literature
Greek
History
Humanities (Interdisciplinary)
Information and Computer Science
Italian
Latin
Linguistics (School of Humanities)
  In addition, special Linguistic emphasis is available in each of the following: Classical Languages; French; German; Russian; Spanish
Linguistics (School of Social Sciences)
Literary Criticism
Literature
  Comparative
  English and American
  French
  German
  Russian
  Spanish
Mathematics
  Statistics
Molecular Biology and Biochemistry
Music
  Special String Performance
Philosophy
Physics
  Applied Physics
  Biomedical Physics
Political Science
Portuguese
Psychobiology
Psychology
Quantitative Social Science
Russian
  Civilization
  Linguistics
  Literature
Social Behavior (Community Psychology and Human Life Cycle Development)
Social Ecology
Social Science
Social Thought
Sociology
Spanish
  Bilingualism and English as a Second Language
  Linguistics
  Literature and Culture
Teacher Education
Television
Women's Studies
Writing

Areas of Graduate Study

Programs of graduate study leading to advanced degrees are offered in a wide range of academic disciplines and professional areas. For further information about any area, including the precise titles of the degrees conferred, consult the Index. Credentials which can be earned through the UCI Office of Teacher Education are listed separately:

Administration
Anatomy
Anthropology
Biochemistry
Biological Sciences
Biophysical Chemistry
Biophysics
Business Administration
Cell Biology
Chemistry
Civil Engineering
Classics
Cognitive Sciences
Comparative Culture
Comparative Literature
Computer Science
Creative Writing
Criminal Justice
Dance
Developmental Biology
Drama
Ecology
Electrical Engineering
Engineering
English and American Literature
Environmental Engineering
Evolutionary Biology
Fine Arts
French
Genetics
German
History
Humanities
Information and Computer Science
Management
Mathematics
Mechanical Engineering
Medicine
Microbiology
Molecular Biology
Music
Pharmacology and Toxicology
Philosophy
Physics
Physiology
Political Science
Politics, Society, and Social Issues
Psychobiology
Psychology
Public Administration
Radiological Sciences
Social Ecology
Social Relations
Social Science
Spanish
Studio Art
Education (Credentials):
  Administrative Services
  Bilingual/Cross-Cultural Emphasis
  Early Childhood Education Specialist
  Multiple Subject Instruction (elementary)
  Pupil Personnel Services
  Single Subject Instruction (secondary)
  Special Education (learning handicapped; physically handicapped; severely handicapped)

Degree List

Titles of degrees awarded may not correspond exactly with specific fields of study offered at UCI. For example, graduate students in Dance, Drama, Music, and Studio Art all earn the M.F.A. in Fine Arts. Please refer to the appropriate Catalogue sections for information regarding any area of study.

Administration	M.S, Ph.D.
Anthropology	B.A.
Applied Ecology	B.A.
Biological Sciences	B.S., M.A.T., M.S., Ph.D.
Chemistry	B.S., M.S., Ph.D.
Classical Civilization	B.A.
Classics	B.A., M.A., Ph.D.
Comparative Culture	B.A., M.A., M.A.T., Ph.D.
Comparative Literature	B.A., M.A., Ph.D.
Dance	B.A.
Drama	B.A.
Economics	B.A.
Education	Credential Programs Only
Engineering	B.S., M.S., Ph.D.
English	B.A., M.A., M.F.A., Ph.D.
Fine Arts	B.A., M.F.A.
French	B.A., M.A., Ph.D.
Geography	B.A.
German	B.A., M.A., Ph.D.
History	B.A., M.A., Ph.D.
History of Art	B.A.
Humanities	B.A.
Information and Computer Science	B.S., M.S., Ph.D.
Linguistics	B.A.
Mathematics	B.S., M.S., Ph.D.
Medicine	M.D.
Music	B.A.
Pharmacology and Toxicology	M.S., Ph.D.
Philosophy	B.A., M.A., Ph.D.
Physics	B.S., M.S., Ph.D.
Political Science	B.A., Ph.D.
Psychology	B.A., Ph.D.
Radiological Sciences	M.S., Ph.D.
Russian	B.A.
Social Ecology	B.A., M.A., Ph.D.
Social Science	B.A., M.A., Ph.D.
Sociology	B.A.
Spanish	B.A., M.A., M.A.T., Ph.D.
Studio Art	B.A.

Honors

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.

Phi Beta Kappa

Phi Beta Kappa is a national honor society which 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 Office of the Dean of Undergraduate Studies, 256 Administration Building.

REQUIREMENTS FOR A BACHELOR'S DEGREE

University Requirements

UC Requirements

1. 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:

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

b. Achieving a score of 600 or better in the College Board English Composition Achievement Test. Students who score below 600 on this examination may be retested by the Subject A Office (please call the Subject A Office for information); *or*

c. Completing satisfactorily the California State University and College English Equivalency Test; *or*

d. Entering the University with credentials from another college which show the completion of an acceptable one-quarter (four units) or one-semester (three units) course in English composition with a grade of C or better. NOTE: High school English courses will not satisfy this option.

Those students who have not met the Subject A requirement before entrance must attempt to satisfy the requirement during their first year of residence in the University.

This requirement may be met *after* entrance by one of the four following means:

One is by taking and passing the Subject A Diagnostic Examination that is given only during fall quarter Academic Advising and Orientation Week before classes begin. A second option, open only to those enrolled in the Humanities Core Course, is by taking and receiving a grade of P in the Writing Workshop. (NOTE: Students held for Subject A and enrolled in the Humanities Core Course MUST be enrolled in the Writing Workshop.) Third, students scoring from 550 to 600 on the College Board English Composition Achievement Test may enroll in WR 39A-B or Humanities 15-16 and can satisfy the Subject A requirement through achieving a grade of C- (1.7) in any quarter of either sequence. Fourth, students scoring below 550 on the College Board English Composition Achievement Test—and who have followed neither of the first two routes described above—can satisfy the Subject A requirement through taking Writing 1A and receiving a grade of P in that course.

2. American History and Institutions. This requirement may be met by one of the following:

a. 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.

b. Receiving a score of 5, 4, or 3 in the Advanced Placement Examination in United States History.

c. Receiving a score of 500 or higher in the College Board Achievement Test in American History and Social Studies.

d. Presentation of a certificate of completion of the requirement at another California institution.

e. Completion at another 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.

f. Completion at UCI of one four-unit course in colonial American history and one four-unit course in introduction to political science with grades of C or better.

g. Passing an examination in these subjects. (Students should contact the Undergraduate Study Office, School of Humanities, for further information about the examination.)

UCI Requirements

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

4. A grade average of at least C (2.0).

5. Candidates for the baccalaureate must attain at least a C (2.0) average in all of the courses required in the major program and at least a C (2.0) average in the upper-division courses required in 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.)

6. Credit for the last three quarters of work immediately preceding graduation earned in residence on the Irvine campus (i.e., a minimum of one year full-time attendance at UCI). Exceptions to this rule may be allowed, with prior departmental approval, to students enrolled in the Education Abroad Program.

7. Students enrolled at UCI from their freshman year may elect to meet as graduation requirements (UC, UCI, school, and major requirements) those in effect at the time of entrance or those subsequently passed after entrance. Students transferring from other collegiate institutions may elect to meet as graduation requirements those in effect at the time of entering the other collegiate institution, those in effect at the time of transfer to UCI, or those subsequently passed. A student who seeks readmission to UCI more than three consecutive quarters after withdrawing from student status must adhere to the graduation requirements in effect at the time of readmission or those subsequently passed.

Breadth Requirement

8. Effective with new freshmen entering UCI in fall quarter, 1980, and thereafter, a candidate for the bachelor's degree must satisfy the following UCI breadth requirement. Normally, three four-unit courses are required in each of the areas listed below:

I. Writing
II. Natural Sciences
III. Social and Behavioral Sciences
IV. Humanistic Inquiry
V. Foreign Language, Linguistics, Logic, Mathematics, or Computer Science

NOTE: In satisfying the breadth requirement, a student may count toward breadth no more than three courses taken within the discipline of the major. For example, a student majoring in Philosophy may count no more than three Philosophy courses toward breadth.

I. Writing Requirement. 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 and must be completed prior to the junior year (or in the case of transfer students within the first year of residency). The third course must be an upper-division course, and it must be taken only after the successful completion of 84 quarter units (achievement of junior status) *and* completion of the lower-division requirement.

Lower-Division Requirement: The two courses taken to fulfill the lower-division requirement must be completed with a grade of C- (1.7) or better. Students may select from the courses specified below:

1. Writing 39A-B, Expository Writing.

2. Humanities 15-16, Humanities Writing Sequence, taken in conjunction with an associated course as designated in the quarterly Schedule of Classes. During the winter and spring quarters of the 1981-82 academic year, Humanities 15-16 will be associated with such courses as English 28, History 29, and Comparative Literature 50. *Students must enroll concurrently in the associated course selected.*

NOTE: Students held for Subject A who have scored between 550 and 600 on the College Board English Composition Achievement Test may enroll in Writing 39A or Humanities 15 (see 1. and 2. above); completion of either course with a grade of at least C- (1.7) will simultaneously fulfill the Subject A Requirement.

3. Any two quarters of the writing component of the Humanities Core Course, Humanities 1A-B-C. Students held for Subject A may begin this option provided they concurrently enroll in the Writing Workshop.

4. Students who complete Writing 39A or Humanities 15 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, non-fiction, or journalism: Writing 30, 31, 32, or 38.

Upper-Division Requirement: The course taken to fulfill the upper-division requirement must be completed with a grade of C (2.0) or better. The requirement may be satisfied by completing any one of the following:

1. Writing 139.

2. An upper-division course in creative writing, non-fiction, or journalism. 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.

3. An upper-division course designated in the quarterly Schedule of Classes as approved for satisfaction of the requirement.

Students who fail to attain the required grades in the courses taken in fulfillment of the Writing Requirement should refer to page 51 for further information.

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

Biological Sciences: Students may select any three courses from Biological Sciences 1A, 1B, 1C, 1D, 1E, 80, 81, 82.

Chemistry: Chemistry 1A-B-C and 1LB-C.

Physics: Physics 3A-B-C and 3LA-B-C; 5A-B-C and 5LA-B-C; 13A-B or 17A-B plus one from 14, 15, 19, 20; 18A, B, C.

III. Social and Behavioral Sciences. Students must select three courses from one of the following areas, *or* two courses from one area plus a third from another area. The first course taken in any area *must* be an introductory course numbered 1-12.

Anthropology and Comparative Culture: Social Sciences 1A, 2A-B-C-D-E, 31D, 70A.

Economics: Social Sciences 1A, 4, 12A-B-C.

Political Science: Social Ecology E7, E89, J80; Social Sciences 6A-B-C, 23A-B-C-D, 24A-B, 26B, 62B.

Psychology: Social Ecology E87, S9, S11, S20, S84, S86; Social Sciences 7, 50Q, 50T, 52A, 55C, 55D, 61A.

Sociology and Social Ecology: Social Ecology 1, E8, E32, J4, J40, S72, S86; Social Sciences 1A, 8, 61A, 61B, 61C, 61E.

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

Arts: Art History 40A-B-C; Art Studio 30A-B-C, 35A-B-C; Drama 40A-B-C; Fine Arts 20A-B-C; Music 40A-B-C.

Humanities: Classics 35A-B-C; History 29A-B-C; Humanities 1A-B-C; Philosophy 5-15-16; 20, 22, and either 21 or 23.

Literature: English and Comparative Literature CL 50A-B-C, E 6-7-8, E 28A-B-C; French 50A-B-C; Russian 20-30-40.

V. Foreign Language, Linguistics, Logic, Mathematics, Computer Science. Students must select a three-course sequence from one of the following areas:

Computer Science: ICS 1 or 15, 2, 3 or 193; 10, 1 or 15, 2 or 193.

Foreign Languages: French 2A-B-C; German 2A-B-C; Greek 25-100-100; Hebrew 2A-B-C; Italian 2A-B-C; Latin 25-100-100; Russian 2A-B-C; Spanish 2A-B-C.

Linguistics: Linguistics 50 and two courses from Linguistics 110, 120, or Social Sciences 50A; Social Sciences 136A-153F-151L.

Logic and Mathematics: Mathematics 2A-B and 2C, 7, or 13; 5A-B-C, 6A-B-C, 14A-B-C; Philosophy 150A-B and 153; Social Sciences 11A-B-C, 100A-B-C.

Prior to fall quarter, 1980, the UCI breadth requirement was met by students taking courses in three schools outside the school of the major (Schools of Biological Sciences, Fine Arts, Humanities, Physical Sciences, or Social Sciences) or, upon approval of petition to their academic dean, by taking courses in Information and Computer Science, Social Ecology, Engineering, or the Graduate School of Administration (now Management). Specifically, such students took 24 units in one school outside the major and 12 units in each of two other schools outside the major. Normally a student took six four-unit (standard or full) courses in one school outside the major and three four-unit (standard or full) courses in each of two other schools outside the major (referred to as the UCI 6-3-3 distribution). The requirement did not apply to students majoring in Engineering.

All students planning to transfer to UCI should see page 40 for details on fulfilling the UCI breadth requirement.

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.

School and Departmental Requirements

In addition to the University requirements listed above, each undergraduate student must satisfy the degree requirements for the major selected. UCI, school, and departmental or major requirements may overlap; courses taken to fulfill a school or departmental requirement (e.g., the physics course requirement in the School of Biological Sciences) may also help fulfill the UCI breadth requirement. Information on specific school and departmental or major degree requirements, as well as courses offered, can be found elsewhere in this Catalogue.

The student should have determined an area of concentration no later than the beginning of the junior year, having made certain that the background and the preparation prerequisite to junior and senior work in the major have been accomplished. New and continuing undergraduate students should read the section on Planning an Undergraduate Program; transfer students should also read the section on Planning for Transfer to UCI.

CAREER OPPORTUNITIES

Any major can lead to any number of careers. Some examples of careers frequently led to by majors available within the academic units at UCI are below.

The eight academic units at UCI which offer undergraduate education leading to the bachelor's degree provide students with a variety of 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 are meant to indicate to students the many and varied career areas pursued by UCI graduates, and to make students aware of some of the vast array of career choices available.

Biological Science Career Areas

Audiology
Bioanalysis
Biochemistry
Cell Biology
Clinical Chemistry
Dentistry
Developmental Biology
Dietetics
Environmental Management
Forestry
Health Administration
Industrial Hygiene
Marine Biology
Medical Technology
Medicine
Microbiology
Oceanography
Optometry
Plant Biology
Pharmacy
Podiatry
Prosthetics Design
Research
Sales
Social Work
Speech Pathology
Teaching
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
Communications
Construction
Consulting
Design
Development
Electronics
Environmental Control
Government
Maintenance
Management
Manufacturing
Marketing
Petroleum
Power
Public Utilities
Quality Control
Research
Teaching
Technical Writing
Transportation

Engineers may find employment in research and development, testing, design, quality control, maintenance, and marketing. They may work in the aerospace, construction, oil, electronics, and communications industries. Also, engineering has taken on new social dimensions and, as a result, engineers are involved in issues such as air and water pollution, traffic control, and health care.

Fine Arts Career Areas

Advertising
Animation
Arts Administration
Art Therapy
Broadcasting
Choreography
Commercial Art
Curating
Direction
Environmental Design
Instrument Repair/Tuning
Interior/Industrial Design
Jewelry Design
Librarianship
Lighting
Marketing
Medical Illustration
Photography
Physical Fitness
Printing
Production
Publicity
Public Relations
Publishing
Retail Sales
Set/Stage/Costume Design
Teaching
Tourism
Writing

The exceptionally talented Fine 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 fine arts 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.

Humanities Career Areas

Advertising
Banking
Broadcasting
Foreign Service
Government Service
Insurance
International Relations
Journalism
Law
Library Science
Management/Administration
Marketing
Personnel
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, or public administration. Frequently, 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, international trade, among others.

Information and Computer Science Career Areas

Accounting
Aerospace
Banking
Business Applications
Computer Modeling
Computer System Design
Data Processing
Engineering
Engineering Applications
Government
Graphics
Health Fields
Insurance
Manufacturing
Numerical Analysis
Retail Sales
Scientific Applications

Graduates may find employment as programmers, computer specialists, systems analysts, EDP auditors, or equipment analysts. They may work in research on medical devices, the psychological aspects of learning and communicating, and artificial intelligence (communication with the computer itself). They may also develop computer-assisted instructional programs for educational institutions.

Physical Science Career Areas

Analytical Chemistry
Biochemistry
Computers
Electronic Systems
Engineering Applications
Food Chemistry
Forensic Chemistry
Geochemistry
Inorganic Chemistry
Medicine
Nuclear Chemistry
Nuclear Reactors
Optical Devices
Organic Chemistry
Pharmacology
Physical Chemistry
Physics and Applied Chemistry
Psychological and Laboratory Data
Quality Control
Radar
Radiation Chemistry
Solid State Devices
Statistics

Graduates of the School of Physical Sciences have backgrounds appropriate for a variety of areas in research and management. Career opportunities for chemists are found in federal, state, and local government as well as in private industry. Water districts, crime labs, and major chemical and oil companies are good resources for employment. Chemists may also work in research and development and in jobs dealing with health, pollution, energy, fuel, drugs, and plastics. 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 employment as computer programmers, laboratory technicians, systems analysts, test engineers, safety engineers, radar specialists, quality control technicians, technical writers, and high school and college teachers, as well as in research.

Social Ecology Career Areas

Administration
Architecture
Banking
Corrections/Probation
Counseling
Education Support Services
Environmental Planning
Government Services
Housing Development
Insurance
Law
Library Service
Management
Marketing
Mental Health
Program Coordination
Public Relations
Research
Social Service
Teaching
Urban Planning

Graduates in Social Ecology may hold positions as attorneys, urban planners, 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. Graduate programs of interest to Social Ecology graduates include those in 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 Science Career Areas

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

Business and industry often look to the Social Science graduate to fill positions in sales, marketing, management training, personnel, production supervision, and general administration. In the public sector, a wide variety of opportunities are available in city, county, state, and federal government. In addition, a number of private and government-sponsored agencies provide career options for the Social Science graduate in the so-called "helping professions." Job categories may range from drug abuse counselor to the administrator of a senior adult center.

PLANNING AN UNDERGRADUATE PROGRAM

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. 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. (Students interested in a major from the School of Humanities should be aware that students do not select a specific major within that School until late in the sophomore year, in order to assure that they have opportunities to explore the various disciplines represented in the School.) In preparation for choosing a major, students need to familiarize themselves as much as possible with UCI and its many 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. Much depends on initiative—on how fully a student takes advantage of opportunities that come through suggestions for further study and through informal communication with faculty and students.

All students are expected to choose a major by the beginning of the junior year. 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 need to 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 prevent moving to a major in a different field. 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.

The General Catalogue is a good place to find specific information about programs available, requirements for majors, and course offerings. At UCI a number of traditionally separate academic disciplines have strong interrelationships, so that the academic environment is influenced by a wide range of 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 fine arts productions.

In addition to consulting the Catalogue, students are encouraged to talk to academic counselors and faculty advisors about the opportunities which are open to them. They may go to any department in order to learn more about its programs of study, its requirements for graduation, and possible enrollment limitations. 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.

Once a student decides on a major, the actual procedure to formalize the decision is not complicated. A form called the "Undergraduate Petition for Change of Major" must be completed whenever a student who has no major is ready to declare one, or whenever a student wishes to change from one major to another. The form is available from academic counselors and the Registrar's Office.

Academic Advising

At the time of admission every undergraduate student at UCI is assigned for purposes of academic advising to the school or program that corresponds to the student's selection of major or school. New students are encouraged to arrange appointments with an academic counselor as soon as possible after they have been admitted to plan their academic programs. Jurisdiction over all questions of academic regulations and academic standing rests with the dean or director of the school or program to which a student is assigned for purposes of academic advising. Thus, all requests to add or drop courses, waive or change graduation or other requirements, and change area of academic concentration must be processed through the office of that dean or director.

A student who has not indicated a choice of major or school on the application form (the "unaffiliated student") is placed in the General Studies Advising Program and, after an individual interview, is temporarily assigned to an academic unit for advising purposes. This assignment continues until the student reaches a decision concerning a major, at which time the student completes a petition for a change of major and is transferred to the corresponding school or program.

Each academic unit is responsible for maintaining a system which provides academic advising by faculty members. These systems differ among the academic units. In some, all of the faculty serve as advisors; in others, only certain members of the faculty are designated as advisors. In each instance, however, every student will have a faculty advisor. Responsibility for informing students of the identity of their advisors rests with the dean or director of the appropriate academic unit. This is normally done by letter, but students may obtain information by telephone from the office of the appropriate dean or director (see separate listing). A student may request a change of advisor through the chief academic advisor or the dean of the unit. A change in area of concentration often involves a change in advisor. This will always be the case when the change of concentration is to a different school or program; the new school or program will assign a new advisor and inform the student.

In some schools and programs consultation between students and their faculty advisors is mandatory. Students are responsible for knowing the governing regulations of the school or program to which they are assigned for academic advising purposes. Irrespective of whether or not consultation between student and advisor is required, *the student is responsible for initiating and maintaining periodic contact with the assigned faculty advisor.* An appropriate time for the initial contact is during the week prior to the beginning of the student's first classes at UCI, or earlier at the time of registration if this is possible. Thereafter, consultation between student and advisor at the time of registration for each subsequent quarter is desirable. The actual frequency of these meetings will be determined by the desires of the stu-

dent, the advisor, and the governing regulations. It is the obligation of the faculty advisor to help the student plan an appropriate program of study and interpret the academic regulations of the campus, *but the student is solely responsible for meeting the academic regulations and remaining in good academic standing.*

In addition to faculty members, academic counselors are available in each unit to assist students with major selection, program planning, and petitions. Also, peer academic advisors (trained upper-division and graduate students) can help students plan their programs, select or change majors, and arrange for tutoring as necessary. Besides furnishing counsel on such matters, these advisors dispense general campus information and refer students to the appropriate faculty and staff personnel for assistance with specific problems.

In the fall, each new student is required to go to the appropriate academic dean's office prior to the beginning of classes during Academic Advising and Orientation Week for advice concerning class enrollment and to pick up a Class Verification and Identification Card. These plans for new students and provisions for continuing students are explained in detail in the Schedule of Classes.

Advising Personnel

Biological Sciences		
Norman M. Weinberger, Acting Dean	329 SH	833-5314
Patrick L. Healey, Executive Associate Dean	329 SH	833-5314
Wendell M. Stanley, Jr., Associate Dean—Undergraduate Affairs and Chief Academic Advisor	844 EGR	833-5318
Margret R. Bailey, Counselor	844 EGR	833-5318
Margaret Doedens, Counselor	844 EGR	833-5318
Cindy Eddleman, Counselor	844 EGR	833-5318
Barbara A. Green, Counselor	844 EGR	833-5318
Grace Nahm, Counselor	844 EGR	833-5318
Engineering		
Allen R. Stubberud, Dean	305 EGR	833-6002
Roland Schinzinger, Associate Dean and Chief Academic Advisor	355 EGR	833-6737
Robin C. Alward, Counselor	355 EGR	833-6749
Ruth L. Eddy, Graduate Counselor	305 EGR	833-6475
Carol T. Egan, Counselor	355 EGR	833-5537
Fine Arts		
Clayton Garrison, Dean	249 FA	833-6611
Keith Fowler, Chief Academic Advisor	246 FA	833-6462
Priscilla Pepke, Academic Counselor	247 FA	833-6646
Graduate School of Management		
Lyman W. Porter, Dean	315 SST	833-5335
Stepan Karamardian (spring 1982 only) Associate Dean and Chief Academic Advisor	303 SST	833-5336
M. Michael Feuers, Assistant Dean	369 SST	833-6873
Susan Lee Sills, Counselor	311 SST	833-6437
Humanities		
William J. Lillyman, Dean	340 HH	833-5131
Kendall E. Bailes, Associate Dean and Chief Academic Advisor	340 HH	833-6453
Cathy Smith, Counselor	338 HH	833-5132
Carol Thompson, Counselor	338 HH	833-5132
Information and Computer Science		
Julian Feldman, Chair	444 CS	833-7078
Rob Kling, Chief Academic Advisor	458 CS	833-5955
Rose Allen, Counselor	438 CS	833-5156
Eddie Rodrigues, Counselor	438 CS	833-5884
Medicine		
Faculty Advisors		
Stuart M. Arfin, Associate Professor of Biological Chemistry and of Biological Sciences	D251 MS I	833-6755
Kenneth M. Baldwin, Associate Professor of Physiology and Biophysics and of Biological Sciences	D352 MS I	833-7192
Lyle C. Dearden, Professor of Anatomy, of Radiological Sciences, and of Biological Sciences	314 MSR II	833-5931
James E. Hall, Associate Professor of Physiology and Biophysics and of Biological Sciences	D337 MS I	833-6676
Kenneth H. Ibsen, Associate Professor of Biological Chemistry and of Biological Sciences	D224 MS I	833-6756
Ralph E. Purdy, Assistant Professor of Medical Pharmacology and Therapeutics	352B MSR II	833-7433
Student Affairs Advisors		
Horace Mitchell, Acting Associate Dean of Medical Student Affairs	125B MSR I	833-6198
Richard Baiz, Assistant Dean of Medical Student Affairs	125 MSR I	833-6138
Bernadette Chavez, Counselor, Medical Student Affairs	125 MSR I	833-6138
Larry Doyle, Counselor, Medical Student Affairs	125 MSR I	833-6451
Jon Sassin, Professor of Neurology and of Physiology and Biophysics	125 MSR I	634-5777
Harvey Williams, Counselor, Medical Student Affairs	120 SST	833-6881

Physical Sciences		
Myron Bander, Dean	220 PS	833-6506
Robert Doedens, Associate Dean and Chief Academic Advisor	230 PS	833-6507
Tina Arth, Counselor	231 PS	833-6507
Frances Dyck, Counselor	231 PS	833-6507
Clare Wilkerson, Counselor	231 PS	833-6507
Social Ecology		
Joseph F. DiMento, Director	468 CS	833-6094
Laurence D. Steinberg, Associate Director for Undergraduate Studies and Chief Academic Advisor	408A CS	833-5574
Joan Campbell, Field Study Coordinator	544 EGR	833-6861
Jan Martin, Graduate Counselor	253A CS	833-5917
Jean Martinez, Counselor	544 EGR	833-6861
Janis Schonauer, Counselor	544 EGR	833-6861
Janet Stevens, Counselor	544 EGR	833-6861
Social Sciences		
Linton Freeman, Dean	607 SST	833-6801
Dickson D. Bruce, Jr., Associate Dean and Chief Academic Advisor	639 SST	833-7027
Ramon Munoz, Counselor	627 SST	833-6803
Carol Nance, Counselor	627 SST	833-6803
Marianne Schnaubelt, Counselor	627 SST	833-6804
Teacher Education		
Kenneth P. Bailey, Director	423 SST	833-5117
Virginia V. Boyle, Academic Advisor	411 SST	833-6673
Ada L. Nix, Academic Counselor	419 SST	833-5119
Carolyn Bouldin, Teacher Intern Program	495 SST	833-5910
Donald Wheeler, Pupil Personnel and Administration	479 SST	833-5176
Eleanor Wynne, Early Childhood and Special Education	415 SST	833-6381
Unaffiliated Students Advising		
Guy Sircello, Dean of Undergraduate Studies	256 Admin.	833-6987
Jan Nelson, Counselor	256 Admin.	833-6987

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. Further, students should supplement their undergraduate programs by anticipating foreign language requirements at major graduate schools and by intensive work in areas outside their major that are of special relevance to their intended graduate work.

For information about graduate or professional study in a given field, students may consult the Graduate Advisor or an academic counselor in the academic unit corresponding to the area of interest. Also, the Career Planning and Placement Center frequently sponsors seminars on specific career areas and offers a number of services useful to those considering graduate or professional study.

Opportunities for Part-Time Study

UCI offers several possibilities to pursue part-time study either for credit leading to an undergraduate or graduate degree or for general knowledge. The same admissions standards that apply to full-time students apply to part-time students. All part-time students pay the full Registration Fee. With approval, a graduate student may enroll for fewer than 12 units of academic credit; however, the student pays all applicable student fees and nonresident tuition, if applicable (see p. 26). With approval, part-time undergraduate students may pay only one-half the Educational Fee if they are enrolled for under nine units per quarter (see p. 42). Part-time undergraduate students whose official residence is outside the State of California pay one-half the nonresident tuition. As there are certain restrictions on gaining credit for part-time course work, the student interested in part-time study should read applicable sections in the General Catalogue. The following special opportunities for part-time study exist:

— Employed graduate students may pursue a Master's degree in Engineering on a part-time basis, with approval of the Dean of the School of Engineering and the Dean of the Division of Graduate Studies and Research (see p. 217).

— The Master's degree program in Information and Computer Science is available to students who are unable to study full time because of personal or professional commitments (see p. 193).

— The Graduate School of Management offers several courses each quarter during afternoon and evening hours, to accommodate the needs of part-time students (see the quarterly Schedule of Classes).

— Certain University Extension courses qualify for unit credit toward a degree; however, if the student wishes to enroll in an Extension course concurrently with enrollment in regular UCI courses, the entire course of study must be approved *in advance* by the dean of the student's school (in the case of graduate students, by the Dean of Graduate Studies and Research) (see p. 27, 40, 53).

— In addition to course work for part-time students already enrolled at UCI, Irvine offers qualified junior- and senior-high school students the opportunity to participate in the reduced-fee Early Admission Experimental Program (see p. 35).

— Many courses of the regular curriculum are available through University Extension to persons interested in improving their general knowledge. Application should be made to the University Extension Office, Irvine Town Center Building.

GRADUATE STUDIES AND RESEARCH

Jaime E. Rodríguez **Dean**

Graduate education and research, two major areas of responsibility of the Division of Graduate Studies and Research, are vital and integral parts of academic life at UCI. Programs leading to doctoral or master's degrees, or to education credentials, are offered in over 30 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 Dean of Graduate Studies and Research has general administrative responsibility for research and graduate education. Graduate education responsibilities include admissions, enrolled-student actions and advising degree awards, fellowship and assistantship administration, Teaching Assistant training, and the Graduate and Professional Opportunity Program, which facilitates the involvement of minority students and women in graduate education. In the area of research, the Graduate Dean has responsibility for the administration of extramurally funded training grants, general research administration, and research policy development and implementation.

The Graduate Division also is administratively responsible for Organized Research Units, Focused Research Programs, the Office of Contracts and Grants Administration, and other campus research activities. The following sections describe areas of graduate education and research, and include information about academic regulations and policies important to applicants and graduate students.

GRADUATE EDUCATION

With the exception of programs conducted by the College of Medicine for the training of medical professionals, the Dean of Graduate Studies and Research 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.

A great deal of information about graduate education at UCI is published in the UCI General Catalogue and in the annual *Graduate Study* announcement. The staff of the Division Office is ready to help answer your 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.

Graduate and Professional Opportunity Program

Through the Graduate and Professional Opportunity Program (GPOP), positive steps are being taken to increase the participation of minorities and women in certain fields, in the graduate academic and professional programs of the University. Appropriate assistance is offered during the admission process, and every effort is made through GPOP advising and support to ensure that all students will have a reasonable chance to attain their academic objectives. UCI does not discriminate against any applicant on the basis of race, religion, color, national origin, sex, age, handicap, or marital status.

Admission to Graduate Standing

Applicants for admission to graduate study at UCI must concurrently apply for acceptance into a specific graduate program to work toward an advanced degree or California education credential. 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 average of at least B (3.0 on a 4.0 scale) or better normally is required. Applicants for programs leading to M.A., M.S., or Ph.D. degrees must submit scores from the Graduate Record Examination Aptitude Test; the Graduate Management Admission Test (GMAT) is preferred by the Graduate School of Management. Most graduate programs have additional admission requirements.

Each applicant's file is evaluated by the admissions committee of the specific graduate program and by the Graduate Dean on the basis of such factors as academic subject preparation, scholarship, letters of recommendation, Graduate Record Examination scores, and examples of previous work. A critical question is whether the applicant's academic objectives can reasonably be satisfied by the graduate programs on this campus. The University of California does not have the capacity to accommodate all applicants who meet the minimum admission requirements.

Prospective graduate students are encouraged to assess the professional placement opportunities that are anticipated in the field of interest. It is generally recognized that the number of traditional academic appointments in certain disciplines is limited. There are, however, other attractive career options, many of them as yet unrecognized, for highly motivated men and women who demonstrate intellectual strength, integrity, and discipline in earning an advanced degree from a respected university. UCI is committed to helping graduate students develop, in addition to their academic training, the communication and problem-solving skills that also may be critical to future careers.

How to Apply

Application forms and the annual *Graduate Study* announcement giving application deadlines for each program are available from the Division of Graduate Studies and Research, University of California, Irvine; Irvine, California 92717. For fall quarter admission, application by February 1 is required by some programs and strongly encouraged for all others. Some academic units will accept applications for winter or spring quarter admission, for which the deadlines are October 15 and January 15, respectively. Two complete sets of official records covering all postsecondary academic work attempted, regardless of length of attendance, are required. A summary of credit transferred and recorded on the transcript issued by the institution granting the degree will not suffice, except in the case of graduates of the University of California. Records must include official evidence of all college-level degrees conferred. To be official, record copies must bear the Registrar's signature and the seal of the issuing institution, and should be sent directly from the Registrar to the Division of Graduate Studies and Research. University of California transcripts also must be requested by applicants, including those who are UCI undergraduates. Until a complete official academic record including certification of degrees awarded has been received, final admission and registration will not be granted. One set of transcripts and all other credentials is retained by the Division, and may not be withdrawn by applicants or students for any purpose. The second set is forwarded to the appropriate academic unit, retained there, and may be used by the student in conferring with faculty advisors. Three letters of recommendation are required. Letters from professors or instructors in disciplines related to the proposed course of study are preferred.

The application must be accompanied by a nonrefundable $25 Application Fee in the form of a check, draft, or money order for the exact amount made payable to Regents-UC. In order for the applicant to receive full consideration, it is necessary that letters and official transcripts be received before the published deadlines. Where students have work in progress at the deadline dates, final transcripts covering such work must be received before a provisionally admitted student is officially enrolled.

A formal notice of the admission decision is sent to each applicant by the Dean of Graduate Studies and Research as soon as possible after the application and complete records are received, and after the department has made a recommendation. All applicants are advised to await this official notification of admission before making definite plans or arrangements for attending UCI.

Admission of Foreign Students

Foreign applicants are subject to the standard admission requirements and must provide satisfactory evidence of financial support in order to obtain necessary visa documents. Since it normally takes much longer to obtain credentials and process foreign applications, foreign students are urged to apply at least six months prior to the deadline dates.

All foreign applicants, except those from countries where English is the primary language, must take the TOEFL Examination (Test of English as a Foreign Language). Ordinarily a score of 550 or better is required. Upon admission and prior to the first day of instruction, the spoken and written English communication skills of a student who has not attained a TOEFL score of at least 600 or who is being considered for appointment as a teaching assistant or reader will be evaluated. The primary purpose of this policy is to identify potential communication problems and to recommend an appropriate program for the development of language skills.

Limited Status

Under certain conditions, students holding a bachelor's degree are admitted to Limited Status in order to prepare for admission to a graduate or professional program by enrolling for a prescribed set of courses (usually undergraduate courses), or to pursue a specific academic program which does not lead to a recognized degree. Although Limited Status does not represent graduate standing, the Dean of Graduate Studies and Research may offer admission upon the recommendation of an academic unit which has agreed to oversee the student's program. Limited Status students may enroll in graduate courses with the permission of the instructor, but courses taken while in Limited Status will not satisfy degree or residency requirements for any UC graduate program to which the student eventually might be admitted. Admission to Limited Status does not imply admission to Graduate study at some later date.

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 Division of Graduate Studies and Research, approving study lists, and evaluating academic petitions. In many academic units the Graduate Advisor is instrumental in 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 and Research.

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 in this section of the Catalogue apply to students enrolled in graduate study. Other regulations and procedures of importance to graduate students 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–, B+, B, and S represent satisfactory scholarship and may be applied toward advanced degree requirements. However, 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, Research Assistant, 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). Certain graduate courses are graded S/U only, with the approval of the Graduate Council. 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; 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.

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 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 and Research 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 Graduate Dean 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 Graduate Dean, disqualification will be noted on the formal academic record of that student. Following the formal notice of disqualification, the student may appeal to the Graduate Dean 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 Summer Sessions. In the case of Ph.D. students, these must be consecutive sessions.

Enrollment Limitations

Full-time academic enrollment ordinarily is expected of graduate students at the University of California. 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 both the student's Graduate Advisor and the Dean of Graduate Studies and Research.

With the approval of the academic unit and the Graduate Dean, a graduate student may enroll for fewer than 12 units of academic credit. However, payment of all regular student fees is required regardless of the number of units of credit earned. To be eligible for an appointment as a Research Assistant, Teaching Assistant, or Reader, and for most fellowships, a student must enroll full time. Satisfactory progress toward completion of the academic program is required of all students.

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's Enrollment in Classes Petition is completed correctly, signed where necessary, and submitted to the Registrar. 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 (see below) has been granted, or a petition to pay the Filing Fee in lieu of registration has been approved by the Dean of Graduate Studies and Research, a student who does not register by the final deadlines 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 and Research. 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 and Research 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 Graduate Dean). Leave may not be granted to students who intend to make use of most University resources or facilities (including housing), and it may be revoked if they do so.

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 readmission policy described below.

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 Readmission with a nonrefundable $25 fee. The Dean of Graduate Studies and Research 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 Graduate Dean. 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 demonstrated a high level of scholarship during at least one year 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 Deans of the respective Graduate Divisions is required. Direct arrangements between faculty members on the two campuses are encouraged so as to ensure the courses, seminars, or facilities will be available to meet the 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. Although eligible for all normal student services, the exchange student is a visitor, not formally admitted to graduate study at the host campus. Application forms for the Intercampus Exchange Program may be obtained from the Graduate Division Office of the student's home campus, and should be filed with the Office at least four weeks before the beginning of the quarter in order to avoid penalties for late filing of the study list.

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. 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 and Research. 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 the Graduate Division. 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 and Research 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 Fine Arts (M.F.A. in Fine Arts) 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.

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, imaginative 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 Dean of Graduate Studies and Research on behalf of the Graduate Council. The proposed candidacy committee must be submitted to the Division Office (on the Ph.D. Form I) at least two weeks before the final qualifying examination is to be given, so that the formal appointment can be made before the examination date. The Report on Qualifying Examination for the Degree of Doctor of Philosophy (Form II) must be signed by the committee at the time the candidacy examination is concluded and submitted to the Dean of Graduate Studies and Research. Following a unanimous favorable vote of the committee, the student will be advanced to candidacy upon payment of the $25 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 Dean of Graduate Studies and Research (on behalf of 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.

The In-Candidacy Fee Offset Grant

By action of each academic unit, the Graduate Council, and the Academic Senate Coordinating Committee on Graduate Affairs, a Normative Time has been established for each Ph.D. program. This is the expected number of 12-month years from first enrollment to completion of the Ph.D. for students entering with normal preparation who are able to study without serious interruptions. The Normative Time established for UCI Ph.D. programs is five years in all fields except (years in parenthesis): Biological Sciences (four or five), Comparative Culture (six), Comparative Literature (six), Engineering (four), French (six), German (six), History (six), Information and Computer Science (four or five), Management (six).

A Ph.D. student in good standing will be eligible for a quarterly grant equal to the Educational Fee if:

1. the student is a formal candidate for the Ph.D., as of the first day of the quarter;

2. the student's accrued time since first enrollment is less than the Normative Time for completion of the Ph.D. established for that graduate program (accrued time is equal to elapsed time from first enrollment as a UCI graduate student less (1) up to three quarters of approved leave, and (2) any time between completion of a graduate program or formal withdrawal and readmission in a different field of study);

3. the student is not entitled to payment of the Educational Fee from an extramural fellowship, grant, or traineeship; and

4. satisfactory academic progress has been certified by the Graduate Advisor.

Additional information about the In-Candidacy Fee Offset Grant program and application forms are available from the Division of Graduate Studies and Research.

Theses and Dissertations

Candidates for the Ph.D. and certain master's degrees must conduct an extensive research project and submit a thesis or dissertation in order to fulfill degree requirements. Research expenses are not supported by the University, and the cost of preparing the thesis or dissertation ordinarily range from, $200 to $1,000 but may be considerably more.

Soon after advancement to candidacy, those Ph.D. or master's candidates who are writing a thesis or dissertation should consult with the Manuscript Advisor in the Division of Graduate Studies and Research. The Manuscript Advisor has the responsibility of ensuring that the established procedures and standards of UCI are upheld in the preparation of theses and dissertations. After approval by the doctoral or thesis committee appointed for each candidate by the Graduate Council, a copy of the dissertation (two copies of a master's thesis), must be filed with the Manuscript Advisor 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. Dissertations filed later than the end of the sixth week of instruction of an academic quarter ordinarily cannot be reviewed and accepted in time for the degree to be conferred in that quarter.

Ordinarily, a graduate student will be registered for the quarter in which the dissertation or thesis is submitted and the degree is to be conferred, and no additional fees are required. If the manuscript is submitted and accepted before the first day of the regular academic quarter in which the degree is to be conferred and the student was registered for the previous regular quarter, additional fees usually are not required.

The Filing Fee

Under certain circumstances, a student 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 and Research. 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 without a late service 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.

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 and Research. The student should consult the departmental Graduate Advisor to determine which degree requirements, if any, have not yet been satisfied.

No later than the beginning of the final quarter, the student should file a Graduation and Diploma Information form with the Division of Graduate Studies and Research and verify with the departmental office that the student's name is included on the tentative degree list. If a master's thesis or doctoral dissertation is to be submitted, the Manuscript Advisor should be consulted well in advance about the final format and the deadline for submission of the approved manuscript.

Students are advised by mail when their diplomas are available, which is approximately 90 days after the quarter in which the degrees are awarded.

Financial Assistance for Graduate Students

The University offers many types of financial assistance to graduate students. These include fellowships, teaching and research assistantships, tuition fellowships for nonresident students, grants-in-aid, student loans, and Work-Study. Applicants interested in assistantships or fellowships should so indicate when applying for admission; continuing students should contact their program's Graduate Advisor. Most awards are made in April or May of the preceding academic year.

Regents' Fellowships will be awarded to a number of promising students entering graduate study at UCI leading to the Doctor of Philosophy or Master of Fine Arts degree. Awards include a stipend, all required student fees, and, if applicable, Nonresident Tuition. Other fellowships are offered, including tuition awards for outstanding scholars 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. Neither assistantship includes remission of fees or tuition, but a graduate assistant who is not a California resident also may receive a tuition fellowship.

Through the Graduate and Professional Opportunity Program, a number of fellowships and assistantships are awarded to first- and second-year graduate students on the basis of need and academic promise. All fellowship awards and assistantship appointments are made in accordance with the affirmative action policies of the University.

Grants for doctoral research and a limited number of dissertation fellowships are awarded each year; additional information is available from the Division of Graduate Studies and Research. The Division Office also provides information and assistance to students who wish to apply for fellowships from federal agencies, foundations, and other non-University sources.

The Fees, Expenses, and Financial Aid section contains information about assistance based upon financial need that is administered by the Financial Aid Office, including grants, loans, and Work-Study awards. A *Financial Aid Prospectus* is available from the Financial Aid Office.

RESEARCH

The University of California is the state's primary research institution. Most scholarly research and creative activities are supported by University funds or by grants and contracts from federal and state agencies, foundations, corporations, and individual sponsors. In addition to University funding, over $26 million from extramural sources was awarded to the University of California, Irvine in the 1979-80 fiscal year for basic and applied research and for other scholarly activity.

Under the direction of Dean of Graduate Studies and Research, the Office of Contracts and Grants Administration (OCGA) is responsible for the submission of proposals, acceptance of grant and contract awards, and negotiation of all awards for extramurally funded research, training, fellowship, and public service programs. The OCGA also provides administrative support for the Human Subjects and Biosafety Committees, and maintains a Resource Center containing the most current information about extramural funding sources for student and faculty research.

While most research takes place at the academic unit level, the academic quality of many of UCI's educational programs is enhanced by Organized Research Units and Focused Research Programs that extend beyond unit boundaries.

Organized Research Units

An Organized Research Unit (ORU) ordinarily consists of an interdepartmental group of faculty, students, and other researchers engaged in a continuing program of 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 our understanding of natural or social phenomena, or of humanistic ideas and expressions. Organized Research Units established on the Irvine campus by The Regents of the University are the Developmental Biology Center, the Institute of Transportation Studies (ITS), and the Public Policy Research Organization (PPRO). A Cancer Research Institute was approved by The Regents in 1980, replacing the Focused Research Program in Oncology.

Developmental Biology Center

The Developmental Biology Center is an Organized Research Unit that provides a focus within the School of Biological Sciences for research in several related areas of developmental biology and genetics. The major goal of the Center is to understand the mechanisms responsible for the control of growth and the generation of spatial patterns of differentiation during development. Experimental techniques from the fields of cell biology, embryology, genetics, neurobiology, and endocrinology are applied to insects, hydra, fish, and amphibians. The work carried out in the Center has potential implications in such areas as the control of growth and regeneration of lost body parts and the cause and prevention of cancer, nervous system anomalies, and birth defects in man. Research in the Center also involves the analysis of insect developmental hormones which may provide new methods to control agricultural pests and disease vectors.

Institute of Transportation Studies

The Institute of Transportation Studies (ITS) was established to foster research, education, and training in the field of transportation. The Institute has been an Organized Research Unit within the University of California since 1947, with its main branch located on the Berkeley campus. The Irvine campus branch was established in 1974.

Emphasis at Irvine has been on the development of a strong interdisciplinary research capability. Completed and ongoing research projects have involved faculty and students from the Graduate School of Management, the School of Social Sciences, the School of Engineering, the Program in Social Ecology, the College of Medicine, and the Department of Information and Computer Science. Research at Irvine focuses upon transportation systems planning and evaluation, fiscal and administrative management of public transit systems, labor relations in the transit industry, and energy and environmental issues. Current projects include "Shared Ride Taxis as Community Transportation," "Improving Transit Performance," "The Cost of Transit Labor Work Rules," "The Impact of Union-Management Relations on Productivity and Efficiency in Urban Mass Transit," "Economic Structure, Community Development, and Transportation Systems: An Empirical Analysis of Household Activity Patterns," and "Analysis of Trends in California Port Development." A portion of Institute funding is used to sponsor postdoctoral research fellowships and visiting professorships.

The Institute maintains an extensive research collection to support these activities. The 10,000-volume collection includes books, journals, dissertations, and technical reports in the field of urban transportation. A wide range of services is offered including computer-based literature searching. Students and faculty are encouraged to meet with the Information Center's trained personnel to discuss research needs and strategies.

Public Policy Research Organization

The Public Policy Research Organization (PPRO) is an Organized Research Unit established to foster empirically grounded research into problems of public policy. In pursuing its broad policies studies mission, PPRO has focused its effort since 1973 on information technology and public policy, and more recently has developed research programs concerned with public management and human cost accounting.

As a campuswide research unit, PPRO draws its research expertise from the full faculty and student resources of the Irvine campus. Of the 60 faculty and students currently doing research in PPRO, the majority are from the School of Social Sciences, the Department of Information and Computer Science, the Program in Social Ecology, the Graduate School of Management, and the College of Medicine. Among PPRO researchers are experts in law, public administration, economics, public finance, political science, sociology, psychology, planning, and public health.

PPRO projects are multidisciplinary by nature. Among the 22 projects currently in progress are studies of the effectiveness of Federal Civil Service reforms; the use of information systems in U.S. and European local governments; the social and mental health impacts of economic change; the use of deadly force by police officers; the incidence of injuries to children in auto accidents; and case studies of the problems and costs faced by new users of computer technology.

PPRO maintains extensive survey research, data analysis, and data archiving capabilities which support its research efforts and which serve researchers in various UCI academic units. A limited number of graduate assistantships and work-study positions are available to qualified UCI students who wish to participate in PPRO research projects or in the preparation of research proposals.

Focused Research Programs

Focused Research Programs are established by the Chancellor for the purpose of developing and, for a limited period of time, sustaining interdisciplinary research that could not be carried out through individual effort or within a single academic unit. Because of the developmental nature of these programs, they ordinarily are approved for no more than three years and are supported partly by University funds. If a research program develops successfully, it may continue with extramural and/or University support. Five groups of faculty, students, and other researchers have been recognized as Focused Research Programs.

Chemistry and Physics of Crystal Surfaces

Researchers from the Departments of Chemistry and Physics are investigating the nature of chemical reactions on surfaces, using the scattering of laser light from surfaces as the basic experimental technique, and exploring fundamental questions in the theory of vibrational motion of surfaces and absorbed atoms.

Goethe Symposium

Faculty from the Departments of German, French and Italian, the Program in Comparative Literature, and the School of Fine Arts, along with scholars from the UCLA Department of German and the UCSC Department of Literature, will mount a symposium on Goethe on the 150th anniversary of his death (1982), concentrating on his narrative fiction. Concomitant goals are to foster scholarly research papers on Goethe and to facilitate collaboration among leading younger scholars concerned with Goethe.

Human Stress Studies

A series of collaborative, theory-based studies addressing key questions about human stress is being conducted by a group from the Program in Social Ecology and the College of Medicine.

Perception and Higher Mental Processes

Faculty and students from the Schools of Social, Biological, and Physical Sciences and the College of Medicine are investigating the bases of and relationships between perception, language, and higher cognitive functions.

Social Network Analysis

Substantive research problems in social history, social anthropology, and sociology are being investigated by researchers from the School of Social Sciences and the Department of History. The researchers are concerned with understanding group dynamics based on a network of individual social relationships. In addition, they collaborate in the development and exchange of network methodologies and theoretical frameworks.

Educational Technology Center

The primary focus of the Educational Technology Center (ETC) is the interactive use of the computer as an aid to learning in many different areas. Emphasis is on inexpensive, graphic personal computers now available for schools and home. The activities of the project range from fundamental research to the development of learning modules. The Center is particularly interested in developing production capabilities which will lead toward the efficient large-scale production of highly effective computer-based learning modules.

Thesaurus Linguae Graecae Project

Financed through private and federal funds, the Thesaurus Linguae Graecae (*TLG*) Project has been in operation at the University of California since the summer of 1972. The goals of the project are to create the *Thesaurus Linguae Graecae*, a data bank of Greek literature from its Homeric beginnings to approximately A.D. 600; to conduct literary research using collected texts; and to apply technological innovation to these endeavors. The *TLG's* research activities are multifaceted, combining the traditional concerns and methodologies of philological and literary study with the most advanced features of computer technology. Included among the research foci currently pursued by the Project are the identification of ancient Greek literary and documentary materials extant from various literary-historical periods; the development of procedures pertinent to the conversion of these materials into machine-readable form; the enhancement of automated text-verification routines; and the examination of criteria for data-capture of "nonstandard" source materials such as documentary papyri and *apparatus critici*. The Project staff are investigating procedures to allow for nationwide access to data-bank resources located at UCI. The *TLG* data bank currently contains more than 42 million words of Greek text, and is expected to grow to 90 million words in the future.

Though a separate administrative entity, the *TLG* is closely related to the Department of Classics in many respects. Faculty members of the Department are involved to varying degrees in *TLG* research; Classics graduate students are encouraged to apply for *TLG* assistantships; UCI's library and research resources in Classics are immeasurably enhanced by the text and reference holdings acquired by the *TLG* for its own purposes; *TLG*-related conferences and visits by scholars from North America and Europe afford the Department and its students many contacts with eminent classicists of special competence. The establishment and availability of a data bank of ancient Greek literary and documentary materials has made UCI a major source of research activity in the field of Classics.

UNDERGRADUATE ADMISSIONS

The Office of Admissions welcomes inquiries on any aspect of becoming eligible for the University of California and on planning for transfer. Admissions counselors are available in 245 Administration Building, and inquiries may be addressed to the Office of Admissions, University of California, Irvine; Irvine, California 92717. General information on application filing is available by telephoning (714) 833-6703; for specific questions regarding admission or eligibility, telephone (714) 833-6705.

The University's undergraduate admission requirements, which are the same on all campuses, are based on two principles. The best predictor of success in the University is high scholarship in previous work, and the study of certain subjects in high school gives a student good preparation for University work.

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

Categories of Application

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

A **freshman** applicant is a student who has graduated from high school or has earned a California Certificate of Proficiency but has not enrolled since then in a regular session of any collegiate-level institution. Summer sessions immediately following graduation are excluded.

An **advanced standing (transfer)** applicant is a high school graduate who has been a registered student in a regular or extension session of a college or university other then a summer session immediately following high school graduation.

An **intercampus transfer** applicant is an undergraduate student who is currently or was previously registered in a regular session at another campus of the University of California and has not been registered in another collegiate institution. See page 56.

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 on the Irvine campus and who has interrupted the completion of consecutive quarters of enrollment. See page 56.

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.

An **Early Admission Experimental Program (EAXP)** applicant is an accelerated high school student who wishes to register and enroll on a reduced fee basis in UC Irvine courses concurrently with high school courses.

Admission to Freshman Standing

The University defines a freshman applicant as a student who has graduated from high school or earned a California Certificate of Proficiency 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 ahead to the section on Nonresident Admission Requirements.

NOTE: Applicants still of freshman level and who have completed more than 12 transferable units since high school graduation should refer to the section on Admission in Advanced Standing.

Advanced standing credit will be granted for an acceptable course from an accredited college or university taken while still in high school if completed after the tenth grade and if reported on a valid transcript issued by the college or community college which conducted the course.

Freshmen applicants who have not yet decided on a major should refer to the section on Planning an Undergraduate Program.

Requirements

To be eligible for admission to the University as a freshman an applicant must meet the Subject, Examination, and Scholarship Requirements described below.

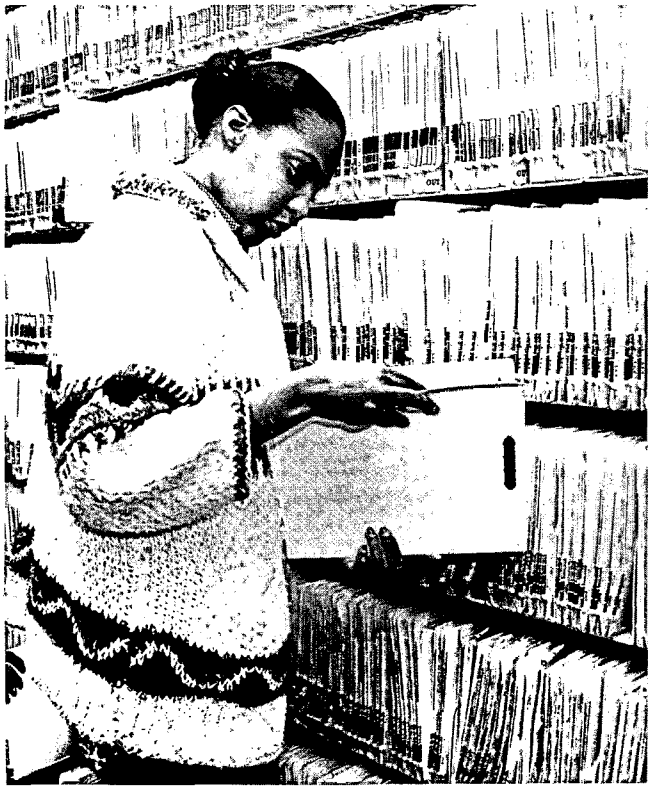
Subject ("A Through F") Requirement

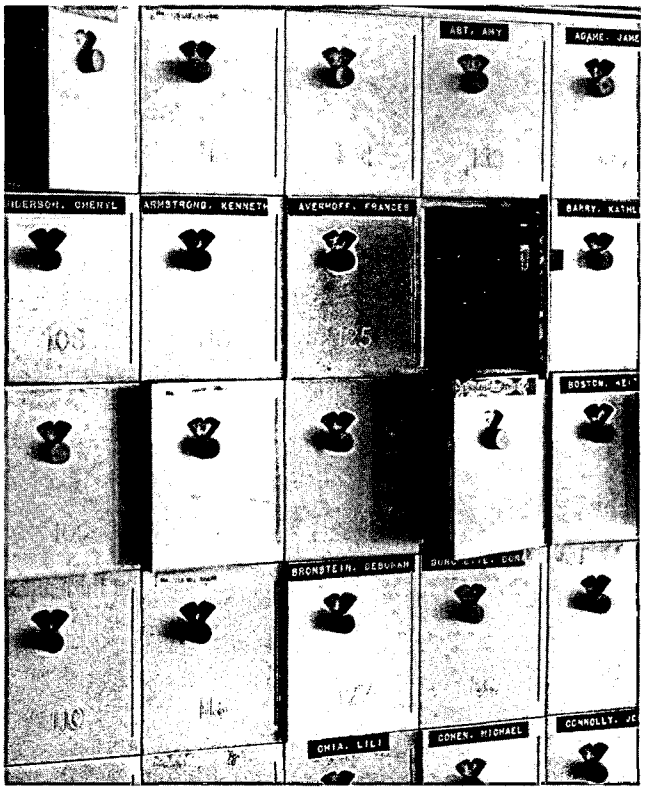
Students must complete certain high school courses with at least a grade of C in each semester of each course in the subject areas listed below. This course sequence is often called "a through f" pattern and must appear on a list of courses that high school principals certify meet University requirements. This list is called "Courses to Meet Requirements for Admission to the University of California" and can be obtained from school counselors. The Office of Admissions will determine the equivalency of courses for graduates of out-of-state high schools.

a. History—1 year
One year* of United States history, or one-half year of United States history and one-half year of civics or American government.

b. English—4 years
Four years of English: composition and/or literature, university preparatory in nature. Not more than one year course will be accepted from the ninth grade.

*A year course in high school is equivalent to one credit/unit.




ABT, AMY
AVERHOFF, FRANCES
BRONSTEIN, DEBORAH
COHEN, MICHAEL

c. Mathematics—2 years
Two years of mathematics: algebra, geometry, trigonometry, calculus, elementary functions, and mathematical analysis. Courses such as arithmetic and business mathematics are not accepted.

d. Laboratory—1 year
A year course in one laboratory science, taken in the tenth, eleventh, or twelfth grade.

e. Foreign Language—2 years
Two years of one foreign language. Any foreign language with a written literature may be used.

f. Advanced Course—1 or 2 years
This requirement must be satisfied by one of the following:

1. Mathematics
A total of one year of advanced mathematics: intermediate algebra, trigonometry, or other comparable mathematics courses; or,

2. Foreign Language
Either an additional year in the same language used for "e" above or two years of a second foreign language; or,

3. Science
A year course in any laboratory science completed in addition to the laboratory science used for "d" above.

The subject requirement can be fulfilled with 11 or 12 high school units. Grades in these courses are the only grades used in calculating the grade point average. However, the University requires all applicants (except those with a Certificate of Proficiency—see p. 39) to complete at least 16 units. Thus, 4-5 units can be taken in elective courses, which provide an excellent opportunity to strengthen preparation for the University. *Additional courses in mathematics and science are essential in* the preparation for majors in engineering, mathematics, the sciences, and many other fields of study.

Examination Requirement

All freshman applicants must submit test scores as described below. Applicants for admission to the fall quarter should take the tests by December or January of the senior year, if possible. The following tests are required:

1. One Aptitude Test — Either:

A. The Scholastic Aptitude Test — SAT — (the verbal and mathematics scores submitted from this test must be from the same sitting); or
B. The American College Test — ACT — composite score.

2. Three College Board Achievement Tests, which must include (a) English Composition, (b) one from among the social studies or foreign languages, and (c) mathematics (level 1 or 2).

Admission by Examination Alone

A student can qualify as a freshman by examination alone. The required total score on the Scholastic Aptitude Test is 1,100. (If ACT is presented, the minimum score is 26.) Also, the student's total score on the three College Board Achievement Tests must be 1,650 or higher, or at least 1,730 if a nonresident of California, with no score less than 500 on any individual Achievement Test. If test scores are available to UCI at a time earlier than the evaluation of an applicant's subject and scholarship requirements, and if they meet the above totals, the campus may be able to expedite notification of admission. This option does not apply to students who will have completed more than 12 transferable units prior to admission. The College Board Achievement Tests cannot be taken in academic subjects covered by transferable college courses a student may have taken.

Eligibility Index

Applicants are admissible if their a-f grade average and test score totals are higher than the combinations below:

A-F GPA	ACT* Composite	or SAT** Total	A-F GPA	ACT* Composite	or SAT** Total
2.78	35	1600	3.05	22	970
2.79	35	1580	3.06	21	950
2.80	34	1550	3.07	21	920
2.81	34	1530	3.08	20	900
2.82	33	1510	3.09	19	880
2.83	33	1480	3.10	18	850
2.84	33	1460	3.11	18	830
2.85	32	1440	3.12	17	810
2.86	32	1410	3.13	16	780
2.87	32	1390	3.14	15	760
2.88	31	1370	3.15	14	740
2.89	31	1340	3.16	14	710
2.90	30	1320	3.17	13	690
2.91	30	1300	3.18	12	670
2.92	29	1270	3.19	11	640
2.93	29	1250	3.20	10	620
2.94	28	1230	3.21	9	600
2.95	28	1200	3.22	9	570
2.96	27	1180	3.23	8	550
2.97	27	1160	3.24	8	530
2.98	26	1130	3.25	7	500
2.99	26	1110	3.26	7	480
3.00	25	1090	3.27	6	460
3.01	25	1060	3.28	6	430
3.02	24	1040	3.29	5	410
3.03	24	1020	3.30	5	400
3.04	23	990			

*ACT is scored in intervals of 1 point from a minimum of 1 to 35 maximum.
**SAT is scored in intervals of 10 points from a minimum of 400 to 1,600 maximum.

Scholarship Requirement

Students who attain a grade point average of 3.30 in "a-f" courses taken after the ninth grade will be eligible to enter the University regardless of their scores on standardized tests. Students with grade point averages below 3.30 but greater than 2.77 will be admitted to the University if they achieve specified scores on the standardized test. (See the Eligibility Index.)

Grades received in courses taken in the ninth grade or earlier are not used in determining the scholarship average, although *subject requirements* (except laboratory science) may be satisfied with grades of C or better in these courses. If students successfully complete more than the minimum units within each required subject, only the best grades are used in calculating their grade point average. Grades are counted on a semester basis unless a school gives only year grades.

Students may repeat up to a total of two semester courses (or one year course) in which they receive a grade of D or lower in order to meet the subject and scholarship requirements. The grades earned in repeated courses, however, will not be counted higher than C in determining the scholarship average. If the courses students repeat were taken before the tenth grade, they will be treated as if the students were taking them for the first time.

Admission to the Early Admission Experimental Program (EAXP)

The opportunity to enroll in University classes concurrent with the junior or senior year of high school is available to certain accelerated students. Through the Early Admission Experimental Program (EAXP), qualified high school students may enroll in UC Irvine courses, receive grades based on the same standards as full-time students, and receive full University of California credit for their work.

EAXP is designed to provide the high school student with an enriched education at a substantially advanced level. Students are given the opportunity to take courses of interest beyond those which their high schools offer. Along with the academic advantages, students have a chance to experience an early orientation to University life.

To continue at UC Irvine after high school graduation, an EAXP student need only complete a change of major petition and enroll as a full-time student. Also, EAXP status entitles students to Intercampus Transfer (ICT) privileges should they decide to attend another campus of the University of California after high school graduation. High school students wishing more information about the Program should contact the Office of Admissions or their high school counselor.

Admission in Advanced Standing

The University defines an advanced standing (transfer) applicant as a high school graduate 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. An advanced standing applicant may not disregard the college record and apply for admission as a freshman.

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

Advanced Standing Admission Requirements

The requirements for admission in advanced standing vary according to the high school record. Advanced standing applicants who have a California Certificate of Proficiency must also meet regular University entrance requirements. NOTE: Admission requirements for freshman applicants were changed for fall 1979 to include a combination of high school grades and examinations. (See the Eligibility Index.) The high school eligibility for advanced standing applicants will be determined by one of the following, depending on the high school graduation date: 1) Students graduating from high school at the end of the 1978-79 academic year are eligible if they meet the Eligibility Index (p. 34); 2) Students graduating from high school prior to the 1978-79 academic year are eligible if they have earned a 3.0 grade point average on the required high school subjects and appropriate test scores if fewer than 12 college units have been completed.

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[1] of 2.00 or better. If the grade point average fell below 2.00 at any one college attended, the student may have to meet additional requirements in order to qualify for admission.

An advanced standing applicant must also meet one of the following conditions:

1. A student who met the Eligibility Index or whose high school scholarship average in the required subjects was 3.00 or better may be admitted any time after establishing an overall grade point average of 2.00 or better. If a student has completed less than 12 quarter or semester units of transferable college credit since high school graduation, the student must also satisfy the examination requirement for freshmen.

2. A student who met the Eligibility Index or whose high school scholarship average in the required subjects was 3.00 or better but had not studied one or more of the required courses in high school may be admitted after the student has:

a. established an overall grade point average of 2.00 or better in another college or university; and

b. completed, with a grade of C or better, appropriate college courses in the high school subjects lacked; and

c. completed 12 or more quarter or semester transferable units, or met the examination requirement.

3. A student who was not eligible for admission as a freshman because of low scholarship or a combination of low scholarship and a lack of required subjects may be admitted after the student has:

[1]The grade point average is determined by dividing the total number of acceptable units attempted into the number of grade points earned on those units. A student may repeat courses completed with a grade lower than C up to a maximum of 16 quarter units without penalty.

The scholarship standard is expressed by a system of grade points and grade point averages earned in courses accepted by the University for advanced standing credit. Grade points are assigned as follows: for each unit of A, 4 points; B, 3 points; C, 2 points; D, 1 point; I and F, no points; P/NP, no points but are included in the unit total.

a. established an overall grade point average of 2.40 or better in another college or university; and

b. completed 84 quarter units (56 semester units) of college credit in courses accepted by the University for transfer; and

c. completed, with a grade of C or better, appropriate college courses in high school subjects that the student lacked (high school deficiencies equivalent to two one-year courses may be waived) *or* completed, with a grade of C or better, 1) one college course in mathematics at least as advanced as the equivalent of two years of high school algebra or one year of algebra and one year of geometry, 2) one course in English of a level transferable to the University of California, and 3) one course in U.S. history, a laboratory science, or a foreign language which is transferable to the University of California.

Students considering admission in advanced standing should refer to page 35.

Admission for a Second Bachelor's Degree

Some students may wish to obtain a second bachelor's degree in a major different from that of the first 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. 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

NOTE: Admission requirements for applicants who are not California residents vary slightly from requirements for California residents.

Nonresident Freshman Applicant

A nonresident freshman applicant must (1) graduate from a regionally or state-accredited high school; (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 Scholastic Aptitude Test (SAT) (verbal and mathematics scores must be from the same sitting) or the American College Test (ACT) composite score—AND three College Board Achievement Tests which must include English Composition; Social Studies or Foreign Language; and Mathematics (level 1 or 2). Please note that the Freshman Eligibility Index applies to California residents only. To be admitted by examination alone, an applicant must score either 1,100 on the Scholastic Aptitude Test or 26 on the American College Test. The total score on the three College Board Achievement Tests must be 1,730 or higher with a score of at least 500 on each test.

Nonresident Advanced Standing Applicant

A student who met the admission requirements for freshman admission as a nonresident must have a grade point average of 2.80 or higher in college courses that are accepted by the University for transfer credit.

A nonresident applicant who graduated from high school with less than a 3.40 grade point average in the subjects required for freshman admission must have completed at least 84 quarter units (56 semester units) of transferable work with a grade point average of 2.80 or higher. Upon successful completion of that work, two units of the required high school subjects may be waived. A student who lacked any of the required subjects in high school must complete, with a grade of C or better, appropriate college courses in those subjects, *or* 1) one college course in mathematics at least as advanced as the equivalent of two years of high school algebra or one year of algebra and one year of geometry, 2) one course in English of a level transferable to the University of California, and 3) one course in U.S. history, a laboratory science, or a foreign language which is transferable to the University of California.

Exceptions to Nonresident Admission Requirements

For admission purposes only, a person residing outside of California may be determined by the Office of Admissions to be a bona fide resident and may be considered under California resident admission requirements if the applicant: is a spouse of a University of California faculty member; is a spouse of military personnel assigned to California; is a military dependent who has been granted a nonresident fee waiver; is an immigrant who has lived in California for a year and has chosen California as a place of residence; is a minor applicant whose parent or legal guardian appears to be a legal resident of California (as determined by the University for tuition purposes); has spent any two years or at last term enrolled in a California high school; has spent the last term (in at least 12 transferable units) enrolled in an accredited California college or university; has been physically present in California continuously for at least one year prior to the quarter for which registration is requested; or if one parent has received a degree from the University of California or is a full-time employee of the University of California.

Nonresident Tuition Fee

Refer to page 44 for information regarding residence classification for tuition purposes and the Nonresident Tuition Fee. Bona fide residents are still held for Nonresident Tuition.

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. An application, official certificates, and detailed transcripts of records should be submitted to the Office of Admissions 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.

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). The admission of otherwise eligible applicants who do not meet this requirement will be deferred until it is possible for them to demonstrate an adequate level of English ability. Arrangements to take the TOEFL may be made by writing directly to TOEFL, Educational Testing Service, P.O. Box 899, Princeton, New Jersy 08540. Students must request the Educational Testing Service to forward results of their tests to the Office of Admissions. Completion of an *acceptable* English composition course (as determined by the Office of Admissions) with a grade of C or better will also clear the English proficiency requirement for international applicants.

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 the nonresident tuition in addition to fees paid by legal residents of California.

Please direct all inquiries regarding the undergraduate admission of international students to the Office of Admissions.

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.

Application Procedures

Application Filing Periods

Application packets for undergraduate admission to the University are available from the counseling office of any California high school or community college, or from any University of California Admissions Office. Submit completed application and related materials to the Office of Admissions, 245 Administration Building, University of California, Irvine; Irvine, California 92717 on or after the appropriate date below:

Winter quarter, 1982	July 1, 1981
Spring quarter, 1982	October 1, 1981
Fall quarter, 1982	November 1, 1981
Winter quarter, 1983	July 1, 1982
Spring quarter, 1983	October 1, 1982

The beginning of the application filing period is the same for all campuses. Each campus will accept for consideration all applications filed during the first month of the filing period. After the first month the closing deadline will vary from campus to campus. Students are encouraged to file their applications early in the filing period to be assured consideration for the program and campus of their choice. Once enrollment quotas have been filled, additional applications cannot be accepted and will be directed to another University campus where enrollments are still open, according to preferences shown on the application.

Application Fee

There is a *nonrefundable* fee of $25 for filing an application for admission. Checks or money orders should be made payable to Regents-UC and attached to the application form.

Duplicate Applications

Only one application per quarter for the University of California is permissible, and it entitles qualified students to attend the campus of their choice if there is space available. Fees submitted with duplicate applications will not be refunded.

Change of Campus

If, after you have applied for admission, your plans change and you prefer to attend a different campus of the University, you should write to the Admissions Office of the campus you prefer to attend. In your letter to the new campus, you should state (1) your intended major, (2) the quarter for which you are applying, (3) the level for which you are applying (whether freshman or advanced standing), (4) the name of the campus to which you originally applied, and (5) the reasons for your change. The new campus will ask the campus of your first choice to transfer your records, provided the new campus still has openings for admission at the time of your letter.

Processing a change-of-campus preference takes several weeks. However, your admission priority will be assigned based on the date your request for a change was made. You should be aware that special program commitments (such as the Educational Opportunity Program or UCLA's Academic Advancement Program) do not transfer from one campus to another.

NOTE: If you requested housing or financial aid information at your first-choice campus, you should inquire of the new campus housing and financial aid offices whether pertinent records have been transferred and about priorities, deadlines, and availability of financial aid and housing.

Transcripts

The Office of Admissions 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.

All applicants are responsible for requesting that the high schools from which they graduated and each college attended send official transcripts of work promptly to the UCI Office of Admissions.

If a student is applying for admission as a freshman, a preliminary transcript showing work through the junior year should be requested from the high school. The transcript should list the courses the student is now taking and those the student plans to take. A final transcript that includes courses and grades for the senior year and a statement of graduation or a California Certificate of Proficiency must also be provided. A transcript from the last college attended is required if any college courses are completed before or at the time of high school graduation.

Those applying for admission in advanced standing should have their graduating high school send a transcript immediately to the Office of Admissions which will also need a transcript from each college attended. A preliminary transcript from the present college should list the courses currently in progress and those planned before transfer.

Attendance at any other schools or colleges after application to the University has been filed is considered to be part of the record and must be reported to the Office of Admissions.

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.

Examination Arrangements

Students should make arrangements to take the required tests with the Educational Testing Service, 1947 Center Street, Berkeley, California 94704, or P.O. Box 592, Princeton, New Jersey 08540 for SAT and Achievement Tests. For the ACT, students should write to the American College Testing Program Registration Unit, P.O. Box 168, Iowa City, Iowa 52240. (Test fees should be paid to the Educational Testing Service, or the American College Testing Program, not the University.) Test scores will be regarded as official only if they are reported directly to the Office of Admissions by the Educational Testing Service or by the American College Testing Program. Also, final notification of admission cannot be released until scores have been received by the Office of Admissions.

In 1981-82 SAT and Achievement Tests will be offered concurrently on the following Saturday mornings:

October 10, 1981 (SAT only in California, Florida, New York, and Texas)
November 7, 1981
December 5, 1981
January 23, 1982
March 27, 1982 (SAT only)
May 1, 1982
June 5, 1982

The 1981-82 ACT Tests will be offered on the following dates:

October 17, 1981
December 12, 1981
February 20, 1982
April 3, 1982
June 12, 1982

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

Notification of Admission

Candidates for the fall quarter will be notified whether their applications have been retained for consideration at UCI immediately after they are received. Most candidates who applied early in the filing period will receive notice of their admissibility by April 15. (There are similar notification periods for other quarters.) Delays will occur if required records have not been received by the Office of Admissions. Since each application is considered individually, the length of time before notification is subject to some variation depending upon the unique circumstances of each applicant.

If offered admission by the University, a student will be asked to sign and return a Statement of Intention to Register, accompanied by a *nonrefundable* fee of $50. This amount will be applied toward payment of University fees, provided the student enrolls in the quarter to which the student has been admitted.

Admission to UCI is not an assurance of 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 or Housing Office does not imply that eligibility for admission has been established.

Reapplication and Deferred Admission Privilege

In general, an application for admission is effective only for the quarter for which it is submitted. If a student is not eligible for admission, or if a student is admitted and does not enroll, the student must file a new application with the required fee in order to be admitted to another quarter. The new application will be considered in light of the admission requirements in effect and the space available on the campus.

However, qualified applicants for undergraduate admission may request to have their admission deferred until a later quarter. Requests for admission deferment should be addressed to the Director of Admissions. Every consideration will be given to deferments requested for valid reasons, though applicants should be aware that responses to such requests may vary from quarter to quarter or major to major due to changing enrollment conditions.

Educational Opportunity Program

Applicants who wish to be considered for the Educational Opportunity Program (EOP) should refer to page 58 for supplementary application procedures.

Additional Information

Recommended Subjects

Many University programs require or recommend specific preparatory subjects to give students the needed background in their chosen fields of study. The lack of such preparation, particularly for advanced standing students, may delay graduation from the University. Details about these recommendations can be found in *Prerequisites and Recommended Subjects*, a University publication sent each year to high school and community college counselors.

Subject A and American History and Institutions

To be eligible for a bachelor's degree from UC Irvine, students must meet a number of requirements, including those of the University of California, the Irvine campus, and the individual school and major. There are two requirements—Subject A (English Composition) and American History and Institutions—which all University of California students must satisfy in order to graduate. For specific information on these requirements and ways to satisfy them *before entrance* to UCI, refer to page 14.

College-Level Courses

The University gives unit credit to students for courses they have completed in other accredited colleges or universities. To be accepted for unit credit, the courses must be consistent with those offered by the University. All applicants with questions regarding transfer of credit should contact the Office of Admissions.

College Level Examination Program (CLEP)

Effective fall 1981, the University has discontinued granting credit for both the general and subject examinations of the College Level Examination Program.

Advanced Placement

The Advanced Placement Examinations of the College Board are taken, usually during the senior year, in conjunction with courses taken in high school. Students will receive 10 quarter units of University credit for each examination (except Latin, Physics C, Part 1, 2, and Mathematics AB which earn five quarter units each) in which they earn a score of 5, 4, or 3. A maximum of 10 units can be earned for the following: a combination of Physics B and Physics C; English Language and Composition and English Composition and Literature if both examinations are presented; in Studio Art a student may submit either a General Portfolio or a Drawing Portfolio, but not both. These credits will apply toward the total required for graduation from the University. Information about specific application of Advanced Placement toward subject credit may be obtained from the Office of Relations with Schools and Colleges.

High School Proficiency Examination

The University of California will accept the California Certificate of Proficiency, awarded by the State Department of Education upon successful completion of the California High School Proficiency Examination, in lieu of the regular high school diploma. However, all other University entrance requirements (subject pattern, grades, tests) must be met. The date of graduation on University records will be the date of the certificate. Entrance by standardized test scores will remain an option for the student ineligible on the basis of high school record.

Physical Examination

All new students and those returning after an absence of two or more quarters require physical examinations and health clearances, respectively, before the first day of the quarter. See Student Health.

PLANNING FOR TRANSFER TO UCI

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. Information regarding eligibility for transfer may be found in the section on Admission in Advanced Standing, page 35.

Unit Credit for Work Taken Elsewhere

The University of California grants unit credit for courses completed in 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 180 quarter units, equivalent to 45 UCI quarter courses, are needed.)

California Community Colleges

Students may find it advantageous or necessary to complete the first two years of a University of California undergraduate program at one of the California Community Colleges, which are an integral part of the state's system of higher education. High school graduates who cannot be accommodated at their first campus preference may choose to attend a community college and transfer to their preferred University campus at a later time. A student may earn a maximum of 105 quarter units (70 semester units) toward a University degree in a community college. 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 community college counselor, with the aid of that college's transferable course list, can advise students about courses which will transfer to the University. Lists for each community college are updated annually and tell which courses will transfer and for how many units. In addition to the community college counselor, staff in the Office of Admissions and Office of Relations with Schools and Colleges keep current copies and can advise students about the transferability of courses.

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 page 14 for UCI graduation requirements, including requirements for units earned in residence at this campus.

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. Decisions regarding the applicability of such courses toward specific degrees and majors rest with the respective faculties.

Course Credit for Work Taken Elsewhere

The policies above refer only to the unit transferability of courses and are uniformly implemented on all campuses of the University. 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 its own programs. To this end, many community colleges have entered into articulation agreements with UCI so that the specific application of their courses to UCI's University, school, and departmental major requirements may be readily communicated to prospective transfer students. Students are urged to consult community college counselors or the Office of Relations with Schools and Colleges for specific information on planning a program for transfer.

The University of California bulletin *Prerequisites and Recommended Subjects* should also be consulted for planning the lower-division course of study for all programs offered on the campuses of the University of California.

Requirements

Requirements at UCI are in four categories: University of California, UCI, school, and departmental or major. Courses not specifically applicable to these are considered to be electives. See pages 14-16 for a description of these requirements.

University of California Requirements: Subject A and American History and Institutions

Among the means of meeting the Subject A requirement is the completion of an acceptable one-quarter (four units) or one-semester (three units) transfer course in English composition with a grade of C or better.

The American History and Institutions requirement may be met by completing in high school one year of U.S history or one semester of U.S. history and one semester of U.S. government with a grade of at least C, or upon certification by another California collegiate institution.

UCI Breadth Requirement

The new UCI breadth requirement applies to new freshmen entering UCI in fall quarter, 1980. Transfer students who subsequent to high school graduation attended a regular term in an accredited college any time prior to fall 1980 have the option of satisfying this requirement through 1) the UCI 6-3-3 distibution (see below), 2) the new UCI breadth requirement, or 3) one of the other options indicated below. The breadth requirement 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 upper-division Writing Requirement. Transfer students should not feel that these must necessarily be completed in the lower division. See page 15 for details on the breadth requirement.

Students who transfer from a four-year institution and who have completed the general breadth requirements of that college will be considered to have met the total breadth requirement of UCI. Students who transfer from a community college and who have met the general breadth requirements of any campus of the University of California prior to transfer will also be regarded as having met the breadth requirement. Students who, upon transfer, have not completed whatever breadth requirements may have been in progress for another campus of the University of California may elect to complete at UCI either that program or whatever UCI breadth requirement is applicable to them—the UCI 6-3-3 distribution or the new UCI breadth requirement.

Students who transfer from colleges on the semester calendar and who elect to satisfy the breadth requirement by fulfilling the UCI 6-3-3 distribution may do so by completing four semester courses (minimum 12 semester units) in one school outside the major and two semester courses (minimum six semester units) in each of two other schools outside the major.

Students transferring from another institution who first attended college in fall 1980 or thereafter may satisfy the new UCI breadth requirement (p. 15) by completing a year sequence (two semesters work, minimum six semester units, or three quarters work, minimum 12 quarter units) in *each* of the following areas:

I. Writing
II. Natural Sciences
III. Social and Behavioral Sciences
IV. Humanistic Inquiry
V. Foreign Language, Linguistics, Logic, Mathematics, or Computer Science

Students transferring to UCI should refer to the following detailed guidelines on how to satisfy the breadth requirement in each area:

I. Writing. The lower-division writing requirement may be met by a year sequence in English composition. Courses used to meet the lower-division writing requirement must be completed with a minimum grade of C- (1.7), 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 requirement. Any student entering 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. The upper-division writing requirement normally should be completed at Irvine.

II. Natural Sciences. This requirement may be met by a year sequence in *one* of the following areas: general biology, general chemistry, basic physics, the physical sciences with the exception of mathematics. These courses may or may not include a laboratory.

III. Social and Behavorial Sciences. This requirement may be met by a year of work in any of the following areas: anthropology and comparative culture, economics, political science, psychology, sociology, or social ecology. Students on the semester system may elect to take both courses in the same area or one course from each of any two areas; students on the quarter system may elect to take three courses in one area, or two courses from one area and a third from another area. History, for the purposes of the breadth requirement, is not considered a Social or Behavioral Science. (See IV, Humanistic Inquiry.)

IV. Humanistic Inquiry. This requirement may be met by a year sequence in *one* of the following areas: classics, history, philosophy, humanities, English literature, comparative literature, dramatic literature, art history, history of music, nature and theory of art. Performance courses may *not* be used in satisfaction of this requirement.

V. Foreign Language, Linguistics, Logic, Mathematics, Computer Science. This requirement may be met by a year sequence in *one* of the following areas: probability and statistics, calculus, logic, linguistics, computer science, or completion of the second year in a foreign language.

In satisfying the above requirements, 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 two semester courses or three quarter courses in Philosophy toward breadth.

Transfer students should check with the academic counselor in their prospective major, the Office of Admissions, or the Office of Relations with Schools and Colleges about courses that may be used to satisfy the UCI breadth requirement. A complete description of the breadth requirement is on page 15.

NOTE FOR PHYSICAL SCIENCES MAJORS: In addition to the courses taken to fulfull the UCI breadth requirement, students majoring in the School of Physical Sciences are required to take one additional year sequence from one of the following breadth areas: Social and Behavioral Sciences (III), Humanistic Inquiry (IV), or the Foreign Languages or Linguistics section of Category V. For purposes of this requirement, the approved sequences are the same ones listed for the UCI breadth requirement, with the exception that a year sequence of a single foreign language at the first level is acceptable.

NOTE FOR BIOLOGICAL SCIENCES MAJORS: By satisfying the lower-division Writing Requirement (I) and completing a year sequence of courses selected from classics, history, philosophy, humanities, English literature, or comparative literature toward the Humanistic Inquiry (IV) breadth requirement, students majoring in Biological Sciences can also satisfy the Humanities requirement for their major.

The courses and descriptions listed elsewhere 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. However, it is strongly advised that they consult with their counselors to verify the transferability of such courses and the applicability to the breadth requirement. No student who has taken a course which is accepted for credit by the Office of Admissions and which has been determined by a community college as acceptable toward completion of the breadth requirement shall incur any loss of credit in satisfaction of the requirement.

School Requirements

Since school requirements occasionally cross school lines (e.g., physical science requirements for all majors in the School of Biological Sciences), courses taken to fulfill a school requirement may at the same time be applicable toward the University breadth requirement unless the school designates otherwise. Also, courses taken to fulfill a departmental major requirement may at the same time fulfill a school requirement or, within prescribed limits, the University breadth requirement.

Although course equivalencies for the breadth requirement are 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. 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.

Departmental or Major Requirements

Courses to be applied toward departmental or major requirements must be more precisely equated with UCI courses in content and purpose than is the case with courses applicable to the breadth requirement (see p. 15 and departmental sections). Prospective transfer students should consult with their counselors as to the applicability of courses toward UCI requirements.

Prospective transfer students should address specific inquiries about their programs to the respective schools or departments at UCI. Community colleges wishing to clarify the status of transfer courses should consult with the Office of Relations with Schools and Colleges at Irvine or the University of California campus closest to them.

FEES, EXPENSES, AND FINANCIAL AID

Estimated Expenses

NOTE: Undergraduate and graduate estimated figures are based on three quarters of attendance. Figures for first-year medical students are based on 10 months of attendance and are higher for second- through fourth-year students, who attend for a calendar year. All fees are subject to change without notice. The following is intended only as a guide in computing average expenses. Fee payment dates are announced in the quarterly Schedule of Classes.

Special Expenditures

Special expenditures beyond the cost of books and basic supplies may be associated with certain courses of study. For example, field study assignments may involve transportation expenses; students who take a dance class may be required to wear a certain type of shoe; a student may need a calculator. A student who has special expenses associated with a course should make an appointment to see a financial aid advisor.

Fees

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 preventive duties is eligible to apply for waiver of certain fees. Additional information concerning this Act is available from the Registrar's Office.

Registration Fee

The University Registration Fee is $150 per 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 remitted to students who may not desire to make use of 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 $50 advance deposit on the Registration Fee (Undergraduate Acceptance of Admission Fee), required of new undergraduates, is applied to the full fee when the student registers. Continuing students are required to pay all outstanding fines and other debts, in full, at the time 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 for each summer quarter. As of spring 1981, the fee for summer quarter, 1981, is $80.

Educational Fee

The Educational Fee is $100 per quarter for undergraduate students and $120 per quarter for graduate students. Legal residents of the State of California with demonstrated financial need may defer payment of the Educational Fee by accepting obligation to repay, at a later date, the sum deferred. Students interested in this provision should contact the Financial Aid Office, *102 Administration Building.*

Medical students are required to pay the Educational Fee for each quarter in which they enroll, including the summer quarter.

Part-Time Status (Undergraduates Only). The Educational Fee has been reduced 50 percent (from $100 to $50 per quarter) for undergraduates enrolled for *less than nine units,* providing their reduced enrollment is *approved in advance* by the appropriate academic dean for the following reasons: financial need, health, or family responsibilities. Part-time status lapses at the end of each academic quarter. A student must, therefore, reapply each quarter that part-time status is desired.

Associated Students Fees

The Associated Students Fee is $13 per quarter for undergraduates and $9 per quarter for graduate and medical students. The undergraduate student fee is administered by the Associated Students of UCI; the graduate and medical student fees are administered by the Associated Graduate Students and the Medical Students Organization, respectively. 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.

California Residents

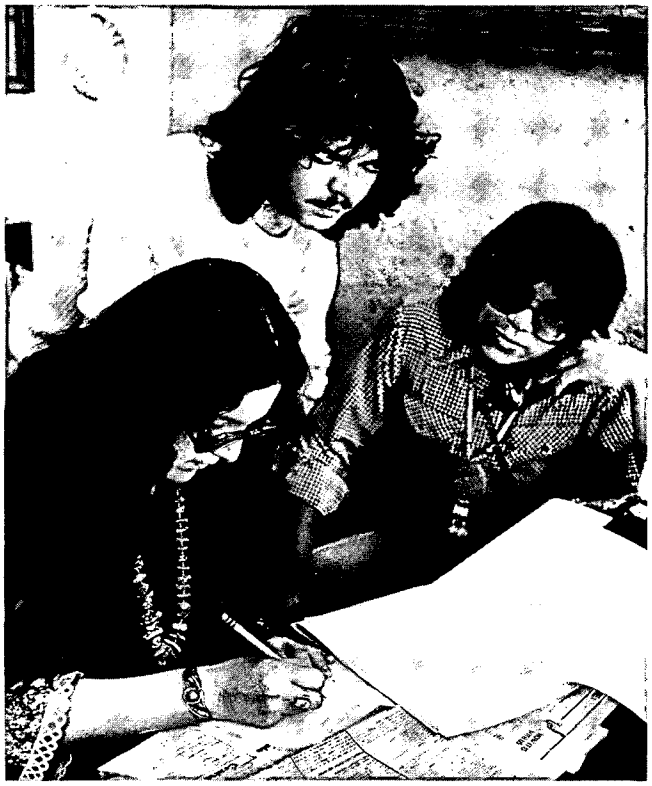
Sample Budgets (for three quarters)

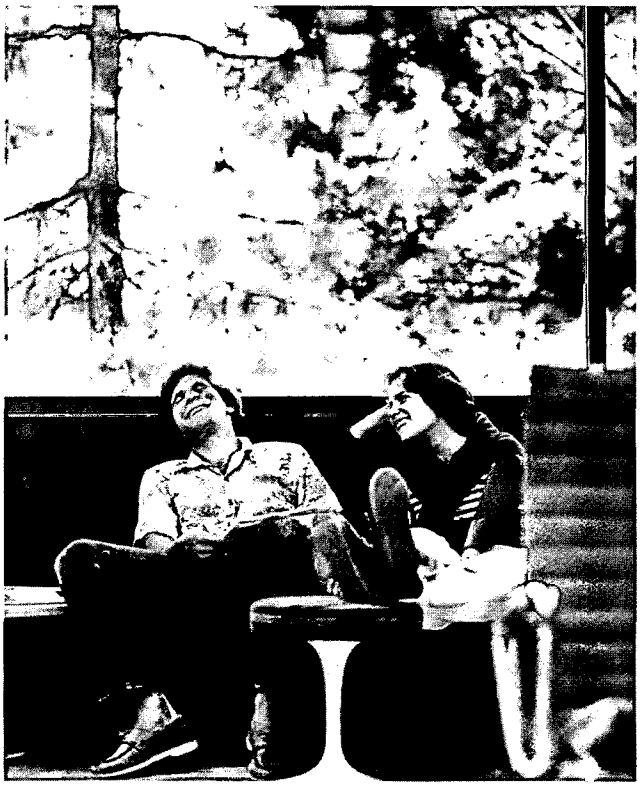
	Undergraduate (on campus)	Graduate (off campus)	Medical[2] (off campus)
University Registration Fee	$ 450	$ 450	$ 530
Educational Fee	300	360	480
Associated Students Fee	39	27	36
University Center Fee	27	27	36
Books and Supplies[1]	345	520	550
Room and Board	2,833	3,519	4,350
Personal Expenses (Meals on Campus, Clothing, Transportation, Recreation)	1,259	1,288	1,880
Average Total for California Residents	$5,253	$6,191	$7,862

Nonresidents. For nonresidents of California, the above costs apply, *plus* $2,880 Nonresident Tuition.

[1]Actual costs will depend upon a student's program.

[2]Based on costs for a first-year medical student attending for 10 months; average cost for each of the second through fourth years is $10,097 based on increased room and board and personal expenses.





University Center Fee

The University Center Fee is $9 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 University Center.

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 enrolled in classes or receive any University benefits until fees are paid in full.

Miscellaneous Fees

Undergraduate Acceptance of Admission Fee[1] (applied toward University Registration Fee)	$50.00
Application Fee[1] (includes readmissions and intercampus transfers)	25.00
Advancement to Candidacy for Ph.D.	25.00
Duplicate Diploma, Standard	22.00
Duplicate Diploma, Professional School	35.00
Filing Fee (graduate programs)	75.00
Special Library Borrowing Privilege Per Year, nonrefundable, renewable	10.00
Transcript of Record[2]	2.00

Service Charges

Breakage (charges will be assessed by department based on actual replacement costs)	
Bus Passes (sold through Parking and Transportation Services Office)	
Changes in Study List after Announced Dates (each petition)	$ 3.00
Credit by Examination (each petition)	5.00
Duplicate Registration and/or Other Cards from Registration Packet (each petition)	3.00
Late Payment of Fees	10.00
Late Enrollment in Classes	25.00
Reinstatement Fee	10.00
Removal of Grade I (each petition)	5.00
Return Check Collection	5.00
Parking Fees (information on fee levels available from Parking and Transportation Services Office)	
System of Interactive Guidance (SIGI) Fee for a maximum of four hours use	10.00
additional use per hour	2.50

Nonresident Tuition Fee and California Residence

Students who have not been residents of California for more than one year immediately prior to the residence determination date for each quarter in which they propose to attend the University are charged, along with other fees, a Nonresident Tuition Fee of $960 for the quarter or $1,440 for the semester to a maximum of $2,880 per academic year. 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 systems, the day instruction begins for the semester. Nonresident undergraduate students enrolled in less than 12 quarter units pay Nonresident Tuition at $80 per unit. Nonresident graduate students pay $960 per quarter or $1,440 per semester regardless of the number of units undertaken.

General

In order to be classified as a resident for tuition purposes, an adult student must have established his or her residence in California for more than one year immediately preceding the residence determination date for the term during which the student proposes to attend the University and relinquish any prior residence. An adult student must couple his or her physical presence within this state for one year with objective evidence that such presence is consistent with the student's intent in making California his or her permanent home and, if these steps are delayed, the one-year durational period will be extended until BOTH presence and intent have been demonstrated for one full year. Indeed, physical presence within the state solely for educational purposes does *not* constitute the establishment of California residence under state law regardless of the length of the student's stay in California.

Relevant indicia which can be relied upon to demonstrate one's intent to make California his or her permanent residence include, but are not limited to, the following: registering and voting in California elections; designating California as the student's permanent address on all school and employment records, including military records if one is in the military service; obtaining a California driver's license or California Identification Card, if a nondriver; obtaining California vehicle registration; paying California income taxes as a resident, including income earned outside this state; establishing an abode where one's permanent belongings are kept within California; licensing for professional practice in California; and the absence of these indicia in other states during any period for which residence in California is asserted. Documentary evidence may be required. No single factor is controlling or decisive. All relevent indicia will be considered in the classification determination.

The residence of the parent with whom an unmarried minor (under age 18) child maintains his or her place of abode is the residence of the unmarried minor child. When the minor lives with neither parent his or her residence is that of the parent with whom he or she maintained his or her last place of abode, provided the minor may establish his or her residence when both parents are deceased and a legal guardian has not been appointed. The residence of an unmarried minor who has a parent living cannot be changed by his or her own act, by the appointment of a legal guardian, or by relinquishment of a parent's right of control.

A man or a women establishes his or her residence. A woman's residence shall not be derivative from that of her husband, or vice versa.

Exceptions

1. A student who remains in this state after his or her parent, who was theretofore domiciled in California for at least one year immediately prior to leaving and has, during the student's

[1]Nonrefundable in all cases.
[2]This charge is for the first copy of each request. There is a charge of $1.00 for each additional copy ordered at the same time.

minority and within one year immediately prior to the residence determination date, established residence elsewhere, shall be entitled to resident classification until the student has attained the age of majority and has resided in the state the minimum time necessary to become a resident so long as, once enrolled, he or she maintains continuous attendance at an institution.

2. Nonresident students who are minors or 18 years of age and can evidence that they have been totally self-supporting through employment and actually present within California for the entire year immediately prior to the residence determination date and have evidenced the intent to make California their permanent home may be eligible for resident status.

3. A student shall be entitled to resident classification if immediately prior to the residence determination date he or she has lived with and been under the continuous direct care and control of any adult or adults other than a parent for not less than two years, provided that the adult or adults having such control have been California residents during the year immediately prior to the residence determination date. This exception continues until the student has attained the age of majority and has resided in the state the minimum time necessary to become a resident student, so long as continuous attendance is maintained at an institution.

4. Exemption from payment of the nonresident tuition fee is available to the natural or adopted child, stepchild, or spouse who is a dependent of a member of the United States military stationed in California on active duty. Such resident classification may be maintained until the student has resided in California the minimum time necessary to become a resident. If a student is enrolled in an institution and the member of the military (a) is transferred on military orders to a place outside the state where the member continues to serve in the armed forces of the United States, or (b) is retired as an active member of the armed forces immediately after having been on active duty in California, the student is entitled to retain resident classification under conditions set forth above.

5. A student who is a member of the United States military stationed in California on active duty, except a member of the military assigned for educational purposes to a state-supported institution of higher education, shall be entitled to resident classification until he or she has resided in the state the minimum time necessary to become a resident.

6. A student who is an adult alien is entitled to resident classification if the student has been lawfully admitted to the United States for permanent residence in accordance with all applicable provisions of the laws of the United States and has thereafter established and maintained residence in California for more than one year immediately prior to the residence determination date.

7. A student who is a minor alien shall be entitled to resident classification if the student and the parent from whom residence is derived have been lawfully admitted to the United States for permanent residence, provided that the parent has had residence in California for more than one year after admission to permanent residence prior to the residence determination date for the term.

8. Children of deceased public law enforcement or fire suppression employees, who were California residents and who were killed in the course of law enforcement or fire suppression duties, may be entitled to resident status.

Procedures

New and returning students are required to complete a Statement of Legal Residence. The student's status is determined by the Residence Deputy who is located in the Registrar's Office.

The student is cautioned that this summation is not a complete explanation of the law regarding residence. The student should also note that changes may have been made in the rate of nonresident tuition and the residence requirements between the time this catalogue statement is published and the relevant residence determination date. Regulations have been adopted by The Regents, a copy of which is available for inspection in the Registrar's Office of the campus. Nonimmigrant aliens having visa classifications A, E, G, I, or K should consult the Residence Deputy in the Registrar's Office for further information about their ability to become California residents for tuition purposes.

All students classified incorrectly as residents are subject to reclassification and to payment of all nonresident fees not paid. If incorrect classification results from false or concealed facts by the student, the student also is subject to University discipline. Resident students who become nonresidents must immediately notify the Residence Deputy.

Inquiries from prospective students regarding residence requirements for tuition purposes should be directed to the Residence Deputy. No other University personnel are authorized to supply information relative to residence requirements for tuition purposes. Any student, following a final decision on residence classification by the Residence Deputy, may make written appeal to the Legal Analyst—Residence Matters (590 University Hall, University of California, 2200 University Avenue, Berkeley, California 94720) within 120 days after notification of the final decision by the Residence Deputy.

Waivers of Nonresident Tuition

To the extent funds are available, Nonresident Tuition waivers may be granted to spouses and dependent, unmarried children under age 21 of University faculty members who are qualified for membership in the Academic Senate; to the unmarried, dependent children under age 21 of a full-time University employee whose permanent assignment is outside California and who has been employed by the University for more than one year immediately prior to the opening of the term; and for certain foreign students. Inquiries regarding these waivers normally should be directed to the Dean of the Graduate Division of the campus the student proposes to attend.

In addition, certain student Teaching Assistants and Teaching Fellows, and certain graduate students designated as University Fellows and Distinguished Scholars, may be eligible for Nonresident Tuition Waivers or fellowships. Such students should contact the Graduate Division for further information.

Fee Refunds

New undergraduates who cancel their registration before the first day of instruction are entitled to a refund of Registration Fee paid except for the $50 nonrefundable Acceptance of Admission Fee; other fees paid are refunded in full.

For all continuing and readmitted students, and new graduate and medical students, there is a service charge of $10 for cancellation of registration or withdrawal before the first day of instruction.

The Associated Student Fee and the University Center Fee are refunded only for cancellation of registration *prior to* the first day of orientation.

After instruction begins, a withdrawal form, available from the Registrar's Office, is necessary. Students who withdraw from the University during the first five weeks of instruction will receive refunds[1] of Registration Fee, Educational Fee, and Nonresident Tuition Fee, less the $50 nonrefundable Undergraduate Acceptance of Admission Fee, on the following basis, effective with the first day of instruction and the effective date of withdrawal: 1-14 calendar days, 80% of amount paid; 15-21 calendar days, 60% of amount paid; 22-28 calendar days, 40% of amount paid; 29-35 calendar days, 20% of amount paid; 36 calendar days and over, 0%. The effective date of withdrawal is normally the date the student's official notice of withdrawal is received by the University. However, under extenuating circumstances, the Assistant Vice Chancellor—Student Affairs, the Dean of the Division of Graduate Studies and Research, or the College of Medicine Promotion and Honors Committee, as appropriate, may determine that the effective date of withdrawal occurred prior to the filing of the notice. It is presumed that no University services will be provided to the student after that date.

Claims for refund of fees must be presented during the fiscal year (July 1 to June 30) in which the claim is applicable. To obtain a refund, the student must surrender the identification card to the Assistant Vice Chancellor—Student Affairs, the Dean of the Division of Graduate Studies and Research, or the College of Medicine Director of Admissions and Records at the time of withdrawal. Refund checks are issued by the Accounting Office and are generally received by mail about four weeks after the official withdrawal.

If any portion of a student's fees has been paid by the University or outside sources, that portion of the refund will be returned directly to the source of those funds. Students receiving financial aid will have their monies credited to the appropriate accounts.

Housing Refund Policies

UCI Housing Contracts provide students with complete housing refund policies.

Financial Aid

Lack of funds need not be a barrier to attending UCI; almost one third of enrolled students receive some form of financial aid. Students who show that they need financial assistance in order to attend are eligible for financial aid through the Financial Aid Office. In addition to awarding aid on the basis of financial need, the Office also offers some scholarships based on academic excellence. Graduate Student Loans, at nine percent interest, are available through banks and other lenders regardless of financial need. Most graduate fellowship programs are administered by the Division of Graduate Studies and Research.

Students who receive financial aid will receive funds from one or more of the following sources: scholarships, grants, loans, and work-study. These sources are described briefly in the following sections; more detailed information can be obtained from the Financial Aid Office.

To obtain financial aid, new and continuing students must file the Student Aid Application for California (SAAC) and the necessary supporting documents each year. Students are encouraged to apply as early as possible. The SAAC, additional forms, information regarding the application process, and financial aid programs for undergraduate, graduate, and medical students may be found in the *Financial Aid Prospectus* which is available in the Financial Aid Office. The usual priority deadline for loans, work-study, and most grants is around April 15. The application deadline for Cal Grants A and B is usually around February 12 for the following academic year. The University expects the student and the parent (or spouse) to contribute toward the educational costs to every extent possible. For dependent students, an analysis of the SAAC and supporting documents determines the amount a 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 spouse can contribute to the cost of the student's education. Income, assets, debts, 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; stocks, bonds, and other securities; business and farm equity; and cash, savings, and checking accounts. Income includes wages, salaries, interest, dividends, and nontaxable income such as Social Security benefits.

All undergraduate financial aid applicants are also required to apply for a (Pell) Basic Grant and for a Cal Grant A or a Cal Grant B.

Scholarships

Scholarships are awarded on the basis of academic ability, achievement, and promise. Although a few honorary scholarships are awarded on the basis of academic excellence alone, most also require that an applicant demonstrate financial need. To be considered for a scholarship, undergraduate students must file an Undergraduate Scholarship Application, available from the Financial Aid Office. Filing deadlines vary each year, but the usual deadline is early January for the following academic year.

Regents' scholarships, among the highest honors conferred upon UC students, are awarded on the basis of academic excellence and exceptional promise, without reference to financial need. Undergraduate students are eligible upon graduation from high school or upon completion of the sophomore year of college. Medical students are eligible during any year of their study in medical school. The appointments run for four years for students entering from high school or two years for students appointed after their sophomore year. Regents' Scholars receive a $100 honorarium the first year of their appointment. In addition, a stipend is awarded each year to Regents' Scholars who submit a complete financial aid application and demonstrate financial need.

[1]If no credit for courses is received, a full refund of the Registration Fee of the regular session will be granted to all students entering the armed forces prior to the sixth week of the quarter. No refund thereafter.

University scholarships are offered to students entering their freshman or junior year who show evidence of high scholastic attainment. Students who demonstrate financial need may receive awards ranging up to $1,200 per academic year. These awards are renewable by submitting an application for consideration each year.

Other scholarships are available to students who qualify. While a student need not apply for a specific scholarship, applicants with special qualifications will receive careful consideration.

For information on Air Force ROTC scholarships, see page 11. For additional information, contact the Scholarship Coordinator in the Financial Aid Office.

Grants

Grants are awarded on the basis of financial need. There is no repayment requirement.

(Pell) Basic Grant: is the largest federally funded grant program and provides awards up to a maximum of $1,900 for the academic year. To be eligible, applicants must be U.S. citizens or permanent residents and must be enrolled as undergraduates and have not previously received a bachelor's degree. Students should use the SAAC to apply for this grant.

Cal Grant A: is a State-funded scholarship program and currently provides awards up to $816 for the academic year to cover the cost of fees. To be eligible, applicants must be California residents and demonstrate financial need. Students should use the SAAC together with the Cal Grant Supplement to apply for Cal Grant A. The filing deadline for new applicants is usually around February 12 for the following year.

Cal Grant B: is a State-funded grant program and provides awards up to a maximum of $1,100 during a student's first year and $1,100 plus the cost of 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 may use the SAAC together with the Cal Grant Supplement to apply for Cal Grant B. The filing deadline for new applicants is usually around February 12 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.*

Supplemental Educational Opportunity Grant (SEOG): provides grant aid for undergraduate students who demonstrate financial need. These federal grants range from $200 to $2,000 per year, depending upon financial need.

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

Educational Fee Grant (EFG): is funded by the University of California and provides aid for undergraduates in their first year of attendance at UCI. Recipients must be California residents, enrolled full time, and must demonstrate financial need. The maximum grant at a UC campus is $100 per quarter (to pay the Educational Fee).

Loans

National Direct Student Loan (NDSL): provides long-term federal loans for U.S. citizens and permanent residents. The amounts awarded vary, depending on financial need, but cannot exceed $3,000 for the first two years or $6,000 for the undergraduate years. 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 four percent a year begins six 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. Graduate students may receive an aggregate of $12,000 which includes loans received as an undergraduate.

Educational Fee Loan (EFL): funded by the University of California, enables California residents who establish financial need to delay payment of all or a portion of the University of California's Educational Fee. Repayment at three percent interest begins nine months after graduation or withdrawal from higher education.

University Loan: funded by the University of California, provides long-term loans to full-time students who demonstrate financial need. The maximum amount for an academic year is $1,000. The three percent interest begins when a student leaves UCI. Repayment begins six months after the student ceases to be enrolled full time and must be completed within five years. Two co-signers are required.

California Guaranteed Student Loan Program (GSL): is a federally supported loan available to U.S. citizens or permanent residents through participating local banks or other lenders at an interest rate of nine percent. Dependent undergraduate students may borrow up to $2,500 per year ($3,000 for independent undergraduates) depending on the participating bank. Graduate and medical students may borrow a maximum of $5,000 per year, not to exceed a cumulative total of $25,000, including undergraduate loans. Income and assets are not used as criteria in determining eligibility for interest benefits. As a result, most students are eligible. The minimum repayment is $30 per month, including an interest rate of nine percent a year, and begins six months after the borrower ceases to be enrolled at least half time. The entire loan must be repaid in 15 years. Application forms are available at the UCI Financial Aid Office.

Health Professions Student Loan: provides long-term federal loans to medical students only. The amount of the loan cannot exceed the sum of all student fees plus $2,500 per academic year, whichever is less. The interest rate is seven percent. Repayment of the principal is not required and interest does not accrue during the time a student is completing professional training, including internships and residencies. The loan may be repaid over a 10-year period.

Emergency Loans: In addition to the long-term loans, various philanthropic individuals and organizations have provided money to create an emergency student loan fund. These loans, which do not bear interest, are of a short-term nature to cover emergency needs.

Work-Study

College Work-Study Program: provides part-time employment for U.S. citizens and permanent residents who are at least half-time students and demonstrate financial need. The maxi-

REGULATIONS AND PROCEDURES

mum amount recipients can earn under this federal program is determined by their financial need.

University Work-Study Program: is similar to the College Work-Study Program except that funds are allocated through The Regents of the University of California.

Veterans Work-Study Program: is available only to U.S. military veterans. Separate applications and detailed information are available from the UCI Veterans Student Services Office.

Summer Work-Study Program: may be available to continuing students enrolled in Summer Session and planning to enroll at UCI in the fall quarter. In addition to the SAAC, students must file a separate Summer Work-Study Application. If a student does not successfully complete at least six units (four units for graduate students) during the summer, the majority of earnings from the summer award will be used as a resource during the following academic year.

Additional Aid for Graduate Students

Graduate students should contact the UCI Division of Graduate Studies and Research, 145 Administration Building, (714) 833-6761, for information about application procedures for other forms of aid such as graduate fellowships, traineeships, or teaching and research assistantships.

Aid for Medical Students

College of Medicine students should contact the Medical school Financial Aid Advisor, E-108 Medical Sciences I, (714) 833-6476, for information about other sources of financial assistance.

Aid for International Students

Students who are not U.S. citizens or permanent residents *may* be eligible for assistance from a limited number of University programs if they have experienced an unanticipated change in their financial situation (which must be documented). These students must complete at least one year at UCI in order to be considered for assistance. Aid is limited to the expenses for books and fees.

Aid for Handicapped Students

All forms of student financial aid are available to eligible handicapped students. Interested students should follow the regular financial aid application procedures and should be sure to specify on the Student Aid Application for California any additional expenses they may incur because of a handicap. Supporting documentation must be provided.

Student Employment

The Career Planning and Placement Center assists UCI students, their spouses, and alumni in obtaining part- or full-time employment during the academic year and summer vacation. It is not necessary to be a financial aid recipient to apply for jobs through the Center. Students with work-study awards may obtain on-campus or off-campus job referrals in the Career Planning and Placement Center. The Center is located in Student Services I.

ACADEMIC REGULATIONS

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 Graduate Studies and Research section.

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

S — Satisfactory (equal to grade B or better; graduate students only in courses so designated by the Graduate Council)

U — Unsatisfactory (graduate students only in courses so designated by the Graduate Council)

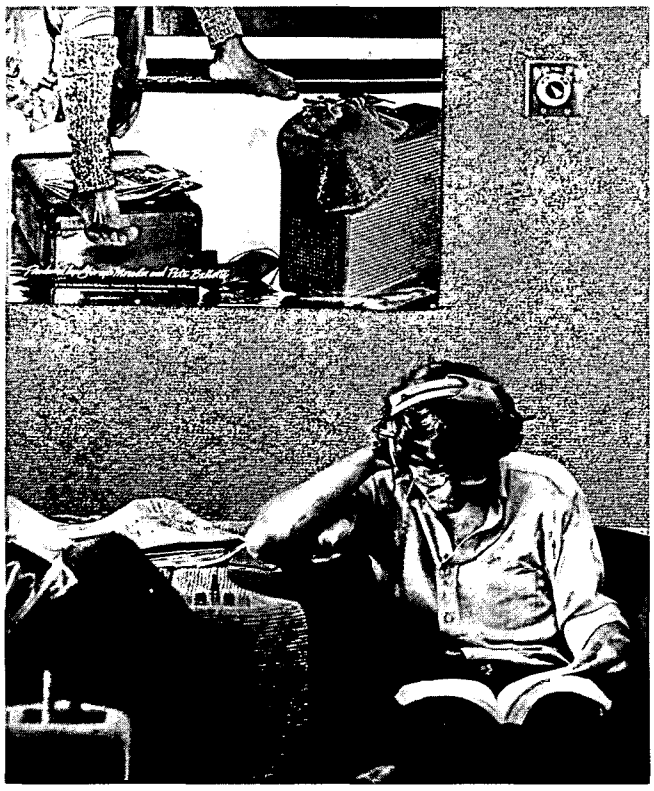
IP — In Progress (restricted to certain sequential courses, so designated by the Committee on Courses, for which the final quarter grade of a multi-quarter sequence course is assigned to the previous quarter(s) of the sequence)

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, unless the instructor at the student's request clears the record or replaces NR with a grade).

Plus suffixes may be attached to the grades B, C, and D; minus suffixes may be attached to the grades A, B, C, and D. Plus grades carry three-tenths grade point more per unit, and minus grades carry three-tenths grade point less per unit than unsuffixed grades.

After each quarter, a 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 Institutions, etc.).

Requirements for a bachelor's degree include the accumulation of credit for 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 the term "course" may be understood in what follows to carry four units. The grade point average is the sum of all accumulated grade points (grade points earned in a course per unit *times* the unit value of the course) divided by the sum of all units attempted.



It should be noted that final grades as reported by professors at UCI 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. 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 by an instructor to a student 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 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 can no longer be replaced and will appear permanently on the record. The student should consult the instructor to determine how the Incomplete may be made up. *The instructor is not obligated to allow the maximum three quarter period.* 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. A form is available for this purpose. Once the work is completed within a time agreed upon by the instructor, the student should ask the instructor to submit a change of grade form to the office of the dean 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. 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.

Pass/Not Pass

The Pass/Not Pass option is available at UCI 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.

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. However, candidates for the bachelor's degree may take a total of 12 more units in courses designated by academic units as Pass/Not Pass Only.

2. 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–, D, or F, the grade will be recorded as a Not Pass, and no credit will be received for the course. In both cases, the student's grade will not be computed into the grade point average.

3. Courses taken under the Pass/Not Pass option may count toward the 180-unit requirement for the bachelor's degree and toward all breadth requirement. But with the exception of courses designated by the academic unit 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 department, unless authorized by the appropriate dean.

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; 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.

4. 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 a quarter without the approval of the dean of the student's school.

5. No student on academic probation may enroll in a course on the Pass/Not Pass option. (Physical Education courses are excepted.)

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. Certain graduate courses are graded S/U only. Also, the grades S or U may be assigned provisonally 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. With the specific approval of the Graduate Council, other graduate courses may be graded on an S/U basis provided that each student enrolled in such a course receives a grade of S, U, or I (or if an undergraduate student, a grade of P or NP).

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 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.

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.

Each undergraduate course counts one through eight units, and graduate courses range from one to 12 units each (see departmental course descriptions). Grade point average (GPA) is computed by dividing the total number of grade points earned by the total value of courses attempted. P, NP, S, U, NR, IP, and I grades are excluded in computing grade point average.

Removal of Deficient Grades

Undergraduates may repeat courses only when grades of D, F, or NP were received. 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 D, F, or NP 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 grades assigned and on total units attempted.

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.

Satisfaction of the Writing Requirement

The two courses taken to fulfill the lower-division Writing Requirement must be completed with a grade of C- (1.7) or better. The following applies to students who fail to attain a grade of C- (1.7) or better in the lower-division courses:

1. Students who fail to attain a grade of C- (1.7) in one or both courses of the Writing 39A-B sequence must repeat the course or courses in question.

2. Students who fail to attain a C- (1.7) in Humanities 15 normally should enroll in Writing 39A; students who fail to attain a C- in Humanities 16 should normally enroll in Writing 39B. Alternatively, a student who fails to attain a C- in either Humanities 15 or 16 may repeat these courses with the permission of a faculty advisor or academic counselor.

3. Students who fail to attain a C- (1.7) in at least two quarters of the writing component of the Humanities Core Course normally should substitute Writing 39B if they need one quarter of additional work to complete the requirement, or Writing 39A-B if they need two quarters to complete the requirement.

The course taken to fulfill the upper-division requirement must be completed with a grade of C (2.0) or better. The following applies to students who fail to attain a grade of C (2.0) or better in the upper-division course:

Students who fail to attain a grade of C (2.0) in Writing 139 should repeat Writing 139. Students following any other approved upper-division option should enroll in Writing 139 if a C is not attained in the selected course.

See page 15 for further information on the Writing Requirement portion of the breadth requirement.

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, B, C, D, or F.

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 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 option, independent study, 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 normally limited to five units per quarter.

Final Examinations

Final examinations are obligatory in all undergraduate courses except laboratory and studio courses, or their equivalent, as individually determined by the Committee on Courses. 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. 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.

Final grade reports from professors are due in the Registrar's Office within 48 hours after the final examination.

Undergraduate Scholarship Requirements

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 — 40.4
Sophomore	40.5 — 83.9
Junior	84.0 — 134.9
Senior	135.0 — 180.0

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 a student must obtain the signature of the student's dean on the Enrollment in Classes Petition. Any action to add or drop courses after submission of the Enrollment in Classes Petition which will cause a student to be enrolled in more than 20 units or fewer than 12 units requires approval by the student's dean. This approval is certified by the dean's signature on the Add, Drop, or Change of Grading Option Card, as appropriate.

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.

(A) 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	—	—

(B) A student who at the end of a given quarter of enrollment has completed no less than a number of units in the range specified in the "Normal Progress" category under (A) 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 (A) is subject to being placed on probation by the Faculty of that student's school or program 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 (A) is subject to disqualification by the Faculty of that student's school or program or its designated agent.

(C) 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 (A) 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.

(D) 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

(E) Units earned under the following three circumstances are not to be counted toward determination of the quarter at entrance under (D) above: (1) Advanced Placement Examination; (2) College Level Examination Program; (3) concurrent enrollment in college courses while in high school.

(F) 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.

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. 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 program 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.

Graduate Scholarship Requirements

For a graduate student, only the grades A, A–, B+, B, and S represent satisfactory scholarship. Information concerning graduate student course load requirements and satisfactory academic progress is given in the Graduate Studies and Research section.

Enrollment in University Extension

If a UCI student wishes to enroll in a University 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 (in the case of graduate students, by the Dean of Graduate Studies and Research).

Credits From Other Institutions: Undergraduate Students

UCI undergraduate students who wish to enroll in courses at another institution in either a summer or regular session and to use such courses to satisfy any UCI requirements must secure approval from the Office of Admissions and their academic dean. If such courses are determined by the Office of Admissions to be transferable, and if such courses 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. The student's academic dean will determine the applicability of such transfer credit toward the satisfaction of specific program requirements.

Students are urged to secure, in advance of enrolling in courses, authorization from the Office of Admissions and their academic deans to apply such courses toward UCI requirements. Only then will the applicability of such courses be guaranteed. Forms for securing such authorization are available in the Office of Admissions and in deans' offices. Such advance authorization is not required; however, students may seek it for their own assurance.

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 acceptable graduate-level courses completed at another institution or through University Extension prior to first enrollment in graduate study at UCI. After enrollment, the student must initiate a formal petition for such credit. Approval of the student's Graduate Advisor and the Graduate Dean 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 University Extension only with the prior approval of the student's Graduate Advisor and the Graduate Dean.

See the Graduate Studies and Research section for further information about graduate transfer credit and the University's Intercampus Exchange Program.

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. **Enrollment does not become official until all required fees have been paid, and the student's Enrollment in Classes Petition has been completed correctly, signed where necessary, and submitted to the Registrar. Students are responsible for ensuring that their course enrollments as indicated on the Class Verification and Identification Card are correct.**

The Schedule of Classes is provided by the Registrar's Office with registration materials approximately six weeks before the beginning of each quarter. The most important form in the registration materials is the Enrollment in Classes Petition. It should be filled out carefully, according to the instructions provided on the form *and* in the Schedule of Classes. A quarterly calendar of dates for submission of enrollment materials and payment of fees is included in each quarterly Schedule of Classes.

The general procedures for enrollment are:

1. Consult the appropriate academic advisor to develop an approved program of study. Secure necessary signatures on the Enrollment in Classes Petition for courses that require special approval.

New undergraduate students entering in the fall are encouraged to attend one of the Student-Parent Orientation Program (SPOP) sessions during the summer for academic advising and enrollment assistance.

2. Submit the completed class enrollment and student information forms to the Registrar.

3. Pay required fees to the Cashier. Any other outstanding obligations must be satisfied at this time also.

Class Verification and Identification Card

After payment of fees and submission of enrollment materials, a Class Verification and Identification Card is available for each student. The Card lists the courses in which a student is enrolled. If any courses requested could not be scheduled, they are listed also, with the reason why the student is not enrolled in the course. Changes to course enrollments after receipt of the Card are handled through Add, Drop, or Change of Grading Option Cards, available from the student's academic dean's office or the Registrar.

New undergraduate students are required to call in person at their academic deans' offices to secure their Class Verification and Identification Cards and advice concerning their academic programs.

Continuing undergraduate students and graduate students should consult the quarterly Schedule of Classes for instructions on where to secure their cards.

The Class Verification and Identification Card is certification of the student's class enrollment and is evidence that the student is registered at UCI and is entitled to Library privileges. In addition, the Card provides identification for Associated Students functions. If the Card is lost, there is a $3 replacement charge. Inquiries regarding the replacement of lost cards should be directed to the office that issued the Card.

Late Enrollment and Payment of Fees

Students who submit enrollment materials and pay fees within the published periods are not subject to late service fees. Those who do not submit an Enrollment in Classes Petition to the Registrar's Office during the published period are subject to a late service fee of $25. Students who do not pay all required fees to the Cashier's Office during the published period for payment of fees are subject to a late service fee of $10. If fees are not paid by the established deadline prior to the beginning of instruction, the student is subject to *both* late service fees (total $35) if allowed to enroll and pay fees after the deadline.

To avoid the expense and inconvenience of late enrollment, students are urged to enroll and pay fees well before the published 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. The Registrar does not have authority to allow a student to pay fees after the deadline date, or to waive the late fees, except in unusual cases where the University is responsible for the late transaction. 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.

Change of Class Enrollment

After official enrollment materials have been filed with the Registrar, a student may add or drop courses, change sections of a course, or change the grading option by completing an Add, Drop, or Change of Grading Option Card, available from the student's academic dean's office.

An undergraduate student may not enroll in more than 20 units (excluding Physical Education) nor fewer than 12 units of course work during a given quarter without the permission of the student's academic dean. 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 and Research.

During the first six weeks of each quarter, a student may add classes provided approval to add each class is granted by the instructor in charge. To add a class, a student must obtain the instructor's signature of approval on an Add Card, carefully complete the Add Card, and submit the card to the student's academic dean's office or the Registrar's Office no later than the end of the sixth week of instruction.

To drop a class or change the grading option during the first two weeks of the quarter, a student must obtain the signature of the instructor in charge as evidence of notification on a Drop or Change of Grading Option Card and submit the card to the student's academic dean no later than the end of the second week of instruction.

Students may drop classes from the third through the sixth week of a quarter, inclusive, only with the permission of the instructor in charge. A student wishing to drop a class during this period must obtain the signature of approval from the instructor in charge on a Drop Card and submit the card to the student's academic dean.

After the sixth week of a quarter, students may drop a course only with the permission of the instructor and the student's academic dean. Permission to drop after the sixth week can be granted only if the student is not failing the course and not subject to disqualification, and only if dropping the course would be to the educational benefit of the student and/or of the class as a whole. To drop a class after the sixth week, a student must complete a Drop Card, obtain the instructor's signature of approval, and submit the card to the student's academic dean for the dean's action. Graduate students must have the approval of the Dean of Graduate Studies and Research to drop a course after the sixth week.

Every student enrolled in a laboratory course in which equipment is issued is responsible for the equipment when dropping a course and will not be permitted to drop until the equipment is accounted for.

Students are responsible for their official enrollment and must be officially enrolled in each class for which they expect credit. They must officially drop classes they have ceased attending. The student cannot simply discontinue attendance in a class; a Drop Card must be filed or the student will receive an F grade in the class. Courses may not be added or dropped retroactively. Students are urged to verify their official enrollment during the eighth week of the quarter. Students enrolling for the next quarter will find this information included with enrollment materials for the next quarter. Those students not enrolling for the next quarter can verify their official enrollment by inquiring at the Registrar's Office.

There is a $3 service charge for all add, drop, or change transactions *received* in the Registrar's Office after the second week 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 action" 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, and the student will be dropped from all courses and will be entitled to no further services of the University except assistance toward reinstatement. A student who desires to be reinstated must satisfy the conditions which caused the "lapse of status" and pay a $10 reinstatement fee at the Cashier's Office.

Transcript of Records

The transcript of a student's academic records will be released only upon a signed request of the student authorizing the release. 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 $2 for the first copy and $1 for each additional copy *ordered at the same.* 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.

When a student orders a transcript sent to another college, university, or agency, it is extremely important for the student to provide a complete and accurate mailing address to ensure delivery to the correct office. At least two weeks should be allowed for a transcript to be sent to another institution or agency.

Diplomas

Students are advised by mail when their diplomas are available, which is about 90 days after the quarter in which the degrees are awarded. Students may then call in person at the Registrar's Office or authorize the Registrar to deliver their diplomas by certified mail, or registered air mail to foreign countries. There is a service charge of $2 for certified mail, $3 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.

Cancellation Prior to Start of Instruction

A student who pays fees for a regular academic quarter and then decides to leave the University prior to the first day of classes must submit a Notice of Cancellation, with the identification card attached, to the appropriate dean's office. With the exception of new undergraduate students, there is a $10 service charge for Cancellation prior to the first day of classes.

Withdrawal From the University After the Start of Instruction

After classes begin for a regular academic quarter, an enrolled student who decides to leave the University before the end of that quarter must submit an official Notice of Withdrawal. A student who fails to submit a Notice of Withdrawal will receive failing grades in all courses and severely jeopardize academic standing at the University.

Undergraduate students must submit the notice, with the identification card attached, to the Assistant Vice Chancellor—Student Affairs. Graduate students must submit the notice to the Dean of Graduate Studies and Research, and students in the College of Medicine must submit it to the College of Medicine Director of Admissions and Records. In extenuating circumstances, such as illness or emergency, the student should notify the appropriate dean or office as soon as possible in order to initiate withdrawal procedures. The effective date of the withdrawal will be determined by the appropriate dean.

A graduate student in good academic standing who wishes to withdraw and intends to return within one year may submit both the Notice of Withdrawal and 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. Further information about Leaves of Absence appears in the Graduate Studies and Research section.

If a 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.

See page 45 for information on fee refunds.

Readmission: Undergraduate Students

We strongly urge students to consider the policy below 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 of dropping out and who have filed readmission applications.

Readmission is not automatic. A student must file an Application for Readmission with the Registrar's Office at least *eight weeks* prior to the quarter in which readmission is desired and pay a nonrefundable $25 Application Fee at the Cashier's Office.

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 in the manner prescribed above. The application, however, will be forwarded to the dean of the school which the student hopes to enter. If the dean decides that the student is serious about academic life, and/or that the student has displayed capability at another academic institution, the student will most likely be allowed readmission to the University.

Transcripts for work taken at other institutions must be submitted as part of the application. A nonrefundable fee of $25 is charged for each Application for Readmission. Remittance by bank draft or money order payable to Regents-UC must be attached to 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 and Research can resume graduate study only if readmitted. An application for readmission must be submitted by the published deadline for graduate admission applications. Please refer to the statement on Readmission which appears in the Graduate Studies and Research section.

Intercampus Transfer: Undergraduates Only

An undergraduate student in good standing may transfer from the UCI campus to another campus of the University of California. To do so, the student should first check with the UCI Registrar to see which of the campuses are accepting transfers and which majors are being encouraged by each campus. The student then obtains an Intercampus Transfer Application form from the UCI Registrar's Office and files the form with the UCI Registrar by the deadline prescribed for the quarter in which the student wishes to transfer. The filing periods are winter quarter—July 1-31; spring quarter—October 1-31; fall quarter—November 1-30. After these dates, applications are accepted only until quotas are filled. A student may apply for only one campus in any given quarter. A nonrefundable fee of $25 is required for all Intercampus Transfer Applications filed with the Registrar's Office.

California Residence

All inquiries with regard to the requirements for the establishment of California residence (including exceptions pertaining to minors, certain classes of refugees and permanent residents of the United States, and dependents of military personnel stationed in California) should be directed to the Residence Deputy, Registrar's Office, 215 Administration Building, University of California, Irvine; Irvine, California 92717, (714) 833-6124 or the Office of the Legal Analyst—Residence Matters, 590 University Hall, University of California, 2200 University Avenue, Berkeley, California 94720, (415) 642-3437. Please refer to the Fees section for information on the Nonresident Tuition Fee and California residence.

STUDENT AFFAIRS

The Office of the Vice Chancellor—Student Affairs provides a broad range of special services and programs for students designed to carry out the University of California's commitment to create an environment supportive of an educational endeavor of the highest quality.

University Center

The University Center, located adjacent to the Administration Building, is UCI's student union building. Facilities include a music listening lounge, a recreation room, an information center, a quiet lounge, conference rooms, club and organization space, and the Backlot Restaurant, which has been designed around the theme of a movie set.

Also located in University Center is UCI's first campus-owned and campus-operated bookstore. In addition to stocking all required and recommended textbooks for courses taught each quarter, the bookstore has an extensive selection of reference materials, technical and trade publications, school supplies, and assorted sundries and UCI sportswear. Regular bookstore hours are: Monday, 8 a.m. to 7 p.m.; Tuesday through Thursday, 8 a.m. to 6 p.m.; Friday, 8 a.m. to 5 p.m.; Saturday, noon to 5 p.m. During the first week of class instruction each quarter, hours are extended as follows: Monday through Thursday, 8 a.m. to 9 p.m.; Friday, 8 a.m. to 5 p.m.; and Saturday, 10 a.m. to 5 p.m.

A second phase of the University Center is scheduled for completion in 1982 and will house a multipurpose facility for dances, films, fairs, lectures, and banquets; an ice cream parlor; a travel agency; a quiche and soup restaurant; an arts and crafts center; and a general store.

Concerts, crafts classes, lecture programs, recreational tournaments, and coffee house entertainment are just some of the programs which are offered at the University Center.

Student Affairs Lectures

Student Affairs Lectures programs are designed to complement the classroom experience of students, provide programs of general interest to the public, and stimulate lively campus and community interaction through cultural, social, and political discussion. Student Affairs Lectures arranges for speakers of national and international stature to visit the campus for seminars, symposia, and series of lectures. During 1980-81, lecturers included Alex Haley, Gore Vidal, Gloria Steinem, and Ramsey Clark.

Committee for Arts

The Committee for Arts provides for the planning and development of cultural programs in the disciplines of art, drama, dance, and music, by presenting recognized professional performing artists and groups. Programming presented in 1980-81 included the Kathak Dancers of India, pianist John MacKay, and the Juilliard String Quartet. Committee for Arts presentations supplement the performances and numerous cultural events sponsored by the UCI School of Fine Arts.

Office of Relations With Schools and Colleges/Educational Opportunity Program

The Office of Relations with Schools and Colleges (ORSC) serves as a liaison between the University of California, Irvine and other educational institutions of the state. Staff members visit secondary schools and community colleges to interpret the policies and programs of the University and to seek information for the University about educational developments throughout the state. In cooperation with community colleges, ORSC staff mediates course articulation agreements and provides assistance with the transfer process. The ORSC staff is a resource to schools and to education-oriented groups, and responds to invitations requesting University representatives and participation in college advisement programs at schools and in the community. Staff members also provide information for prospective students, teachers, parents, and counselors.

On the UC Irvine campus, the Office of Relations with Schools and Colleges provides a number of services for the prospective student. Program information is supplied in a variety of forms; brochures, flyers, films, and slide presentations are available, describing programs of study offered at UCI and explaining how students can qualify for admission. ORSC also schedules campus visits and tours, arranges educational conferences, sponsors a variety of on-campus activities for prospective students and educational groups, and assists prospective students in the application process. ORSC participates in the Access and Aspiration Model (AAM) Program for community college women, and sponsors a program of honors outreach to the high schools and community colleges. Student-led tours for prospective students and their parents and school groups may be scheduled through the Office by calling Campus Tours, (714) 833-5832.

Four major programs within the Office of Relations with Schools and Colleges are committed to the University of California's program of student affirmative action outreach at the undergraduate level. The Educational Opportunity Program (EOP) for disadvantaged students may provide, according to the student's circumstances, special admissions consideration, financial aid, and academic support through advising and tutoring. The Student Affirmative Action Outreach Program is designed to attract underrepresented minority and disadvantaged students who are regularly eligible for admission as undergraduates to the University of California. Younger students are the focus of the Early Outreach Program which comprises the Partnership Program and University Partners. The Partnership Program works with the junior high schools to increase the number of University-eligible students from low-income and underrepresented groups. University Partners is designed to maintain contact with former Partnership students in the ninth and tenth grades. These programs are described below. Inquiries may be directed to the Office of Relations with Schools and Colleges/Educational Opportunity Program, University of California, Irvine; Irvine, California 92717, (714) 833-5410.

Educational Opportunity Program

The goal of the Educational Opportunity Program (EOP) is to encourage representation of disadvantaged students at UCI by assisting them in enrolling and succeeding at the University. The kinds of difficulties students encounter in seeking a college education may range from inadequate public school preparation to a lack of funds to support their education. The Educational Opportunity Program is designed to assist students in overcoming obstacles by providing counseling on admissions and financial aid, and academic support through advising, tutoring, and learning skills services. A special EOP summer session is offered to those students identified by EOP as most likely to benefit from this support program. Counseling on a continuing basis is available to all EOP students through the Counseling Center, the Tutorial Assistance Program, the Learning Skills Center, and the Special Services Office. Information and the EOP brochure may be obtained from the Office of Relations with Schools and Colleges/Educational Opportunity Program, (714) 833-5410.

Students from disadvantaged backgrounds are encouraged to apply. EOP assists those who are regularly admissible to the University, and also those who may not have met traditional admissions requirements but who can offer evidence supporting their ability to achieve at the University level. With the exception of American Indians, only residents of the State of California are eligible to apply for EOP sponsorship. American Indian applicants must document their tribal affiliation.

Admission

Prospective EOP students must complete the regular UC admission forms and follow all procedures. EOP applicants should take particular care with the required essay and indicate their interest in EOP by marking the appropriate places provided on the application. Applications may be obtained from counseling offices in California high schools and community colleges or the UCI Office of Admissions. In addition, the EOP applicant is advised to submit two letters of recommendation from teachers, counselors, persons in the community, or employers, which document the student's background, motivation, and academic potential.

In those cases where entering the University at this time would not seem appropriate, the EOP staff may recommend a program of study in a community college or elsewhere, in order that the student may qualify for UCI at a later date.

Financial Assistance

Personal financial resources should not be the determining factor in deciding whether or not to attend college. All students admitted to UCI, including EOP students, are eligible for financial assistance on the basis of demonstrated need. Funds can be provided to cover room and board, fees, books and supplies, and living expenses, when a student or family is unable to fully meet these expenses. Financial aid is comprised of a combination or "package" of grant, loan, scholarship, and/or part-time employment based on the individual circumstances of the applicant. See Financial Aid, page 46.

Undergraduate Student Affirmative Action Outreach Program

The purpose of the Student Affirmative Action Outreach Program is to attract underrepresented minority and disadvantaged students who are regularly admissible to UCI. Campus representatives visit high schools, community colleges, and community centers to meet with students, parents, teachers, and school officials to discuss the outreach approach. The program also includes a series of seminars and workshops aimed at orienting students to specific academic disciplines, such as mathematics, physics, computer science, chemistry, biology, and engineering.

Early Outreach

Young students are the focus of the Early Outreach Program which works with the junior high and high schools to increase the number of University-eligible students from low-income and underrepresented groups.

Partnership Program

In an attempt to assure that more students from underrepresented groups become eligible for admission to the University, the Partnership Program was organized between UCI and selected junior high schools. In the target junior high schools, the Partnership program aims to encourage greater academic achievement among young students. Students, parents, and teachers are given information sessions at their schools and are advised about appropriate University preparatory course work. Additional advising sessions at UCI provide them with the opportunity to tour UCI facilities. Information about the Partnership Program may be obtained by calling (714) 833-6362.

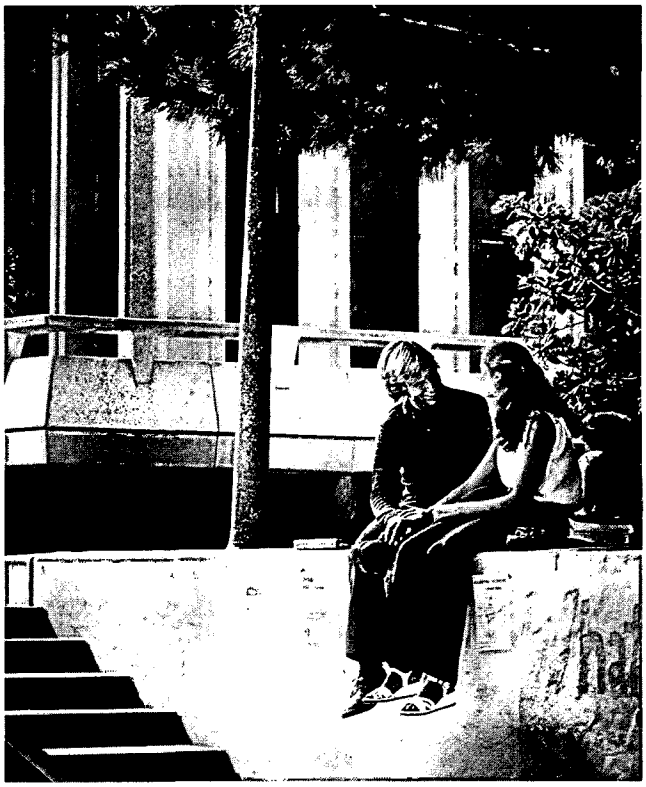
University Partners

University Partners, the most recent addition to UCI's outreach efforts, was developed to meet the needs of ninth and tenth grade students who have been involved with the Partnership Program. Partners personnel identify former Partnership students to high school counselors and request that these students be counseled as "college preparatory." Students, their parents, and their teachers are provided with information about the educational preparation necessary for University admission and UCI's financial aid program. In addition, Partners provides students with career counseling, motivational and learning experiences, and informational materials. Further information may be obtained by calling (714) 833-5997.

Career Planning and Placement Center

The Career Planning and Placement Center is responsible for assisting UCI students in the process of career decision making and planning through workshops and individual study job listings and internship opportunities for students; for assisting students and alumni seeking career employment opportunities; for teaching job-search skills and interviewing techniques; for providing career job listings and administering a full program of on-campus recruitment; and for providing graduate and professional school information. Vocational interest testing and a computerized guidance system are available on a fee-for-service basis.


STUDY
GUIDES



The Center's Career Experience Program provides UCI students with a variety of opportunities to obtain career-related work experience. Students are placed in paid or volunteer internships in the business and professional communities of Orange County, Sacramento, and Washington, D.C.

In cooperation with the Office of Teacher Education, the Center provides educational placement services for those seeking teaching, administrative, and counseling positions in education. Placement files are maintained and kept active free of charge for one year after graduation from or completion of credential work at the University of California. A fee of $25 is assessed each year thereafter to keep a file active. If more than five copies of the file are mailed to prospective employers by the Center, a fee of $2 per file is charged for the sixth and following copies.

In addition, the Center offers services and programs to meet specialized needs of specific student populations, including the handicapped, women, minority and disadvantaged students, and returning students. Recorded job information is available on a 24-hour telephone line.

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. Group, individual, couples, and family counseling services are available to all students and their immediate relatives. All discussions are strictly confidential. Staff psychologists train student group leaders, faculty members, student interns, resident assistants, peer academic advisors, and administrative personnel in communication, listening, leadership, group dynamics, classroom management, teaching, and crisis intervention skills.

Special Services

The Special Services Office provides educational and multicultural support programs designed to increase the retention and graduation rates of EOP/Special Services students. The Office develops programs to help students make a smooth transition into the academic areas of their choice at UCI. Special Services professional counselors, along with peer counselors, maintain a close liaison with academic departments in assisting students, especially freshmen and sophomores, who are having difficulty with their course work. Through support programs which include tutoring, study skills advising, and counseling, these students are provided with resources to help them attain good academic standing. Special Services also sponsors an undergraduate mentor program to encourage students in good academic standing to pursue graduate study.

Learning Skills Services

The Learning Skills Center staff provides programming to enhance students' reading, writing, and learning skills. Ongoing classes, workshops, individual counseling, and self-help materials focus on areas such as improvement of writing style, preparation for graduate entrance examinations, reading and study for particular academic disciplines, development of critical thinking skills, and improvement of communication skills for students for whom English is a second language. Many students who utilize the services wish to improve skills developed in high school or to focus on new skills which will help them achieve their highest potential and take advantage of the opportunities for learning available at UCI.

Tutorial Assistance Program

The Tutorial Assistance Program (TAP) provides subject area supplementation through small group peer tutoring to undergraduate students who need academic support in addition to that which is provided in the classroom. Tutoring is available in all disciplines and is designed to benefit both the student who experiences difficulty in a course and the student who does well but seeks to refine basic skills. TAP works closely with faculty and staff in an effort to assist students to become more confident, to reach their academic goals, and to develop a practice of independent learning.

Student Programs Center

The Student Programs Center supports the efforts of students in coordinating extracurricular educational programs of diverse interest and focus which provide opportunities for students and faculty to share learning experiences on an informal basis. These programs aid students in gaining personal and leadership skills through involvement in campus events and in their own residential communities. The Student Programs Center is made up of two units, Student Support Services and Campus Organization Services.

Student Support Services

This Office emphasizes orientation, outreach, service, and leadership development programs. Orientation programs include the Student-Parent Orientation Program (SPOP), a 36-hour live-in experience on campus for new students and their parents; Uni-Prep, a week-long, intensive program in September to help new students develop increased social and intellectual skills; Irvine Info, a spring information program for UCI applicants; and Academic Advising and Orientation Week, held in the fall.

The Student Support Services Office directs the programs for handicapped and international students, students who reside off campus, veterans and nontraditional students, and undergraduate administrative interns. In addition, the Office provides programming for the Cross-Cultural Center and advises the Minority Programs Committee. The Office is located in 201 and 209 Administration Building, (714) 833-7244.

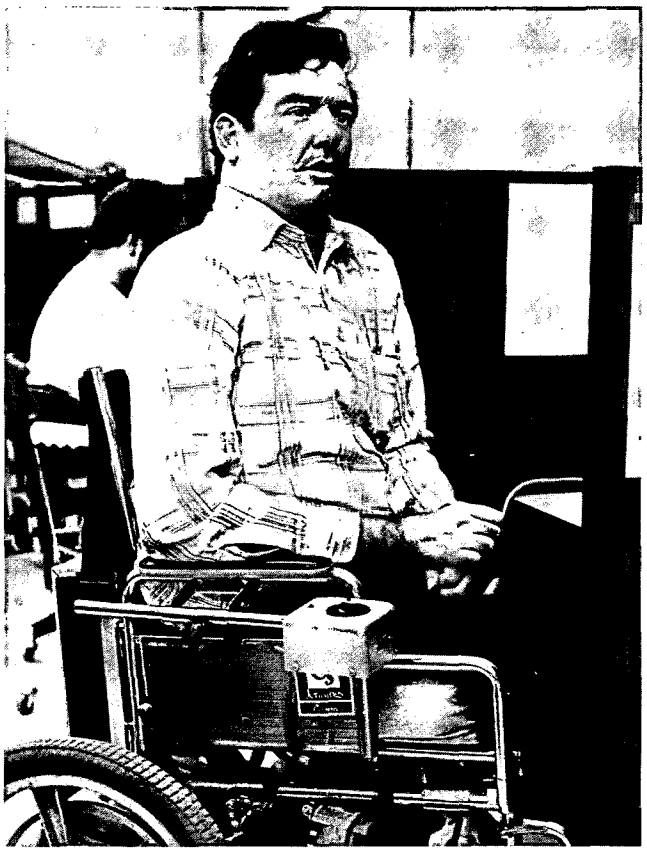
The program of support services for handicapped students is designed to provide a productive learning environment within the mainstream of campus life and to offer disabled students opportunities to ensure their effective participation in the academic community. The Handicapped Student Services staff assists students with any and all concerns from the point of admission through the completion of the academic program. Specialized services include tutoring, reader service for the blind, priority registration, and provision of notetakers, interpreters, and study rooms. In addition, a van is available (by reservation) for transportation to medical appointments or for academically related uses, such as trips to the UCLA Library. There is a Handicapped Student Center on campus which offers a comfortable atmosphere where students may rest, relax, or socialize with other students. All buildings on the Irvine campus are accessible to wheelchairs, and white lines are painted on walkways to indicate paths leading to curb cuts. Housing and dining facilities accommodate students in wheelchairs.

Handicapped students who require accommodations for the classroom (such as the service of an interpreter or notetaker) are strongly urged to contact the Handicapped Student Advisor as soon as possible after admission in order to acquaint themselves with the policies and services of the campus. The telephone number of this Office is (714) 833-6478.

Services to international students, permanent residents, refugees, and international faculty members and scholars and their families include assistance with visa and immigration forms and the interpretation of government regulations. In addition, the staff provides information about all the necessary services for effective participation in the University community including housing, tutoring, orientation, registration, financial aid, and student activities. The staff refers students to other campus support services as necessary. The Office is located in 201 Administration Building, (714) 833-7249.

The Nontraditional Students Program offers services to students returning to school after an interruption in their education. The staff assists with programming, counseling, orientation, and other student activities. This Office is located in 201 Administration Building, (714) 833-7249.

Off-Campus Student Services is designed to meet the needs of students who live off campus. Services include off-campus housing referral, landlord/tenant counseling, bus route/carpooling information, and special activities. Student advisors coordinate the program under the direction of University staff. The Office is located in 209 Administration Building, (714) 833-7247.



The Veterans Program emphasizes support services for veteran students. Considerable assistance for veterans with Veterans Administration benefit certification, tutorial services, orientation, and outreach programs is available through this office. Veterans are reminded that in order to receive VA educational benefits they must adhere to the standards of satisfactory progress and attendance which are described in the UCI General Catalogue on pages 14-16 and pages 48-53. Veterans should check with the Office for additional information regarding Veterans educational requirements. The telehone number is (714) 833-6477.

The Undergraduate Administrative Intern Program provides participating students with administrative experience designed to increase the students' knowledge of complex organizational structures. Fifteen to 20 students are selected each year and assigned to campus administrative units where they receive practical experience.

The Minority Programs Committee supports and coordinates a series of campus activities sponsored by Third World organizations. Major cultural events include Black History Month, Cinco de Mayo, Chinese New Year, La Tardeada, and the annual Black Awards Presentation.

The Cross-Cultural Center offers a friendly atmosphere where Third World students, staff, faculty, and community members may meet. The Center provides a lounge for studying and socializing; job boards listing educational and career opportunities; and a display case with pamphlets, brochures, and flyers on campus and community events. Also, the Center houses offices for Third World student organizations and a full-time Activity Programmer who coordinates the Center's activities and serves as a resource person for students and organizations that use the Center. In addition, the Center sponsors special events such as the Third World Feast, ethnic poetry readings, and faculty-student interactions. For further information about the Center, please call (714) 833-7215.

Campus Organization Services

The Office of Campus Organization Services, located in the University Center, provides program advisement and support services for all registered campus organizations, including peer program advisors and skill development workshops designed to ensure the successful operation of registered organizations. Office space in the University Center is provided for many of the more active student groups.

The Office administers the Cooperative Outdoor Program (COP) and oversees the Outdoor Equipment Rental Center and the Bicycle Maintenance Center. The Office also implements various credit and noncredit courses and seminars pertaining to environmental education topics and issues.

The Women's Resource Center, located on the first floor of Gateway Commons, is also administered by the Office. The Women's Resource Center provides an array of programs and services on awareness, skill-building, rape prevention, and leadership for campus women and women's organizations.

Unless otherwise specified, registered campus organizations are open to both undergraduate and graduate students. Registered campus organizations for 1980-81 included:

Academic Groups

Alpha Epsilon Delta Premedical Honor Society
American Institute of Aeronautics and Astronautics
American Marketing Association
American Society of Mechanical Engineers, Student Chapter
Anteater Psychological Society
Appropriate Technology Program at UCI
Asian Medical Student Association
Associacfon de Estudiantes de Español y Portugues (AEEP)
Associated Philosophy Undergraduates
Biological Sciences Student Association (BSSA)
Biophysics Club
Black Students in Science Organization
Black Students in Social Ecology
Chi Epsilon Mu Engineering Honor Society
Chicanos for Creative Medicine
Education Abroad Travelers
Engineering Students at UCI
Eta Kappa Nu
Eta Sigma Phi
Flat Earth Society
Friends of Social Ecology
Graduate School of Management Accounting Society
Graduate School of Management Student Association
Institute of Electrical and Electronics Engineers (IEEE)
Korean Student Engineering Club
Math Club
Medspur
Mexican-American Engineering Society
National Society of Black Engineers
Phi Delta Epsilon Medical Fraternity
Poetry Reading Series
Pre-Law Society
Russian Club at UCI
Social Ecology Graduate Students Colloquium Committee
Society for the Study of Consciousness
Society of Physics Students
Space Payload Research Organization
Student Affiliates of American Chemical Society (SAACS)
Student National Medical Association (SNMA)
Women in Biological Sciences

Environmental Groups

Cal PIRG (Public Interest Research Group Organizing Committee)
Friends of the San Joaquin Marsh
Irvine Environmental Coalition
Verano Food Co-op

Greek Groups

Alpha Chi Omega (Sorority)
Alpha Kappa Alpha (Sorority)
Alpha Phi Alpha (Fraternity)
Beta Theta Pi (Fraternity)
Black and Gold (Alpha Phi Alpha Pledges)
Chi Psi (Fraternity)
Chi Psi Little Sisters
Chi Psi Pledges
Crimson and Creme (Fraternity)
Delta Delta Delta (Sorority)
Delta Delta Delta Big Brothers
Delta Gamma (Sorority)
Delta Sigma Theta (Sorority)
Gamma Phi Beta (Sorority)
Greek Presidents' Council
Interfraternity Council
Panhellenic Association at UCI
Phi Delta Theta (Fraternity)
Phi Gamma Delta (Fraternity)
Pi Beta Phi (Sorority)
Sigma Chi (Fraternity)
Sigma Chi Little Sisters

International Groups

Democratic Association of Iranian Students at UCI
International Students Association at UCI
Organization of Arab Students

Political Groups

Alliance for Survival
Amnesty International
California College Republicans
California Women in Higher Education
Citizens Party at UCI
Democratic Club at UCI
New American Movement
Republic of China Student Association
Republican Youth Associates
Science for the People
South Orange County C.E.D.
Student Alternative Media Collective
Students for a Libertarian Society
Young Americans for Freedom at UCI

Recreational Groups

Amateur Radio Club
Breezers at UCI
Club Mesa Court
Cyclists at UCI
DISC Frisbee Club
Irvine Chess Club
K.A.O.S.

The Monastery
On the Spot
Pep Squad
Photography Unlimited
Simulation Game Club at UCI
Skydiving Club at UCI
Society of Amateur Rocketeers (SOAR)
Titterers at UCI
UCI Band
UCI College of Medicine Class of 1984
University Choral Organization
University Productions
Wildebeest Horse Owners Association (WHOA)

Religious Groups

Asian American Christian Fellowship
Bahai Club
Bible Study Club
Black Student Union Gospel Choir
Brothers and Sisters in Christ
Campus Christians
Campus Crusade for Christ
Chinese Christian Fellowship
Christian Medical Society, Irvine Chapter
Christian Science Organization
Dharma Study Group of Orange County
Emanuel '81
Full Gospel College Fellowship, Irvine
Interfaith
Intervarsity
Islamic Studies Center—Irvine/ Student Organizaton
Jewish Student Union—Hillel
Korean Bible Study
Krishna Yoga Society
Latter-Day Saint Student Association
Messianic Association at UCI
Muslim Students Association, UCI Chapter
Navigators
Orange Jews at UCI
South Coast Jewish Youth
Voyagers College Fellowship

Sports Clubs

Badminton Club at UCI
Gymnastics Club at UCI
Handball Club at UCI
Karate Club at UCI
Racquetball Club
Rugby Football Club at UCI
Sailing Association at UCI
Scuba Diving Club at UCI
Ski Club
Soccer Club at UCI
T'ai Chi Club at UCI
Weightlifting Club at UCI

Third World

A and D Productions
Black Student Union
The Blade
Chicano Veterans Association
Chinese Association at UCI
Gentlemen
Kababayan
Korean Students Association
La Escuelita (Field Study Chicano Community)
Latin American Solidarity Committee
MECHA
Mestizo Society
Ms. Ebony
Mujeres Latinas
Returning Minority Women
Third World Collective
Tomo No Kai
Vietnamese Students Association at UCI (VSAUCI)

Other

Armenian Students Association
Campus Organization for Music Appreciation
Commuter Club
Feminist Women's Health Organization
FUG (Computer Programming)
The Guild
Guild of Performing Artisans
Handicapped Student Support Group
Improvetcetera
International Legion of Decency
Isengard Royal Society
Mordor
Nica Quetza Achitli (NQA)
Orange County Reproductive Rights Group
Returning Women
Star Trek Association at UCI
Student Alumni Association at UCI
Students Against Muscular Dystrophy
Students for a Better UCI
Support the Dance at UCI
Transcendental Meditation Society at UCI
The Troop
The Union
Verano Residents Association
Veterans Club
We the People
World Music Collective

Service Groups

Circle K
Community Concern
Education Motivation
La Escuelita

Information on campus organizations or programs can be obtained by visiting Campus Organizations Services in 102 University Center.

Campus Auxiliary Services

The Office of Campus Auxiliary Services provides child care services and audiovisual services, and centralizes the steps necessary to make specific arrangements for academic, cultural, and social events on campus. The Office, located in the Administration Building, (714) 833-6368, is organized into four units which provide a variety of services to students, faculty, staff, and community members: Central Campus Calendar, Summer Conference Office, Audiovisual Services, and Child Care Services.

Central Campus Calendar

Central Campus Calendar schedules and coordinates events and activities which take place on campus. The Office provides information and advice to program planners, interprets University policies and procedures, and advises those planning programs on the most economical, efficient way to use campus support services. Selection and reservations of facilities, orders for staff and equipment support, and cost estimates are processed through the Office. The Calendar Office schedules academic, Extension, and Summer Session classrooms, provides centralized billing for special events, and serves the campus as a central information center by maintaining the master calendar of campus activities. The Office is located in 255 Administration Building, (714) 833-5252.

Summer Conference Office

The Summer Conference Office serves as a one-stop service for live-in conferences, workshops, and seminars held at UCI. The Conference Office provides information, program and budget planning, and room and board accommodations. Also, it can arrange recreational activities, child care, and tours of the area for faculty, students, and staff, as well as non-University organizations, educational institutions, and nonprofit groups wishing to utilize UCI facilities for approved live-in conferences. The Office is located in 255 Administration Building, (714) 833-6963.

Audiovisual Office

The Audiovisual Office provides staff assistance and audiovisual equipment on a recharge basis for students, faculty, staff, and non-University organizations in the development and presentation of programs and special events. The staff also operates the audiovisual systems for regularly scheduled academic classes in Science Lecture Hall and Social Science Hall. Consultation and support on effective media use, equipment, or any other aspect of audiovisual usage are available to the campus as a whole. For information telephone (714) 833-5128.

Child Care Services

Child Care Services, organized into four Centers, offers full-time and part-time programs for children. The Infant/Toddler Center provides services for children from six weeks to two and one-half years of age. The Verano Children's Center and the Children's Center both provide educational programs and care for children ages two and one-half to five; the Extended Day Care Center serves children ages five to 12. The programs are designed to meet the individual needs of each child. Toward

that end, the Centers provide environments in which diverse cultural, ethnic, and personal teaching and parenting styles are encouraged. The programs are open to children of UCI students, faculty, and staff, with priority enrollment and tuition subsidy available to students. Information may be obtained by visiting the Centers or telephoning (714) 833-6276.

Housing and Food Service

The Central Housing Office coordinates application procedures and contracts with campus residents.

On-campus residences are available for 1,550 single undergraduate students in Mesa Court and Middle Earth. UCI's residence hall program emphasizes small-group living. 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. Liberal use of wood in building design and picturesque landscaping help to create a home-like environment. 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 rooms is also available in each residence. Every room has carpeting and draperies, and is furnished with a bed, desk, chair, chest of drawers, closet, and bookshelves for each student. Both Mesa Court and Middle Earth have complete food service and dining commons for their residents. The halls are, however, closed during the Christmas and spring recesses.

Each hall tends to have distinctive characteristics and often focuses on a specific interest or life-style. Examples include halls devoted to the fine arts, the humanities, languages, the outdoors, or crafts. An additional housing option at UCI is the 80-space Recreational Vehicle Park. Students must provide their own vehicle. For further information, contact the Central Housing Office.

An apartment complex for single undergraduates was completed in 1981. This group of 200 two-bedroom apartments houses 800 students. Half of the units are furnished, and the others include carpeting, draperies, a stove, and a refrigerator. A variety of programs is offered in the community center building, and in the complexes' two lounges and recreation buildings.

Undergraduate applicants must indicate their interest in on-campus housing by marking the appropriate item on the UC Undergraduate Application for Admission in order to receive an application for housing. Prompt return of the Housing Application is important as housing priority is given based on the date of receipt of the completed housing application. Due to the large demand for housing, students wishing to live on campus should apply for admission on November 1, when the application filing period opens, if they wish to live on campus the following fall. The application for admission allows the students to request information about off-campus housing as well.

Students who become eligible for residence hall contracts will be obliged to pay approximately $100 as a reservation fee at the time the contract is returned to the University; any cancellation, regardless of the circumstances or time of year, will result in a nonrefundable penalty fee. The cost of room and board in the residence halls is paid in quarterly payments.

The University also has 562 one-, two-, and three-bedroom apartments in Verano Place for full-time registered students who are married, single parents, graduate students, or who are single and 25 years of age or older. Over half of the apartments are furnished, and all have carpeting, draperies, a stove, and a refrigerator. They are attractive and considerably lower in rent than comparable units in local communities. An assortment of social, cultural, and educational programs such as community dinners, courses, and workshops is offered in the community. Students may apply to live in Verano Place at any time by requesting an application from the Housing Office. An application fee of $20 must accompany the application. This amount becomes part of a $100 security deposit upon occupancy. In the event that a student wishes to cancel the application prior to receiving an assignment, the $20 is refunded. Application should be made at least six months in advance of the date the student wishes to move in.

Students who live in the residence halls are provided with a prepaid meal plan. Meals are served cafeteria style, and the menu offers a wide selection of food, with fresh fruit and an array of salads daily. Meals are served three times daily on weekdays (brunch and dinner only on Saturdays and Sundays) in the Mesa Court and Middle Earth Commons.

Students who live off campus may wish to take advantage of the Nonresident Meal Contract. This contract, good for any quarter, enables a student to eat 19 meals per week in Mesa Commons. For spring quarter, 1981, the price of the meal plan was $4.50 per day.

Residential Learning

The Student Programs Offices at Mesa Court and Middle Earth have the significant responsibility of providing student residents with an environment conducive to their intellectual, social, and personal growth. The housing staffs work closely with students to create opportunities for educational exploration and ways of developing interpersonal skills. Academically oriented residential learning programs include the Social Science Center, Social Science Hall, Humanities House, Social Ecology Center, Foreign Language Programs, and Center for the Arts. The Outdoors and Photography Halls are examples of special interest hall programs. Weekend field trips and retreats, designed to amplify on-campus experiences, are often part of the interest hall programs. The Student Programs Offices also supervise and train resident assistants, advise the residential student government, and coordinate information and skill development workshops.

Student Health Service

All fully registered students are eligible for Student Health Service benefits under the UCI program. Student Health facilities include a complete outpatient clinic, staffed by physicians and nurses, supported by an x-ray and clinical laboratory. General medical clinics are held 8:00 a.m. to 4:00 p.m. every day during the week. Specialty clinics are held at variously scheduled times by appointment and include Dermatology, Gynecology, Orthopedics, Mental Health, Birth Control, Minor Surgery, Nutrition/Weight Control, and Ear, Nose, and Throat. Emergency service is provided after regular hours and on weekends when school is in session. An infirmary provides inpatient care for students who need bed care. The main telephone number for Student Health is (714) 833-5301.

In addition to the campus facility, there is a basic insurance program which provides limited coverage for emergency care and hospitalization when such care is required but not available at the Student Health Service. Each fully registered student at UCI will automatically have this limited Health and Accident Insurance plan in effect. *To assure coverage each student is required to have a current medical history and physical examination on file at the Student Health Service.* Undergraduate students are mailed medical history and physical examination forms after they return their $50 Undergraduate Acceptance of Admission Fee; graduate and medical students should visit the Center when they arrive at UCI to obtain and complete the forms. Students should check with the Student Health Service for information on the benefits and limitations under the insurance plan.

Professional counseling and help for emotional problems are available through the Mental Health Division of the Student Health Services. Psychiatric and psychological services, weight control clinics, and headache and biofeedback relaxation training are available.

Student Health coverage provides as many services as possible without additional charge; however, some services are available only on a fee-for-service basis. Some of the services available at moderate charges are immunizations, allergy desensitization injections, prescriptions from the Student Health Pharmacy, dental services including minor surgery, elective laboratory tests, and, time permitting, physical examinations for employment, insurance, or a marriage license. Eye care is available to students and their spouses at the Eye Clinic located in the Student Health Center. Appointments with the Ophthalmologist can be made by calling (714) 833-5304. A Dispensing Optician is available to make repairs and supply frames and lenses. Call (714) 833-5301 for the Optician's office hours. Current fee schedules are available at the Student Health Center.

Health education courses are offered for academic credit through the UCI Office of Teacher Education. Health science experience for teachers, training in peer health advising, and field work opportunities are available. Health education programs offered through Student Health include CPR, First Aid, Blood Drive, Rape Prevention, UCIMC Emergency Care Patient Counseling, and Plaque Control. For information regarding these courses and programs call (714) 833-5806.

During the academic year students may listen to any of 100 taped health messages that provide information about a variety of illnesses and health problems, and their recognition, prevention, and/or treatment. Any of the taped messages may be heard by calling (714) 833-5472.

Student Health coverage extends from the first day of the quarter to but not including the first day of the following quarter, but begins only after the student has paid the full Registration Fee and has been issued the Class Verification and Identification Card. There is an exception for spring quarter coverage which extends only to the last day of that quarter.

The Student Health Service encourages preventive medicine. It supplements but does not supplant the family physician. Full and mutual cooperation between the Student Health Service and the family physician is encouraged.

Optional additional insurance for students, spouses, and children is available at the Student Health Service. Optional insurance coverage also is available for the summer or one unregistered quarter each year. Enrollment in this plan is limited to a short time at the beginning of each quarter. Stop by the Student Health Center for more information and application forms during the first week of each quarter to assure coverage.

Physical Examinations and Health Clearances. All new students are required to have a complete physical examination within 90 days prior to the first day of the quarter. The examination should be performed by the student's own physician. If this is impractical, the examination can be obtained at the Student Health Service for a moderate charge. Please call for an appointment.

Students returning to UCI after an absence of two or more quarters are required to have a health clearance by the Student Health Service. Students returning after participation in the Education Abroad Program must comply with this requirement upon their return to UCI.

Commencement

UCI Commencement ceremonies are held in Campus Park each June. Students who graduate any quarter of the academic year may participate in the year-end graduation ceremony. Commencement protocol information is mailed to all prospective graduates in late spring and also is available in the office of each academic counselor. For further information, call the Commencement Committee representative, (714) 833-6378.

Student Conduct and Discipline

In order to make the administration of campus activities coherent and consistent, the Office of the Vice Chancellor—Student Affairs provides students with a handbook setting forth the standards of conduct expected of UCI students. This booklet, "Policies Applying to Campus Activities, Organizations, and Students," gives the rules concerning conduct and related matters, as established by the policies of The Regents and the President of the University. Campus regulations are available also. 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. The booklet is a reinforcement of that assumption. Copies are available from Campus Organization Services, located in the University Center. An Ombudsman is available to assist students with any problems or concerns they may encounter while at UCI, including those related to student conduct and discipline. The Ombudsman is located in the Office of the Vice Chancellor—Student Affairs.

Associated Students

The Associated Students of the University of California, Irvine (ASUCI), with offices located in the University Center, is composed of all registered undergraduate students at UC Irvine, whose quarterly student fees allow this nonprofit organization to provide leadership, representation, programs of entertainment, and academic and social services.

Services. ASUCI funds, manages, and operates numerous student services on campus. The weekly *New University* newspaper; *La Voz Mestiza,* and *The Blade* newspapers; and KUCI (89.9 FM) radio are student-operated campus media. The College

Legal Clinic provides free legal assistance to students on almost all matters. The ASUCI Travel Service offers charter information, booking services, passport photo service, and student travel identification. Enhancing the quality of our environment is the long-range goal of the ASUCI Recycling Center. The ASUCI Information Desk, located just inside the entrance to ASUCI, has knowledgeable receptionists to answer questions and provide directions.

The ASUCI Ticket Office, open from 9:30 a.m. to 4:00 p.m., Monday through Friday, dispenses several business and commercial services. Tickets for on-campus and off-campus (Ticketron) events are available, with those for ASUCI programs often priced nominally or free to students. The Ticket Office also has a check-cashing service.

ASUCI entertainment services offer all students varying diversions for their leisure hours. Noon concerts are held bi-weekly in Gateway Plaza. Major concerts occur in Crawford Hall at least twice a quarter, and popular films are shown on weekends at reduced rates. Speakers appear periodically under ASUCI's sponsorship, with lectures covering politics, economics, humor, and humanism. On weekends one can choose the relaxed atmosphere of the Soundstage where UCI students often perform. A Bluegrass Festival is held in the fall, and each spring Wayzgoose, a student festival with a Renaissance theme, is held in Campus Park.

These programs are operated by executive commissions, which all students are encouraged to join. The UCI Pep Band, Pep Club, and Pep Squad, partially funded by ASUCI, provide support for UCI athletic teams and University events with rallies, dances, rooter sections, and spirit-raising activities.

Organization. The ASUCI government consists of a 26-member Council, including 21 representatives from the academic schools and programs, and five executive officers. The five executive officers are elected for one-year terms by the student body each spring. Their general task is the setting of goals and policy making to achieve ASUCI's primary goal, a University wholly responsive to student needs and desires. The President handles Universitywide affairs, instigates office and budgetary efficiency, and provides focal spokesmanship for the Associated Students in policy dealings with the administration. In addition, the President coordinates and lobbies for student interests in the surrounding communities. The Executive Vice President chairs the legislative Council, sits on the Registration Fee Advisory Committee, and supervises the Elections Commissioner. The Vice President for Academic Services is liaison to the Academic Senate, coordinates student input in each school, and directs the Student Recommended Faculty Program, through which students nominate visiting lecturers. The Office also serves as the student voice in statewide academic affairs and assists students with informal and formal resolution of grievances when they arise. The Vice President for Administration chairs the Communications Board, and appoints and monitors over 60 student representatives to UCI administrative and Academic Senate committees. The Vice President for Student Services investigates new services, evaluates current programs, and coordinates ASUCI publicity. The executive officers are aided by appointed commissioners who deal with the Student Lobby Annex, housing, student grievances, concerts, and more.

ASUCI policy and budgetary decisions are promulgated by the Council. Each councilperson sits on at least one subcommittee of the Council. Council elections are held in fall and spring with 10 (or half) Council seats filled in each election.

Representation. The nine UC campus student bodies are linked togther by the Student Body Presidents Council (SBPC), on which the ASUCI President serves. The SBPC carries out many activities, including advisement to the Board of Regents and selection of the student Regent, appointment of students to statewide University committees, and direction of the UC Student Lobby through which student interests are promoted in Sacramento and Berkeley (University Hall).

On the Irvine campus, students are encouraged to participate in and are appointed to serve on the Chancellor's Advisory, ad hoc Academic Senate, and campus administrative committees.

Involvement. ASUCI's primary goal is to further the control by students over their own curricula, funds, administration, and student life. All students concerned about academics, services, representation, or entertainment can reach their Council representative or the executive officers at ASUCI, University Center, (714) 833-5547.

Associated Graduate Students

All graduate students are automatically members of the Associated Graduate Students (AGS). AGS is governed by a Council of members elected from each academic unit conducting a graduate program, and the President, who is elected in a campuswide election held during spring quarter. The AGS Council is an independent entity within UCI, with the exclusive reponsibility as the elected student body for representation of all graduate students to the UCI administration, Systemwide, and the community-at-large. The Associated Graduate Student Council nominates graduate students for positions on all UCI administrative committees, councils, special and ad hoc committees, the UCI Academic Senate committees, and Systemwide committees.

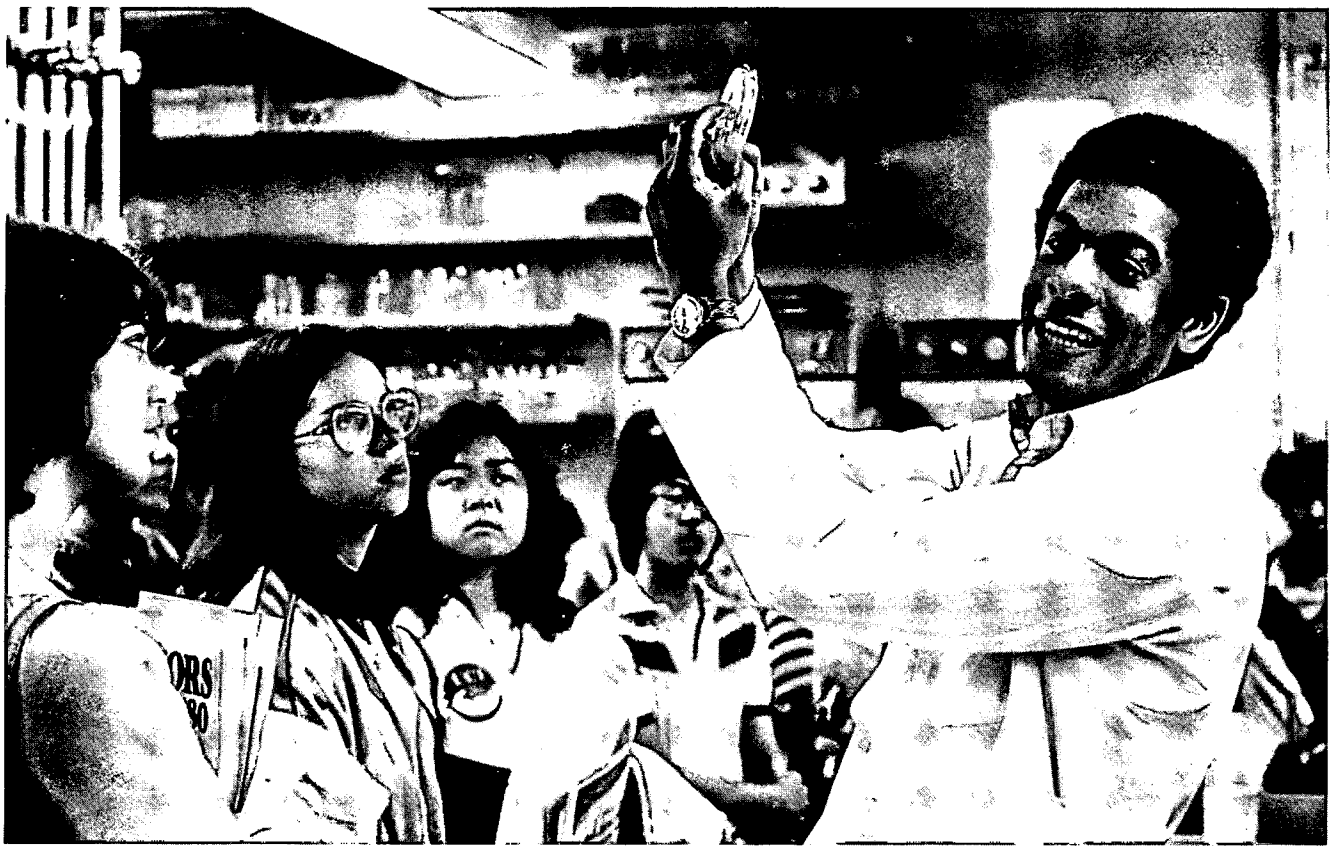
The Associated Graduate Student Council utilizes the quarterly Associated Graduate Student Fee to provide funding for graduate student projects as well as to support activities that benefit the campus community. AGS representatives also work actively with the Student Body Presidents Council and the Student Lobby in efforts to implement legislation which is supportive of students and crucial to the social needs of the wider community.

Medical Students Organization

The Medical Students Organization (MSO) is governed by an elected student council composed of two officers from each class and a student body President, Vice President, Secretary, and Treasurer. This council represents the medical student body in all matters relating to the UCI campus, UC Systemwide, and the community.

The Associated Students fee paid by each medical student is used, in part, to support the campuswide programs and activities of the ASUCI and specific medical student activities, including student organizations, the yearbook, speakers, movies, and maintenance of recreational facilities.

SCHOOLS AND DEPARTMENTS



SCHOOL OF BIOLOGICAL SCIENCES

Norman M. Weinberger **Acting Dean**

Joseph Arditti, Ph.D. University of Southern California, *Professor of Biological Sciences*

Stuart M. Arfin, Ph.D. Yeshiva University, Albert Einstein College of Medicine, *Associate Professor of Biochemistry*

Dana Aswad, Ph.D. University of California, Berkeley, *Assistant Professor of Psychobiology*

Peter R. Atsatt, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*

Kenneth M. Baldwin, Ph.D. University of Iowa, *Associate Professor of Physiology and Biophysics*

Ernest A. Ball, Ph.D. University of California, Berkeley, *Professor Emeritus of Biological Sciences*

Albert F. Bennett, Ph.D. University of Michigan, *Associate Professor of Biological Sciences* (on leave F, W, S)

Michael W. Berns, Ph.D. Cornell University, *Chair of the Department of Developmental and Cell Biology, Professor of Biological Sciences and Pediatrics*

Kevin P. Bertrand, Ph.D. Stanford University, *Assistant Professor of Microbiology*

Robert H. Blanks, Ph.D. University of California, Los Angeles, *Assistant Professor of Anatomy*

Hans R. Bode, Ph.D. Yale University, *Vice Chair of the Department of Developmental and Cell Biology, Associate Professor of Biological Sciences*

Timothy J. Bradley, Ph.D. University of British Columbia, *Assistant Professor of Biological Sciences*

Gayle A. Brenchley, Ph.D. The Johns Hopkins University, *Assistant Professor of Biological Sciences* (on leave W)

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*

Michael D. Cahalan, Ph.D. University of Washington, *Assistant Professor of Physiology and Biophysics*

Richard D. Campbell, Ph.D. The Rockefeller University, *Professor of Biological Sciences*

F. Lynn Carpenter, Ph.D. University of California, Berkeley, *Associate Professor of Biological Sciences*

Carl Cotman, Ph.D. Indiana University, *Professor of Psychobiology*

Dennis D. Cunningham, Ph.D. University of Chicago, *Vice Chair of the Department of Microbiology and Professor of Microbiology*

Rowland H. Davis, Ph.D. Harvard University, *Professor of Biological Sciences*

Lyle C. Dearden, Ph.D. University of Utah, *Vice Chair of the Department of Anatomy and Professor of Anatomy*
Peter S. Dixon, Ph.D., D. Sc. University of Manchester, *Professor of Biological Sciences and Environmental Engineering*
James H. Fallon, Ph.D. University of Illinios, *Assistant Professor of Anatomy*
Donald E. Fosket, Ph.D. University of Idaho, *Associate Professor of Biological Sciences*
Scott E. Fraser, Ph.D. The Johns Hopkins University, *Assistant Professor of Physiology and Biophysics*
Roland A. Giolli, Ph.D. University of California, Berkeley, *Professor of Psychobiology and Anatomy*
Gale A. Granger, Ph.D. University of Washington, *Professor of Immunology and Microbiology*
George A. Gutman, Ph.D. Stanford University, *Assistant Professor of Microbiology*
Harry Haigler, Ph.D. Vanderbilt University, *Assistant Professor of Physiology and Biophysics*
James E. Hall, Ph.D. University of California, Riverside, *Associate Professor of Physiology and Biophysics*
Barbara A. Hamkalo, Ph.D. University of Massachusetts, *Associate Professor of Biological Sciences*
G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology*
Patrick L. Healey, Ph.D. University of California, Berkeley, *Executive Associate Dean of the School of Biological Sciences and Associate Professor of Biological Sciences*
George L. Hunt, Jr., Ph.D. Harvard University, *Chair of the Department of Ecology and Evolutionary Biology and Associate Professor of Biological Sciences* (on leave W)
Kenneth H. Ibsen, Ph.D. University of California, Los Angeles, *Associate Professor of Biochemistry*
Robert K. Josephson, Ph.D. University of California, Los Angeles, *Chair of the Department of Psychobiology and Professor of Biological Sciences and Psychobiology*
Keith E. Justice, Ph.D. University of Arizona, *Associate Professor of Biological Sciences and Information and Computer Science* (on leave F, W)
Herbert P. Killackey, Ph.D. Duke University, *Professor of Psychobiology and Anatomy*
David T. Kingsbury, Ph.D. University of California, San Diego, *Associate Professor of Microbiology*
Leonard M. Kitzes, Ph.D. University of California, Irvine, *Assistant Professor of Anatomy*
Harold Koopowitz, Ph.D. University of California, Los Angeles, *Associate Professor of Biological Sciences*
Stuart M. Krassner, Sc.D. The Johns Hopkins University, *Professor of Biological Sciences and Microbiology*
Janos K. Lanyi, Ph.D. Harvard University, *Professor of Physiology and Biophysics*
Howard M. Lenhoff, Ph.D. The Johns Hopkins University, *Professor of Biological Sciences*
Michael Leon, Ph.D. University of Chicago, *Associate Professor of Psychobiology*
Mark M. Littler, Ph.D. University of Hawaii, *Professor of Biological Sciences* (on leave F)
Kenneth J. Longmuir, Ph.D. University of Oregon, *Assistant Professor of Physiology and Biophysics in Residence*
Gary S. Lynch, Ph.D. Princeton University, *Professor of Psychobiology and Social Sciences*
Richard E. MacMillen, Ph.D. University of California, Los Angeles, *Professor of Biological Sciences*
Jerry E. Manning, Ph.D. University of Utah, *Associate Professor of Biological Sciences*
Gordon A. Marsh, B.S. University of California, Berkeley, *Director of the Museum of Systematic Biology and Lecturer in Biological Sciences*
J. Lawrence Marsh, Ph.D. University of Washington, *Assistant Professor of Biological Sciences*
John F. Marshall, Ph.D. University of Pennsylvania, *Assistant Professor of Psychobiology*
Brian J. McCarthy, Ph.D. Oxford University, *Professor of Biochemistry*
James L. McGaugh, Ph.D. University of California, Berkeley, *Executive Vice Chancellor and Professor of Psychobiology and Psychiatry & Human Behavior*
Calvin S. McLauglin, Ph.D. Massachusetts Institute of Technology, *Vice Chair of the Department of Biological Chemistry and Professor of Biochemistry*
Ronald L. Meyer, Ph.D. California Institute of Technology, *Assistant Professor of Biological Sciences*
Kivie Moldave, Ph.D. University of Southern California, *Professor of Biochemistry*
Harris S. Moyed, Ph.D. University of Pennsylvania, *Professor of Microbiology*
Ernest P. Noble, Ph.D. Oregon State University, M.D. Case Western Reserve, *Professor of Psychobiology, Psychiatry & Human Behavior, and Medical Pharmacology & Therapeutics*
William D. Nunn, Ph.D. City University of New York, *Associate Professor of Biochemistry*
Mu-ming Poo, Ph.D. The Johns Hopkins University, *Associate Professor of Physiology and Biophysics*
Charles E. Ribak, Ph.D. Boston University, *Assistant Professor of Anatomy*
Martine J. RoBards, Ph.D. Florida State University, *Assistant Professor of Anatomy*
Richard T. Robertson, Ph.D. University of California, Irvine, *Assistant Professor of Anatomy*
Eloy Rodriguez, Ph.D. University of Texas, *Associate Professor of Biological Sciences*
Philip W. Rundel, Ph.D. Duke University, *Professor of Biological Sciences* (on leave S)
Jon F. Sassin, M.D. St. Louis University, *Professor of Psychobiology and Neurology*
Howard A. Schneiderman, Ph.D. Harvard University, *Professor of Biological Sciences* (on leave)
John T. Smiley, Ph.D. University of Texas, *Assistant Professor of Biological Sciences*
Eric J. Stanbridge, Ph.D. Stanford University, *Associate Professor of Microbiology*
Wendell M. Stanley, Jr., Ph.D. University of Wisconsin, *Associate Dean for Undergraduate Affairs of the School of Biological Sciences, Associate Professor of Biochemistry*
Arnold Starr, M.D. New York University, *Chair of the Department of Neurology and Professor of Neurology, Psychobiology, and Social Science*
Grover C. Stephens, Ph.D. Northwestern University, *Professor of Biological Sciences*
John E. Swett, Ph.D. University of California, Los Angeles, *Chair of the Department of Anatomy and Professor of Anatomy*
Paul S. Sypherd, Ph.D. Yale University, *Chair of the Department of Microbiology and Professor of Microbiology*
Krishna K. Tewari, Ph.D. Lucknow University, *Chair of the Department of Molecular Biology and Biochemistry and Professor of Biochemistry*
Marcel Verzeano, M.D. University of Pisa Medical School, *Professor Emeritus of Psychobiology*
Larry E. Vickery, Ph.D. University of California, Santa Barbara, *Assistant Professor of Physiology and Biophysics*
Edward K. Wagner, Ph.D. Massachusetts Institute of Technology, *Professor of Virology*
Harry Walter, Ph.D. Indiana University, *Professor of Physiology and Biophysics in Residence*
Robert C. Warner, Ph.D. New York University, *Professor of Biochemistry*
John J. Wasmuth, Ph.D. Purdue University, *Assistant Professor of Biochemistry*
Norman M. Weinberger, Ph.D. Western Reserve University, *Acting Dean of the School of Biological Sciences and Professor of Psychobiology*

Stephen H. White, Ph.D. University of Washington, *Chair of the Department of Physiology and Biophysics and Professor of Physiology and Biophysics*

Archie F. Wilson, M.D. University of California, San Francisco, Ph.D. University of California, Los Angeles, *Vice Chair of the Department of Medicine, Professor of Medicine (Pulmonary) and Physiology and Biophysics; Chief of Pulmonary Diseases*

Beatriz Levy Wilson, Ph.D. University of California, San Francisco, *Assistant Professor of Molecular Biology and Biochemistry*

Clifford A. Woolfolk, Ph.D. University of Washington, *Associate Professor of Microbiology*

Pauline I. Yahr, Ph.D. University of Texas, *Associate Professor of Psychobiology*

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 midst of many of the activities that govern major aspects of life. These include some of the most challenging intellectual problems, such as 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 mankind in the coming decade, such as sensible management of the environment and the effective control of human populations. It is vital that educated men and women understand the contributions that biological sciences have made and will continue to make for the future welfare of mankind.

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 avail themselves of the principles and ever-increasing knowledge of biology. The curriculm 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. Each quarter nearly 300 undergraduate students and 150 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 four years of mathematics, biology, and especially 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 12-course Biological Sciences Core, with lectures and laboratories developing the major concepts of modern biology. Satellite courses 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. In addition to the regular major in Biological Sciences, a concentration in Ecology and Environmental Biology, also leading to a B.S. degree in Biological Sciences, is available at the undergraduate level. The degree requirements of these two programs are similar, with the concentration in Ecology and Environmental Biology placing a greater emphasis on ecology and the natural sciences and a lesser emphasis on chemistry and molecular biology. 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 with an interest in the application of ecology to human needs may choose the Applied Ecology major, leading to a B.A. degree in Applied Ecology, which is offered jointly by the School of Biological Sciences and the Program in Social Ecology. See page 200.

Degrees

Biological Sciences ..... B.S., M.A.T., M.S., Ph.D.

A concentration in Ecology and Environmental Biology is available at the undergraduate level. Opportunities are available at the graduate level to specialize in Developmental and Cell Biology, Ecology and Evolutionary Biology, Molecular Biology and Biochemistry, Psychobiology, Anatomy, Microbiology, and Physiology and Biophysics.

Applied Ecology (offered jointly with the Program in Social Ecology)..... B.A.

Honors

Graduation with Honors. Of the graduating seniors, approximately 12 percent may receive honors: 1 percent *summa cum laude*, 3 percent *magna cum laude*, and 8 percent *cum laude*. The selection for these awards is based on rank-ordered grade point averages.

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 carry 12 or more graded units with a grade point average of 3.5 per quarter for a minimum of six quarters. Their names will be inscribed on a permanent plaque in the Biological Sciences Student Affairs Office.

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.

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.

Dean's Academic Achievement and Service Awards. Four Biological Sciences majors will be the recipients of the Dean's Academic Achievement and Service Awards. These 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 (detailed on p. 72) are presented with Excellence in Research certificates.

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.

William F. Holcomb Scholarship. The intent of the William F. Holcomb Scholarship is to support marine biological and/or related studies. The Scholarship is to be used to support a student who wishes to attend a summer program at a marine biological station or similar facility.

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 in service to the School.

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.

Edward A. Steinhaus Memorial Award. The Edward A. Steinhaus Memorial Award is given to an outstanding graduate Teaching Assistant chosen by a committee composed of undergraduate students, faculty members, representatives from the administration, and Mrs. Steinhaus.

The preceding Honors, Scholarships, Prizes, and Awards are presented at the annual Honors Convocation held the first week of June.

Requirements for the B.S. Degree in Biological Sciences

University Requirements: See page 14.

School Requirements

Biological Sciences Core Curriculum (90, 101, 102, 103, 103L, 104, 104L, 105, 105L, 106, 106L, 107); minimum of three satellite courses; Chemistry 1A-B-C, 51A-B-C, and 1LB-LC, 51LA-LB; Mathematics 2A-B-C or 2A-B and one quarter statistics; Physics 3A-B-C, 3LA-LB-LC or 5A-B-C, 5LA-LB-LC; and Humanities 1A-B-C, or another option of the lower-division Writing Requirement of the breadth requirement (Category I) *and* a three-quarter sequence in either Humanities or Literature (Category IV, Humanistic Inquiry).

Students must have a 2.0 cumulative grade point average in the Biological Sciences Core Curriculum and three satellite courses.

In addition to the listed Biological Sciences satellite courses, Chemistry 130A-B-C or 131A-B-C and Physics 18A-B-C can be used to satisfy the satellite requirement. Students with a double major in Psychology and Biological Sciences can also use Psychology 151A-B-C to satisfy the satellite requirement.

No student may enter as a double major, but students interested in other areas may possibly 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.

For information on requirements for the B.S. degree in Biological Sciences with a concentration in Ecology and Environmental Biology, see page 71.

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– (1.7) or better will have satisfied the UCI breadth requirement, with two exceptions: the upper-division Writing Requirement and Category III, Social and Behavioral Sciences.

Specifically, the Humanities Core or its alternative satisfies Category IV, Humanistic Inquiry; it also satisfies the lower-division Writing Requirement when two quarters of the writing

Sample Program — Biological Sciences

	Freshman	Sophomore	Junior	Senior
FALL	Chem. 1A	Bio. Core	Bio. Core	Bio. Core
	Human. 1A[a]	Chem. 51A, LA	Physics 3A, LA or Elective[d]	Bio. Satellite
	Bio. 2 (Fr. Sem.)	Math 2A or Physics 3A, LA[c]	Bio. Satellite[e]	Research
	Math 2A[b]		Elective	Elective
WINTER	Bio. Core	Bio. Core	Bio. Core	Research
	Chem. 1B, LB	Chem. 51B, LB	Physics 3B, LB or Elective	Electives
	Human. 1B	Math 2B or Physics 3B, LB	Bio. Satellite	
	Math 2B		Elective	
SPRING	Chem. 1C, LC	Bio. Core	Bio. Core	Research
	Human. 1C	Chem. 51C	Physics 3C, LC or Elective	Electives
	Math 2C or 7	Math 2C or 7, or Physics 3C, LC	Bio. Satellite	
			Elective	

[a]Students may replace Humanities 1A-B-C with another option of the lower-division Writing Requirement of the breadth requirement (Category I) *and* a three-quarter breadth sequence in either Humanities or Literature (Category IV, Humanistic Inquiry). Normally students must satisfy the Subject A requirement prior to fulfilling the lower-division Writing Requirement. Students taking Humanities 1A must also enroll in Writing Workshop (2 units) if they have not satisfied the Subject A requirement.

[b]Students with a score of 650 or higher on the Mathematics portion of the Scholastic Aptitude Test (SAT) may begin mathematics as freshmen. Students with a score below 650 on the Mathematics portion of the SAT should defer mathematics to their sophomore year. Please note the prerequisites for Mathematics 2A.

[c]Students who have completed mathematics in their freshman year may take Physics 3A-B-C and 3LA-LB-LC in their sophomore year. Students who take the mathematics requirement in their sophomore year should defer physics to their junior year. Physics 3A-B-C is the course for nonmajors and is fully acceptable for a degree in the Biological Sciences. Physics 5A-B-C, which begins in the winter quarter, better prepares a student for Physical Chemistry 130A-B-C or 131A-B-C and for some graduate schools.

[d]Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

[e]In addition to our listed biological sciences satellite courses, Chemistry 130A-B-C or 131A-B-C, Physics 18A-B-C, and Psychology 151A-B-C (for Biological Sciences/Psychology double majors) are counted as satellites.

component are passed with a grade of C- or better. Chemistry and physics satisfy Category II, Natural Sciences. Category V, Foreign Language, Linguistics, Logic, Mathematics, Computer Science, 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 important for students to take their required physical sciences early.

Freshmen will normally take eight units of the humanities requirement, Chemistry 1A, and a freshman seminar (Biological Sciences 2) during the fall quarter. Students with a score of 650 or higher on the Mathematics part of the Scholastic Aptitude Test (SAT) may enroll in mathematics during the fall quarter. Please note the prerequisites for Mathematics 2A. During winter quarter, students will begin the Biological Sciences Core with Biological Sciences 90.

Sophomores begin organic chemistry (Chemistry 51A), continue the Biological Sciences Core, and complete the Humanities requirement if they have not taken it during their freshman year. Sophomores often begin taking courses in other schools to meet the UCI breadth requirement and fulfill their mathematics requirement if they have not done so as freshmen. Sophomores who have completed the mathematics requirement as freshmen may enroll in physics. Students who intend to double major in Chemistry may be required to take Physics 5A-B-C in place of Physics 3A-B-C.

During their junior year, most majors continue the Biological Sciences Core and take physics if they have not yet done so. Juniors complete their breadth requirements and often become involved in the satellite course requirements. Since most satellites are based upon material contained in the Core, it is usually preferable for students to have completed most of the Core before taking satellite courses.

Finally, during their senior year, students complete the Core and may become involved in an area of specialization within the School.

A special program of study should be considered by students who enter the biological sciences with a weak background in the sciences and in writing skills. A weak background might consist of not completing high school chemistry or mathematics through trigonometry, and not satisfying the Subject A requirement before entering the University. This program allows a student to gain the necessary background skills and may require five years of study at the undergraduate level. Before beginning this program of study, students must see an academic counselor in the Biological Sciences Student Affairs Office.

Freshmen should complete Writing 1A, Mathematics 1, Biological Sciences 2, and an additional humanities course (to satisfy the alternative to the Humanities Core) during the fall quarter. The winter quarter should include Chemistry 10 and continuation of humanities and mathematics. Continuation of humanities and mathematics, and an elective, are taken during the spring quarter.

During the second year, students should begin general chemistry (Chemistry 1A-B-C), continue working on the breadth requirement and any remaining humanities requirements, and complete mathematics. During winter quarter, students will begin the Biological Sciences Core with Biological Sciences 90.

The Biological Sciences Core, organic chemistry (Chemistry 51A-B-C), and elective courses should be taken during the third year.

The fourth year should include Physics 3A-B-C, continuation of the Biological Sciences Core, biological sciences satellites, and possibly research or other electives.

The fifth year should be relatively free to explore additional satellites and research and to complete any remaining Biological Sciences Core courses.

Requirements for the B.S. Degree in Biological Sciences with a Concentration in Ecology and Environmental Biology

The School of Biological Sciences offers a concentration in Ecology and Environmental Biology which provides a second pathway to a B.S. degree in Biological Sciences. The concentration in Ecology and Environmental Biology differs from the regular undergraduate program in having a greater emphasis on ecology and the natural sciences and a lesser emphasis on chemistry and molecular biology. Its principal objective is to afford the student an integrated, interdisciplinary program in environmental studies within the framework of a broad and rigorous physical and biological sciences background. A vital goal is to allow the student completing the course of study to be broadly trained as a biologist, with the breadth of educational experience to view environmental problems from an informed ecologist's perspective. In addition to completing basic required courses in the humanities and the physical and biological sciences, the student must complete a core of environmentally based courses from the Department of Ecology and Evolutionary Biology, the Program in Social Ecology, and the School of Engineering. Exposure to current thought in several subareas of ecology is emphasized, and the acquisition of elementary statistical and computer skills is stressed. Opportunities to specialize in several general study areas are furnished. Students will study theoretical concepts and experimental relationships in terrestrial or aquatic systems through Ecology and Evolutionary Biology satellite courses, but may also choose to specialize in the demographic and planning aspects of environmental management through classes in Social Ecology, or the technological approach to environmental problem solving through advanced course work in environmental engineering.

Students with an engineering perspective are encouraged to explore the program options in environmental engineering (p. 216), offered by the School of Engineering. Students should also investigate the Applied Ecology major (p. 200), offered jointly by the School of Biological Sciences and the Program in Social Ecology. The Applied Ecology major emphasizes ecology as it pertains to human needs, whereas the concentration in Ecology and Environmental Biology emphasizes ecology as a basic science.

University Requirements: See page 14.

School Requirements

Biological Sciences 90, 101, 102, 103, 103L, 104, 104L, 105, 106, 106L, 120, 166, either 171 or 174, and either 169 or 179; Chemistry 1A-B-C, 51A-B and 1LB-LC, 51LA-LB; Information and Computer Science 1; Mathematics 2A-B and one quarter statistics; Physics 3A-B-C, 3LA-LB-LC; one of the following courses: Engineering CE173 or ME164, Social Ecology E125, E156A, or E158; one of the following courses: Engineering CE161, CE162, Social Ecology E162, E168, E171, E173, E176, E181; and Humanities 1A-B-C, or another option of the lower-division Writing Requirement of the breadth requirement (Category I) *and* a three-quarter sequence in either Humanities or Literature (Category IV, Humanistic Inquiry).

Students must attain a 2.0 grade point average in required Biological Sciences courses.

Planning a Program of Study

A normal program of study for the concentration in Ecology and Environmental Biology is similar to that for the regular Biological Sciences major, except that Biological Sciences 102 and 120 are normally taken in the sophomore year. In the junior and senior years a program of study in Ecology and Environmental Biology requires Information and Computer Science 1 rather than Biological Sciences 107. In addition, required electives in biological sciences, engineering, and social ecology replace the requirement for three satellite courses.

The UCI breadth requirement may be satisfied in the concentration in Ecology and Environmental Biology in a manner similar to the regular Biological Sciences major.

Further clarification on the concentration in Ecology and Environmental Biology may be obtained from the Biological Sciences Student Affairs Office.

Special Programs and Courses

Biological Sciences 199

Every undergraduate student in the School of Biological Sciences has the opportunity to pursue independent research in a professor's laboratory 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 we do 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 their faculty advisors.

Excellence in Research Program

The School of Biological Sciences believes that successful participation in creative research is one of the highest academic goals our undergraduates can attain and accordingly rewards such students with Excellence in Biological Sciences Research.

Sample Program — Ecology and Environmental Biology Concentration

	Freshman	Sophomore	Junior	Senior
FALL	Bio. Sci. 2 (Seminar)	Bio. Sci.101	Bio. Sci.104, 104L	Required Elective[e]
	Chem. 1A	Chem. 51A, LA	Bio. Sci. 166	Required Elective
	Human. 1A[a]	Math 2A or Physics 3A, LA[c]	Physics 3A, LA or Elective	Elective
	Math 2A[b]	Elective[d]	Breadth	Elective
WINTER	Bio. Sci. 90	Bio. Sci. 102	Bio. Sci. 105	Required Elective
	Chem. 1B, LB	Chem. 51B, LB	ICS 1	Elective
	Human. 1B	Math 2B or Physics 3B, LB	Physics 3B, LB or Elective	Elective
	Math 2B		Breadth	Elective
SPRING	Chem. 1C, LC	Bio. Sci. 103, 103L	Bio. Sci. 106, 106L	Required Elective
	Human. 1C	Bio. Sci. 120	Physics 3C, LC or Elective	Elective
	Statistics	Statistics or Physics 3C, LC	Breadth	Elective
				Elective

[a]Students may replace Humanities 1A-B-C with another option of the lower-division Writing Requirement of the breadth requirement (Category I) *and* a three-quarter breadth sequence in either Humanities or Literature (Category IV, Humanistic Inquiry). (See School Requirements for regular Biological Sciences majors and footnote a from the Sample Program for regular Biological Sciences majors.)

[b]Students with a score of 650 or higher on the Mathematics section of the Scholastic Aptitude Test (SAT) may begin mathematics as freshmen. Students with a score below 650 on the Mathematics section of the SAT should defer mathematics to their sophomore year.

[c]Students who have completed mathematics in their freshman year may take Physics 3A-B-C and 3LA-LB-LC in their sophomore year. Students who take the mathematics requirements in their sophomore year should defer physics to their junior year.

[d]Electives should be chosen with the following purposes in mind: UCI breadth requirements; students' own breadth; preprofessional training.

[e]Required electives are Biological Sciences 171 or 174, Biological Sciences 169 or 179, and two courses from among various Engineering and Social Ecology courses. See School Requirements for the concentration in Ecology and Environmental Biology.

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. With successful completion of this Program the students are awarded Excellence in Research certificates. 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 (with at least one quarter taken during the academic year of the symposium) are eligible to participate. They must be in good academic standing and making normal progress in biological sciences.

Research Enrichment Program

The Research Enrichment Program is open to highly qualified sophomores and juniors who are interested in either health or life science research. Students may apply at the end of their freshman year to participate in the following year. The program offers students special seminars, guest speakers, field trips, and individual projects. It is the goal of the program to introduce students to as many and varied areas of biology as possible, with the intention of participating in a 199 research project the following year. Selection into the program is based on interviews and overall academic records.

Marine Ecology Super Course

For the winter quarter of odd years, Biological Sciences 181 (Advanced Marine Ecology) and 182 (Applied Marine Productivity), or a similar grouping, will be combined into a Marine Ecology Super Course. These courses, with a Biological Sciences 199 research course, will constitute a student's entire winter quarter curriculum. The course is limited to 20 students with selection based on a questionnaire and interview. Prerequisites are completion of Biological Sciences 102 and consent of instructor.

Terrestrial Ecology Super Course

For the spring quarter of even years, Biological Sciences 167 (Field Ecology), 172 (Physiological Plant Ecology), and 173 (Physiological Animal Ecology), or a similar grouping, will be combined into a Terrestrial Ecology Super Course. These courses, with a Biological Sciences 199 research course, will constitute a student's entire spring quarter curriculum. The course is limited to 20 students with selection based on a questionnaire and interview. Prerequisites are completion of Biological Sciences 102 and consent of instructor.

Undergraduate Seminars

In addition to research opportunities, there are freshman, sophomore, junior, and senior seminars which enable students to meet in small groups with individual professors. Topics vary from quarter to quarter. Exciting developments in modern biology as well as other topics of interest to students are discussed. Some of the areas are regeneration, developmental biology of marine invertebrates, immunology, regulation of enzyme action and synthesis, human ecology, population ecology, experimental neuroanatomy, and neural and endocrine bases of behavior.

Undergraduate Teaching Opportunities

Through the Education Motivation Program and the Tutoring Program, students can immediately put to practice skills they have learned in their biology training. These programs provide opportunities for students to develop teaching abilities and to perform a worthwhile and necessary service. In the Education Motivation Program, present biological sciences majors go into the elementary and junior high schools to motivate students toward a career in the sciences. In the Tutoring Program, UCI students tutor other UCI students in biology, chemistry, mathematics, and physics.

3-2 Program in the Graduate School of Management

Students who are interested in a career in administration and who will have completed all of the course requirements for a degree in Biological Sciences by the end of their junior year may apply to a cooperative 3-2 program which leads to a Master's degree in Administration as well as the Bachelor's degree in Biological Sciences. During the senior year, students will take courses in management which will count toward the 180 elective units needed to receive the Bachelor's degree. Upon successful completion of the required courses and units, usually at the conclusion of the first year in the 3-2 program, the B.S. degree in the Biological Sciences will be awarded. The M.S. degree in Management will be awarded after successful completion of course requirements, ordinarily at the end of the fifth year.

Special Research Resources

Special research resources include the Laser Microbeam Program (LAMP), 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 Museum of Systematic Biology, a teaching and research facility which currently contains material on local populations of plants, invertebrates, and vertebrates; the Developmental Biology Center, devoted to analyzing developmental mechanisms in amphibians, insects, and other invertebrates; the Irvine 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 Ecology 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 on our campus, 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. The Office also houses the office of the Counselor

for Special Programs. This office is responsible for academic counseling, coordination of special services, and professional career counseling specifically for minority and E.O.P. (Educational Opportunity Program) students.

All freshmen will be enrolled in small-group freshman seminars (Biological Sciences 2). All other new students will be enrolled in special sections of Biological Sciences 190. The professor conducting the seminar will be the student's faculty advisor. Upper-division peer advisors will be 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 near the Student Affairs Office. Office hours are posted at the beginning of each quarter, and anyone should feel free to drop by and discuss any social or academic problems.

Career Advising

Information on graduate and professional schools in the health sciences can be obtained from the Student Affairs Office. Additional career information and job opportunities are available through the UCI Career Planning and Placement Office.

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.

A 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 bacteriology, biochemistry, biometeorology, botany, cytology, ecology, fishery biology, genetics, home economics, microbiology, 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 Biological Sciences Student Affairs Office. They should also check deadlines for taking the New Medical College Admission Test or other required tests and application deadlines. The New Medical College Admission Test, required by most medical schools, is administered in spring and fall of each year on the Irvine campus. This test should be taken in the spring, a year and one-half before the student plans to enter medical school.

Many of our students desire a career related to their education in the biological sciences. Students can go into medicine, dentistry, optometry, osteopathy, podiatry, veterinary medicine, and related medical fields; into teaching; and into research in the biological sciences. In properly preparing for such careers, planning is essential early in a student's education.

Leaders in dental, medical, and veterinary education 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 on the Irvine campus. 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.

Student Participation

BSSA. The School of Biological Sciences highly recommends undergraduate student participation in its activities. The Biological Sciences Student Association (BSSA) is an autonomous student group which provides a liaison among the administration, faculty, Biological Sciences Student Affairs Office, and students. Some of its activities include teaching evaluations, a Biofaire, special events, publication of a list of 199 courses available, and a quarterly newsletter.

Alpha Epsilon Delta. Alpha Epsilon Delta is a national honor society for students preparing for careers in the health professions. The objects of the society are to encourage excellence in premedical scholarship; stimulate an appreciation of the importance of premedical education; promote cooperation and contacts between medical and premedical students and educators; bind together similarly interested students; and use its knowledge for the benefit of health organizations, charities, and the community. In addition to regular meetings, the chapter shows medical films, visits medical centers and health facilities, and sponsors campus and community health service projects.

BSSO. The Black Students in Science Organization (BSSO) was established to maintain a unified and supportive community of successful Black science and prehealth professional majors at UCI. The group holds weekly meetings; sponsors guest speakers; provides academic support in the form of study sessions, examinations, and study aids from previous classes; and compiles and disseminates information on careers and issues affecting the Black community in particular. BSSO also works in close association with the UCI College of Medicine chapter of the S.N.M.A. (Student National Medical Association). Major achievements have included "BSSO Week" and the cosponsoring of an annual "UCI-CCM Third World Pre-Medical Awareness Conference."

CCM/CBS. Chicanos in Creative Medicine/Biological Sciences (CCM/CBS) was established to promote interaction among Chicano-Latino students majoring in the Biological Sciences. Some of the activities include lectures by prominent scientists, opportunities to visit graduate schools, and an annual dance. The major aim of CCM/CBS is to help members attain the goal of their choice—be it medical school, graduate school, or any science-related profession.

Medspur. Medspur, conceived in 1977, is dedicated to serving prehealth professional students in both social and academic endeavors while at UCI. As the largest registered campus organization, Medspur brings together each year well over 400 students into the club who are interested in pursuing professional careers in human and animal medicine and in dentistry. Medspur's main goal is to bring students together in an environment conducive to the development of cooperation and friendship. Medspur is committed to providing members with the opportunity to learn about the realities of their prospective careers and the issues which face the health-care specialist.

Medspur invites members of the medical community to speak about their professions and consistently organizes student/faculty interactions, dances, MCAT preparation sessions, and Chemistry 1A and Biological Sciences 90 examination reviews. The highlight of each year is the annual UCI Medspur/UCLA Medicus joint Southland Pre-Health Conference which allows students to explore all aspects of the health-care professions.

Graduate Program

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 Departments of the College of Medicine (Anatomy, Biological Chemistry, Microbiology, and Physiology and Biophysics) cooperate in the conduct of a unified graduate program, administered by the School of Biological Sciences. The organization of the Departments encourages an interdisciplinary approach to scientific problems, especially at the graduate level.

All programs of study, regardless of emphasis, lead to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D) in the Biological Sciences. At the current time, applications for the M.A.T. are not being accepted. Each Department has a graduate advisor whom students may consult in regard to the technical details of their individual programs.

Applications for admission to graduate study are evaluated both by the Division of Graduate Studies and Research and by the School or the Department to which the student has applied on the basis of letters of recommendation, Graduate Record Examination scores, grades, and other qualifications of the applicant. Candidates for graduate admission are urged to consult the department(s) whose faculty and expertise best fit their interests.

Some faculty are members of an interdisciplinary biophysics and biophysical chemistry group. These faculty are from the Department of Chemistry in the School of Physical Sciences; the Departments of Developmental and Cell Biology and Molecular Biology and Biochemistry in the School of Biological Sciences; and the Department of Physiology and Biophysics in the College of Medicine. This program provides an opportunity for interaction among graduate students and faculty who share common interests in biophysics and biophysical chemistry. Participating graduate students pursue a degree in the department best suited to their own background and research interests. A program of seminars brings the group together monthly to discuss research problems of mutual interest, and a regular series of interdisciplinary courses is offered by the participating faculty to provide formal instruction in areas encompassed by biophysics and biophysical chemistry.

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.* 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.

Each new student is assigned a faculty member as a temporary advisor. 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. 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

Plan I: Thesis Plan — The student completes seven upper-division or graduate courses including a minimum of five non-research 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 Dean of Graduate Studies and Research.

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.

Undergraduate Courses in Biological Sciences

Undergraduates have the opportunity to concentrate in several areas of biology which may be defined by taking a series of related courses in the School. Examples of these areas and courses involved are listed below.

Anatomy: 148, 156, 157, 164

Animal Physiology: 133, 138, 138L, 140, 150, 156, 160, 161, 162, 163, 173, 187, 187L; Developmental and Cell Biology 210, 266, 287

Aquatic Ecology: 135, 169, 175, 176, 176L, 178, 179, 180A-B, 181, 182

Biophysics: 123; Chemistry 130A-B-C or 131A-B-C; Molecular Biology and Biochemistry 262

Cell Biology: 129, 144A, 144B, 151, 161; Developmental and Cell Biology 205

Developmental Biology: 136, 137B, 137LB, 142, 147, 147L, 148, 148L

Ecological Energetics: 138, 138L, 172, 173, 178, 189

Entomology: 177, 177L, 184; Developmental and Cell Biology 210, 262

Genetics: 137A, 137B, 137LB, 137C, 151; Developmental and Cell Biology 230; Molecular Biology and Biochemistry 207

Invertebrate Biology: 135, 143, 169, 175, 177, 180, 188

Microbiology: 121, 122, 122L, 124 (an organized one-year sequence in the basic microbiological sciences designed to meet the requirements of professional schools in the topic areas, i.e., Medical Technology); Molecular Biology and Biochemistry 221

Molecular Biology and Biochemistry: 123, 137A, 141, 142, 153; Chemistry 130A-B-C or 131A-B-C; Molecular Biology and Biochemistry 205A-B, 207, 214, 262

Neurobiology and Behavior: 133, 152, 153, 155, 156, 157, 158, 161, 162, 163, 164, 174

Organismic Biology: 135, 143, 173, 175, 177, 177L, 180, 185

Plant Biology: 134A, 134LA, 134B, 134LB, 139, 141, 147, 147L, 167, 171, 172, 175, 176, 176L

Terrestrial Ecology: 167, 171, 177, 177L, 185

Theoretical Ecology: 120, 174, 186

Courses for Nonmajors

Nonmajors may also take other courses for which they have the prerequisites.

1 Fundamentals of Modern Biology. Courses which, along with Biological Sciences 80 and 81, provide the nonmajor with a fundamental knowledge of biology. Each course is an independent unit with no prerequisites. Students may take any combination of courses within the collection. **(II)**

1A Physiology (4) F, Summer. Lecture, three hours. How animal cells and animals work, with attention to the structure and function of the human body. **(II)**

1B Molecular Biology (4) W. Lecture, three hours. Molecules of life, with emphasis on medical applications. **(II)**

1C Populations and Environments (4) S, Summer. Lecture, three hours. Principles of ecology with application to populations, communities, ecosystems, and humans. Same as Social Ecology E6. **(II)**

1D Human Development and Genetics (4) S. Lecture, three hours. Human reproduction and embryonic fetal and postnatal development. Problems of birth defects, teratogenesis, cancer, and aging in relation to their genetic basis. Possibilities and consequences of human intervention in developmental and evolutionary processes. **(II)**

1E Botany (5) W. Lecture, three hours; laboratory, three hours. Structure and function of flowering plants related to their roles in ecology and human needs. **(II)**

80-81-82 Biological Basis of Behavior. Lecture, three hours. Three introductory courses, each an independent unit with no prerequisites. Students may take any combination of courses within the collection. **(II)**

80 The Brain and Behavior (4) F. Brain mechanisms underlying psychological processes, including consciousness and sleep, sex, food and water intake, perception, learning, memory, and language. **(II)**

81 The Biology of Behavior Disorders (4) W. Current facts and theories regarding mental illness, genetic disorders, brain damage, sexual deviance, drug abuse, and intellectual functioning. **(II)**

82 Sociobiology (4) S. Biological processes influencing social interactions such as mate selection, care of young, communication, competition, cooperation, aggression, and social stratification. **(II)**

Courses for Both Majors and Nonmajors

1E Botany (5) W. Lecture, three hours; laboratory, three hours. Structure and function of flowering plants related to their roles in ecology and human needs.

5 Mountain Ecology (4) S. Lecture, three hours. Introduction to ecological relationships within mountain environments. Characteristics of those environments and how organisms are adapted. Geological features such as mountain building and erosional processes. Recognition of key animals, plants, and geologic features, with emphasis on the Sierra Nevada and local ranges. Management of wildlife and forests, including endangered species, logging practices, and fire ecology. Problems of mountain survival, including equipment, emergency shelters, map reading, food sources, and hypothermia. Several field trips required.

10 Coastal Ecology (4) F. Lecture, three hours. Introduction to current ecological problems embracing the biology of coastal marine and adjacent terrestrial ecosystems. Physical environment, factors affecting species distribution and abundance, coastal pollution sources and their ecological effects, and use and management of the coastal ecosystem. Effects upon intertidal zonation of physical factors and such biological factors as competition, predation, and behavioral, physiological, and morphological adaptations. Several field trips required.

15 Desert Ecology (4) W. Lecture, three hours. Physical characteristics, climates, and diversity among North American deserts, and ecology and physiological ecology of desert floras and animal populations. Physiological, morphological, behavioral, and life history adaptations to desert environments, with emphasis placed on examples from California deserts. Several field trips required.

20 Western Water Problems (4) W. 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.

45A-B-C Biology of Oral Disease (1) F, W, S. Lecture, two hours; field observation, three hours. Biological, chemical, clinical, and psychological factors of oral disease. Includes lectures, presentation of an independent project, and field observation. Pass/Not Pass only.

50 The Biology of Heart Disease (4) S. Lecture, four hours. Guest lecturers from the field of cardiovascular medicine discuss current concepts on cause, diagnosis, and treatment of heart disease. Topics include surgery, rehabilitation, and congenital defects, with emphasis on prevention.

60 Horticultural Sciences (4) F. Lecture, three hours; field, three hours. Theory and practice of plant culture. Basic aspects of plant structure and function, soil science, plant pathology, plant pests and irrigation, and the applied aspects of horticulture. Plant cultivation in a garden plot.

61 Horticultural Sciences Field (2) F, W, S. Continuation of field work begun in previous quarter. Prerequisite: completion of Biological Sciences 60.

78 Health (4) F, S. Lecture, three hours. Lectures by eminent scientists and discussion on subjects relating to basic current issues in health areas. Topics vary from year to year. Pass/Not Pass only.

91 Origin of Life and Biological Evolution (4) S. Lecture, three hours. Origin of life starting with the primordial atmosphere of the earth about 4 billion years ago. Biological evolution of organisms traced in increasing steps of chemical complexity beginning with the formation of primitive biological molecules. Evolution of immune system, nervous system, and behavior.

108 Behavioral Neuroscience Theory and Methods (4) W. Lecture, three hours. Study of the nervous system and how behavior is mediated. Investigates the neural mechanisms underlying both simple and complex aspects of behavior.

Seminars, Special Courses, and Independent Study

Seminars

2 Freshman Seminars (1) F. Lecture, one hour. Weekly seminar conducted by faculty advisors to discuss a wide variety of relevant biological topics and to provide academic advising. Prerequisite: freshman Biological Sciences majors. Pass/Not Pass only.

55 Sophomore Seminars (2-2-2) F, W, S. Intensive study of selected topics in experimental biology. Prerequisite: sophomore Biological Sciences majors. Pass/Not Pass only.

190 Junior/Senior Seminars (2-2-2) F, W, S. Lecture, one hour. Weekly seminar of small group of students with a faculty member. Most fall seminars conducted by faculty advisors to discuss biological topics and to provide academic advising. Prerequisite: junior/senior Biological Sciences majors. Pass/Not Pass only.

Special Courses

97 Education Motivation (4) F, W, S. Field, four hours. Students develop and deliver special enriched educational programs in biological sciences for presentation in junior and senior high schools. May be repeated once for credit. Pass/Not Pass only.

98 Special Group Activities F, W, S.

Sec. 1 Health Science Experience (0). Opportunities to observe/participate in various health fields. Specific number of hours per quarter of volunteer work with approved health professionals required. Passing contingent on completion of minimum specified hours with satisfactory evaluation. Some agencies require a two-quarter commitment. Fields include dentistry, optometry, veterinary and human medicine, and allied health. Pass/Not Pass only.

Sec. 2 Tutoring in Biological Sciences (2 to 4). Students act as peer tutors and provide tutorial assistance in Biological Sciences Core classes. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass only.

Sec. 3 Tutoring in Horticulture (1 to 4). Students act as peer tutors and provide tutorial assistance in Biological Sciences Core classes. Prerequisite: consent of instructor. May be repeated for a total of eight units. Pass/Not Pass 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.

191 Mammals to Molecules: An Overview of Research in the School of Biological Sciences (2) S. Lecture, two hours. Exposure to research currently occurring in biological sciences on the Irvine campus. Prerequisites: completion of or concurrent enrollment in Biological Sciences 104 and Chemistry 51C.

198 Research Enrichment (4-4-4) F, W, S. Seminar, two hours. Highly qualified sophomores and juniors who are interested in more detailed aspects of biological sciences. Special seminars, guest speakers, field trips, and individual projects. Investigates an area of biological interest each quarter. Selection into the program is based on interviews and overall academic performance. Prerequisite: consent of instructor.

Independent Study

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. May be graded "IP."

199A-B-C Independent Study in Biological Sciences Research (1 to 4 per quarter) F, W, S. Individual laboratory research under a professor's direction. Required for participation in the Excellence in Research Program. Prerequisite: consent of instructor. May be graded "IP."

Core Curriculum

Biological Sciences courses numbered 90, 101, 102, 103, 103L, 104, 104L, 105, 105L, 106, 106L, and 107 are required of all Biological Sciences majors. (See Concentration in Ecology and Environmental Biology for exceptions.) Lecture, three hours; laboratory, three hours unless otherwise noted. (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.)

90 Diversity of Life (3) W. Lecture, one hour; laboratory, four hours. Types of living organisms with an introduction to systematics and classification. Evolutionary viewpoint is stressed.

101 Evolutionary Biology and Genetics (4) F. Lecture. Introduction to the theory of evolution and speciation, and classic and modern concepts of genetics. Prerequisites: Biological Sciences 90 and concurrent enrollment in or completion of Chemistry 1A-B-C. Formerly Biological Sciences 101A.

102 Ecology (4) F, W. 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. Prerequisites: Biological Sciences 90 and 101. Formerly Biological Sciences 101E.

103 Developmental and Cell Biology (4) S. 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 101. Formerly Biological Sciences 101B.

103L Developmental and Cell Biology Laboratory (2) S. Corequisite: Biological Sciences 103. Formerly Biological Sciences 101LB.

104 Physiology (5) F. Lecture, four hours. 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 105. Prerequisite: Biological Sciences 103. Formerly Biological Sciences 101C. Not offered 1981.

104L Physiology Laboratory (2) F. Corequisite: Biological Sciences 104. Formerly Biological Sciences 101LC. Not offered 1981.

105 Psychobiology (4) F, W. Lecture. Evolution of behavior, including ethological and psychological aspects and analysis of neuroanatomical, neurochemical, neurophysiological, and neuroendocrine systems underlying basic behavioral processes. Prerequisite: Biological Sciences 104. Formerly Biological Sciences 101D.

105L Psychobiology Laboratory (3) F, W. Corequisite: Biological Sciences 105. Formerly Biological Sciences 101LD.

106 Biochemistry and 107 Molecular Biology form a continuous sequence covering modern biochemistry and molecular biology.

106 Biochemistry (4) W, S. Lecture. Structure and properties of proteins; major biochemical pathways and mechanisms for their control. Prerequisite: completion of or concurrent enrollment in Chemistry 51B. Formerly Biological Sciences 101F.

106L Biochemistry Laboratory (2) W, S. Properties of enzymes and the culture and isolation of mutants of microorganisms. Prerequisite: concurrent enrollment in or completion of Biological Sciences 106. Formerly Biological Sciences 101LF.

107 Molecular Biology (4) F, 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 106. Formerly Biological Sciences 101G.

Satellite Courses

118 Microbial Ecology of Natural and Polluted Waters (4) S. Lecture, three hours. Microorganisms and their functions in the aquatic environment, specifically their role in biogeochemical cycles of nitrogen, sulfur, and mercury, and how man's activities affect these cycles. How and why indicator organisms are used in the determination of water quality for public health. Prerequisite: a general course in biology or Social Ecology E5. Same as Social Ecology E125.

118L Microbial Ecology of Natural and Polluted Waters Laboratory (4) S. Laboratory, six hours. Enumeration and identification of microorganisms from various aquatic environments. Microbial mediation of sulfur, nitrogen, and mercury cycles. Public health aspects of water quality. Corequisite: Biological Sciences 118. Same as Social Ecology E125L.

119 The Chemical Components of Water Quality (4) F. Lecture, three hours; laboratory, three hours. Chemical properties of water used for drinking, agriculture, and industry. Basic chemical analyses of water and significance of these tests in determining water quality. Prerequisites: Chemistry 1A and Social Ecology E5. Same as Social Ecology E140.

120 Quantitative Ecology (4) S. Lecture, four hours. Analysis and survey of quantitative ecological models: population growth and regulation, predation, competition, community composition, sociobiology, optimality theory, and similar topics. Interactive computer tutorials with graphics. Prerequisites: Biological Sciences 102 and Mathematics 2A-B.

121 Immunology with Hematology (4) W. 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 106 or consent of instructor.

122 General Microbiology (4) F, 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 106.

122L General Microbiology Laboratory (4) F, 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: concurrent enrollment in Biological Sciences 122 and consent of instructor.

123 Biophysical Chemistry (4) S. Lecture, three hours; discussion, one hour. Structure and properties of molecules and biological macromolecules using spectroscopic, hydrodynamic, thermodynamic, and radiation scattering methods. Prerequisite: Chemistry 130B or 131B. Same as Chemistry 130C.

124 Virology (4) S. Lecture, three 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 106.

127 Pathogenic Microbiology (4) W. Lecture, three hours. Disease-causing microorganisms including bacteria, fungi, and viruses explored in light of their ability to cause disease. Nature of host parasite relationship and role of immunity in the pathogenesis of infectious diseases. Prerequisite: Biological Sciences 122 or consent of instructor.

129 Biogenesis of Cell Organelles (4) S of even years. Lecture, three hours. Molecular biology of mitochondria and chloroplasts. Organization and expression of extranuclear genes. Prerequisite: Biological Sciences 107.

133 Sensory Physiology (4) S. Lecture, three hours. Physiology and function of sense organs. Emphasis on transduction at the cellular level. Prerequisite: consent of instructor.

134A Plant Physiology (4) S of even years. Lecture, three hours. Plant hormones, growth, and development. Prerequisite: Biological Sciences 1E or consent of instructor.

134LA Plant Physiology Laboratory (2) S of even years. Laboratory, three hours. Prerequisite: concurrent enrollment in or completion of Biological Sciences 134A.

134B Plant Physiology (4) S of odd years. Lecture, three hours. Plant metabolism, mineral nutrition, photosynthesis, cell physiology. Prerequisite: Biological Sciences 1E or consent of instructor.

134LB Plant Physiology Laboratory (2) S of odd years. Laboratory, three hours. Prerequisite: concurrent enrollment in or completion of Biological Sciences 134B.

135 Biology of an Organism: Hydra (4) S. Lecture, three hours. Some basic concepts of biology through study of the life history of the simple freshwater hydra. Reading material will consist mostly of research and review articles. Prerequisites: Biological Sciences 103 and consent of instructor.

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 104 or consent of instructor.

137 Genetics

137A Genetics of Bacteria and Viruses (4) F. Lecture, four hours. Prerequisite: Biological Sciences 104.

137B Eucaryote Genetics (4) W. Lecture, four hours. Basic genetics of animals, plants, and man. Covers transmission genetics, chromosome behavior, and molecular genetics unique to higher organisms. Prerequisite: Biological Sciences 104.

137LB Eucaryote Genetics Laboratory (4) W. Laboratory, four hours. Experiments include generation and analysis of chemical- and x-ray-induced mutations, gynadromorph mapping, clonal analysis of mitotic crossing-over, chromosome analysis, and restriction mapping of recombinant DNA clones. Corequisite: Biological Sciences 137B.

137C Human Genetics (4) S. Lecture, four hours. Normal and abnormal genetic variation in the human population. Prerequisite: Biological Sciences 137B.

138 Comparative Animal Physiology (4) W of even years. Lecture, three hours. Maintenance aspects of physiology: water balance; feeding and digestion; metabolism; respiration and circulation. Prerequisite: Biological Sciences 104.

138L Comparative Animal Physiology Laboratory (2) W of even years. Laboratory, three hours. Prerequisite: concurrent enrollment in or completion of Biological Sciences 138.

139 Experimental Phytochemistry Laboratory (5) F of even years. Lecture, one hour; laboratory, six hours. Isolation, characterization, and determination of biological activity of toxic and medicinal plant natural products. Neurotoxins, cardiac glycosides (heart poisons), vitamin antagonists, allergens, and anti-neoplastic agents of plant origin. Purified extracts tested on experimental animals to determine biological activity. Prerequisites: Biological Sciences 1E and/or 102 and 141, and Chemistry 51C.

140 Membrane Physiology (4) S. Lecture, three hours. Introduction to structure and function of biological membranes emphasizing basic concepts. Passive and active ion transport, isolation, and chemical analysis of membranes, membrane architecture, and physical methods for studying membranes. Prerequisites: Biological Sciences Core, Physics 3A-B-C or 5A-B-C and Mathematics 2A-B, or consent of instructor. Not offered 1982.

141 Comparative Plant Biochemistry (4) F of odd years. Lecture, three hours. Evolution, taxonomy, and biological significance of toxic secondary metabolites in higher plants. Structures, compartmentalization, biosynthesis, function, and role of naturally occurring compounds in plants, including carbohydrates, lipids, terpenoids, polyketides, phenolics, nitrogenous compounds (amino acids, alkaloids, porphyrins), and sulfur- and halogen-containing compounds. The importance of plant chemicals as biologically active drugs in human affairs is also discussed. Prerequisites: Biological Sciences 1E and 101 or 102, and Chemistry 51C.

142 Molecular Biology of Development (4) S. Lecture and discussion, three hours. Molecular mechanisms in control of development. Emphasis on cell differentiation. Prerequisite: Biological Sciences 107 or consent of instructor. Not offered 1982.

143 Human Parasitology (4) S of odd years. Lecture, three hours. Introduction to human animal-parasitic diseases including worm and protozoan infections. Prerequisite: Biological Sciences 104 or consent of instructor.

144 Cell Biology

144A Cell Organelles and Membranes (4) S. Lecture, four hours. Ultrastructure and function of cellular organelles and membrane systems. Prerequisite: Biological Sciences 103.

144B The Nucleus (4) F. Lecture, four hours. Ultrastructure and biochemical function of the nucleus, with emphasis on structure of chromatin, the mitotic cycle, and meiosis. Prerequisite: Biological Sciences 103.

147 Growth and Development of Plants (4) S. Lecture, three hours. Plant growth and development at the organismic, cellular, and molecular levels. Subjects include plant reproduction and embryology; morphogenesis of plant meristems; cell differentiation; and differentiation gene expression, genetic transformation, and somatic cell genetics. Prerequisite: Biological Sciences 103.

147L Growth and Development of Plants Laboratory (1) S. Prerequisite: concurrent enrollment in or completion of Biological Sciences 147. Not offered 1982.

148 Vertebrate Embryology (4) S. Lecture, three hours. Introduction to animal development through organogenesis with emphasis on vertebrates. Corequisite: Biological Sciences 148L. Prerequisite: Biological Sciences 103.

148L Vertebrate Embryology Laboratory (2) S. Laboratory, four hours. Corequisite: Biological Sciences 148.

150 Mammalian Physiology (4) W of odd years. Lecture and discussion, four hours. Maintenance aspects of mammalian physiology (circulation, respiration, excretion, digestion, energy metabolism, endocrines, reproduction). Physiology of central nervous systems not included. Prerequisite: Biological Sciences 104, Chemistry 51C suggested.

151 Structure and Function of Eucaryotic 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 107.

152 Neural Mechanisms of Learning (4) S of odd years. Lecture, three hours. Neural mechanisms and processes underlying learning, ranging from habituation in simple neuronal systems through neural processes of learning in the intact mammalian brain to brain substrates of human information processing and language. Prerequisite: Biological Sciences 105 or 80.

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 107 or 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 105 or 80-81 and consent of instructor.

156 Neural Systems (4) W of even years. Lecture and discussion, 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. An attempt is made to unify these levels. Most useful to students who have had satellite courses or research experience in neurophysiology or neurochemistry. Prerequisite: Biological Sciences 105.

158 Learning and Memory (4) F of odd years. Lecture and discussion, three hours. Basic issues concerning the nature of behavioral plasticity and information storage and their neural substrates. Prerequisite: Biological Sciences 105 or 80-81.

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 105.

162 Synaptic Mechanisms (4) S of odd years. Lecture and discussion, three hours. New concepts and current literature in developing areas of synapse function. Prerequisite: Biological Sciences 105 or consent of instructor.

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 105.

164 Neuroanatomy (4) S of odd years. Lecture and discussion, three hours. Introduction to comparative neuroanatomy, emphasizing mammalian central nervous system. Prerequisite: Biological Sciences 105.

166 Field Methods in Ecology (4) F. Lecture, one hour; laboratory, six hours. Introduction to materials and methods techniques and statistical treatment. Emphasis on field studies with effort equally divided between plant and animal ecology in marine, freshwater, and terrestrial habitats. Prerequisites: Biological Sciences 90 and completion of or concurrent enrollment in 102.

167 Field Botany (4) S of even years. Lecture, three hours; laboratory and field, three hours. Taxonomic survey of selected plant families, including the role of floral biology and agencies of pollination in angiosperm evolution. Each student completes a short research problem. May be taken only as part of the Terrestrial Ecology Super Course. Prerequisite: consent of instructor.

169 Marine Ecology (4) F, Summer. Lecture, three hours. Fundamental concepts of marine ecology. Physical and chemical factors, current systems and water masses, trophic ecology, distributions of organisms, survey of pelagic and benthic communities. Prerequisite: Biological Sciences 102.

171 Vegetation and Ecosystem Dynamics (4) S of even years. Lecture, three hours; two weekend field trips. Introduction to major vegetation types of the world and dynamics of their ecosystems. Emphasis on community ecosystem dynamics. Major emphasis given to community structure. Research paper required. Prerequisites: Biological Sciences 102 and consent of instructor. Not offered 1982.

172 Physiological Plant Ecology (4) S of even years. Lecture, three hours; field, three hours. Examination of functional response of individual plants and plant communities to their environment. May be taken only as part of the Terrestrial Ecology Super Course. Research paper required. Prerequisite: consent of instructor. Not offered 1982.

173 Physiological Animal Ecology (4) S of even years. Lecture, three hours; field, three hours. An examination of the functional means by which vertebrates cope with their environments; roles of osmoregulation, thermoregulation, and energy metabolism in the lives of tetrapods. Prerequisites: Biological Sciences 102 and consent of instructor.

174 Behavioral Ecology (4) W of odd years. Lecture, three hours; laboratory, 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 102 or consent of instructor.

175 Phycology (4) W of even years. Lecture, three hours; laboratory, two hours; two field trips. Structure, reproduction, and life histories of freshwater and marine algae. Prerequisite: Biological Sciences 102 or consent of instructor.

176 Phytoplankton Taxonomy and Ecology (4) S of even years. Lecture, three hours. Systematics, population ecology, and general physiology of planktonic algae. Prerequisite: Biological Sciences 169 or consent of instructor. Corequisite: Biological Sciences 176L.

176L Phytoplankton Taxonomy and Ecology Laboratory (2) S of even years. Laboratory, three hours; field, one hour. Identification procedures, use of taxonomic literature, and development of manipulatory skill in evaluating phytoplankton populations. Corequisite: Biological Sciences 176.

177 General Entomology (4) F of odd years. Lecture, three hours; laboratory, six hours; three field trips. Insect structure, function, development, and classification. Emphasis on natural history, environmental association, and relationships to man. Collection required. Prerequisite: consent of instructor.

177L General Entomology Laboratory (2) F of odd years. Laboratory, six hours. Introduction to insect taxonomy and systematics. Emphasis on the study of insect diversity through detailed examination of external morphology and ecological relationships of approximately 150 representative families. Insect identification and familiarity with field collecting and sampling methods. Collection required. Corequisite: Biological Sciences 177.

178 Marine Productivity Ecology (4) F of odd years. Lecture, three hours. Primary production in oceanic, marine, and estuarine environments. Productivity at levels of grazers, predators, and decomposers. Methods of measurement and their interpretation. Prerequisite: Biological Sciences 169 or consent of instructor. Not offered 1981.

179 Limnology and Freshwater Biology (4) F. 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 102 or consent of instructor.

180 Invertebrate Zoology (6) W. Lecture, three hours; laboratory, five hours. Survey of major invertebrate phyla. Emphasis on comparative morphology, evolution, adaptive physiology, behavior, and life history. Prerequisite: Biological Sciences 90 or 102.

181 Advanced Marine Ecology (6) W of odd years. Lecture, one hour; discussion, one hour; laboratory and field, six hours. Comparative studies of intertidal community structure with emphasis on soft bottoms. Analytical methods employed. Data collected from various habitats presented as final report in manuscript form. May be taken only as part of the Marine Ecology Super Course. Prerequisite: consent of instructor.

182 Advanced Marine Productivity (6) W of odd years. Lecture, one hour; discussion, one hour; laboratory and field, six hours. Productivity ecology, functional morphology, and natural history of rocky intertidal populations and communities. Productivity and standing crop measurement methods, reduction, interpretation, and reporting of data. May be taken only as part of the Marine Ecology Super Course. Prerequisite: consent of instructor.

184 Insect Ecology (4) S of even years. Lecture, three hours. Ecological and evolutionary aspects of insect lifestyles including evolution, morphology, and physiology. Major insect orders; role in ecosystem functioning; patterns of feeding, growth, and reproduction; relationship to humans. Prerequisite: Biological Sciences 102 or consent of instructor.

185 Field Ornithology (4) S of even years. Lecture, two hours; field and laboratory, three hours; two weekend field trips. Field studies and reading from periodical literature. Emphasis on behavior and ecology, although aspects of physiology and taxonomy are covered. Prerequisite: consent of instructor.

186 Ecology of Terrestrial Communities (4) S of odd years. Lecture, three hours. Community function, structure, development, and evolution. Predation, competition, symbiosis, species diversity, niche theory, succession, island biogeography, and coevolution. Prerequisite: Biological Sciences 102.

187 Mammalian Biology and Ecology (4) F of even years. Lecture, two hours. Origin, phylogeny, and biogeography of mammals with emphasis on their taxonomy, physiology, and ecology. Prerequisites: Biological Sciences 102, and consent of instructor.

187L Mammalian Biology and Ecology Laboratory (0) F of even years. Laboratory and weekend field trips, three hours. Classification and identification of local mammals. Field affords opportunities for ecological research. Corequisite: Biological Sciences 187.

188 Introduction to Insect Physiology (4) W of odd years. Lecture, three hours. Physiology of insects. Insect respiration, digestion, excretion, and neurobiology, including sensory systems and effectors. Prerequisite: Biological Sciences 102 or 103.

189 Ecological Energetics (4) W. Lecture, three hours. Role of energy and energetic transformations in ecological systems, studied at four levels of organization: cellular, individual whole organism, population, and community. Effect of energy and its availability or limitation on the function of ecological systems and the evolution of adaptations. Prerequisite: Biological Sciences 90. Recommend Biological Sciences 102 and 104.

192 Comparative Animal Histology (4) S. Lecture, two hours; laboratory, three hours. Cell organization within tissue, tissue structure related to tissue function; organization of similar tissues in different animal phyla analyzed at the level of light microscopy. Laboratory involves study of tissue using light microscopy. Prerequisite: Biological Sciences 104 or equivalent knowledge of cell structure and animal anatomy.

Graduate Study in the School of Biological Sciences

Graduate student status is a prerequisite for all 200-299 courses listed in the following departmental sections.

DEPARTMENT OF DEVELOPMENTAL AND CELL BIOLOGY

Participating Faculty

Michael W. Berns, *Department Chair*: Experimental cytology; laser microbeams
Joseph Arditti: Plant physiology and development; orchid and taro biology
Albert F. Bennett: Environmental physiology; physiological ecology
Hans R. Bode: Cell differentiation and pattern formation
Timothy J. Bradley: Comparative physiology of ion transport epithelia
Peter J. Bryant: Diploid genetics and development
Susan V. Bryant: Regeneration and vertebrate development
Richard D. Campbell: Developmental biology of invertebrates
Rowland H. Davis: Biochemical genetics, compartmentation and regulation in metabolism of eucaryotes
Donald E. Fosket: Cell growth and development
Barbara A. Hamkalo: Structure of chromosomes; regulation of gene expression
Patrick L. Healey: Plant cell development and morphogenesis
Robert K. Josephson: Comparative neurophysiology
Harold Koopowitz: Sensory physiology and comparative neurophysiology
Stuart M. Krassner: Parasite immunology and biochemistry
Howard M. Lenhoff: Physiology and developmental biology of marine invertebrates; immobilized enzymes
Jerry E. Manning: Gene sequence organization in eucaryote DNA; electron microscopy
J. Lawrence Marsh: Molecular genetics of development and gene regulation
Ronald L. Meyer: Developmental neurobiology
Eloy Rodriguez: Eco-biological function of plant toxins; plant chemical ecology; biological and cellular chemistry of plant products
Howard A. Schneiderman: Developmental biology and insect physiology
Grover C. Stephens: Comparative animal physiology

The Department of Developmental and Cell Biology is concerned with the development, physiology, structure, and function of organisms and their component cells. The main emphasis of the Developmental and Cell Biology graduate program is research training in either developmental and cell biology or comparative physiology of animals and plants. The Department maintains facilities for research involving biochemistry; genetics; electron microscopy; cell, tissue, and organism culture; microsurgery; and neurophysiology.

Students in the Department of Developmental and Cell Biology generally enter one of two graduate curricula. In the first year, those emphasizing comparative physiology take a three-quarter sequence of organismic physiology (Developmental and Cell Biology 210). Those emphasizing developmental and cell biology take a series of courses (five out of a possible eight) in the first two years. The selection of the first-year course program is made in consultation with a faculty advisory committee when the student first arrives on the campus. This committee monitors the student's progress through the first year after which the student's thesis committee is established and takes over the advising function. Students are able to diverge from this basic Core into their areas of special interest by means of graduate seminar courses in subsequent years. At the end of the first year students in comparative physiology take an oral examination that covers a broad area in the general and related fields of interest to that student. Students in developmental and cell biology prepare and defend a research proposal and are examined in fields related to the proposal. Since many doctoral students in the Department undertake academic careers, the Department expects each graduate student to participate in a directed teaching experience during the graduate program. 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 five years or less.

Some faculty from the Department are members of an interdisciplinary biophysics and biophysical chemistry group. See page 75 for a description of 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 Developmental and Cell Biology Journal Club (4-4-4) F, W, S. Seminar, two hours. Advanced study in various fields of organismic biology. Prerequisite: consent of instructor.

202 Techniques in Developmental and Cell Biology (5) W. Lecture, two hours; laboratory, six hours. Techniques in electron microscopy, histology, autoradiography, microsurgery, and tissue culture. Prerequisite: consent of instructor. Not offered 1982.

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.

205 Microscopy and Photography (2) F of odd years. Lecture, two hours. Major techniques and instrumentation related to light microscopy and scientific photography. Course will be practical in its aim. Students will carry out projects using methods introduced. Prerequisite: completion of or concurrent enrollment in any laboratory research course.

210 Foundations of Physiology (4-4-4) F, W, S. Lecture and discussion, four hours. Physical and functional principles common to many living forms stressed. Will form a basis for subsequent specialization in any of the subdisciplines of physiology.

230 Gene Expression (4) S of odd years. Lecture, two hours; discussion, one hour. Molecular mechanisms of gene expression in developing eucaryotic systems. Gametogenesis, fertilization, early embryogenesis, organogenesis, and cell differentiation. Prerequisite: consent of instructor.

231 Growth and Differentiation (4) F of odd years. Lecture, two hours; discussion, one hour. Events of and factors controlling growth and differentiation of individual cells and cell populations in animals and plants. Cell cycle traverse, cell population kinetics, division vs. differentiation, choice of differentiation, and stem cell behavior. Prerequisite: consent of instructor.

232 Pattern Formation during Development (4) W of even years. Lecture, two hours; discussion, one hour. How spatial patterns of differentiated cell types arise during development. Principles of pattern formation in a number of key developing systems and consideration of various hypotheses about the mechanisms involved. Prerequisites: undergraduate course in developmental biology and consent of instructor.

233 Cell Surface Biology (4) S of even years. Lecture, three hours. Modern concepts of cell surface organization and dynamics as well as cell-cell, cell-matrix, and hormone-cell interactions of normal and pathologic cells and tissues. Prerequisite: consent of instructor.

234 Morphogenesis (4) F of even years. Lecture, two hours; discussion, one hour. Cellular and tissue behaviors causing the shaping of plant and animal tissues and organs. Cell movement, cell shape changes, cell expansion, and cell adhesiveness as related to morphogenesis of tissues. Prerequisite: consent of instructor.

236 Special Topics in Developmental and Cell Biology (2-2-2) F, W, S. Seminar, two hours. Journal club dealing with various molecular and cytological aspects of developmental and cell biology.

248 Insect Reproduction (4) F of odd years. Lecture, three hours. Discussion of latest research on gametogenesis, fertilization, parthenogenesis, and early development of insects, with emphasis on genetic aspects in *Drosophila*. Prerequisite: consent of instructor. Open to senior undergraduate students with consent.

249 Insect Development (4) F of even years. Lecture, four hours. Uses and advantages of insects in developmental biology. Oogenesis, spermatogenesis, and embryonic and postembryonic development studies by classical methods as well as by genetic methods in *Drosophila*. Emphasis placed on studies of pattern formation in imaginal discs and regenerating appendages, and on the endocrine control of development. Prerequisite: consent of instructor.

250 Drosophila Genetics (4) S. Seminar, four hours. Origin and genetics of chromosome aberrations including inversions, duplications, deletions, translocations, rings and compounds, and their use in the study of chromosome behavior. Organization and function of genetic material using conditional mutations, genetic fine structure analysis, and recombinant plasmids. Genetics of chromosome behavior using meiotic mutants, mutator genes, and chromosome destabilizing mutations. Mutations and genetic techniques used in the study of biochemistry, physiology, development, and behavior. Prerequisite: consent of instructor.

253 Plant Cell Differentiation (4) W of odd years. Lecture, three hours. The cellular and molecular basis of plant cell differentiation. Different areas covered each quarter. Over the course of several years will discuss hormone action, seed protein synthesis and decomposition, cell wall deposition, nitrogen fixation, and chloroplast differentiation. May be repeated for credit.

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. May be repeated for credit.

261 Advanced Topics in Plant Physiology (4) F, W, S. Seminar, two hours. Topics will change from year to year. Subject will be major problems in plant physiology. Prerequisites: Biological Sciences 134A-B or consent of instructor.

264A-B-C Coelenterate Biology (4-4-4) F, W, S. Seminar, two hours. Topics vary from year to year. Prerequisite: consent of instructor.

265 Parasitology (4-4-4) F, W, S. Seminar, one hour. Topics vary from year to year. Prerequisite: consent of instructor.

266 Comparative Physiology (4) W. Seminar, two hours. Topics vary from year to year. Prerequisite: consent of instructor.

268 Chromosome Structure and Function (4) F every third year beginning 1979. Lecture, three hours; demonstration, one hour. Recent concepts of chromosomal function and structure, exposure to modern electronmicroscopic techniques and their interpretation. Prerequisite: consent of instructor. Same as Molecular Biology and Biochemistry 211.

285 Advanced Topics in Plant 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. Required for all graduate students working toward an advanced degree in the area of plant biology in Developmental and Cell Biology. Prerequisite: consent of instructor. Same as Ecology and Evolutionary Biology 285.

286 Advanced Topics in Animal Development (4) W of odd years. Seminar, three hours. Discussion of the literature of a particular topic which varies from quarter to quarter. Topics include induction, determination, differentiation, growth. Prerequisite: consent of instructor. May be repeated for credit.

287 Vertebrate Endocrinology (4) F. Lecture, three hours. Mechanisms by which hormones regulate metabolic and other cellular functions. Primary data upon which current ideas on endocrinology are based. Prerequisites: Biological Sciences 104 and 106.

289A-B-C Regeneration (2-2-2) F, W, S. Seminar, one and one-half hours. Current topics in vertebrate limb development and regeneration. 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.

DEPARTMENT OF ECOLOGY AND EVOLUTIONARY BIOLOGY

Participating Faculty

George L. Hunt, *Department Chair:* Behavioral ecology
Peter R. Atsatt: Plant ecology and evolution
Albert F. Bennett: Comparative physiology; exercise physiology; muscle physiology
Gayle A. Brenchley: Marine ecology, infaunal community structures
F. Lynn Carpenter: Community ecology
Peter S. Dixon: Phycology
Keith E. Justice: Terrestrial population ecology
Mark M. Littler: Marine production ecology and algal functional morphology
Richard E. MacMillen: Physiological animal ecology
Gordon A. Marsh: General entomology
Eloy Rodriguez: Eco-biological function of plant toxins; plant chemical ecology; biological and cellular chemistry of plant products
Philip W. Rundel: Physiological plant ecology
John T. Smiley: Plant-insect interactions
Grover C. Stephens: Comparative animal physiology

Ecology and evolutionary biology deals with the establishment of adaptations over evolutionary time and with the significance of these adaptations in ecological time. The Department of Ecology and Evolutionary Biology focuses on problems at the population and community levels, with particular emphasis placed on coevolved processes. While the Department has faculty specialists in plant and animal ecology and in marine and terrestrial ecology, primary attention is given to important ecological questions rather than to particular habitats or taxa. Faculty and graduate student research is often centered at the interface of two or more of these specialties. Departmental research activities include ecological energetics, plant-herbivore and plant-pollinator interactions, population and reproductive ecology, and community ecology. These research endeavors attempt to achieve a balance between empirical and theoretical approaches to evolutionary and ecological problems.

Primary emphasis in the Department 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. All entering students are required to enroll during the first year in a two-quarter graduate core sequence. At the end of the first year, these students will complete an oral examination based upon the core courses and other materials the Department might require. Satisfactory performance on this examination is required for continuation in the graduate program.

Students entering with a B.A. or B.S. degree will enroll in the graduate core for two consecutive years, while those entering with an M.A. or M.S. degree will enroll only for the initial year. Each entering graduate student will be assigned a faculty advisor and a three-person advisory committee for guidance, with whom the student will meet at least once each quarter. 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 before the end of each academic year.

Normally, all requirements for the Ph.D. should be completed within five years. No more than seven years will be allowed for completion of the program. Prior to advancement to candidacy for the Ph.D., students must satisfy two breadth requirements at the discretion of their advisory committee. One of these must be satisfied with a foreign language and the second by the attainment of an additional skill equivalent to a second foreign language (i.e., a second foreign language, demonstrated skills in computer-statistics, attainment of unusual technical expertise necessary for dissertation research, etc.) 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 verbal, quantitative, and advanced biology GRE scores. The deadline for application is February 1.

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.

201A-B Seminar in Ecology and Evolutionary Biology (2-2) F, W. One and one-half hours. Invited speakers present current research in ecology and evolutionary biology. Required of all graduate students.

202A-B-C Ecology and Evolutionary Biology Research Reviews (1-1-1) F, W, S. Seminar, one hour. Current research by graduate students and faculty. Satisfactory/Unsatisfactory only. Required of all graduate students.

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.

205A-B Special Topics in Ecology and Evolutionary Biology, Part I (2-2) F, W. Lecture, three hours. Survey of special topics. Required of all incoming graduate students in first year of residence and in second year for students entering with baccalaureate degree. Corequisite: Ecology and Evolutionary Biology 206A-B.

206A-B Special Topics in Ecology and Evolutionary Biology, Part II (2-2) F, W. Lecture, three hours. Survey of special topics. Required of all incoming graduate students in first year of residence and in second year for students entering with baccalaureate degree. Corequisite: Ecology and Evolutionary Biology 205A-B.

Enrollment in the following courses may be approved for undergraduate students with advanced standing:

222 Seminar in Phycology (2 to 4) W of odd years. Seminar, three hours. Discussion of recent developments in marine and freshwater phycology. Prerequisite: consent of instructor.

223 Seminar in Population Biology (2 to 4) W of even years. Seminar, three hours. A qualitative approach to the study of factors which influence distribution and abundance of organisms based on selections from recent and classic literature. Prerequisite: consent of instructor.

224 Seminar in Vertebrate Biology (2 to 4) S. Seminar, three hours. Topics arranged are consistent with graduate student interest and center around themes in vertebrate physiological ecology, paleontology, and evolution. Prerequisite: consent of instructor.

225 Seminar in Plant Ecology (2 to 4) W of even years. Seminar, three hours. Intensive examination of current topics in plant ecology with special emphasis on physiological ecology of plants in desert and mediterranean climate ecosystems. Prerequisite: consent of instructor.

226 Seminar in Marine Ecology (2 to 4) S of even years. Seminar, three hours. Selected topics in marine ecology such as community dynamics, benthic ecology, and paleoecology. Prerequisite: consent of instructor.

227 Seminar in Population/Community Ecology (2 to 4) F of odd years. Seminar, three 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.

228 Seminar in Functional Morphology (2 to 4) W of even years. Seminar, three hours. Functional morphology and productivity strategies in marine macrophytes. Processes of ecology, physiology, and anatomy presented in light of environmental and biological phenonmena. Prerequisite: consent of instructor.

229 Seminar in Terrestrial Community Ecology (2 to 4) S of even years. Seminar, three hours. Modern topics in field and theoretical community ecology. Prerequisite: consent of instructor.

232 Seminar in Animal Ecology (2 to 4) S of even years. Seminar, three hours. Application of ecological and evolutionary principles to management of pest populations, emphasizing use of natural enemies, selective breeding, cultural methods, and integrated management. Prerequisite: consent of instructor.

233 Seminar in Plant/Herbivore Interactions (2 to 4 per quarter) W, S of odd years. Seminar, three hours. Survey of current literature dealing with reciprocal adaptation of plants and their herbivores. May be repeated for credit. Prerequisite: consent of instructor.

273 Physiological Animal Ecology (4) S of odd years. Lecture, two hours; discussion, one hour; laboratory and field, four hours. Studies of the roles of water, energy, and temperature in the lives of vertebrates. Prerequisite: consent of instructor.

274 Behavioral Ecology (4) W of even years. Seminar, three hours. Selected topics in behavioral ecology through discussion of current literature and preparation of papers. Prerequisite: consent of instructor.

278 Productivity Ecology (4) S of odd years. Lecture and discussion, three hours. Methodology, literature, energetics, and trophodynamics of biological systems. Prerequisite: consent of instructor.

285 Advanced Topics in Plant 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 areas of plant physiology, development, and biochemistry. Required for all graduate students working toward an advanced degree in the area of plant biology in Developmental and Cell Biology. Prerequisite: consent of instructor. Same as Developmental and Cell Biology 285.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF MOLECULAR BIOLOGY AND BIOCHEMISTRY AND DEPARTMENT OF BIOLOGICAL CHEMISTRY

Participating Faculty: Molecular Biology and Biochemistry

Krishna K. Tewari, *Department Chair:* Differentiation, development, and replication of extranuclear organelles

Rowland H. Davis: Biochemical genetics, compartmentation and regulation in metabolism of eucaryotes

Gale A. Granger: Immunology and cellular immunity utilizing *in vitro* systems

Barbara A. Hamkalo: Structure of chromosomes; regulation of gene expression

Jerry E. Manning: Gene sequence organization, eucaryotic DNA; electron microscopy

Brian J. McCarthy: Gene structure and expression; biochemistry and genetics of development; biochemical evolution

William D. Nunn: Membrane structure and biosynthesis; lipid biochemistry

Wendell M. Stanley, Jr.: Physical and biological properties of nucleic acids and proteins

Edward K. Wagner: Animal virology, nucleic acid synthesis, and function in infected cells

Robert C. Warner: Molecular biology of nucleic acids; physical chemistry of macromolecules; mechanism of genetic recombination

Beatriz Levy Wilson: Regulation of gene activity in eucaryotes

Clifford A. Woolfolk: General microbiology; enzymology

Participating Faculty: Biological Chemistry

Calvin S. McLaughlin, *Department Vice Chair:* Genetic and biochemical approaches to the synthesis of proteins and ribonucleic acids and their regulation in eucaryotic cells

Stuart M. Arfin: Genetic and biochemical regulatory mechanisms in mammalian systems

Kenneth H. Ibsen: Properties, distribution, and control of expression of isoenzymes

Kivie Moldave: Protein biosynthesis; ribosome structure

John J. Wasmuth: Regulation of amino acid metabolism; mammalian cell genetics

The Department of Molecular Biology and Biochemistry in the School of Biological Sciences and the Department of Biological Chemistry in the College of Medicine jointly offer graduate study under the administration of the School of Biological Sciences. The program makes extensive use of health science facilities, in addition to those of the School of Biological Sciences. The curriculum is designed to produce creative and productive scientists who have an in-depth comprehension of modern biochemistry and molecular biology and who are highly competent in a given subspecialty. The faculty's research interests include structure and synthesis of nucleic acids and proteins, regulation, metabolism, biochemical genetics, gene organization, and immunology. The first-year student is required to take a core of advanced courses (204, 205A-B, and 207), to become associated with the laboratories of at least three different investigators, and to attend the 201A-B-C seminar series. During the first year, students are advised by members of the graduate committee. Upon successful completion of the first year, the student is given a comprehensive oral examination to

test breadth and depth of knowledge. Although further supplemental work may be recommended, the student normally begins a specific research project with a faculty member in the second year. The student, by passing an oral examination at the beginning of the third year on the proposed dissertation work, may advance to candidacy for the Ph.D. degree. Students normally complete their degree programs after a total of four years of graduate study. Participation in the seminar series (201A-B-C) and completion of at least one satellite course per year (210-279) are expected of all continuing students. Regular teaching of undergraduates is part of the training of graduate students at all levels. The graduate committee may waive some of the above requirements for candidates for the Master's degree.

Applicants should have adequate undergraduate preparation in calculus, physics, physical chemistry, organic chemistry, and biochemistry. Students who have not had an adequate physical chemistry course are expected to take Chemistry 130A-B-C during their first year.

Some faculty from the Department of Molecular Biology and Biochemistry are members of an interdisciplinary biophysics and biophysical chemistry group. See page 75 for a description of the program.

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 Seminar in Molecular Biology and Biochemistry (2-2-2-) F, W, S. Seminar, two hours. Content varies. Presentation of research from departmental laboratories or, when pertinent, of other recent developments. Prerequisite: consent of instructor.

203A-B-C Tutorial in Molecular Biology and Biochemistry (4-4-4) 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.

204 Biochemical Methodology (5) S. Lecture, three hours; laboratory, six hours. Introduction to techniques available to the modern biochemist. Opportunity to experience many of the methods available for the isolation and characterization of molecules of biological interest. Experiences are provided in the context of a problem(s) in modern molecular biology, emphasizing the principles behind techniques employed. Prerequisite: consent of instructor.

205A-B Biochemistry Core (5-5) F, W. Lecture, five hours. Advanced course in general biochemistry. Prerequisites: Biological Sciences 107 or equivalent and Chemistry 51A-B-C or equivalent.

207 Molecular Genetics Core (5) S. Lecture, five hours. Replication, recombination, and molecular mechanisms of control in phage, bacteria, lower eucaryotes, and mammalian cells. Prerequisite: Molecular Biology and Biochemistry 205B or equivalent.

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.

211 Chromosome Structure and Function (4) F every third year beginning 1979. Lecture, three hours; demonstration, one hour. Recent concepts of chromosomal function and structure, exposure to modern electronmicroscopic techniques and their interpretation. Prerequisite: consent of instructor. Same as Developmental and Cell Biology 268.

212 Molecular Genetics of Gene Expression in Eucaryotes (4) S. Lecture or discussion, two hours. An examination of progress in elucidation of mechanisms controlling gene expression. Prerequisite: consent of instructor.

214 Biosynthesis of Nucleic Acids (4) S every third year beginning 1979. Lecture, three hours. Structure, function, and replication of DNA and RNA in procaryotes and eucaryotes; emphasis on current research. Prerequisite: consent of instructor.

215 Mechanisms of Recombination (3) W every third year beginning 1980. Lecture or discussion, two hours. Molecular mechanisms utilized in genetic recombination. Prerequisite: consent of instructor.

221 Advanced Immunology (4) S every third year beginning 1979. 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.

222 Lymphocyte Surface Molecules (4) S. Seminar, three hours. Formal lectures and informal discussions on various surface receptor systems and glyco proteins displayed on the surface of resting and activated human and mice lymphoid cells. Prerequisite: consent of instructor.

226 Animal Virology (4) W every third year beginning 1981. Lecture, two hours. Elements of viral infection, including the role of viruses as potential oncogenic agents. Prerequisite: consent of instructor.

232 Metabolic Regulatory Mechanisms in Eucaryotes (4) W every third year beginning 1979. Lecture, two hours. Classical and current literature relating to the genetic and biochemical regulation of enzyme activity in eucaryotes. Prerequisite: consent of instructor.

234 Molecular Genetics and Regulation (4) S. Lecture, three hours. Molecular mechanisms which control gene expression in both procaryotic and eucaryotic cells. Both specific and integrative control systems studied, and these mechanisms will be correlated with control and developmental phenomena. Modern methods of molecular genetics and recombinant DNA methodologies emphasized. Prerequisites: Molecular Biology and Biochemistry 205A-B and consent of instructor. Same as Microbiology 218.

236 Control of Energy Metabolism (3) S every third year beginning 1981. Lecture, two hours. Classical and current literature relating to control of energy metabolism at molecular and organismal levels. Prerequisite: consent of instructor.

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. Same as Chemistry 262 and Physiology 262.

263 Biochemical Dynamics (4). Lecture, three hours. Chemical mechanisms associated with enzyme function. Kinetics and multistep kinetics; active site factors and chemistry and biochemistry of cofactors. Prerequisites: Biological Sciences 123 or Chemistry 130A-B-C or 131A-B-C. Same as Chemistry 263 and Physiology 263.

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: consent of instructor and Biological Sciences 106 and 107. 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.

291 Topics in Gene Regulation (2-2-2) F, W, S. Seminar, two hours. Gene organization and expression and the physical, chemical, and biological properties of macromolecules. Students will present a colloquium on their research or a topic related to their research.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF PSYCHOBIOLOGY

Participating Faculty

Robert K. Josephson, *Department Chair:* Invertebrate neurophysiology
Dana Aswad: Biochemistry of neural function
Carl Cotman: Neurochemistry, molecular psychology
Roland A. Giolli: Experimental neuroanatomy
Herbert P. Killackey: Comparative and developmental neuroanatomy
Michael Leon: Physiological and behavioral aspects of reproduction and development
Gary S. Lynch: Neural systems
John F. Marshall: Neural plasticity related to recovery of function after brain injury
James L. McGaugh: Neurobiology of learning and memory
Ernest P. Noble: Human behavior
Jon F. Sassin: Sleep disorders
Arnold Starr: Neural bases of sensory process, evoked brain potentials
Norman M. Weinberger: Neural bases of attention and learning
Pauline I. Yahr: Hormonal control of social behavior

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, neuropharmacology, arousal and attention, learning and memory, reproductive behavior, and communication. The importance of a developmental and comparative approach 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 and second years. They also must take a minimum of four advanced courses before graduation and must participate in directed research and teaching each year. To advance to candidacy, the student must prepare a critical review paper in the area of the proposed dissertation research and must pass an oral examination in psychobiology 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 four 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 general aptitude GRE test scores. Because graduate training emphasizes research, preference is given to applicants having laboratory research experience as undergraduates. The Department accepts only those students seeking a doctorate, though students who do not successfully complete their course work or do not advance to candidacy may, with the consent of the faculty, complete a Master's thesis and receive an M.S. degree in Biological Sciences. 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 February 1.

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 Seminar in Psychobiology (2-2) F, W. Seminar, two hours. Advanced study of current topics in various areas of psychobiology. Topics will vary from quarter to quarter and from year to year. Prerequisite: consent of instructor.

Psychobiology Graduate Core 206A-B-C-D-E, 207A-B, 208A-B-C. An integrated sequence in neurobiology and behavioral biology. Required of all graduate students in the Department of Psychobiology. Admission of other students by consent of the Director of Graduate Studies.

206A-B-C-D-E Graduate Core (4-4-4-4-2) F, W, S, F, W.

207A-B Graduate Core (4-4) F, W. Lecture. A survey of fundamental topics in neurobiology and the biological bases of behavior. The following areas are included: comparative neuroanatomy, neurophysiology of single neurons and neural systems, neurochemistry, neuropharmacology, neuroendocrinology, sensory and motor processes, central regulatory mechanisms, evolution and development of behavior, sleep and wakefulness, learning and memory, attention, language, and cognition.

208A-B-C Graduate Core Laboratory (2-2-2) F, W, S. Laboratory, six hours. Use of contemporary techniques in neurobiology and behavioral biology. Neuroanatomy: gross and microscopic techniques for analyzing neural tissue, including neurohistology with normal and experimental material. Neurochemistry: biochemical techniques for analysis of brain tissue, including separation and identification of cellular constituents. Neurophysiology: bioelectronics, electrophysiological methods for single units, multiple units, gross field potential, and the electroencephalogram.

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) W of even years. Lecture and seminar, three hours. Relationships which exist among endocrine secretions, the brain, and behavior. The biology of reproduction is covered in detail as is the role of hormones in development stress and social behavior.

243 Advanced Analysis of Comparative and Developmental Neurobiology (4) S of odd years. Lecture and seminar, three hours. The vertebrate nervous system approached from both its phylogenetic and ontogenetic history. Emphasis will be given to contemporary experimental approaches to selected neuronal systems.

244 Advanced Neurochemistry (4) W of odd 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.

246 Advanced Analysis of Attention and Learning (4) F of even 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) S of even years. Lecture and seminar, three hours. Consideration of selected topics in neurobiology in which multidisciplinary approaches have been used to analyze function.

248A Fundamentals of Evoked Potentials (4). Lecture, two hours. Introduction to the study of the electrical activity of the human brain from the brainstem to the cerebral cortex. Prerequisite: consent of instructor. Same as Social Sciences 252A.

248B Neuropsychological Correlates of Cerebral Evoked Potentials (4). Lecture, three hours. An advanced course on the study of the electrical activity of the human brain concentrating on the cerebral cortex. Prerequisite: Psychobiology 248A or consent of instructor. Same as Social Sciences 252B.

250 Advanced Analysis of Brain and Behavior (4) S of even years. Analysis of basic mechanisms underlying behavioral change and plasticity. Emphasis on recovery of function after brain injury and neuropharmacological/neurochemical approaches to cellular plasticity.

251 Neurological Psychobiology (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.

253 Advanced Analysis of Muscle and Other Effectors (4) F of even years. Biophysics and biochemistry of striated muscle, proteins of muscle and their organization, sliding filament model of muscle contraction, calcium as a regulator of contractile activity, structural organization of control systems, neurological control of contractile activity, muscle kinetics, and thermodynamics.

255 Topics in Behavioral and Cognitive Neuroscience (2-2) F, S. Seminar, two hours. The biological basis of the internal knowledge which influences and in many cases determines behavior. Examination of the foundations of the study of cognitive capacities such as memory, perception, and action.

NOTE: Consent of instructor required for seminar courses numbered 260-274. 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 F, W, S.

262 Second Messengers, Protein Modification, and Neuronal Function F, W, S. How chemical and electrical excitation or inhibition produces relatively long-lasting biochemical changes in the neuron. Emphasis on cyclic nucleotides, Ca^{++}, and the phosphorylation and carboxymethylation of proteins.

263 Seminar in Comparative and Developmental Neurology F, W, S.

264 Seminar in Neurochemistry F, W, S.

265 Reproductive Physiology and Behavior F, W, S. Thermal, endocrine, and metabolic bases of mother-young interactions in rodents.

266 Seminar in Neural Bases of Learning F, W, S.

267 Seminar in Neural Systems F, W, S.

268 Seminar in Neuroanatomy F, W, S.

269 Seminar in Sleep and Neuroendocrinology F, W, S.

270 Seminar in Neuromechanisms F, W, S.

271 Seminar in Auditory Neurophysiology F, W, S.

272 Seminar in Neurophysiology of Behavior F, W, S.

273 Seminar in Comparative Behavior F, W, S.

274 Seminar in Brain and Behavior F, W, S.

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.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DEPARTMENT OF ANATOMY

Participating Faculty

John E. Swett, *Department Chair*: Sensory-motor systems of the spinal cord
Lyle C. Dearden, *Vice Chair*: Growth inhibition and pulmonary edema
Robert H. Blanks: Vestibular physiology; anatomy
James H. Fallon: Circadian rhythms; monoamine systems, neurotransmitter interactions
Roland A. Giolli: Experimental neuroanatomy; visual system
Herbert P. Killackey: Developmental neuroanatomy; somatosensory system
Leonard M. Kitzes: Auditory neurophysiology; anatomy; development
Charles E. Ribak: Neurocytology; immunocytochemistry; electron microscopy
Martine J. RoBards: Somatosensory anatomy; physiology
Richard T. Robertson: Nonspecific sensory systems; forebrain organization
Raymond B. Wuerker: Neuropathology

The Department of Anatomy in the College of Medicine offers a doctoral program leading to the Ph.D. degree in Biological Sciences, with specialized research training in the neurosciences. Research programs in the neurosciences include neurotransmitter immunocytochemistry, the central neural regulation of circadian rhythms, forebrain organization, and organization and development of sensory systems. Research programs also include growth inhibition, cartilage, and pulmonary edema. The Department maintains research facilities so that the student can become experienced with the following techniques: electron microscopy; immunocytochemistry; fluorescence histochemistry; neuroanatomical tracing; single- and multiple-unit neurophysiology; and computer analysis of neuroscientific data. Students are encouraged to become proficient in multiple areas of study using numerous techniques in various species.

Students in the Department of Anatomy have two major goals. The first goal is to attain the technical skills, theoretical background, and experimental knowledge necessary to conduct innovative and fundamentally sound research. The second goal is to become knowledgeable anatomists with the ability to teach graduate, undergraduate, and professional courses in anatomy and neuroscience. These two goals are achieved through a basic and extended academic program that is tailored to the individual needs of the student.

The core curriculum is designed to provide all students with a fundamental knowledge of gross, cellular, and subcellular anatomy; physiology; and biochemistry. In the first year, students will be required to take neuroanatomy, microscopic anatomy, embryology, gross anatomy, biochemistry, and physiology. Over the usual four-year training period the student will be required to complete a practical course in statistics, four departmental seminar courses, four laboratory tutorials, and a total of 50 credit hours of research in anatomy. Elective courses in the Department of Anatomy or other departments on campus may also be taken; examples include pharmacology, psychobiology, cell biology, genetics, computer science, pathology, and physiology. The student typically devotes the majority of the first year to taking core courses and about half of the second year to taking electives. Only a minimum of the third year is spent taking courses. Each year following the first year, the student is expected to act as an assistant in one major anatomy core course.

When a student is accepted into the graduate program, the student and the Graduate Committee decide to which laboratories the student will be assigned the first year. During the first year the student will spend approximately 25 percent of the time doing research. At the beginning of the second year the student and the Graduate Committee select a faculty sponsor who will supervise the dissertation research. An oral Qualifying Examination at the end of the summer of the second year is given to the student by a Candidacy Committee. The examination covers anatomy and focuses on the candidate's field of specialization.

The dissertation research is chosen by the student and faculty advisor under guidance of the Graduate Committee. The majority of the second, third, and fourth year is devoted to completing the research and preparing a written dissertation suitable for publication.

An oral defense of the dissertation research before the student's advisor and Doctoral Committee constitutes the final examination. The Ph.D. degree in Biological Sciences is awarded following completion of all the requirements, a process that normally will take four years to complete.

Courses in Anatomy

201A-B Human Gross Anatomy (8-8) F, W. 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. Prerequisite: consent of instructor.

202 Human Neuroanatomy (9) W. Lecture, four hours; laboratory, four hours. Survey of basic structure of the nervous system, with emphasis on clinical relevance and problem solving. Prerequisite: consent of instructor.

203A-B Human Microscopic Anatomy (6-6) F, W. Lecture, four hours; laboratory, four hours. Fall: emphasis on functional implications of structure of cells and tissues. Winter: emphasis on organization of cells and tissues in organs and organ systems. Prerequisite: consent of instructor.

204 Human Embryology (10) F. Lecture, three hours. Development of the human embryo and fetus. Emphasis on early development and the development of organ systems. Prerequisite: consent of instructor.

206 Tutorial in Anatomy. Tutorial, three hours. Series of tutorials on advanced topics in Anatomy.

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) F. Special topics in microanatomy. Primarily library work, but study of prepared histological slides and photographs included. Prerequisites: Anatomy 203A-B.

206D Embryology (3) F. Special topics in embryology. Primarily library work, but study of prepared slides also included. Prerequisites: Anatomy 201A-B and 204.

207 Series on Sensory Systems. Seminar, three hours. The anatomy of brain sensory systems.

207A Structure and Function of the Mammalian Visual System (3) F of odd years. Seminars presented by students on topics dealing with select issues concerning the structure and function of the mammalian visual system. Seminars must emphasize a current issue or relate to a classical concept. Prerequisite: consent of instructor.

207B Structure and Function of the Auditory System (3) F of even years. Principles of transduction, stimulus coding, and information transfer in the mammalian auditory system. Functional organization and single neuron physiology of the auditory system emphasized. Students present seminars on relevant topics. Prerequisite: consent of instructor.

207C Structure and Function of the Vestibular System (3) W of odd years. Anatomy and physiology of the vestibular endorgans, the vestibulo-ocular and vestibulospinal systems, and the role of the cerebellum in control of these pathways. Prerequisite: consent of instructor.

207D Structure and Function of the Somatosensory System (3) Summer of even years. After a series of introductory lectures, students prepare seminars on the anatomy and physiology of the various somatosensory pathways, including the dorsal column, spinothalamic, spinocervical, spinocerebellar, and trigeminal-related systems. Prerequisite: completion of Anatomy Core or consent of instructor.

207F Structure and Function of Polysensory Systems (3) Summer of odd years. Anatomy and physiology of multisensory systems of the brain. Topics include sensory properties of the reticular formation, nonspecific thalamus, limbic system, and association cortex. Prerequisite: consent of instructor.

208 Neural and Cellular Anatomy. Seminar, three hours. Seminars covering cellular aspects of anatomy.

208A Neurocytology (3) W of odd 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.

208B Neurotransmitter Pathways: Monoamine Systems (3) F of even years. Detailed review of the organization of central neuroamine pathways. Dopamine, norepinephrine, epinephrine, and serotonin systems analyzed with respect to cell bodies of origin pathways and terminal areas innervated in the brain. Prerequisite: consent of instructor.

208C Cellular Diversification (3) S of odd years. Ultrastructure of cells, including alterations and their organelles, as they relate to the myriad of diverse functions required in a complex functioning organism. Prerequisite: consent of instructor.

208D Advanced Analysis of Comparative and Developmental Neurobiology (3) S of odd years. Vertebrate nervous system approached from both its pylogenetic and autogenetic history. Emphasis on contemporary experimental approaches to selected systems. Prerequisite: consent of instructor.

208E Functional Anatomy of the Peripheral Nervous System (3) F of even years. Seminar program designed to review critically the modern literature pertaining to the detailed structure and functional organization of peripheral nervous systems of mammals with emphasis on specialization of nerve endings. Prerequisite: consent of instructor.

209 Advanced Laboratory Techniques. Tutorial courses on laboratory techniques in the anatomical sciences.

209A Experimental Methods in Neuroanatomy, Light Microscopy (2) F of even years. Laboratory, four hours. Mastery of currently used techniques for tracing neurons and for studying the structure of their somata, axons, and axon terminals. Techniques involving neuronal degeneration and axonal transport considered in detail. Prerequisite: consent of instructor.

209B Techniques in Neurocytology (2) W of even years. Laboratory, four hours. Practical techniques for preparation, processing, and analysis of tissue from the central nervous system for observation with the electron microscope. Projects utilize either quantitative, Golgi, autoradiographic, immunocytochemical, or degeneration methods. Prerequisite: consent of instructor.

209C Introduction to Small Animal Neurosurgery (2) F of odd years. Laboratory, four hours. After a series of introductory lectures, students observe surgical demonstrations by faculty members of operative approaches used in various neuroanatomical and neurophysiological procedures. Each student participates in several surgical procedures and prepares a surgery handbook. Prerequisite: completion of Anatomy Core courses or consent of instructor.

209D Fluorescence Microscopy (2) W of odd years. Laboratory, four hours. Use of fluorescence microscopy in studying monoamine systems and labeling with fluorescent markers. The first application is a histochemical technique for studying endogenous monoamine neurotransmitters; the second application is a retrograde tracer technique.

209E Techniques in Electron Microscopy (2) S of odd years. Laboratory, four hours. Tissue preparation, sectioning, and staining (including spread histochemical stain) for electron microscopic observation. Electron microscopic and related photographic techniques, including developing and printing.

209F Electrophysiological and Laboratory Computer Techniques (4) S of odd years. Laboratory, eight hours. Twelve-week laboratory in which students conduct recommended neurophysiological experiments, analyze resulting data using a laboratory computer, and prepare a written report using scientific journal format.

209G Critique of the Scientific Paper (2) F of odd years. Seminar, two hours. Review of the structure of scientific articles and techniques for evaluating stengths and weaknesses. Each weekly session devoted to analysis of two to three preassigned scientific papers in neurobiology. Prerequisite: consent of instructor.

DEPARTMENT OF MICROBIOLOGY

Participating Faculty

Paul S. Sypherd, *Department Chair:* Molecular biology of fungal morphogenesis; assembly of ribosomes
Dennis D. Cunningham, *Department Vice Chair:* Regulation of cell division; cell surface receptors for mitogenic proteases and polypeptides
Kevin P. Bertrand: Molecular basis of bacterial antibiotic resistance; regulation of bacterial gene expressing recombinant DNA methods
Gale A. Granger: Molecular immunology
George A. Gutman: Immunology; antibody structure and gene organization
G. Wesley Hatfield: Molecular genetics; recombinant DNA; regulation of gene expression in mammalian cells and bacteria
David T. Kingsbury: Viral nucleic acids; biochemistry of virus infection; molecular biology of infectious agents
Stuart M. Krassner: Parasite immunology and biochemistry
Harris S. Moyed: Regulation of enzyme action and synthesis; action of antibiotics
Eric J. Stanbridge: Mycoplasmas; genetics of cancer; medical microbiology
Clifford A. Woolfolk: General microbiology and physiology; enzymology

Graduate instruction and research in microbiology leading to the Ph.D. in Biological Sciences is offered by the Department of Microbiology, College of Medicine. The curriculum of the Department is designed to provide advanced training to individuals interested in the molecular basis of regulatory systems which operate in viruses, in microorganisms and cultured mammalian cells, and in the structure, genetics, and synthesis of immunoglobulins. The core curriculum is centered about the molecular biology and genetics of viruses and bacteria, the fundamentals of the immune response, the biology of cultured animal cells, and the genetics and physiology of infectious agents.

It is recommended that the student's undergraduate preparation include courses in calculus, physical chemistry, biochemistry, genetics, and general biology. Before a graduate degree will be awarded, the student must demonstrate competence by course work and examination in biochemistry, physical chemistry, genetics, and various aspects of microbiology and immunology. During the first year, all students in the graduate program will be expected to spend approximately six weeks in various faculty members' laboratories with the aim of becoming familiar with the research approaches and the laboratory techniques employed in each specific research area. Incoming students review their programs each quarter with the departmental graduate student advisor. During the second or third year, each student will take an advancement to candidacy examination. Graduate students are required to take graduate courses in biochemistry, and Microbiology 210, 212, 213, 214, and 280. Additional course work will reflect the interest of individual students. The major remaining requirement for the Ph.D. degree will be the satisfactory completion and oral defense of a dissertation consisting of original research carried out under the guidance of a faculty member. Students with adequate preparation should be able to complete the Ph.D. in four years or less.

Courses in Microbiology

200A-B-C Research in Microbiology (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor.

201A-B-C Research Topics in Microbiology (1-1-1) F, W, S. Seminar, two hours. Seminars presented by graduate students and faculty of the Department which explore research topics in specialized areas of microbiology. Opportunity for students to gain experience in the organization, critical evaluation, and oral presentation of current research developments. May be repeated for credit.

203 Tutorial in Microbiology (1-1-1) F, W, S. Tutorial, one to four hours. Advanced study in areas related to faculty research interests. Involves small group study based on readings, discussion, and guest speakers. Tutorials may be conducted as journal clubs. May be repeated for credit. Satisfactory/Unsatisfactory only.

210A-B Medical Microbiology (4-6) S, Summer. 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.

212 Microbial Physiology (4) W. Lecture, three hours. Structural and functional organization of cells, metabolism of organisms with respect to energetics, biosynthesis, and nutrition, and control of their proliferation and differentiation. Prerequisite: consent of instructor.

213 Genetics of Microorganisms (4). Lecture, four hours. Mechanisms employed by microorganisms for gene transfer, and genetics of bacteriophage and animal viruses. Emphasis on organisms which cause human disease, including properties of resistance factors, transmission of antibiotic resistance, and genetic control of pathogenic factors. Prerequisites: prior courses in microbiology and biochemistry and consent of instructor.

214 Cell Culture Biology (4) F. Lecture, two hours; seminar, one hour. Use of animal cell cultures to study problems of differentiation, mutation, control of enzyme synthesis, control of DNA synthesis and cell division, transformation to malignancy by tumor viruses, radiation, chemical carcinogens, and immune responses in cell culture. Prerequisite: consent of instructor.

217 Medical Virology (4). Lecture, three hours. Animal viruses as elements of disease including mechanism of infection at both the cellular and organismic levels. Topics include comparative studies of various groups and role of immune response in virus infection. Prerequisite: consent of instructor.

218 Molecular Genetics and Regulation (4) S. Lecture, three hours. Molecular mechanisms which control gene expression in both procaryotic and eucaryotic cells. Both specific and integrative control systems studied; these mechanisms are correlated with control and developmental phenomena. Modern methods of molecular genetics and recombinant DNA methodologies emphasized. Prerequisites: Molecular Biology and Biochemistry 205A-B and consent of instructor. Same as Molecular Biology and Biochemistry 234.

280A-B-C Advanced Studies in Microbiology (2-2-2) F, W, S. Discussion, two hours. Presented by various members of the faculty; will relate current laboratory research to the literature.

DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS

Participating Faculty

Stephen H. White, *Department Chair*: Physical chemistry of membranes

Kenneth M. Baldwin: Effects of exercise on the physiology and biochemistry of muscles

Michael D. Cahalan: Molecular properties of ionic channels in excitable cell membranes

Scott E. Fraser: Developmental neurobiology and pattern formation

Harry T. Haigler: Polypeptide hormone regulation of cell growth

James E. Hall: Voltage-dependent conductances in membranes

Daniel Hollander: Absorption of lipid-soluble nutrients; aging in digestive-absorptive capacity of gastrointestinal tract

Janos K. Lanyi: Transport and energy coupling in the membrane of *Halobacterium halobium*; functions of retinal proteins in photophysiology

Kenneth J. Longmuir: Spectroscopic studies of lipid-protein interactions; investigation of the structure, function, and biosynthesis of lung surfactant

Mu-ming Poo: Membrane physiology and cellular neurobiology

Larry E. Vickery: Metallo-enzyme structure and function; regulation of steroid hormone biosynthesis

Harry Walter: Characterization of cell membrane surfaces by partitioning in two-polymer aqueous phase systems

Archie F. Wilson: Mechanics of respiration; gas exchange and pathophysiology of asthma; site of deposition of aerosols; physiological properties of hypometabolic status (transcendental meditation)

Graduate instruction and research in physiology and biophysics leading to the Ph.D. in Biological Sciences is offered by the Department of Physiology and Biophysics, College of Medicine. The Department provides research opportunities in the molecular biophysics of membranes and proteins, endocrinology, cellular physiology, and the physiology of exercise, respiration, and the nervous system. The faculty research is generally oriented toward molecular and cellular physiology but opportunities for research in organ physiology also exist. The core curriculum provides the student with a broad background in physiology and biophysics and the closely related fields of anatomy and biochemistry. Elective courses permit in-depth exploration of particular areas. Interdisciplinary dissertation research involving the research of more than one faculty member is encouraged.

Prerequisites for admission normally include a bachelor's degree in one of the biological sciences, physics, chemistry, mathematics, or engineering, as well as undergraduate courses in calculus, organic and physical chemistry, biochemistry, and advanced biology (e.g., neurophysiology, cell biology, neurobiology, psychobiology). Up to two prerequisites may be fulfilled as first-year electives. GRE Aptitude and Advanced tests are required. Preference will be given to those students who have prior research experience.

The Department admits about three highly qualified students each fall. The program emphasizes original research, and students are expected to become involved in the research of the Department as early as possible. The core program includes graduate courses in physiology, biophysics, biochemistry, morphology, and cell biology. After the first year, training will follow the classical tutorial pattern in which a small number of students are tutored by the faculty in an informal setting. Students also will participate in a program of laboratory rotations and attend the weekly colloquium in physiology. The third and fourth years will be spent primarily in research, with some participation in teaching physiology to medical students. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination.

Incoming students will receive academic advising from the Department Graduate Advisor until such time as they choose a dissertation advisor. The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students who have completed all necessary prerequisites should be able to complete the Ph.D. within four years.

A comprehensive examination will be administered in June at the end of the second year. The examination is based upon the tutorials in advanced physiology and is designed to test the student's ability to organize a body of knowledge and to think critically. Some time during the third year, the student will present a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee will critically examine the student's qualifications for the successful conduct of the doctoral dissertation. Advancement to candidacy for the Ph.D. is recommended to the Dean of Graduate Studies and Research upon the unanimous vote of the committee.

Some faculty from the Department are members of an interdisciplinary biophysics and biophysical chemistry group. See page 75 for a description of the program.

Courses in Physiology

200A-B-C Research in Physiology (2 to 12 per quarter) F, W, S. Individual research supervised by a particular professor. Prerequisite: consent of instructor.

201 Methods of Physiology Research (1 to 4 per quarter) F, W, S. Laboratory, eight hours. Introduction to current laboratory research techniques in physiology and related sciences. Students concentrate on techniques emphasized in the various laboratories of the Department of Physiology and Biophysics. Prerequisite: consent of instructor.

204A-B-C Laboratory Methods in Physiology and Biophysics (3-3-3) F, W, S. Lecture, one hour; laboratory, six hours; discussion, one hour. Introduction to techniques available to the modern physiologist. Fall: animal and cellular physiological recording methods and membrane biophysics. Winter and spring: methods of purification and characterization of cellular organelles, biochemicals, and enzymes as well as measurements of hormone actions *in vitro*. Prerequisite: consent of instructor.

205 Instrumentation Laboratory in Physiology (3) S. Lecture, one-half hour; laboratory, three and one-half hours. Instrumentation methods useful in physiological research. Linear circuits, operational amplifiers, digital circuits, transistors, special circuits, and machine tools for constructing special apparatus.

206A-B Introduction to Medical Physiology (6-6) 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: consent of Department.

206C Experimental Surgery (1-4). Lecture, two hours; laboratory, six hours. Introduction to the basic principles of experimental surgery. Students will perform a series of approximately 10 experiments involving all of the major organ systems. Prerequisite: Physiology 206B.

206E Advanced Studies in Respiratory Physiology (4). Lecture and discussion, three hours. Critical review of selected topics in respiratory physiology. Prerequisite: consent of instructor. May be repeated for credit.

207A-B Advanced Physiology (6-6). Discussion and seminar, four hours. For advanced graduate students in physiology. Collection of original papers describing significant achievements in specific areas of physiology read each week and discussed during a weekly four-hour meeting. Topics reflect interest and skills of faculty. Prerequisites: Physiology 206B and consent of instructor.

208A-B-C Tutorials in Physiology (1 to 4 per quarter) F, W, S. Advanced study in areas not represented by formal courses. May involve individual or small group study through discussion, reading, composition, and laboratory experiences.

220 Physiology of Exercise (4). Discussion and seminar, three hours. Acute and chronic effects of exercise on various organ systems, with emphasis on cardiovascular, respiratory, endocrine, and neuromuscular mechanisms. Prerequisite: Physiology 206B.

230 Membrane Biophysics (4). Lecture and discussion, three hours. Structure and function of biological membranes, including the thermodynamics and structure of lipid bilayers, properties of ionic channels, fluctuation analysis, surface charges, and surface receptors. Techniques for studying membranes emphasized. Original papers read and a research proposal formulated by each student. Prerequisites: Chemistry 130A-B-C or 131A-B-C and Physiology 206A, or consent of instructor.

261 Biomolecular Structure (4). Lecture, three hours. Inter- and intramolecular interactions which govern biomolecular structure and organization. Theory of cooperative binding and conformation change in biological systems. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent. Same as Chemistry 261.

262 Biopolymers in Solution (4). Lecture, three hours. Electronic, chiroptical, and magnetic resonance spectroscopy as applied to studies of biological molecules and macromolecules. Theroretical 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. Same as Molecular Biology and Biochemistry 262 and Chemistry 262.

263 Biochemical Dynamics (4). Lecture, three hours. Chemical mechanisms associated with enzyme function. Kinetics and multistep kinetics; active site factors and chemistry and biochemistry of cofactors. Prerequisites: Biological Sciences 123 or Chemistry 130A-B-C or 131A-B-C. Same as Molecular Biology and Biochemistry 263 and Chemistry 263.

281A-B-C Advanced Topics in Endocrinology (1-1-1) F, W, S. Seminar, one hour. Recent advances in endocrine physiology and biochemistry. Prerequisites: Physiology 206A-B or 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.

SCHOOL OF FINE ARTS

Clayton Garrison **Dean**

The primary activity of the School of Fine Arts is creating and performing works of art in an atmosphere in which the creative process is central. We are committed to the creative act: to making and performing. A program based on such a commitment requires a faculty experienced in the creative process. The faculty in the School of Fine Arts is comprised primarily of permanent artists-in-residence. Studio courses in all areas are taught by eminent faculty who have earned their living professionally and who continue to maintain professional assignments and commitments.

In addition to the permanent artists-in-residence faculty, visiting artists comprise about one-third of the staff, providing a constant inflow of ideas and personalities. A variety of artists challenges the students' sensibilities and encourages them to think and to create freshly and freely.

The focus on the creative process, the professional and scholar-performer faculty, and the individual's commitment and courage provide, we feel, an ideal condition for the serious student

in the arts who wants to be painting, sculpturing, dancing, acting, singing, directing, choreographing, writing, or playing an instrument six to 10 hours a day during the most sensitive and formative years of life. Our central concern is the development of a creative talent in an atmosphere of creative activity. In addition to programs concerned primarily with studio and performance activity, courses of study in the history and theory of the arts are offered as major areas of concentration.

Undergraduate majors are offered in Fine Arts (General Interdisciplinary), History of Art, Studio Art, Dance, Drama, and Music. Requirements include extensive studio and workshop experiences, essential theoretical and historical backgrounds, and exercises in criticism. The requirements for all performing and studio majors in the fine arts are designed to provide opportunities for the student-artist to work creatively for at least four hours a day from the freshman year through graduation. Courses in film writing and television are available in the Drama program.

A student who wishes to pursue a double major by combining two majors from the School of Fine Arts or by combining a major from the School with a major from another academic unit may do so with the proviso that only one major can be officially declared until the senior year. At that time, when the requirements for both majors are nearly completed, the student can be approved as a double major.

In addition to producing student concerts, musicals, and dramatic performances, the School of Fine Arts presents a varied offering of cultural events each year, including distinguished lecturers, world-renowned concert artists, outstanding dance and drama groups, jazz and folk performers, a film series, and a gallery program.

The Fine Arts Village includes studio and classroom space for the areas of studio art, art history, dance, drama, and music. Specialized facilities for the studio art area include an Art Gallery and six well-lighted studios for drawing, painting, sculpture, graphics, and ceramics. Power equipment for sculpture, two presses for graphics (intaglio), print making and lithography, and two kilns for ceramics are available. The Village Theatre, conventionally designed, contains an orchestra pit, a large, completely equipped stage, and seating for 420 people. The Concert Hall, seating 230, has a thrust platform stage, a Baroque pipe organ, and excellent acoustics. The Studio Theatre provides an experimental stage base without fixed seats, allowing complete freedom in determining the style of production. The Little Theatre, located in Humanities Hall, and the Virginia and Norman Nixon Studio Theatre are intimate proscenium theatres for Drama Workshops and graduate directing projects. All theatres are completely equipped with modern sound and lighting systems, and students involved in productions work in completely equipped and professionally operated scenery and costume shops. Campus television studios are also located in the Village. Music students attend orchestra rehearsals in a special Village facility also utilized for choral and instrumental ensemble rehearsals. Practice rooms are equipped with Steinway practice pianos, and Steinway concert grands are used in concerts. A music listening laboratory is also available to music students. Dance classes in ballet, freestyle, and jazz are held in four locations: the two main studios in the Fine Arts Village, Crawford Hall (gymnasium), and the Studio Theatre.

The School of Fine Arts is organized with areas of instruction and production, rather than with formal departments. The faculty in each of the major areas of instruction (art history, studio art, dance, drama, music) nominates five students to the Dean's Student Advisory Council. The Dean selects two undergraduates and one graduate student from each area. These 15 students comprise the Dean's Student Advisory Council for a term of one year. The Council meets about six times a year. This council reviews matters concerning appointments and promotions, curriculum, appropriations, policy on graduate admissions, productions and concerts, and community relations. There is no difference between undergraduate and graduate participation. The students act as an ad hoc review committee on all permanent appointments and on all recommendations for merit increases and promotions. Students in the School of Fine Arts and qualified students from other academic areas are involved at a less formal level as participants, organizers, and coordinators throughout the year in the various productional units, including University Chorus, UCI Symphony Orchestra, University Theatre, Student Exhibitions, Graduate Art Gallery, Dance Concerts, Dance Workshop, Drama Workshop, Music and Opera Workshop, and Television Production.

The opportunity is provided for all qualified UCI students to participate in the UCI Pep Band and Song Leaders, and to receive course credit for this participation. Those interested should see the instructor of Theatre Orchestra, Drama 173, about requirements for participation and enrollment in the appropriate course.

All new Fine Arts students are assigned or may choose their own faculty advisors and are encouraged to meet with them during orientation week and periodically throughout the year to plan programs of study and to discuss educational and career objectives. In addition, students are invited to make use of the counseling services in the Fine Arts Counseling Office for assistance with programs, requirements, or any academic matter.

Degrees

Dance ..... B.A.
Drama ..... B.A.
Fine Arts ..... B.A., M.F.A.
History of Art ..... B.A.
Music ..... B.A.
Studio Art ..... B.A.

Honors

Students who have distinguished themselves academically will be considered for honors at graduation. In keeping with the Academic Senate Resolution no more than 12 percent of the graduating seniors may receive honors.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None (see under programs).

Graduate Program

The School of Fine Arts offers a program leading to the degree of Master of Fine Arts with concentrations in studio art, dance, drama, and music. The primary activity of the School of Fine

Arts is performance—the creative act. Research activities are concerned with illuminating performance and inspiring 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 program is, thus, to produce literate artists who are responsive to intellectual stimuli, who are capable of integrating knowledge into creative acts, and who are disciplined to the point of freedom. It is the strong belief of the School that intellectual integrity and professional 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 as the number of graduate students that can be admitted to the School of Fine Arts is limited. Applicants are advised to arrange for submission of portfolios, auditions, compositions, dossiers, and interviews, as appropriate, by March 1. Students applying for scholarships and fellowships should do so by March 1, and are also encouraged to apply for financial assistance through the Financial Aid Office. The School of Fine 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 will be assigned an advisor. The student should discuss with this advisor the scope of undergraduate preparation to determine any areas which may need strengthening if the student is to derive full benefit from graduate study.

FINE ARTS

General Interdisciplinary

The program in general interdisciplinary studies is designed for students who wish to combine the various disciplines in fine arts. Although participation in studio classes is required, the program emphasizes the study of the history, theory, and criticism of the arts in three of the School's instructional areas. The nature of the program provides each student the opportunity to plan a uniquely individual course of study with the approval of an advisor. Upon completion of this program, students will be awarded the B.A. in Fine Arts with General Interdisciplinary as the area of concentration.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None.

Program Requirements

Three one-year surveys in three different areas of the arts selected from Fine Arts 20A-B-C, Art History 40A-B-C, Dance 110A-B-C, Dance 112A-B-C, Drama 40A-B-C, Music 40A-B-C, or Fine Arts 100A-B-C; 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; a senior thesis; two years in a single European language at University level (through 2C) or equivalent competence; related courses in disciplines other than fine arts are encouraged.

Sample Program for Freshmen

Fall	Winter	Spring
Survey Course	Survey Course	Survey Course
Studio Course	Studio Course	Studio Course
Foreign Language	Foreign Language	Foreign Language
Elective	Elective	Elective

Courses in Fine Arts

20A-B-C The Arts and Man (4-4-4). Major accomplishments in art, dance, drama, and music. **(IV)**

22A-B The Nature of Film (4-4)

100A-B-C The Arts and Society (4-4-4) F, W, S. An interdisciplinary study of the arts. Analyses of selected monuments and accomplishments in art, dance, drama, and music, with attention to the historical circumstances in which the works were produced.

104 Literature and Fine Arts (4). May be repeated for credit.

192 Proseminar in Film Criticism (4). Same as Drama 192.

HISTORY OF ART

George Bauer, Ph.D. Princeton University, *Chair and Associate Professor of Art History*
Linda Bauer, Ph.D. Institute of Fine Arts, New York University, *Associate Professor of Art History*
Hara Georgiou, Ph.D. Bryn Mawr, *Associate Professor of Art History*
Philip Leider, M.A. University of Nebraska, *Lecturer in Art History*
Mary Jo McNamara, M.A. Stanford University, *Acting Assistant Professor of Art History*

The program in the history of art is designed to provide a comprehensive study of art as a humanistic discipline. The program is concerned with understanding the function and characteristics of the monuments of civilization. Artists' intentions and achievements are studied in their historical settings. Students majoring in the history of art should select appropriate courses in classics, history, literature, and philosophy, as well as in other areas of the fine arts. All majors in the history of art are encouraged to study a second language beyond the minimum program requirement of two years in a single language at the university level.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None.

Program Requirements

Art History Major: Art History 40A-B-C or any three courses from Art History 20A-B-C-D-E-F; nine upper-division courses in Art History, with at least one course in each of the following areas: Ancient (100, 100N, 101, 102), Medieval (103, 103N), Renaissance/Baroque (104, 104N, 105, 105N, 106, 106N, 107, 107N), and Modern (108, 108N, 109, 109N, 110N, 128, 129); two proseminars in Art History (198); two years in a single European language at University level (through 2C) or equivalent competence; three courses in Fine Arts outside the major (these courses may be taken Pass/Not Pass).

Sample Program for Freshmen

Fall	Winter	Spring
Art History 40A	Art History 40B	Art History 40C
Foreign Language	Foreign Language	Foreign Language
Elective	Elective	Elective
Elective	Elective	Elective

Lower-Division Courses in History of Art

20 Nature of Art

20A Prehistoric, Ancient (4) F

20B Greek, Roman, Early Christian (4) W

20C Christendom (4) S

20D Early Renaissance (4) F

20E Late Renaissance and Baroque (4) W

20F Seventeenth Century and Eighteenth Century (4) S

35A-B-C Contemporary Artists (4-4-4) F, W, S. Concepts and processes of contemporary artists. Same as Art Studio 35A-B-C. **(IV)**

40A-B-C History of Art (4-4-4) F, W, S, (40B) Summer (IV)

46 The Nature of Architecture (4)

Upper-Division Courses in History of Art

Courses in the following 100-109 sequence will include such topics as The Arts of Crete and Early Greece, Roman Architecture, Early Christian and Byzantine Art, Gothic Architecture, Italian Renaissance Sculpture, Baroque Painting, The Rococo, Impressionism, and Twentieth-Century Painting.

The topics within a given area may vary from quarter to quarter; hence if the topic varies each course may be repeated for credit. Art History 40A-B-C (or any three courses from Art History 20A-B-C-D-E-F) *is prerequisite* for courses 100-112.

100 Studies in Ancient Art (4)

101 Studies in Greek Art (4)

102 Studies in Roman Art (4)

103 Studies in Medieval Art (4)

104 Studies in Southern Renaissance Art (4)

105 Studies in Northern Renaissance Art (4)

106 Studies in Baroque Art (4)

107 Studies in Eighteenth-Century Art (4)

108 Studies in Nineteenth-Century Art (4)

109 Studies in Twentieth-Century Art (4)

110 Studies in American Art (4)

111 Studies in Primitive Art (4)

112 Studies in Oriental Art (4)

Art History 40A-B-C is not prerequisite for the following courses:

100N Ancient Art (4)

103N Medieval Art (4)

104N Italian Renaissance (4)

105N Northern Renaissance (4)

106N Baroque (4)

107N Eighteenth-Century Art (4)

108N Nineteenth-Century Art (4)

109N Twentieth-Century Art (4)

110N Twentieth-Century Architecture (4)

112N Oriental Art (4)

127 History of Design (4)

128 Art and Technology (4)

129 New American Art (4)

140 Criticism of Art (4). May be repeated for credit.

All advanced problems, special studies, and tutorial courses may be repeated for credit.

195 Art Museum Problems (4). Same as Studio Art 195.

196 Tutorial in Art History (4-4-4) F, W, S, Summer

198 Proseminar in Art History (4)

Graduate Courses in History of Art

All graduate courses may be repeated for credit.

200 Bibliography and Research (4)

220 Seminar in Art History (4)

240 Graduate Projects (4)

250 Directed Reading (4)

260 Thesis (4)

STUDIO ART

Jerry Anderson, M.F.A. University of Arizona, *Chair and Lecturer in Studio Art* (new directions in art form)

Ed Bereal, Chouinard Art Institute, *Lecturer in Studio Art* (live art performance using social/political themes; video documentation and presentation)

Tony DeLap, Claremont Graduate School, *Professor of Studio Art* (architectural paintings and forms)

John Paul Jones, M.F.A. University of Iowa, *Professor of Studio Art* (suspended sculptural constructions of wood and metal which often use elements of light or movement)

Craig Kauffman, M.F.A. University of California, Los Angeles, *Associate Professor of Studio Art* (formal paintings using silk, rhoplex, and paper, incorporating both Japanese and French interior school elements)

Melinda Wortz, M.A. University of California, Los Angeles, *Lecturer in Studio Art, Director of the University Gallery* (art history, with emphasis on contemporary artists and exhibitions)

The program in studio art provides basic studio experiences in the fundamental knowledge and techniques of drawing, painting, sculpture, ceramics, and graphic art, and a study of the history and criticism of art. The curriculum constantly relates studio practice to the development of the visual arts and current critical theory. It aims to develop a sense of visual awareness by as wide a range of the study of art as possible. The student majoring in art experiences the creative aspects of art by learning to think with the materials and techniques of the medium.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None.

Program Requirements

Studio Major: Art Studio 30A-B-C; Art History 40A-B-C or any three courses from Art History 20A-B-C-D-E-F; one year in lower-division studio courses in sequence; three courses in history of modern art; 12 upper-division studio courses (Art Studio 145 through 194).

Sample Program for Freshmen

Fall	Winter	Spring
Art Studio 30A	Art Studio 30B	Art Studio 30C
Art History 40A	Art History 40B	Art History 40C
Elective	Elective	Elective
Elective	Elective	Elective

Master of Fine Arts Program

Degree Offered

M.F.A. in Fine Arts, with emphasis in studio art.

General Information

The M.F.A. program focuses primarily on development of experimental concepts and format relevant to contemporary issues as they affect visual arts, rather than on processes of traditional techniques and ideas. A small, personal environment supports the individual's efforts in research, development, and exhibition of ideas by providing as much latitude for special needs as possible. By meeting with students on a one-to-one basis or in small groups, a variety of art experiences occur. Internships, selected field trips, contemporary exhibitions in the Art Gallery, contact with visiting professional artists, and seminars provide the framework for the program.

Because of the limited physical facilities, studio space is arranged privately.

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, and submit by March 1 a portfolio of their creative work. 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, normally after three quarters in residence. 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. 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 and essay may be required to test the candidate's general knowledge in the area in which the project falls.

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. Electives may be taken in any discipline. The 72 units will normally be made up in the following manner:

First Year: three courses in Graduate Problems (215); three seminars in Problems of Contemporary Art (230); three courses in Graduate Projects (240).

Second Year: two courses in Graduate Problems (215); three seminars in Problems of Contemporary Art (230); three courses in Graduate Projects (240); one course in Thesis (260).

Lower-Division Courses in Studio Art

30A-B-C Visual Arts Fundamentals (4-4-4) F, W, S. Fundamentals of drawing, pictorial structure, theory of color, and two- and three-dimensional design. **(IV)**

35A-B-C Contemporary Artists (4-4-4) F, W, S. Concepts and processes of contemporary artists. An exploration of the issues and artists of contemporary times, with special emphasis on art of the last 40 years. Slide lectures are supplemented with field trips to museum exhibitions, private collections, and artists' studios, and with films. Reading consists of artists' writings and those of contemporary critics. Same as Art History 35A-B-C. **(IV)**

50A-B-C Drawing (4-4-4) F, W, S, (50) Summer

60A-B-C Painting (4-4-4) F, W, S, (60) Summer

70A-B-C Sculpture (4-4-4) F, W, S

80A-B-C Graphic Art (4-4-4) F, W, S, (80) Summer

86A-B-C Ceramics (4-4-4) F, W, S, (86) Summer. Exploration of the use of clay on a sculptural basis with an emphasis on idea development. Instruction includes techniques of hand building, glazing and a variety of finishing processes, and the use of other structural materials. Experimentation is encouraged.

Upper-Division Courses in Studio Art

All advanced problems, special studies, and tutorial courses may be repeated for credit.

145 Advanced Problems in Design (4-4-4) F, W, S. Introduction to architecture through awareness of man-made space. A wide range of aesthetic concerns is covered. Individual and group projects are presented. Field trips, slide lectures, and participation of visiting professionals are included. Open to beginning and advanced Art Studio majors as well as nonmajors. Prerequisites: Art Studio 30A-B-C.

150 Advanced Problems in Drawing (4-4-4) F, W, S, Summer. Prerequisites: Art Studio 30A-B-C and 50A-B-C.

160 Advanced Problems in Painting (4-4-4) F, W, S, Summer. Prerequisites: Art Studio 30A-B-C and 60A-B-C.

170 Advanced Problems in Sculpture (4-4-4) F, W, S. Prerequisites: Art Studio 30A-B-C and 70A-B-C.

180 Problems in Graphic Art (4-4-4) F, W, S, Summer. Prerequisites: Art Studio 30A-B-C and 80A-B-C.

185 Design and Typography (4)

186 Advanced Problems in Ceramics (4-4-4) F, W, S, Summer. Advanced work in ceramics provides opportunity for discussion of ideas and advanced techniques on an individual, as well as group basis. Techniques and thought processes from Art Studio 86A-B-C will be continued on a more sophisticated level. Prerequisites: Art Studio 30A-B-C and 86A-B-C.

190 Studio Problems (4-4-4) F, W, S, Summer. Presentation of projects which cannot be dealt with in other more specifically defined studio courses. Emphasis on manifestation of ideas through conversation and presentation of work. Opportunity for student who is changing ideas about traditional art to experiment with nontraditional approaches to visual arts such as performance, text, video. The student must be mature enough to be self-motivated and use the class as a catalyst for the development of confidence and credibility.

191 Studio in Drawing (4)

192 Studio in Painting (4)

193 Studio in Sculpture (4)

194 Studio in Graphic Art (4)

195 Art Museum Problems (4). Same as Art History 195.

Graduate Courses in Studio Art

All graduate courses may be repeated for credit.

210 Graduate Studio: Painting (4)

211 Graduate Studio: Sculpture (4)

212 Graduate Studio: Ceramics (4)

214 Graduate Studio: Graphic Art (4)

215 Graduate Studio: Problems (4-4-4) F, W, S

230 Seminar in Problems of Contemporary Art (4-4-4) F, W, S

240 Graduate Projects (4-4-4) F, W, S

250 Directed Reading (4)

260 Thesis (4) S

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DANCE

James Penrod, M.F.A. University of California, Irvine, *Chair and Associate Professor of Dance* (modern dance technique; dance notation; choreography; movement analysis)

El Gabriel, *Lecturer in Dance* (ballet; modern dance technique; choreography; choreography workshop)

Wendy Hilton, Wendy Hilton Baroque Dance Company, *Visiting Lecturer in Dance* (drama; music/historical choreography; Baroque dance)

Eugene Loring, *Professor Emeritus of Dance*

Olga Maynard, *Associate Professor of Dance* (dance history, aesthetics, and criticism)

Carol McGahan, *Visiting Lecturer in Dance* (ballet technique)

Janice Gudde Plastino, Ph.D. University of Southern California, *Associate Professor of Dance* (ballet; modern dance technique; kinesiology/anatomy; theories of dance; research methods; choreography)

Barbara Plunk, *Visiting Lecturer in Dance* (ballet; modern dance technique; teaching of dance)

Antony Tudor, Associate Director, American Ballet Theatre, *Visiting Lecturer in Dance*

The program in dance provides studio experiences in the fundamental knowledge and techniques of classical ballet and of contemporary dance movements. The classical academic approach to ballet adheres to those principles developed from Noverre through Petipa and Cecchetti modified to accommodate our current understanding of those laws of physics and of the human anatomy applicable to the study of dance. The workshops in contemporary dance explore and extend the various approaches to modern dance and jazz, concentrating on physiological and rhythmic problems encountered in contemporary choreography. Studies in preclassic dance forms and their musical structures provide additional workshop experience as well as significant research materials for choreographic problems. Theoretical and historical courses complement the practical work in workshops, choreography, and performance. The program is designed for students preparing to continue professionally as dancers, as choreographers, and as teachers, as well as for students who, while not planning to make dance their vocation, have a serious interest in the theory, practice, and history of dance.

The traditional technique of classical ballet constitutes a craft and style that serves not only as a physiological center for the logical training of the body, but also as a basic language of movement for the choreographer. Workshop experiences build progressively on the techniques of ballet and extend through the contemporary idioms of jazz, modern, and freestyle. The aim is to develop kinetic resources, precision, flexibility, and freedom in a coordinated and intelligently responsive body.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None.

Performance Requirements

Students planning to major in dance should develop basic ability in techniques of ballet and freestyle dance forms. Although freshmen entering with fewer than 12 units are not required to audition, a placement examination is offered. The evaluation of the examination indicates the level of ballet and freestyle at which the student is placed. Freshmen declaring the dance major are encouraged to take the placement examination, especially if they feel they could be placed at a higher level than Ballet I and Freestyle I. At the end of the sophomore year, the faculty will determine whether the student is making sufficient progress to proceed as an upper-division major.

All advanced standing applicants (entering students with 12 units or more) to the University who have indicated an interest in majoring in dance are required to audition and will be notified by the School of the date. Evaluations of the student's audition will indicate whether or not the student may major in dance and will indicate the appropriate placement level in ballet and freestyle for students admitted to the major. This placement level determines the minimum amount of years it will take to complete the degree requirements.

Inasmuch as the level of performance ability generally determines the length of time in study, and all transfer students must anticipate meeting the total performance requirements for the B.A. degree, students deficient in level of performance in comparison to their level of academic study should be prepared to extend their studies in order to meet performance requirements.

Program Requirements

Performing Major: four years studio work in ballet (Dance 30A-B-C, 35A-B-C, 130A-B-C, 135A-B-C); three years studio work in freestyle (Dance 40A-B-C, 45A-B-C, and 140 for three quarters); two years studio work in jazz (Dance 50A-B-C, 55A-B-C); one year in theory (Dance 20A-B-C); one quarter in fundamentals of music (Music 25) and two quarters in music for

dancers (Dance 120A-B); one course in dance notation (Dance 65A); three consecutive courses in history of dance (Dance 110A-B-C or 112A-B-C); three courses in choreography (Dance 155A-B-C); two courses in acting (Drama 30A-B); participation in dance performance (Dance 160).

Teaching, History, or Choreography Major: three years studio work in ballet (Dance 30A-B-C, 35A-B-C, 130A-B-C); two years studio work in freestyle (Dance 40A-B-C, 45A-B-C); one year studio work in jazz (Dance 50A-B-C); one year in theory (Dance 20A-B-C); one quarter in fundamentals of music (Music 25) and two quarters in music for dancers (Dance 120A-B); three consecutive courses in history of dance (Dance 110A-B-C or 112A-B-C); three courses in dance notation (Dance 65A-B-C); three courses in choreography (Dance 155A-B-C); two courses in acting (Drama 30A-B); participation in dance performance (Dance 160).

Sample Program for Freshmen

Fall	Winter	Spring
Dance 30A	Dance 30B	Dance 30C
Dance 40A	Dance 40B	Dance 40C
Elective	Elective	Elective
Elective	Elective	Elective
Elective	Elective	Elective

Master of Fine Arts Program

Degree Offered

M.F.A. in Fine Arts, with emphasis in choreography or the teaching of dance.

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. Candidates must meet the minimum requirements for the B.A. degree in Dance from the Irvine campus of the University of California. A paper of 500 words or more on a dance subject and proposals for three choreographed works which could be completed in the graduate program must be submitted for the file. Proof of practical ability in ballet, freestyle, and jazz dance forms must be provided by personal audition on the announced date shortly following the March 1 deadline for applying. Also on this date, applicants must present a prepared five-minute choreographed piece: a solo performed by the applicant and/or a work for a small group. Interviews with faculty will be conducted following the audition.

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.

Normally after three quarters in residence, students must demonstrate satisfactory progress by the presentation of a choreographic project. Acceptable completion of this project will allow the student to progress to candidacy for the degree.

Satisfactory attainment must be demonstrated by a major production thesis: in choreography this would be the composition and production of a choreographic work; in teaching this would be a practical and comprehensive project concerned with the teaching of dance. Either the production thesis or the teaching project must be supported by a written paper of about 20 pages. The production or project and supporting paper are to be defended in a one-hour oral examination which may also test the candidate's general knowledge in the area; *or* a written thesis of about 75 pages in a chosen area of research must be prepared. This thesis is to be defended in a one-hour oral examination which may also test the candidate's general knowledge in the area.

Candidates presenting a written research thesis are required to demonstrate a reading knowledge of French. Subject to faculty approval this knowledge may be demonstrated by the Educational Testing Service Foreign Language Test; an examination administered by the faculty; or satisfactory completion of a course at a specified level.

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. Electives may be taken in any discipline. The 72 units will normally be made up in the following manner:

First Year: three courses in Dance and Related Arts (220); three courses in Teaching of Dance (231); three courses (12 units) in Graduate Ballet, Freestyle, or Jazz (210, 211, 212); one course in Graduate Projects (240) and one elective course, or two courses in Thesis (260).

Second Year: three courses in Dance and Related Arts (220); two courses (eight units) in Graduate Ballet, Freestyle, or Jazz (210, 211, 212); one course in Graduate Projects (240) and one course in Thesis (260), or two courses in Thesis (260).

Lower-Division Courses in Dance

20A-B-C Theories of Dance (4-4-4) F, W, S. Open only to students enrolled in workshop courses.

30A-B-C Studio Workshop in Ballet I (2-2-2) F, W, S, (30) Summer.

35A-B-C Studio Workshop in Ballet II (2-2-2) F, W, S, (35) Summer. Prerequisites: Dance 30A-B-C.

40A-B-C Studio Workshop in Freestyle I (2-2-2) F, W, S, (40) Summer

45A-B-C Studio Workshop in Freestyle II (2-2-2) F, W, S. Prerequisites: Dance 40A-B-C.

50A-B-C Studio Workshop in Jazz I (2-2-2) F, W, S. Prerequisites: Dance 40A-B-C.

55A-B-C Studio Workshop in Jazz II (2-2-2) F, W, S. Prerequisites: Dance 50A-B-C.

65A-B-C Dance Notation (4-4-4) F, W, S. Prerequisite: one year in a studio workshop course.

Upper-Division Courses in Dance

110A-B-C History of World Dance (Prehistoric to Contemporary) (4-4-4) F, W, S. Offered alternate years with Dance 112A-B-C.

112A-B-C History of Theatre Dance (Renaissance Ballet to Contemporary) (4-4-4) F, W, S. Offered alternate years with Dance 110A-B-C.

120A-B Music for Dancers (4-4) W, S. Prerequisite: Music 25.

125 Criticism of Dance (4). May be repeated for credit. Prerequisites: Dance 112A-B-C.

130A-B-C Advanced Studio Workshop in Ballet III (2-2-2) F, W, S, (130) Summer. Prerequisites: Dance 35A-B-C.

135A-B-C Advanced Studio Workshop in Ballet IV (2-2-2) F, W, S, (135) Summer. Prerequisites: Dance 130A-B-C.

140 Advanced Studio Workshop in Freestyle (2) F, W, S, Summer. May be repeated for credit. Prerequisites: Dance 45A-B-C.

150 Advanced Studio Workshop in Jazz (2). May be repeated for credit. Prerequisites: Dance 55A-B-C.

155A-B-C Choreography I (4-4-4) F, W, S

160 Dance Performance (4). Rehearsal and performance in a faculty-choreographed production. By audition only. May be repeated for credit.

170 Ethnic Dance of Eastern Cultures (2). May be repeated for credit.

175 Ethnic Dance of Western Cultures (2). May be repeated for credit.

180A-B-C Choreography II (4-4-4)

185A-B-C Choreography III (4-4-4)

190 Studio Tutorial in Ballet (2) F, W, S. May be repeated for credit. Prerequisites: Dance 135A-B-C.

191 Studio Tutorial in Freestyle (2) F, W, S. May be repeated for credit. Prerequisite: Dance 140.

192 Studio Tutorial in Jazz (2) F, W, S. May be repeated for credit. Prerequisites: Dance 55A-B-C.

193 Studio Tutorial in Choreography (4). May be repeated for credit. Prerequisites: Dance 185A-B-C.

194 Tutorial in History of Dance (4). May be repeated for credit. Prerequisites: Dance 110A-B-C, 120A-B, 180A-B-C.

195 Tutorial in Dance Notation (4). May be repeated for credit.

197 M.F.A. Concert (4) F, W, S. Participation in concerts choreographed by first- and second-year graduate students in dance. Performers chosen by audition. May be repeated for credit.

198 Dance Workshop (4) S. May be repeated for credit.

Graduate Courses in Dance

All graduate courses may be repeated for credit.

200 Bibliography and Research (4-4-4) F, W, S

210 Graduate Studio: Ballet (2-2-2) F, W, S

211 Graduate Studio: Freestyle (2-2-2) F, W, S

212 Graduate Studio: Jazz (2-2-2)

213 Graduate Studio: Choreography (4)

220 Seminar in Dance History (4-4-4) F, W, S

230 Seminar in Theories of Dance (4)

231 Seminar in the Teaching of Dance (4-4-4) F, W, S

240 Graduate Projects (4-4-4) F, W, S

250 Directed Reading (4)

260 Thesis (4) W

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

DRAMA

Robert Cohen, D.F.A. Yale University, *Chair and Professor of Drama*
Richard Triplett, Otis Art Institute, *Professor of Drama and Chair of Theatre Design*
Ian Bernard, *Visiting Lecturer in Drama*
Henry W. Fortenbaugh, B.A. Michigan State University, *Visiting Lecturer in Drama*
Keith Fowler, D.F.A. Yale University, *Assistant Professor of Drama*
Clayton Garrison, Ph.D. Stanford University, *Professor of Drama and Dean of the School of Fine Arts*
Cameron Harvey, M.F.A. University of California, Irvine, *Associate Professor of Drama*
William E. Lewis, M.F.A. University of California, Irvine, *Visiting Lecturer in Drama*
Brewster Mason, Royal Shakespeare Company, *Lecturer in Drama*
David McDonald, Ph.D. Stanford University, *Associate Professor of Drama*
Carla R. Meyer, B.F.A. Carnegie-Mellon University, *Visiting Lecturer in Drama*
William Needles, Stratford Shakespearean Festival, *Visiting Lecturer in Drama*
Thomas Ruzika, M.F.A. University of California, Irvine, *Adjunct Lecturer in Drama*
Charlotte E. Stratton, M.F.A. University of Texas, Austin, *Assistant Professor in Drama*

The program leading to the Bachelor of Arts in Drama provides the professional training and the liberal study essential to attaining the highest standards in theatre. Each major in drama experiences exacting and rigorous training in the mutually interrelated areas of the theatre: performance, design, literature, history, and criticism. The curriculum constantly relates studio practices, technical resources, and productional techniques to the development of dramatic literature and current critical theory. The student specializes during the last two years of study in acting, directing, design, television, or criticism. Majors in drama are expected to undertake extensive studies in art, dance, and music.

The continuous production of plays, musicals, operettas, and operas constitutes the major activity of the program. Students are treated as members of a theatrical organization, and they acquire experiences in all phases of theatrical production in a professionally disciplined atmosphere. Dramatic production centers on an exhaustive analysis of the script and on the challenge of communicating the complexities of the plan to an audience in a unified and meaningful production.

The program is designed for students preparing to continue professionally as actors, directors, designers, critics, and teachers, as well as for students who, while not planning to make the theatre their vocation, have a serious interest in the literature, theory, and practice of drama.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None.

Program Requirements

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); one course in makeup (Drama 153); an introductory course in production theory (Drama 10); two upper-division courses in dramatic literature; six upper-division courses in addition to the two in dramatic literature mentioned above (these may be in studio work and/or dramatic literature, playwriting, film writing, television production, and criticism); two quarters in dance (these courses may be taken on Pass/Not Pass); two quarters of Theatre Production (Drama 101).

Sample Program for Freshmen

Fall	Winter	Spring
Drama 30A	Drama 30B	Drama 30C
Drama 40A	Drama 40B	Drama 40C
Elective	Elective	Elective
Elective	Elective	Elective

Master of Fine Arts Program

Degree Offered

M.F.A. in Fine Arts, with emphasis in acting, directing, design, or music theatre.

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.

By March 1 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 or music theatre; auditions are scheduled at UCI and in New York City shortly after the application deadline. Interviews for directing and design are desirable, but not 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, 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.

During the second year of the program the candidate will be examined on general familiarity with the history of the theatre and the principal works of dramatic literature. An assigned list of books and plays will form the basic syllabus of this examination.

The required thesis normally consists of directing, designing, 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.

One hundred eight 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 four areas:

Directing

Nine graduate studios in directing (211)
Three courses in history of design and production (120A-B-C)
Three courses in acting (210, 130A-B-C, or 135 as qualified)
One seminar in script analysis and research (235)
Two seminars in dramatic literature, performance theory, and/or contemporary theatre (220, 221, 222, 223, or 230)
One course in production management (171)—must be taken the first quarter in residence
One course in directorial concepts in design and technology (245)
Seven projects in directing (240), of which one is the thesis, one a professional internship, and one a project in stage management or theatre production

Acting

Nine graduate studios in acting (210), which include daily studios in speech and movement
One graduate studio in speech and movement profile (202)—must be taken the first quarter in residence
Two courses in dance
One course in makeup production techniques (153)
Three master classes in acting: Shakespeare or Molière (135)
One master class in acting: improvisation (135)
One master class in acting: television (135)
One master class in acting: comedy (135)
One course in musical theatre workshop, opera workshop, or graduate music theatre (165, 216, 217, or Music 164)
One seminar in script analysis and research (235)
Two seminars in dramatic literature, performance theory, and/or contemporary theatre (220, 221, 222, 223, or 230)
Six graduate projects, of which two may be professional internships (240)

Design

Five graduate studios in design (255)
Three graduate studios in designers' presentational techniques (256)
Seven courses in graduate projects, of which one is the thesis (240)
Three courses in production theory (150-159)
Two seminars in dramatic literature, performance theory, and/or contemporary theatre (220, 221, 222, 223, or 230)
Three courses in history of design and production (120A-B-C)
One course in production management (171)
One seminar in script analysis and research (235)
Two electives

Music Theatre

Six courses in graduate music theatre (216)
Three courses in opera workshop (217)
Three courses in graduate projects, of which one is the thesis (240)
Three graduate studios in acting (210)
One seminar in dramatic literature, performance theory, and/or contemporary theatre (220, 221, 222, 223, or 230)
Nine courses in graduate voice tutorial (Music 218)
Two courses in history of music theatre and opera (148A-B)
Nine courses in dance

Lower-Division Courses in Drama

10 Introduction to Production Theory (4) F, S. An introduction to modern production techniques as practiced in realizing scenic designs. The lecture/laboratory course covers the equipment, theories, techniques, and history of production practices in the technical theatre; laboratory sections integrate class instruction with practical applications wherever possible.

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.

25 Shakespeare (4). A reading of selected plays by Shakespeare, with a focus on thematic and theatrical aspects of Shakespeare's art.

30A-B-C Acting (4-4-4), (30A) F, W, S, Summer, (30B) F, W, S, (30C) F, W, S. A one-year course (must be taken sequentially) 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. **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.

32 Playwriting (4). Writing of assigned exercises and the completion 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 WR 32.

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 15 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. This quarter concentrates on the Post Naturalistic theatre: Expressionism, Epic Theatre, Theatre of the Absurd, and Contemporary American Theatre. Among the playwrights studied are Shaw, Pirandello, Giraudoux, Ionesco, Beckett, Williams, Brecht, Weiss, and Albee. Same as English CL 40A-B-C. **(IV)**

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.

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 Courses in Drama

100 University Theatre (4-4-4) F, W, S. 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 will be engaged in the construction of designed work as well as its applied execution during performance. Although there are no prerequisites for Drama 101, an instructor's signature is required for enrollment to assure that the student is provided with a production capacity. May be repeated for credit.

101 Studio A Theatre Production: Costume (4) F, W, S
101 Studio B Theatre Production: Scenic (4) F, W, S
101 Studio C Theatre Production: Lighting (4) F, W, S
101 Studio D Theatre Production: Stage Management (4) F, W, S
101 Studio E Theatre Production: Audio (4) F, W, S

103 Lectures in Dramatic Literature (4). May be repeated, provided topic changes. 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.

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 the development of the physical Greek theatre. May be repeated for credit, provided topic changes.

109 History of Film (4). May be repeated for credit, provided topic changes.

112 Advanced Playwriting (4). By consent. Three-hour advanced playwriting workshop; discussion of student writing and of relevant literary texts. May be repeated for credit. Prerequisite: Drama 32. Same as English WR 112.

114 Film Writing (4) F, W, S. A course in the writing of scenarios, scenes, and scripts for television and films. Much of the instruction in this course is on a tutorial basis. The final project is the completion of a script for a short film. May be repeated for credit.

115A-B-C Filmmaking (4-4-4). A three-quarter course in the practical foundation of Super-8 and 16mm-sound filmmaking, including lighting, sound, direction, cinematography, and editing. Prerequisite: Drama 114 or consent of instructor. Not offered every year.

116 Film Criticism (4). May be repeated for credit, provided topic changes. Not offered every year.

117 Russian Stage and Film Drama (4). The course will trace the development of the Russian theatre through the Symbolist drama to Futurism and the post-Revolutionary era. Attention will be paid to the innovation of twentieth-century stage directors, and masterpieces of the Soviet cinema will be viewed and discussed. Open to freshmen. Lectures, readings, and discussions in English. Same as Russian 130.

120A-B-C History of Design and Production. The history of theatrical design and production. Scenery, costumings, stage lighting and machinery, and theatre architecture will receive special attention, as will production methods and techniques.

120A (4) F. Primitive theatre through Renaissance, and up to the beginning of the eighteenth century.

120B (4) W. Eighteenth and nineteenth centuries.

120C (4) S. Twentieth century.

130A-B-C Advanced Acting (130) Summer. A three-quarter course in rehearsal and presentation of acting scenes. Each section is prerequisite to the next; any section may be repeated for credit.

130A Basic Scenes (4) F, W, S. Rehearsal and presentation of at least five scenes from contemporary material. Exercises in developing relationship communication and character-to-character contact.

130B Characterization (4) W, S. Rehearsal and performance of four scenes developing characters in depth; examination of the credibility and theatricality of characterization.

130C Style (4) W, S. Rehearsal and presentation of at least four scenes from assigned material; examination of the credibility and theatricality of style.

132 A-B-C Speech for the Theatre (4-4-4). 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.

134 Movement: Footwork and Spatial Relationships (4) S. Analysis and practice of basic performance movement: footwork, step sequence, dance patterns, spatial relationships, and rhythms. Prerequisites: Drama 30A-B-C or consent.

135 Master Classes in Acting. Beginning in fall 1979, Drama 130A-B-C prerequisite for all master classes. All master classes may be repeated for credit.

135 Television Acting (4). Rehearsal, taping, and playback analysis of television scenes developed in the class.

135 Improvisation (4). Exploration of theatre games and improvisation as acting styles in themselves and as liberating devices for conventional acting. Scenes and exercises.

135 Movement for the Actor (4). Exploration of basic and complex stage movements: accelerations, decelerations, turns, walks, runs, stops, and starts. Development of physical control and physical timing.

135 Acting: Body Language (4). Exploration and practice in nonverbal communication as it occurs in both staged and daily-life activity. Use of body language as a communicative tactic.

135 Acting: Shakespeare (4). Preparation and presentation of a number of Shakespearean scenes.

135 Acting: Molière (4). Preparation and presentation of a number of scenes from Molière.

135 Acting: Restoration (4). Preparation and presentation of a number of scenes from Restoration Drama.

135 Acting: Theories (4). A reading and practice course surveying the basic literature of acting, including the historical work of Coqueling, Stanislavski, Brecht, and Grotowski, and an examination of contemporary acting theories. A paper and two scenes will be required.

140 Contemporary American Drama (4). A close examination of works and trends in the American theatre since World War II. The"New" Theatre (1960-69) is given particular attention, as is the current season in New York and Los Angeles.

141 Contemporary British Theatre (4). A close examination of British theatre in the post-Suez (1956-on) period, with special attention to works and trends in the past few London seasons, and in the present one.

142 Contemporary Continental Drama: Theatre of the Absurd (4). A close examination of the philosophy of the "absurd," as detailed by Albert Camus, and the "absurdist" theatre which developed parallel to that philosophy. Readings in Camus, Sartre, Giraudoux, Beckett, Ionesco, Genet, Mrozek, Handke, and others.

143 Realism and Revolt: Ibsen to O'Neill (4)

148A-B History of Music Theatre and Opera (4-4) F, W. A general survey of the principal forces and styles at work in the musical theatre from 1600 to the present. Close study of the best examples of these styles.

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 media and resources used by the lighting designer in the theatre. Class tours will be conducted to leading commercial suppliers to examine equipment and procedures first hand. Detailed studio attention is given to stage lighting graphics and problems related to road trouping. Prerequisite: Drama 50C.

153 Makeup Production Techniques (4). A studio laboratory course in the techniques of stage makeup including projects in prosthesis and ventilation of hair. Prerequisite: signature of instructor.

154 Audio Production Techniques (4). A studio-lecture course in the basic theories and techniques of using audio reproduction and reinforcement as an integral part of a theatrical production.

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 signature of instructor.

157 Lighting Composition (4). The class provides an opportunity for students to pursue stage lighting composition in a studio atmosphere. Laboratory practice will include 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). An advanced course in theatrical design which 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 (floor plans, models, rendering, etc.) Prerequisite: Drama 50A or 50B, or signature of instructor. May be repeated for credit.

159 Proseminar in Theatre Design (4). Content will vary. Prerequisite: signature of instructor. May be repeated for credit.

165 Music Theatre Workshop (4). A workshop in movement, vocal performance, and acting in the musical theatre. Exercises, preparation for auditions, scenes, and projects. Prerequisites: Drama 30A-B-C. May be repeated for credit.

170 Directing (4) F. A basic course in 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 are assigned; 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.

172 Contemporary Theories on Play Directing (4)

173 Theatre Orchestra (2). May be repeated for credit. Same as Music 173.

174 Acting-Directing Workshop (4). May be repeated for credit.

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 (4). Reading and analysis of theories and critical approaches to contemporary theatre: Meyerhold, Brecht, Artaud, Frye, Brook, 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.

186 Projects in Filmmaking (4). May be repeated for credit. Prerequisites: Drama 115A-B-C and consent of instructor.

The following courses may be repeated for credit:

190 Studio in Acting (4)

191 Studio in Directing (4)

192 Proseminar in Film Criticism (4). Same as Fine Arts 192.

194 Criticism (4)

195 Television Production (4). A basic course in all practical phases of television production, including lighting, directing, producing, editing, and camera work.

196 Projects in Television (4)

197 Dramatic Literature (4)

198 Drama Workshop (4) F, W, S. By audition or accepted proposal only. This course 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 Design (4) F, W, S. Production experience in theatre design. Prerequisite: signature of instructor. Pass/Not Pass only. May be repeated for credit.

Graduate Courses in Drama

Courses numbered 200; 210-222; 230-240; and 256 may be repeated for credit.

200 Bibliography and Research (4)

202 Movement and Speech Profile (2) F. Assessment of individual patterns and capabilities in the physical and vocal fundamentals of acting. The resultant profile leads to particularized and tutorial instruction in future quarters. Required of M.F.A. candidates in acting in their first quarter.

210 Graduate Studio: Acting (4-4-4) F, W, S

211 Graduate Studio: Directing (4-4-4) F, W, S

212 Graduate Studio: Playwriting (4)

214 Graduate Studio: Film Writing (4)

215 Graduate Studio: Filmmaking (4)

216 Graduate Music Theatre (4-4-4) F, W, S. A workshop in movement, vocal performance, audition technique, and acting for the Musical Theatre. Exercises, scenes, and projects.

217 Opera Workshop (4) F. Participation 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.

220 Seminar in Dramatic Literature (4-4-4) 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.*

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 (4-4-4) F, W, S

245 Directorial Concepts in Design and Technology (4) S. A study of the potential for directorial conceptualization, and collaboration with designers, in the areas of scenery, costume, lighting, and sound.

250 Directed Reading (4)

255 Graduate Theatre Design (4-4-4) F, W, S

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.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

MUSIC

Peter Odegard, Ph.D. University of California, Berkeley, *Chair and Professor of Music*
Richard Glenn, Guitar and Lute, M. Mus. University of Redlands, *Lecturer in Music*
Barbara Phillips Hasty, Voice, M.M. University of Southern California, *Visiting Lecturer in Music*
William Holmes, Ph.D. Columbia University, *Professor of Music and Director of the Graduate Program in Music*
Joseph B. Huszti, M.M. Northwestern University, *Professor of Music and Director of the Choral Ensembles*
Arnold Juda, Music Lyceum Amsterdam, *Lecturer Emeritus in Music*
Irvin Kimber, *Lecturer in Music*
Margaret Murata, Ph.D. University of Chicago, *Associate Professor of Music*
Nanette Nowels, Piano, M. Mus. University of Southern California, *Visiting Lecturer in Music*
Ronald W. Sainio, M. Mus. University of Wisconsin, *Visiting Lecturer in Music*
Mahlon Schanzenbach, Voice, M.A. California State University, Long Beach, *Visiting Lecturer in Music*
Nina Scolnik, Piano, Performance Diploma, The Juilliard School, *Visiting Lecturer in Music*
H. Colin Slim, Ph.D. Harvard University, *Professor of Music*
Willem F. VanOvereem, Piano, M.A. University of California, Berkeley, *Visiting Lecturer in Music*

New York String Quartet

William Fitzpatrick, Violin, Performance Diploma, The Juilliard School, *Visiting Lecturer in Music and Assistant Conductor of the University Orchestra*
Brian Dembow, Violin, B.M. The Juilliard School, *Visiting Lecturer in Music*
Robert Becker, Viola, M.M. The Juilliard School, *Visiting Lecturer in Music*
Stephen Erdody, Violoncello, M.M. The Juilliard School, *Visiting Lecturer in Music*

Tutorial Faculty

John Alesi, Percussion, *Visiting Lecturer in Music*
Phillip Apponi, Clarinet, *Visiting Lecturer in Music*
Kalman Bloch, Clarinet, Los Angeles Philharmonic Orchestra, *Visiting Lecturer in Music*
Kay Brightman, Bassoon, *Visiting Lecturer in Music*
Lloyd Lippert, Trumpet, *Visiting Lecturer in Music*
Eiki Paik, Piano, *Visiting Lecturer in Music*
George Roberts, Trombone, *Visiting Lecturer in Music*
Jennifer Rubin, Double Bass, *Visiting Lecturer in Music*
David Weiss, Oboe, Los Angeles Philharmonic Orchestra, *Visiting Lecturer in Music*
Marianne Whitmyer, Flute, *Visiting Lecturer in Music*

Additional professional staff in instrumental music will supplement the staff in accordance with the needs of the program.

The program for the Bachelor's degree in Music is designed for two types of students: those who wish to obtain a sound background in music leading to a terminal degree and those who wish to obtain a thorough preparation for undertaking graduate work in one or more of four broad fields: musicology, composition, music performance, and teaching. The program provides intensive training in three mutually dependent areas as related components of a total musical experience: performance and musicianship, the theory of music, and the history of music. A knowledge of all three of these areas is indispensable and minimal for a successful career in music. The program in music provides practical and theoretical studies fundamental to a wide spectrum of careers in music. The aim of this program is to give a sound basic musical education for students wishing to fulfill themselves either as performers, scholars, or teachers, as well as in other musical pursuits. A special option is available to fulfill the needs of those students whose primary interest is in the area of string performance.

Beyond the specific goals outlined above and the requirements listed below, the student in music, through cooperative programs undertaken in conjunction with the other arts, achieves an awareness of the relationship of music to those other arts and of the various roles of music in society, both past and present.

Several music scholarships are available. These include, but are not restricted to, the Hinkle-Phillips Memorial Scholarship ($1,000), the Harry and Marjorie Anne Slim Memorial Scholarships ($1,000), the Music Section of the Town and Gown Scholarships, and the Zubin Mehta Scholarship given by the Orange County Philharmonic Society ($500). For information on how to apply, please contact the Music Office.

Jazz Ensemble. The Jazz Ensemble performs music in traditional and experimental jazz styles involving both written and improvisatory materials. Players of all instruments, and singers, arrangers, and composers are invited to participate. Course credit may be obtained by enrolling in Music 178.

Performance Requirements

The student will audition at the beginning of the freshman year (earlier auditions may be arranged by contacting the Music Office) to determine the student's ability to meet the performance requirements of the program as stated below. After two years, the faculty will determine whether the student is making sufficient progress to proceed as an upper-division music major. All transfer students are required to audition for the music faculty and receive permission before declaring a major in Music.

Recommended Preparation

Voice Majors. At least two years private study and/or participation in choral or orchestra ensemble and facility at the keyboard are recommended. Background in Italian, French, and German art songs is recommended.

Piano Majors. The requirements for an entering piano major are that the candidate should have mastered a Haydn or Mozart sonata, a two-part invention of Bach, and all the major and minor scales and arpeggios.

Woodwind Majors: Flute, Oboe, Clarinet, Bassoon. Sustained tone production, precise intonation over a dynamic range from *pianissimo* to *fortissimo*, control of breath, tongue, and double and triple tongue attacks over the entire range of the instrument, all major and minor scales and arpeggios *legato* and *staccato* commensurate with the range and technique of the instrument are required. The student should be able to play and read a repertoire of a difficulty comparable to the earlier symphonies of Haydn, Mozart, Beethoven, and Schubert and should demonstrate knowledge of the sonata literature for the particular instrument.

Brass Majors: French Horn, Trumpet, Trombone, Tuba. Requirements are essentially the same as for woodwinds.

Percussion Majors. Mastery of rudimentary drum techniques and a knowledge of the piano comparable to grade three is required.

String Majors: Violin, Viola, Violoncello, Double Bass. Requirements are clear tone production; 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 is highly desirable. The student should also be able to satisfy the same general repertoire requirements listed above under woodwinds.

Special String Performance Majors: 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, and two contrasting movements of a classical or romantic concerto from the standard repertoire are required.

Viola. Major and minor scales and arpeggios through three octaves, one movement from a Bach suite, and one movement of a sonata or concerto from the standard repertoire (e.g., Brahms sonata, concertos by Handel, Hoffmeister, Bartok, Telemann, etc.) are required.

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, and one movement from a romantic sonata (e.g., Brahms, Strauss, etc.) or one movement of a concerto from the standard repertoire (e.g., Lalo, Saint-Saens, Dvorak, Haydn) are required.

Double Bass. Major and minor scales and arpeggios, solo from Saint-Saens Carnival of the Animals or a comparable work, and two contrasting movements from any concerto of the standard repertoire are required.

Guitar and Lute Majors. The requirements are the mastery of all major and minor scales and etudes such as those of Fernando Sor to demonstrate the ability to play arpeggios, chords, slurs, and the rest stroke cleanly and with good tone; the ability to sightread single lines on all parts of the fingerboard, and similar pieces in more than one part up to the fifth position; the ability to demonstrate knowledge of repertoire from different periods, and to perform at least one extended work (sonata, suite, theme and variations, etc.). Prior knowledge of the lute is desirable but not essential.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: None.

Program Requirements (General)

Entering majors are expected to have competence in the practice of music: in reading and performing. At the end of the sophomore year, the faculty will determine whether the student is making sufficient progress in the following areas to proceed as an upper-division major:

1. Basic Ability at the Keyboard: the performance at sight of moderately difficult works;
2. Musicianship: sightsinging, dictation, keyboard harmony;
3. Analysis: music of the difficulty of a Mozart divertimento (from score), a sonata movement by Beethoven, a Schubert song; and
4. History: knowledge of basic reference tools for all Western music, major composers, major musical styles and forms ca. 500-1950.

All transfer students must take placement examinations in the four areas specified above and must audition. Evaluations of auditions and examinations will indicate whether or not the student may declare a major in music and will indicate the appropriate placement level for students admitted to the major. This placement level determines the minimum amount of years it will take to complete the degree requirements.

Basic to the program for all majors is command of piano: the performance at sight of moderately difficult works. Students must demonstrate this skill, by examination, no later than the end of the first quarter of the junior year.

Performance requirements include private study — vocal or instrumental, a senior recital, and participation in the chorus or various music ensembles during each quarter of the student's four years.

Program Requirements (Specific)

Two years of theory (Music 30A-B-C, 130A-B-C); two years of musicianship (Music 5A-B-C, 15A-B-C to be taken concurrently with 30A-B-C and 130A-B-C); one year in history and literature of music (Music 40A-B-C) to be preceded by Music 30A-B-C; two courses in counterpoint (Music 135A-B); two courses in analysis (Music 155A-B); one course in twentieth-century music (Music 145); instrumental or vocal instruction (private lessons) each quarter of residence (Music 165, 166, 167, 168, or 190); command of piano; and a senior recital. All music majors who are studying an orchestral or band instrument are required to enroll in Orchestra or Wind Ensemble (Music 160 or 161) and in Chamber Ensembles (Music 176) each quarter of residence. Majors studying guitar or lute are required to enroll in Guitar and Lute Workshop (Music 174) and Chamber Ensembles (Music 176) each quarter of residence. Majors studying piano are required to enroll in Piano Repertory (Music 175) and Chamber Ensembles (Music 176) each quarter of residence. Majors studying voice are required to enroll in Chorus (Music 162) and Vocal Performance (Music 163) each quarter of residence. During the quarter of their Senior Recital students, by permission, may be exempted from their ensemble requirement.

Program Requirements (Special String Performance)

This special program is designed to provide the student with the necessary skills to be able to compete, upon graduation, at

Sample Programs — Music

	Freshman	Sophomore	Junior	Senior
FALL	Music 5A	Music 15A	Music 135A	Music 155A
	Music 30A	Music 130A	Elective	Elective
	(Music 10)	Music 40A	Elective	Elective
	Major group[1]	Major group[1]	Major group[1]	Major group[1]
WINTER	Music 5B	Music 15B	Music 135B	Music 155B
	Music 30B	Music 130B	Elective	Elective
	(Music 10)	Music 40B	Elective	Elective
	Major group[1]	Major group[1]	Major group[1]	Major group[1]
SPRING	Music 5C	Music 15C	Music 145	Senior recital
	Music 30C	Music 130C	Elective	Elective
	(Music 10)	Music 40C	Elective	Elective
	Major group[1]	Major group[1]	Major group[1]	Major group[1]

[1]Three courses taken concurrently that are determined by your major. See *Course Groups by Major* chart below.

Course Groups by Major

Piano major	Voice major	Guitar major	String major	Woodwind/ Brass major	Percussion major
Music 165	Music 168	Music 190	Music 166	Music 167	Music 190
Music 175	Music 163	Music 174	Music 160	Music 160	Music 160
Music 176	Music 162	Music 176	Music 176	Music 176	Music 176

a professional level in a highly competitive field. Special emphasis is put on the student's progress and achievement through intensive private study and the maximum opportunity to perform. Students will be expected to give during their senior year a full public recital which will reflect the high performance standards of this special program. Participation in the University Orchestra is required during all four years of residence.

Four years of instruction in major instrument (77, 177); two years in theory (30A-B-C, 130A-B-C); two years in musicianship (5A-B-C, 15A-B-C); one year in history and literature of music (40A-B-C); four years in Orchestra (160); two years in Chamber Music (194); three courses in Fine Arts (to be chosen from history or criticism of art, dance history, development of drama, dramatic literature, or film criticism); an elective in music, totaling four to eight units (to be chosen from 145, 135A-B, 155A-B, 140-144); command of piano; a full, public senior recital (196).

Master of Fine Arts Program

Degree Offered

M.F.A. in Fine Arts, with emphasis in composition, choral conducting, voice, piano performance, and instrumental performance.

Admission

Applicants for admission to the degree program must meet the general requirements for admission to graduate study and hold a B.A. in Music, or a B.M., or the equivalent. Applicants must demonstrate their competence in basic musical skills: ear-training, sightsinging, written and keyboard harmony, dictation, score-reading, and minimal facility at the piano (including sight-reading). Applicants must submit proof of at least two years of college study, or the equivalent, of at least one of the following languages: French, German, Italian.

Applicants must also submit an 8-10 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. 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.

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. Reading knowledge of one language other than English (French, German, Italian, Latin) must be demonstrated by a written examination administered by the music faculty. This examination must be passed before the candidate may schedule the comprehensive examination.

Comprehensive examinations are normally taken after three to four quarters in residence as a prerequisite to candidacy for the M.F.A. A student failing these examinations may reschedule them once in the following quarter. Participation in performance at UCI 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:

Composition: two courses in Bibliography (200); two courses in Directed Reading (250); six courses in Graduate Studio; Composition (212); three courses in Graduate Projects (240); two quarters of Tutorials (190); one quarter of Tutorials (191); three electives; preparation of a project in composition, supported by a written essay of about 20 pages.

Sample Programs — Special String Performance

	Freshman	Sophomore	Junior	Senior
FALL	Music 5A	Music 15A	Music 40A	Music 194
	Music 30A	Music 130A	Music 194	Music 177
	(Music 10)	Music 77	Music 177	Music 160
	Music 77	Music 160	Music 160	Elective
	Music 160	Fine Arts course	Music Elective	Elective
	Elective	Elective	Elective	
WINTER	Music 5B	Music 15B	Music 40B	Music 194
	Music 30B	Music 130B	Music 194	Music 177
	(Music 10)	Music 77	Music 177	Music 160
	Music 77	Music 160	Music 160	Elective
	Music 160	Fine Arts course	Elective	Elective
	Elective			
SPRING	Music 5C	Music 15C	Music 40C	Music 194
	Music 30C	Music 130C	Music 194	Music 177
	(Music 10)	Music 77	Music 177	Music 160
	Music 77	Music 160	Music 160	Music 196
	Music 160	Fine Arts course	Music Elective	Elective
	Elective		Elective	

Choral Conducting or Voice: two courses in Bibliography (200); two quarters of Tutorials (190); five courses in Graduate Studio: Vocal Literature (210); one quarter of Tutorials (191); two courses in Directed Reading (250); three quarters of Graduate Projects (240); four electives; preparations of a project in performance, supported by a written essay of about 20 pages.

Piano Performance: two courses in Bibliography (200); one course in Directed Reading (250); six courses in Graduate Studio: Instrumental Literature (211); three quarters of Graduate Projects (240); six quarters of Chamber Ensembles and Performance, of which at least two will be devoted to contemporary music (176); three electives. There will be a solo recital at the end of each of the two years of residence.

Instrumental Performance: two courses in Bibliography (200); one course in Directed Reading (250); six courses in Graduate Studio: Instrumental Literature (211); six quarters of Chamber Ensembles and Performance, of which at least two will be devoted to contemporary music (176); three quarters of Graduate Projects (240); three electives. There will be a solo recital at the end of the second year of residence.

Lower-Division Courses in Music

5A-B-C Musicianship I (2-2-2) F, W, S. Sightsinging, harmonic, rhythmic, and melodic dictation; exercises in rhythm. Prerequisites: Music major or consent of instructor. Corequisites: enrollment in freshmen theory (Music 30A-B-C) and piano (Music 10), or demonstrated proficiency.

10 Basic Piano (2) F, W, S. For music majors with little or no piano experience, this course provides the necessary background for realizing keyboard exercises required in the theory and harmony courses, and to enable them to play and sight-read simple music from different periods.

15A-B-C Musicianship II (2-2-2) F, W, S. Two- to four-part dictation, sightsinging including simple atonal melodies, keyboard harmony, C clefs. Corequisites: Music 130A-B-C. Prerequisites: Music 5A-B-C or equivalent.

18 Basic Voice (2) F, W, S, Summer. Class instruction for nonmusic majors. Students must be enrolled in Music 162 or Drama 165 in the current year. Prerequisite: Music 25 or consent of instructor.

20 The Nature of Music (4) F. A nonhistorical introduction designed to teach students how to listen to music by immediate response to its basic elements. Neither an ability to read music, nor any extensive familiarity with it, is required.

25 Fundamentals of Music (2) F, S, Summer. Scales, key signatures, notation, basic progressions, intervals, reading, intonation, transposition, basic rhythms.

30A-B-C Theory I (4-4-4) F, W, S. The study of traditional common-practice diatonic harmony, through written and keyboard drill. Basic harmonic theory, triads, seventh chords, sequences, modulation, elementary figured bases. Prerequisite: Music 25 or equivalent.

40A-B-C History and Literature of Music (4-4-4) F, W, S. A survey of styles in Western music from ancient times to Richard Wagner. Emphasis is placed on acquiring a thorough knowledge of specific musical examples representing the principal styles of Western art music to 1880. For majors only. Prerequisites: Music 5A-B-C and Music 30A-B-C or equivalents. Another selection of History and Literature of Music for nonmajors will cover the musical periods from ancient to present. No prerequisites. **(IV)**

77 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 freshman and sophomore levels. May be repeated for credit.

Upper-Division Courses in Music

130A-B-C Theory II (4-4-4) F, W, S. The course deals with writing exercises in two, three, and four parts in order to practice and to become familiar with the procedures of tonal harmony. Some original composition is also expected. Prerequisites: Music 30A-B-C or equivalent.

135A-B Counterpoint (4-4) F, W. Practical exercises and composition in modal and tonal two- and three-part writing. Canon and fugue, as well as some contemporary forms are also studied. **135A** Modal counterpoint; **135B** Tonal counterpoint. Offered alternate years with Music 155A-B. Prerequisites: Music 30C for 135A; Music 130A for 135B.

Courses in the 140-145 sequence are for Music majors and will 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, Bartok, and Stravinsky (145). The topics will vary from quarter to quarter; each course may be repeated for credit. In addition, special courses in the 140-145 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) S

150A-B-C Composition (4) F, W, S. Composing exercises and projects for diverse instrumental-vocal combinations and the consideration of contemporary techniques and problems as they may apply to individual students. Participation in the improvisation ensemble and working with electronic media help to delineate solutions to many problems. Prerequisites: Music 15C and Music 30C or equivalents, or consent of instructor. May be repeated for credit.

152A-B-C History of Opera (4-4-4). A general survey of the principal styles in opera from 1600 to today. Emphasis is on the study of the best examples of these styles.

155A-B Analysis (4-4) F, W. Methods of comprehensive analysis in all Western musical styles: additive, continuous, transformational, and hierarchic forms; introduction to linear analysis; aspects of rhythm, texture, and sonority as formative structures. Prerequisites: Music 15C and Music 130C or equivalents. Offered alternate years with Music 135A-B.

160 University Orchestra (1 to 2) F, W, S. A course offered to all students of UCI, whether music majors or nonmajors. One unit of credit for majors; two units of credit for nonmajors. The Orchestra is composed of students and community members. It performs regularly on campus, and its repertoire includes major works of the classical symphonic literature as well as representative works by contemporary composers. Musicians are required to attend all rehearsals (Tuesdays and Thursdays, from 7-10 p.m.). May be repeated for credit.

161 University Wind Ensemble and Brass 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 is open to both music majors and nonmajors by audition only. May be repeated for credit.

162 University Chorus (2) F, W, S. As the major choral performance organization, this ensemble prepares music of all eras. Included in the University Chorus are Concert Choir, Freshman Chorus, Men's Chorus, Women's Chorus, and Madrigal Singers. Each quarter a major concert is prepared, often with orchestral accompaniment. Membership is open to all University members by audition. May be repeated for credit.

163 Vocal Performance (2) F, W, S. A laboratory structured to increase singers' awareness about their technique, diction, and interpretation. Voice majors prepare songs from the standard repertoire to be presented in public recitals scheduled during the academic year. 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.

165 Advanced Study in Piano (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 of true artistic value. Private weekly lessons. May be repeated for credit.

166 Advanced Study for String Instruments (2) F, W, S. Private weekly lessons. May be repeated for credit.

167 Advanced Study for Wind Instruments (2) F, W, S. Private weekly lessons. 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. May be repeated for credit.

169 Conducting (4). Fundamentals of baton technique, score study, transposition, and orchestration. Not offered every year. Prerequisites: Music 15C and Music 40A-B-C or equivalents.

170 Orchestration (4). Study of the history of orchestration, with exercises in its theory and practice. The course combines extensive musical analysis with study of the history of modern orchestral instruments and reading in the major treatises on orchestration, such as those by Berlioz and Strauss. Although designed for music majors, the course is open to anyone possessing the requisite theoretical background. Not offered every year. Prerequisites: Music 30C or equivalent; Music 5C.

171 Chamber Singers (2). A highly select ensemble specializing in vocal chamber music from all periods. Frequent performances on and off campus. Membership is open to all University members by audition.

172 Chamber Orchestra (2). Not offered every year.

173 Theatre Orchestra (2). Not offered every year. Same as Drama 173.

174 Guitar and Lute Workshop (2) F, W, S. A practical class for the improvement of sight-reading skills by ensemble playing. The workshop also covers specialized forms of notation employed for the guitar and lute, and the history and literature of these instruments. May be repeated for credit.

175 Piano Repertory (2) F, W, S. Weekly two-hour meetings of 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 in one of the two piano recitals held quarterly. 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. May be repeated for credit.

178 Stage 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. May be repeated for credit. Consent of instructor required.

180 Music Criticism (4). Topics vary.

190 Studio Tutorials in Music (2-2-2) F, W, S. Piano, strings, winds, voice, conducting, guitar, lute, percussion for majors. Violin, viola, cello, double bass for qualified nonmajors with consent of instructor and with concurrent enrollment in Music 160. May be repeated for credit.

191 Tutorial in Music (4-4-4) F, W, S. May be repeated for credit.

194 Chamber Music (2) F, W, S. A study in the performance of standard classical, romantic, and contemporary chamber music works. This course 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.

195 String Quartet Proseminar (2) F, W, S. This course is designed to show the inner workings of the string quartet through open rehearsals and seminars given by the New York String Quartet. A survey of the history of the string quartet will also be given. May be repeated for credit.

196 String Senior Recital (4) F, W, S. A full, public recital to be given in the senior year. The program must include works from major periods of music (e.g., Baroque, classical, romantic, modern).

198 Music Workshop (4). May be repeated for credit.

Graduate Courses in Music

All graduate courses may be repeated for credit.

200 Bibliography and Research (4-4) 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.

210 Graduate Studio: Vocal Literature (4-4-4) F, W, S. Includes studies in vocal literature, vocal pedagogy, and diction and performance.

211 Graduate Studio: Instrumental Literature (4-4-4) F, W, S. Contents will vary according to the student's major instrument. The core of this course is intensive private instruction and study of the various instrumental literatures.

212 Graduate Studio: Composition (4-4-4) F, W, S. Intensive work in composition geared to each student's level of competence.

218 Graduate Voice Tutorial (2-2-2) F, W, S. Advanced studies in vocal technique. Private weekly lessons. May be repeated for credit. Prerequisite: acceptance into graduate program in drama with an emphasis on music theatre.

220 Seminar in Music History (4)

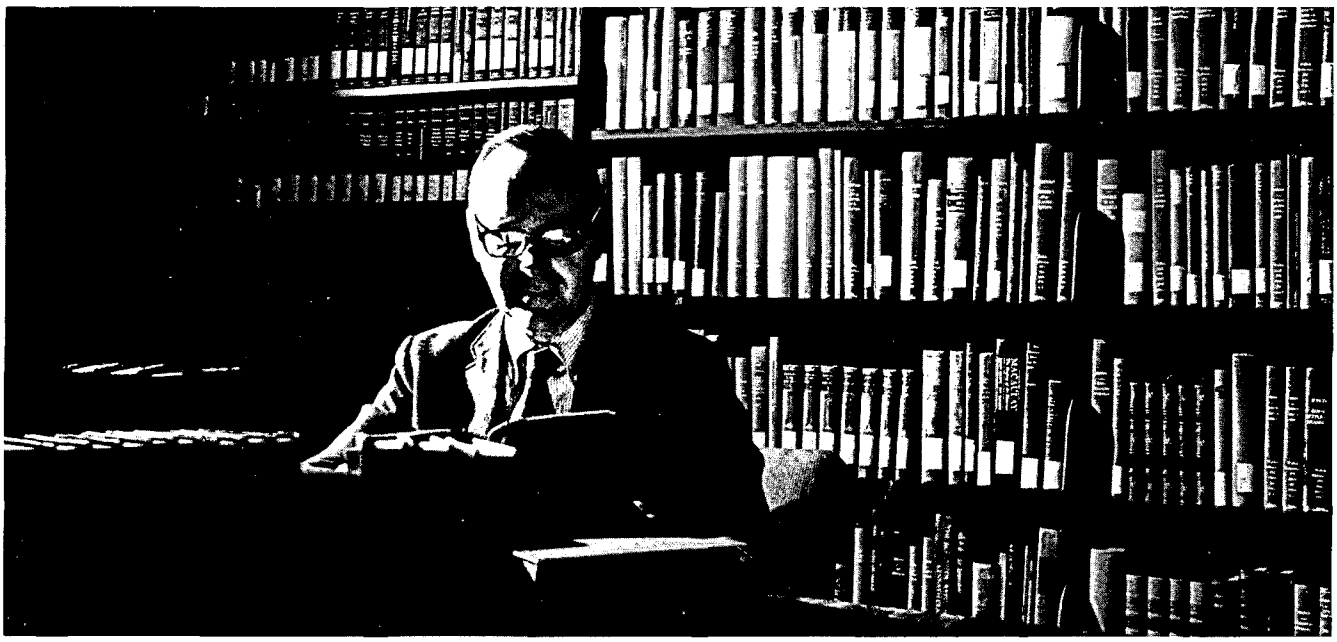
230 Seminar in Contemporary Music (4)

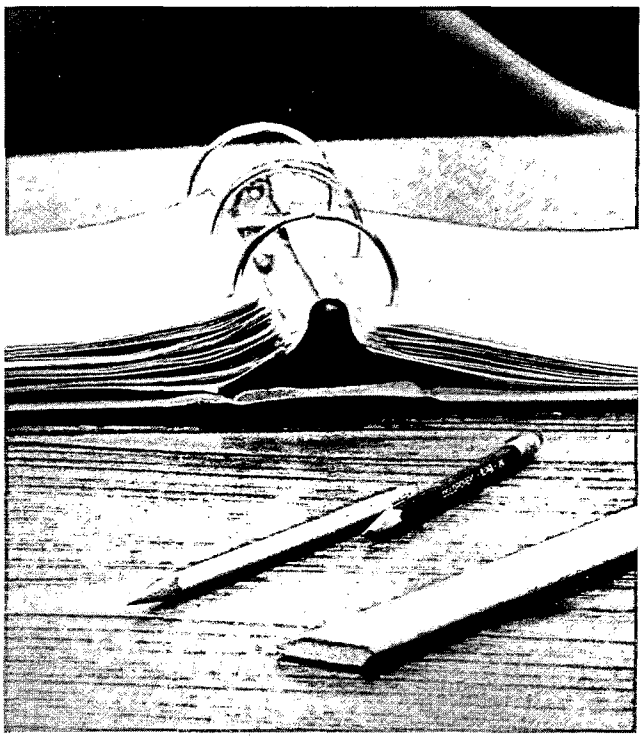
240 Graduate Projects (4-4-4) F, W, S. Contents will vary according to the student's area of concentration. For composers it will include preparation of works for performance; for vocalists and choral conductors it will include study of conducting and the preparation of solo and choral works for performance; for pianists it will include master classes in performance; and for other instrumentalists it will include participation in the University Orchestra and Wind Ensemble.

250 Directed Reading (4)

260 Thesis (4). By consent.

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.





SCHOOL OF HUMANITIES

William J. Lillyman **Dean**

The School of Humanities sets for itself the goal of helping to develop both the analytical and creative powers of its students with particular respect not only to vocational goals, but also the larger questions of human conduct, the modes of human communication and symbolization, speculative thought, and the verbal arts. The School includes those basic disciplines of language, literature, history, and philosophy that deal fundamentally with the relation of man to himself and to all that is other than himself. As such, the School takes as its concern a large portion of the liberal education not only of students who intend

to major within its confines, but also of students who come to it from other parts of the campus. Because of the nature of the disciplines collected in the School, it is deeply concerned with language and its many facets. Further, though the School has established a number of specific major courses of study, it is intent on integrating the basic disciplines in a variety of ways at the undergraduate level and to some extent at the graduate level.

Degrees

Classical Civilization	B.A.
Classics	B.A., M.A., Ph.D.
Comparative Literature	B.A., M.A., Ph.D.
English	B.A., M.A., M.F.A., Ph.D.
French	B.A., M.A., Ph.D.
German	B.A., M.A., Ph.D.
History	B.A., M.A., Ph.D.
Humanities	B.A.
Linguistics	B.A.
Philosophy	B.A., M.A., Ph.D.
Russian	B.A.
Spanish	B.A., M.A.T., M.A., Ph.D.

Honors

Students are nominated for honors at graduation on the basis of scholarship and special achievements. To be nominated the student must achieve a UC grade point average of at least 3.40 and receive strong recommendation from the department. A minimum of 18 courses (72 units) in residence at UCI is a necessary condition for honors at graduation. To be eligible for nomination, the student must meet all honors criteria and must file an application for graduation by the end of the winter quarter of the senior year.

Undergraduate Programs

The School offers undergraduate majors in Classical Civilization, Classics, Comparative Literature, English, French, German, History, Humanities, Linguistics, Philosophy, Russian, and Spanish. It offers elementary and intermediate courses in Hebrew and elementary and upper-division courses in Italian and Portuguese.

A corps of lower-division advisors is designed to meet the special needs of freshmen and sophomores. The advisors are particularly interested in undergraduate education and especially knowledgeable about University regulations, requirements in and outside the School, course content, options to major, and other matters that may present difficulties. Students in the School do not elect majors until the last quarter of the sophomore year, at which time each student is assigned an advisor in the major chosen. Until that time the lower-division advisor is prepared to help the student keep options to major open, plan a coherent program of humanistic study, and reach an eventual decision about the major.

NOTE: In many undergraduate courses in the School of Humanities, additional meetings between individual students and the instructor may be required.

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 with their advisors will construct programs that include a good number of such courses.

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, and by serving on the Humanities Council, which directly advises the Dean.

Graduates of the School of Humanities often go on to graduate and professional schools. An undergraduate major in the humanities is excellent preparation for future careers in law, teaching at all levels, business, journalism, administration, government service at all levels, and even medicine.

Language Laboratory

The Language Laboratory serves as the audio-lingual resource center for the following languages taught in the School of Humanities: Spanish, French, German, Russian, Portuguese, Italian, and Hebrew. Students, faculty, and staff may listen to cassettes of audio material in the Laboratory, or they may check out cassettes and cassette players to practice at home. Members of the community are welcome to use the Language Laboratory facilities on campus.

In addition to the languages offered in the School of Humanities, the Language Laboratory has a tape library that includes reels in Persian, Romanian, Chinese, Japanese, Dutch, Swedish, Norwegian, English, and Swahili. Arrangements can be made to provide these languages on cassette.

Through the business office, the Language Laboratory operates a translation referral service for students, faculty, staff, members of the community, and local businesses. The Language Laboratory is located in 207 and 213 Humanities Hall and is open from 8:00 a.m. until 4:00 p.m., Monday through Friday. The telephone number is (714) 833-6344.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements

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 Dean's 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 lower-division advisor and the advisor's written approval for the program of study decided upon. Consultation should be made by the second week of each quarter.

Graduate Programs

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. An exception is the two-year Master of Fine Arts in English (Creative Writing). In addition to the seminars offered by the various departments, the School sponsors a number of interdisciplinary seminars annually. These courses are taught jointly 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 is accepted annually to study for teaching credentials. This program is a cooperative effort between the School and the Office of Teacher Education.

Graduate students in the School of Humanities participate in the affairs of the School in a number of ways: by serving on committees of the various departments, by sitting with the faculty in its meetings, and by serving on the student graduate advisory committee, which directly advises the Dean.

DEPARTMENT OF CLASSICS

B.P. Reardon, D.U. Université de Nantes, *Chair of the Department and Professor of Classics* (Late Greek literature; Greek novel)
Luci Berkowitz, Ph.D.The Ohio State University, *Professor of Classics* (Greek bibliography; literary criticism)
Theodore F. Brunner, Ph.D. Stanford University, *Professor of Classics and Director, Thesaurus Linguae Graecae Project* (computer application to classical literature; Augustan literature)
Peter Colaclides, Ph.D. University of Athens, *Professor of Classics* (linguistics; politics; criticism)
Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of Classics and History* (Roman history; Classical tradition)
Dana F. Sutton, Ph.D. University of Wisconsin, *Assistant Professor of Classics* (Greek drama, satyr-play)

Undergraduate Program

The Department of Classics aims to provide the undergraduate student with an exposure to the origins and heritage of Western 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), through English translation courses in classical literature, history, civilization, and mythology, helping students to appreciate the pervasive influence of Greece and Rome 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, the basis of studying the Classics must be competence in both of the classical languages. The Classics program is designed to provide the student with this competence as rapidly as possible, so that by the end of first year Latin or Greek the student has already been introduced to some of the major classical authors in the original. From then on, the student is concerned with reading and interpreting the literature of ancient Greece and Rome, and will devote study to literary and textual criticism. In addition, students obtain an extensive background in ancillary fields such as ancient history, archaeology, art, drama, philosophy, and religion.

The major in Classical Civilization is designed for those students who have no plans to pursue graduate studies in the classical languages, yet wish to obtain an undergraduate degree based on a sound exposure to the classical world. The nucleus of this major consists of one year of study (or its equivalent) in either classical language and a minimum of 10 courses in English translation (seven of which are given by the Department) concerning such topics as classical literature, civilization, history, archaeology, art, and drama.

The student planning to major in Classics or Classical Civilization should obtain a copy of the pamphlet, "The Classics," available in the departmental office.

Students entering UCI with previous Greek or Latin training will be given advanced standing as follows: 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 Latin will enroll in Latin 1B, 1C, 25, and 100 respectively. Exceptions to this ruling can be made but must have the approval of the Department Chair. Students with high school training in the classical languages are encouraged to consult with the Classics staff 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. They 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.

Please direct inquiries regarding language placement, prerequisites, planning a program of study, or other matters related to the Department's offerings to the Office of the Chair, 142 Humanities Hall, (714) 833-6735/5896.

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. Under the auspices of this agreement, students may take two years of the Hebrew language. The courses cover both contemporary and biblical Hebrew. In addition, it is intended that a course will be offered each quarter in either Jewish history, philosophy, or literature. 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 page 14.

School Requirements: See page 110.

Departmental Requirements

Two separate majors: Classics (with an emphasis in Greek, Latin, or Linguistics) and Classical Civilization.

Classics (Greek emphasis): five or more courses on the Greek 100 level; Greek 110; Latin 1A-B-C; Latin 25; two courses on the Latin 100 level.

Classics (Latin emphasis): five or more courses on the Latin 100 level; Latin 110; Greek 1A-B-C; Greek 25; two courses on the Greek 100 level.

Classics (Linguistics emphasis): two possible plans of study. *Greek concentration*—Greek 25; five courses on the Greek 100 level; Greek 110; Latin 25; two courses on the Latin 100 level; Linguistics 50, 110, 120, 130 (Greek 120 recommended) or *Latin concentration*—Latin 25; five courses on the Latin 100 level; Latin 110; Greek 25; two courses on the Greek 100 level; Linguistics 50, 110, 120, 130 (Latin 120 recommended).

NOTE: With the permission of the Department, an additional 100 series course in the same language may be substituted for Greek or Latin 25.

Classical Civilization: Latin (or Greek) 1A-B-C, or equivalent; Classics 35A-B-C; Classics 50A; at least one course each from the Classics 150, 160, and 170 series; three additional courses in classical history, classical philosophy, classical art or classical civilization approved by the Classics Department.

Planning a Program of Study

The Department believes in close consultation with students on academic advising, program planning, and discussion of goals and direction. Students planning to major in Classics or Classical Civilization are strongly urged to consult with the departmental faculty at the earliest possible moment, in order to familiarize themselves with the nature of the various programs. All majors are assigned to a faculty member for academic advising.

Career Opportunities

The Classics major may lead to a career in high school teaching, or, after appropriate graduate study, in college and university teaching. The major is prepared for admission to graduate study in classics, comparative literature, linguistics, ancient history, or, with additional course work, archaeology. A Classics or Classical Civilization major is also excellent preparation for entering a theological seminary. However, it is not the essential purpose of a major program in Classics, and especially Classical Civilization, to provide specific vocational skills. The study of Greek, Latin, and classical civilization is primarily a valuable component of a liberal education. A knowledge of Greek and Roman literature, history, religion, philosophy, and science provides a proper foundation for the investigation and appreciation of all aspects of modern civilization.

Nevertheless, the student who chooses to major in Classics or Classical Civilization has the choice of many professional opportunities. Graduate and professional schools in law, medicine, or business welcome students with training in the Classics. In many sectors of the business world, corporations prefer to train prospective managers and executives according to their own special methods and needs. These businesses are well acquainted with the value of a person who has chosen to study classics as an undergraduate. In a world of rapid industrial growth in which highly specialized skills quickly become obsolete because of changes in technology, the student with a strong background in a respected liberal arts major such as Classics offers the diversity, flexibility, precision, and ability to learn which employers in business, government, and industry find attractive.

More specific career information is contained in the publication "Careers for Classicists" available from the Department.

Graduate Program

The Classics graduate program emphasizes individual attention under tutorial conditions and study in small groups. The number of students admitted is carefully limited and work is closely supervised. Each student is associated with various faculty members while developing general competence in the discipline, research methods, and teaching. The principal strength of the program is in the area of literature. The entering student should be qualified at least to the level of the B.A. in Classics; some students may be required to do additional work at the undergraduate level.

Students entering with the B.A. are normally expected to complete the Ph.D. program in five years. Completion of a dissertation and its successful oral defense are required. A sample Ph.D. curriculum can be obtained on request from the Department. The M.A. degree may be conferred after two years of satisfactory work.

Students meet in one group for regular course work consisting of three elements as follows:

(1) a single weekly seminar, covering a different topic each quarter, which may meet on another UC campus in some quarters; most seminars are devoted to major literary topics;

(2) a topically arranged directed reading course covering, in a three-year cycle, texts on the reading list;

(3) tutorial instruction in Greek and Latin language and advanced prose composition.

In addition to the above, instruction is given regularly in the tradition, methods, and tools of classical scholarship, including computer application to literature.

In addition to course work, students are required to read extensively in the general field of Classics, under faculty guidance.

Students take written examinations, and their progress is assessed periodically. Students are required to pass reading examinations in German and French at an early stage. After course work is completed, each student must pass an individually designed qualifying examination, covering both the general field of Classics and the student's own interests, in order to become a candidate for the Ph.D. and enter the dissertation stage.

The resources of the program are appreciably enhanced by contributions from other sources. In particular, cooperative arrangements are in force among the Classics graduate programs of the UC campuses at Irvine, Los Angeles, and Santa Barbara. Additionally, the program calls on visiting scholars, faculty from other UCI departments, and members of the Thesaurus Linguae Graecae Project (see below).

Thesaurus Linguae Graecae Project

The Thesaurus Linguae Graecae Project, a unique resource for research in Greek literary and linguistic studies, is closely affiliated with the Department of Classics. For further details, consult the Graduate Studies and Research section of the General Catalogue.

Undergraduate Courses

Greek 1A-B-C Fundamentals of Greek (5-5-5) F, W, S. Elements of classical Greek grammar and syntax, with selected readings. 1C is devoted to selected readings from Greek authors.

Greek 20A-B-C Intensive Greek (5-5-5) Summer. Offered in summer session only. Covers, in eight weeks, the equivalent of Greek 1A-B-C. Will be offered if enrollment warrants; those interested should contact the Department.

Greek 25 Intensive Greek Review (5) F. Review of grammar and an introduction to selected major authors for students who have passed 1C or its equivalent, or have had two years (with consent) or more of the language at the high school level. Especially qualified students may bypass this course with the consent of the Department and go directly to the 100 level. **(V)**

Greek 99 Special Studies in Greek (4-4-4) F, W, S. Consultation with instructor necessary prior to registration.

Greek 100 Seminar in Greek Literature (4-4-4) F, W, S. May be repeated for credit provided topic varies. History (F), Epic (W), Drama (S). Prerequisite: Greek 25, equivalent, or consent of the Department. **(V)**

Greek 110 Greek Prose Composition (4). 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 (4-4-4) F, W, S. Consultation with instructor necessary prior to registration.

Latin 1A-B-C Fundamentals of Latin (5-5-5) F, W, S. Elements of Latin grammar and syntax, with selected readings. 1C is devoted to selected readings from Roman authors.

Latin 20A-B-C Intensive Latin (5-5-5) Summer. Offered in summer session only. Covers, in eight weeks, the equivalent of Latin 1A-B-C. Will be offered if enrollment warrants; those interested should contact the Department.

Latin 25 Intensive Latin Review (5) F. Review of grammar and an introduction to selected major authors for students who have passed 1C or its equivalent, or have had two years (with consent) or more of the language at the high school level. Especially qualified students may bypass this course with the consent of the Department and go directly to the 100 level. **(V)**

Latin 99 Special Studies in Latin (4-4-4) F, W, S. Consultation with instructor necessary prior to enrollment.

Latin 100 Seminar in Latin Literature (4-4-4) F, W, S. May be repeated for credit provided topic varies. History (F), Epic (W), Drama (S). Prerequisite: Latin 25, equivalent, or consent of the Department. **(V)**

Latin 110 Latin Prose Composition (4). Prerequisite: Latin 25, equivalent, or consent of the Department.

Latin 120 Introduction to Vulgar and Medieval Latin (4). Morphological, syntactical, and lexical developments in post-classical Latin illustrated by a variety of texts. Prerequisite: Latin 1C or consent of instructor.

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 (4-4-4) F, W, S. Consultation with instructor necessary prior to enrollment.

Classics 5 Building English Vocabulary through Greek and Latin Roots (4) F. 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) W. 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, 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 to the disintegration of the Roman Empire. Focuses on major institutions and cultural phenomena as seen through study of ancient literature, history, archaeology, and religion. Same as History 35A-B-C. **(IV)**

35A Myth and Religion in Ancient Society (IV)

35B Literature and Ancient Society: Greece (IV)

35C Archaeology and Ancient Society: Rome (IV)

Classics 50A Introduction to Classical Literature in English Translation (4) F. Selected texts from epic, drama, poetry, and prose discourse by major Greek and Roman authors in context of Western literary tradition.

Classics 99 Special Studies in Classics (4-4-4) F, W, S. Consultation with instructor necessary prior to enrollment.

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 145 Introduction to Classical Archaeology (4) W. Range and variety of materials used as evidence for reconstruction or recovery of the Greek and Roman civilizations and methods by which information is inferred from artifacts. Emphasis on particular facets of daily life.

Classics 149 Archaeological Techniques (4). Selected topics in classical archaeology. Subject matter will vary. May be repeated for credit. Readings in translation.

Classics 150 Classical Mythology (4). Selected myths and legends as used in classical literature, and their modern interpretations.

Classics 155 Classics and Philosophy: The Greek and Roman Philosophers (4). Selected topics in Greek and Roman philosophy. May be repeated for credit provided topic varies. Readings in translation.

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 169 Ancient Literary Criticism (4). Study in English translation of the major literary critics in classical antiquity including Plato, Aristotle, Horace, "Longinus," and Quintilian. Designed particularly for students majoring in Comparative Literature, English, Classics, and the various languages.

Classics 170 Topics in Classical Civilization in English Translation (4). Subject matter variable. May be repeated for credit provided topic varies.

Classics 180A-B-C Judaic Studies (4-4-4) F, W, S. Jewish culture, history, and philosophy. Topics vary. May be repeated for credit provided topic varies.

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 (4-4-4) F, W, S. Consultation with instructor necessary prior to registration.

Hebrew 1A-B-C Hebrew Fundamentals (4-4-4) F, W, S

Hebrew 2A-B-C Hebrew Reading and Composition (4-4-4) F, W, S. (IV)

Judaica 180A-B-C Jewish Culture, History, and Philosophy (4-4-4) F, W, S. Topics vary. May be repeated for credit provided topic varies.

Graduate Courses

Classics 220 Classics Graduate Seminar (4-4-4) F, W, S. Subject matter variable; mainly but not exclusively major literary topics.

Classics 230 Directed Reading (4-4-4) F, W, S. Texts from the reading list; several topics each year, coordinated with Classics 220 topics, in a three-year cycle.

Classics 240 Greek and Latin Language (4-4-4) F, W, S. Prose composition and translation.

Classics 299 Dissertation Research (4-4-4) F, W, S

Classics 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF ENGLISH AND COMPARATIVE LITERATURE

John C. Rowe, Ph.D. State University of New York at Buffalo, *Chair of the Department and Associate Professor of English* (American literature; modern literature; critical theory; comparative literature)

Stephen A. Barney, Ph.D. Harvard University, *Professor of English* (Medieval literature and culture; allegory)

Joseph N. Bell, B.A. University of Missouri, *Lecturer in English* (journalism; nonfiction)

Homer Brown, Ph.D. The Johns Hopkins University, *Professor of English* (eighteenth-century; novel; literary theory; Romanticism)

James L. Calderwood, Ph.D. University of Washington, *Professor of English and Associate Dean for Graduate Study, School of Humanities* (drama, Shakespeare)

Robert Folkenflik, Ph.D. Cornell University, *Associate Professor of English* (eighteenth-century; novel; biography; autobiography)

Alexander Gelley, Ph.D. Yale University, *Associate Professor of Comparative Literature* (eighteenth- and nineteenth-century European novel; critical theory; comparative literature)

Linda Georgianna, Ph.D. Columbia University, *Assistant Professor of English* (Medieval literature and culture)

Oakley Hall, M.F.A. University of Iowa, *Professor of English* (fiction writing; contemporary fiction)

Carl Hartman, M.F.A. University of Iowa, *Senior Lecturer in English and Associate Vice Chancellor—Academic Affairs* (fiction writing)

Donald Heiney, Ph.D. University of Southern California, *Professor of Comparative Literature and Director of the Writing Program in Fiction* (fiction writing; translation; modern, continental, and American fiction)

W. Lawrence Hogue, Ph.D. Stanford University, *Assistant Professor of English* (American literature)

Reneé Riese Hubert, Ph.D. Columbia University, *Professor 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)

Anton Kaes, Ph.D. Stanford University, *Associate Professor of German and Comparative Literature and Director of the Program in Comparative Literature* (Modernism; German-American literary relations, drama, literature, and film; critical theory; comparative literature)

Murray Krieger, Ph.D. Ohio State University, *University Professor of English* (critical theory; Renaissance lyric; eighteenth-century figures)

Frank Lentricchia, Ph.D. Duke University, *Professor of English and Director of the Program in Critical Theory* (American literature; critical theory)

Juliet MacCannell, Ph.D. Cornell University, *Assistant Professor of Comparative Literature* (eighteenth-century French literature; modern semiotics; comparative literature)

James McMichael, Ph.D. Stanford University, *Professor of English and Director of the Writing Program in Poetry* (contemporary poetry; poetry writing; prosody; Joyce)

Robert L. Montgomery, Ph.D. Harvard University, *Professor of English* (Renaissance literature; critical theory; comparative literature)

Robert Newsom, Ph.D. Columbia University, *Assistant Professor of English* (nineteenth-century fiction)

Robert L. Peters, Ph.D. University of Wisconsin, *Professor of English* (Victorian literature; contemporary poetry; poetry and fiction writing)

Barbara L. Reed, Ph.D. Indiana University, *Lecturer in English and Assistant Vice Chancellor—Academic Affairs for Administration and Academic Personnel* (American literature; the epic)

Edgar T. Schell, Ph.D. University of California, Berkeley, *Associate Professor of English* (Medieval and Renaissance literature)

Myron Simon, Ed.D. University of Michigan, *Professor of English and Education* (American and Canadian literature; early twentieth-century English poetry; ethnic literature; rhetoric)

Owen Thomas, Ph.D. University of California, Los Angeles, *Professor of Linguistics, English, and Education* (American literature)

Harold Toliver, Ph.D. University of Washington, *Professor of English* (Renaissance and seventeenth-century literature; theory of fiction; theory of genre)

Christiane Von Buelow, A.B.D. Stanford University, *Acting Assistant Professor of Comparative Literature* (modern poetry; Latin American literature; German comparative literature)

Albert O. Wlecke, Ph.D. Michigan State University, *Associate Professor of English* (English and American Romanticism; teaching of composition)

Charles P. Wright, Jr., M.F.A. University of Iowa, *Professor of English* (modern and contemporary poetry; poetry writing)

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 two elected student committees, one of undergraduates, one of graduates, which are concerned primarily with matters of personnel and curriculum. The committees meet periodically with faculty committees of the Department, and the recommendations of student committees become matters of record which accompany any recommendations emanating from the Department. Each quarter all students taking classes within the Department have the opportunity to evaluate the particular course and teacher.

Undergraduate Program

The Department offers to the undergraduate essentially three areas of study:

The Program in Literary Criticism, which emphasizes a variety of critical approaches in the reading and criticism principally of English and American literature.

The Program in Writing, which offers an emphasis in the writing of poetry, fiction, or drama. Undergraduate courses in journalism and nonfiction are also available, including formal instruction and workshop experience for staff members of the

campus newspaper. The aim of the program 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). See page 15.

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.

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.

Students intending to major in English or Comparative Literature should obtain a copy of *Undergraduate Study in English and Comparative Literature* from the departmental office. Comparative Literature is well-suited for students interested in a double major.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

English: Two courses from the E 28A-B-C or CL 50A-B-C groups (including either E 28A or CL 50A) and a third course either from those two groups or from E 6, 7, 8 or CL 7 or 8; CR 100A-B; CL 100; E 102A-B-C; four courses above 102, at least three of which must be 103s or 104s; competence in a foreign language, either classical or modern, equivalent to six quarters of work at Irvine (in classical languages, 1A-B-C and Greek or Latin 100 three times, though Greek or Latin 25 may be substituted for one of the 100 courses), plus (in modern languages) one course in a foreign literature in which texts are read in the original language; passing performance in the Senior Comprehensive Examination in English (see below). 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.

Comparative Literature: Sufficient competence in a foreign language, either modern or classical, to be able to deal with facility with 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-B, CL 100, CL 102A-B (required) and either E 103 or CL 103 or CL 104; suitable upper-division course work in the literature of a foreign language; appropriate study in English and American literature; and further study in literature or allied fields as recommended by the advisor.

The Comparative Literature Program maintains a comprehensive reading list in world literature, on which CL 50A-B-C and CL 102A-B are based. Students who have not taken and passed one or more of those courses may, *by prior arrangement with the Director of the Program,* take an examination on relevant parts of the reading list in qualifying for a Bachelor's degree in Comparative Literature.

Planning a Program of Study

Students should plan, with their faculty advisors, coherent programs of study, 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, medicine, etc. 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 with Professor Myron Simon (as well as with the Office of Teacher Education) 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.

The Senior Comprehensive Course in English (E 102A-B-C)

The Senior Comprehensive Course is a three-quarter sequence: E 102A-B-C. Each quarter has its own requirements, usually midterm and final examinations. The course is planned according to the Senior Comprehensive Reading List, much of which students are expected to prepare on their own. Divided into three parts by historical periods, the course will ask that a student reveal the following: an ability to read any given literary text intelligently; a knowledge of the general outlines of English and American literary history, including the more significant facts and dates; an understanding of the terms appropriate to literary discussion; and a knowledge of the works on the reading list.

Students must take E 102A-B-C in their senior year. A student who fails part one may enroll in a second course, taking a make-up examination at first opportunity, and so on with parts two and three. No student may take any of the three parts of the course more than three times, and no student who fails to pass all three parts may receive a degree in English. Normally students will take the three parts in the A-B-C order; students graduating in an off quarter, however, may vary the sequence.

Copies of past examinations may be obtained in the Office of the Department of English and Comparative Literature.

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; and 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 and Research, admits students to these programs. Each program has a director appointed by the Department Chair. A deliberate effort is made to maintain close administrative and intellectual ties among the programs.

Specific requirements for the graduate degrees will be reached 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 and Comparative Literature must submit scores for the Graduate Record Examination (GRE) including the Advanced Literature in English Test; applicants must also submit sample papers and a statement about competence in foreign languages.

Part-time graduate work is not permitted. Only in exceptional circumstances will students be permitted to undertake programs of less than six full courses during the academic year. The normal expectation, however, is enrollment in three courses each quarter, except for Teaching Assistants, who 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, plus a quarter or a summer for preparation for M.A. examination, which normally is taken after about nine courses.

The Ph.D. qualifying examination should be taken within a couple of quarters after courses are finished. Dissertations can frequently be written in a year. The Ph.D. in English normally should be completed in five years or less; 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 of participation in this program.

All those interested in graduate study in the Department should obtain the brochure on graduate programs from the departmental office.

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 passing of a written examination upon a designated reading list. Exceptional students may be exempted from taking the examination by petitioning the Graduate Committee, which will review the student's performance and qualifications in arriving at its decision. The candidate must take all formal work in graduate-level courses and seminars.

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-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. The fifth quarter of work toward the degree may be taken at the Instituto Allende, San Miguel de Allende, Mexico. 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 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. Read-

ing 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 takes general examinations on literary theory and criticism; some particular literary form, genre, style, theme, or structure; a historical period; a group of authors; and a specific topic. The first four of these examinations are written; the fifth is oral. The student has the opportunity to present personal choices for the examination, but the choices must enable an individual to demonstrate breadth of knowledge as well as 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. Submission of an acceptable dissertation completes the Ph.D. All work for the Ph.D. degree must be in courses limited to graduate students.

Comparative Literature

There are at least four avenues by which the student may approach graduate work in Comparative Literature:

1. An undergraduate major in Comparative Literature equivalent to the one described above;

2. An English major, provided that a sufficient background in at least one foreign language is demonstrated (a beginning on a second foreign language is desirable);

3. A normal major in drama, with same proviso as 1. above;

4. A normal major in a foreign language, provided that a sufficient general background in world literature is demonstrated.

Make-up work will be required before graduate studies can begin if one of these avenues has not been taken.

At the graduate level, the study of Comparative Literature becomes more specialized, with the student engaged in a particular area of research and dealing with such problems as the development of genres, interrelations between literatures, the theory and practice of translation, and other literary questions transcending national boundaries.

For the graduate student in Comparative Literature a professional competence in foreign languages is essential. French and German are usually required for all doctoral candidates, since these languages along with English are the accepted tools of international literary scholarship. A classical language may prove indispensable for work in many traditional fields of literary study, and the scholar's own specialty may require the mastery of other languages. The underlying assumption of language requirements is that, after the tool languages have been mastered, the professional scholar's own interests should determine the specific kinds and degrees of language skill to be acquired.

At the graduate level, the nucleus of the foreign language requirement is the course CL 220 (Problems in Translation) in which, after a suitable theoretical preparation, the student plans and carries out a high-quality translation of a literary 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

Students entering the Master of Arts program should complete their course work in three quarters. This course work should include CL 220 (Problems in Translation) with a project in either French or German and appropriate graduate-level work in English, foreign languages, drama, comparative literature, and other areas as counselled by the advisor. Soon after beginning graduate work the student, with the advice and approval of the assigned advisor, will decide on a field of specialty which will be emphasized in progressing toward the M.A. degree. (Normally this choice will be a preliminary step toward the selection of an area of specialty for the Ph.D.)

Graduate study in Comparative Literature requires an exceptional facility in foreign languages, and the student should not attempt a Master's degree without a thorough knowledge of one foreign language and literature and a considerable knowledge of a second language. Normally the greatest part of the student's work will involve the study of literary texts in the original languages.

At the end of course work, normally about nine courses at the graduate level, the student will be examined on a reading list in world literature that the student's committee has approved. This list should be designed by the student in consultation with the committee and based on the general World Literature list for Comparative Literature. The student's own list should follow some organizing principle, such as an emphasis on the fields and languages of the student's specialization. Nevertheless, every list should include works from all of the different groups represented on the general World Literature list. The M.A. examination is a three-hour written examination, which focuses on essay questions based on the student's approved reading list. Exceptional students may be exempted from taking the examination by petitioning the Graduate Committee which will review the student's performance and qualifications in arriving at its decision.

Doctor of Philosophy in Comparative Literature

The Doctoral program is designed to prepare the student for a professional career as a scholar and critic of literature. Details of the doctoral program in Comparative Literature may be obtained from the Director. Normally the degree requires two years of course work (usually a minimum of three courses per quarter). Of these courses, the only required course is CL 220 (Problems in Translation), which is taken twice, with projects in acceptable languages. The rest of the student's work will be in seminars or other graduate-level courses in Comparative Literature, English, the various foreign language departments, or drama.

In general an exceptional command of foreign languages is required, normally involving a professional competence in two or more foreign languages, either modern or classical. The doc-

toral student is encouraged to design and carry out a personal plan of study (the area of specialty) in a particular field of interest. The requirements for the doctorate also include an area of competence in literary theory and practical criticism; a student may also stress theory in preparation for the Qualifying Examination.

Upon completion of the course work, the student will be examined in the following areas of knowledge: (1) mastery of a limited topic in literary theory or history of criticism, along with general knowledge of major critical texts in the history of literature; (2) an area of specialty as described above; and (3) major works and authors appropriate to the study of comparative literature. Following this examination, and upon recommendation of a candidacy committee appointed by the Graduate Council, the student is formally admitted to candidacy.

The study toward the degree of Doctor of Philosophy will culminate in the writing of a suitable dissertation, normally on a comparative subject, although subjects lying within a single literature or dealing with general literary and aesthetic problems not confined to any specific literatures may also be acceptable. Studies of the relation between literature and the other arts are also encouraged.

Undergraduate Courses

Satisfaction of the Subject A requirement is a prerequisite for all departmental courses except E 6, 7, 8 and CL 7, 8. However, students scoring from 550 to 600 on the College Board English Composition Achievement Test normally should be able to satisfy the Subject A requirement with the same courses they take to satisfy the lower-division Writing Requirement of the breadth requirement (Category I). See page 15.

Descriptions of the topics to be offered in the undergraduate literary courses during a given year are available through the departmental office in the fall.

Writing Workshop (2). Open as space allows to students held for Subject A who are enrolling simultaneously in the Humanities Core Course (Humanities 1A-B-C). For further information, consult the Subject A Office.

WR 1A-B Fundamentals of Composition (4-0) F, W, S, Summer. Discussion, three hours. Writing 1A deals with basic problems of grammar, sentence structure, and paragraph organization in the writing of expository prose; some exercises, frequent papers. Students achieving a grade of P in Writing 1A satisfy the Subject A requirement. A student seeking to satisfy the Subject A requirement whose work is lower than P in Writing 1A will receive an IP and should enroll in Writing 1B, which continues to treat the matters studied in Writing 1A; a student whose performance in Writing 1B achieves the level of P will satisfy the Subject A requirement.

E 6 Major British Writers: Chaucer to Pope (4) F, Summer. Lecture, three hours. Reading of major works by such figures as Chaucer, Shakespeare, Milton, Swift, Pope, and others. Primarily designed for nonmajors. **(IV)**

E 7 Major British Writers: Wordsworth to Joyce (4) W. Lecture, three hours. Reading of major works by such figures as Wordsworth, Keats, Brontës, Dickens, Arnold, Joyce, and others. Primarily designed for nonmajors. **(IV)**

E 8 Major American Writers (4) S. Lecture, three hours. Reading of major works by such figures as Emerson, Hawthorne, Melville, Whitman, Twain, James, Eliot, Faulkner, and others. Primarily designed for nonmajors. **(IV)**

CL 7 Existentialism in Literature (4) S. Lecture, three hours. Introduction to literary aspects of problems raised by existential philosophers.

CL 8 Major European Authors (4) W. Comparative study of two or more European writers related by genre, style, etc., for instance, Balzac and Dickens, Kafka and Beckett.

E 28A-B-C The Nature of Literature (4-4-4) F, W, S. Discussion, three hours. Lyric and Epic Imagination (A); Comic and Tragic Vision (B); Realism and Romance (C). Reading of selected texts to explore the ways in which these modes formulate experience. Students will write several short papers in each course. **(IV)** When taken in conjunction with Humanities 15-16, may also be used to satisfy the lower-division portion of the breadth requirement in Writing (Category I).

WR 30 The Art of Writing: Poetry (4) F, W, S, Summer. Beginners' workshop in the writing of poetry, evaluation of student manuscripts, and parallel readings. **(I)**

WR 31 The Art of Writing: Prose Fiction (4) F, W, S, Summer. Beginners' workshop in fiction writing, evaluation of student manuscripts, and parallel readings. **(I)**

WR 32 The Art of Writing: Drama (4). Beginners' workshop in playwriting, evaluation of student manuscripts, and parallel readings. Same as Drama 32. **(I)**

WR 38 The Art of Writing: Nonfiction and Journalism (4) F, W, Summer. Beginners' workshop in the writing of nonfiction and news articles, evaluation of student manuscripts, projects. Three hours. **(I)**

WR 39A-B Expository Writing (4-4) F, W, S. Practice in writing clear and effective expository prose. Three hours. **(I)**

CL 40A-B-C Development of Drama (4-4-4) F, W, S. Same as Drama 40A-B-C. **(IV)**

CL 50A-B-C The Literary Tradition (4-4-4) F, W, S. The reading of selected major works in the Western literary tradition. Required of Comparative Literature majors. **(IV)** When taken in conjunction with Humanities 15-16, may also be used to satisfy the lower-division portion of the breadth requirement in Writing (Category I).

CR 100A Literary Theory and Criticism (4) F. 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) 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 15 students. Each instructor announces a theoretical topic deriving from CR 100A and explores it through a number of theoretical and literary texts. May be repeated as the topics change. Prerequisite: CR 100A.

WR 100B Undergraduate Seminar in Literary Theory (4). Seminar, three hours. Substitute for CR 100B (above) for writing emphasis students. Prerequisite: CR 100A.

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 15 students. Each instructor announces a topic that joins theoretical speculation about literature with the practical criticism of individual literary texts. May be repeated as the topics change. Prerequisite: a lower-division series in literature.

E 102A-B-C Senior Comprehensive Course in English (4-4-4) F, W, S. Required of English majors; qualified nonmajors may enroll with consent. This series of three courses is designed to prepare students for the three parts of the comprehensive examination. **E 102A** Medieval and Renaissance; **E 102B** Later Seventeenth Century through the Romantic Period; **E 102C** Victorian, American.

CL 102A-B Undergraduate Reading Program in Comparative Literature (4-4) W, S. Reading, lectures, and discussion. Required of Comparative Literature majors, but others may enroll with consent. **CL 102A** Post-Romantic Continental Literature; **CL 102B** Twentieth-Century Continental Literature.

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. Three hours. May be taken more than once provided the topic changes. 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.

CL 104 The Interdisciplinary Course (4) F, S. Lecture and discussion course open to all students, three hours. May be taken more than once provided the topic changes. 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.

WR 109 Nonfiction and Journalism (4) S. By consent. Three hours. The course develops out of WR 38 for students with special competence for advanced work in journalism.

WR 110 Short Story Writing (4) W, S. By consent. 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.

WR 111 Poetry Writing (4) W, S. By consent. 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.

WR 112 Playwriting (4). By consent. Three-hour advanced playwriting workshop; discussion of student writing and of relevant literary texts. Same as Drama 112.

WR 113 Novel Writing (4) S. By consent. Three-hour advanced workshop in fiction writing; discussion of student writing and of relevant literary texts.

WR 115 Conference in Writing (4). By consent. Primarily for writing emphasis seniors. May be repeated.

WR 139 Advanced Expository Writing (4). Discussion, three hours. Study of rhetorical techniques; practice in writing clear and effective prose. Prerequisite: satisfaction of the lower-division writing requirement of the breadth requirement. Students meeting the pre-1980 breadth requirement may be admitted by permission of the instructor. **(I)**

E 140 Children's Literature (4) F. 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 requirement in English or Comparative Literature.

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 major.

WR 179 Advanced Composition for Teachers (4). Examines principles of formal composition as well as problems in teaching composition. Same as Education 179.

E 181 The Structure of English (4). Prerequisite: Linguistics 50 or an equivalent course.

E 184 History of English Language (4)

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.

E 199 Reading and Conference (4-4-4). By consent, by arrangement. To be taken only when the materials to be studied and the topic to be pursued lie outside the normal run of departmental offerings, when the student will have no formal chance in the course of several years to pursue the subject of interest, and when the subject fits significantly into the student's major program. Before enrolling in this course, the student must have the consent of the advisor, the instructor, and the Department Chair. To obtain consent the student must submit a written description of the course to the Chair.

CL 198 Special Topics (4-4-4). Directed group study of selected topics. By consent, by arrangement.

CL 199 Reading and Conference (4-4-4). See the description of E 199 above.

Graduate Courses

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 these Humanities courses of special interest: **Humanities 200 (The Nature and Theory of History); Humanities 210 (Approaches to Linguistic Study); Humanities 230 (Philosophical Analysis); and Humanities 291 (Interdisciplinary Topics).**

E 200 Selected Topics in English Linguistics (4)

E 210 Studies in Literary History (4) F, W, S

CL 210 Comparative Studies (4) F, W, S

CL 220 Problems in Translation (4) W, S

CR 220A-B-C Studies in Literary Theory and Its History (4-4-4) F, W, S. CR 220A same as Humanities 220.

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

WR 250 Graduate Writers' Workshop (4 to 8) F, W, S

WR 251 Writing in Conference (4 to 8) F, W, S

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 397 Rhetoric, Linguistics, and Composition for College Teaching (2). Satisfactory/Unsatisfactory only.

E 398 Rhetoric and the Teaching of Composition (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.

DEPARTMENT OF FRENCH AND ITALIAN

Franco Tonelli, Ph.D. Louisiana State University, *Associate Professor of French and Italian, Director of the Film Studies Program, and Chair of the Department* (contemporary drama and theory of drama)
David Carroll, Ph.D. The Johns Hopkins University, *Associate Professor of French* (literary theory and twentieth-century French literature)
James Chiampi, Ph.D. Yale University, *Associate Professor of Italian* (Italian Renaissance)
Eugenio Donato, Ph.D. The Johns Hopkins University, *Professor of French and Italian* (literary theory and eighteenth- and nineteenth-century French literature)
Judd D. Hubert, Ph.D. Columbia University, *Professor of French* (seventeenth- and nineteenth-century French literature)
Renée Riese Hubert, Ph.D. Columbia University, *Professor of French and Comparative Literature* (nineteenth and twentieth-century French literature)
Alice M. Laborde, Ph.D. University of California, Los Angeles, *Associate Professor of French* (eighteenth-century French literature)
Leslie W. Rabine, Ph.D. Stanford University, *Associate Professor of French* (nineteenth-century French literature and women's studies)
Janette Reardon, M. ès L. Université de Nantes, *Visiting Lecturer in French* (methodology of teaching)
Richard L. Regosin, Ph.D. The Johns Hopkins University, *Professor of French* (sixteenth- and seventeenth-century French literature)
Aliko Songolo, Ph.D. University of Iowa, *Associate Professor of French* (French African and Caribbean literature)
Bernard Tranel, Ph.D. University of California, San Diego, *Associate Professor of French and Linguistics* (French linguistics)

The Department of French and Italian offers courses designed to provide linguistic competence and a broad knowledge of diverse aspects of French and Italian culture: literary, social, historical, aesthetic. It seeks to enrich the students' appreciation of their own civilizations and to create a deeper sense of international understanding.

The program brings the students to participate in the creative process of language, to think in French or Italian as they learn to understand, speak, read, and write. Most classes are taught entirely in the foreign language, and a multiple approach stresses the interdependence of the four basic skills and makes them mutually reinforcing. The Language Laboratory is used to complement classroom activity.

Representatives chosen by the undergraduate French majors and by the graduate students serve on departmental committees. These representatives also participate in Department meetings and are responsible for student evaluation procedures.

Undergraduate Program in French

While preparing the student for graduate work and for the teaching profession, the French major is essentially a liberal arts program offering a broad, humanistic course of study.

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, courses in speaking (conversation and phonetics) and writing enable the students to attain a greater degree of proficiency, preparing them for further study in French literature and linguistics and in French civilization and culture.

In the introductory courses in literature, complete texts are studied by genre. The student learns to analyze and interpret different types of creative literature and is introduced to various critical techniques. At the more advanced level, literature courses may emphasize a single author, movement, or genre within a historical period. The content of these courses changes yearly according to the interests of both faculty and students. Senior seminars are offered periodically to discuss literary problems which cannot be dealt with in depth in the regular offerings.

Courses in civilization and culture explore aspects of French history, intellectual thought, and the arts. Courses are offered with a historical emphasis (for instance, The World of the Renaissance in France; The Age of Louis XIV; colonialism; anti-Semitism) and with a comparative orientation (for instance, Poetry and Painting; Literature and Society; Women in Literature; Paris and the History of Art; Literature and History).

Courses in linguistics introduce students to aspects of the structure of the French language and to the application of linguistic techniques to problems of literary analysis.

Students are placed in elementary and intermediate courses according to their years of previous study and their grades; no placement examination is given. One year of high school is equated with one quarter of work at UCI. A student may not go back more than one quarter and receive credit.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

French Major with Emphasis in Literature: French 11, 100A-B, 101A-B-C, and eight other upper-division courses taught in French, at least six of which must be in literature.

French Major with Emphasis in Linguistics: French 11, 100A-B, 101A-B-C, two courses in French civilization, Linguistics 50, 110, 120, 130, and French 113, 131. Prospective elementary and secondary school teachers who choose this option should take as electives additional courses in French language, civilization, and/or literature. Work in French civilization is required by state credentialing authorities.

French Major with Emphasis in Culture and Civilization: French 11, 100A-B, 101A-B-C, and eight other upper-division courses taught in French, at least four of which must be in civilization and culture.

Planning a Program of Study

The student and the faculty advisor (assigned upon entering the major) should plan a coherent program of courses to fulfull the literature, the linguistics, or the culture and civilization emphasis during the junior year.

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 the departmental coordinator of advisors concerning career plans in the areas of teaching, industry, journalism, law, civil service, etc.

Undergraduate Program in Italian

Third- and fourth-year offerings provide an introduction to Italian literature and culture that serves as a basis for composition, conversation, and phonetics.

Tutorial and seminar courses are available for advanced students. 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.

Graduate Program in French

The Department stresses understanding rather than encyclopedic knowledge, experimentation with various critical approaches rather than the perpetuation of a tradition, creativity rather than conformity. Each quarter internationally known scholars are in residence to participate in the graduate program. Students choose their courses from three categories: 1. Critical Theory: problems in French literature and criticism; 2. Comparative Methods; 3. Author, Genre, Period, Movement

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, with at least six in literature, one in linguistics, and one in writing and style. Particularly well-prepared students may receive special permission to take a minimum of nine courses and to write a short thesis, for which two course credits are given. All entering graduate students are assigned a faculty advisor. Individual programs are arranged in consultation with the faculty advisors. During the spring 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 (proficiency is defined as the equivalent of the level attained at the end of course 2C).

All M.A. candidates are required to pass a written and oral comprehensive examination on material drawn from the class program and the Master of Arts reading list. The student writes essays demonstrating an understanding of theoretical concepts and their application to the study of specific literary texts as well as an ability to establish relationships among literary works of different periods, genres, or authors. The written examination also allows the student to present an original topic of research. The oral part of the examination allows elaboration on aspects of the written examination, but seeks primarily to test the students' broader knowledge.

The Master's examination is given in mid-fall quarter and at the end of winter quarter. Students who are Teaching Assistants normally take the examination in the fifth quarter of their studies.

Doctor of Philosophy in French

Upon successful completion of the Master's examinations and admission to the Ph.D. program, or admission with a Master's degree from an accredited institution, a Guidance Committee is appointed to advise the candidate 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 formal Guidance Committee is composed of five members in fields closely related to the student's interest and projected area of specialization in which the dissertation will be prepared and one member who is not affiliated with the School. One member of the committee will be 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 18 graduate courses or seminars in French beyond the B.A., including one graduate course in French linguistics, one graduate course in writing and style, and three graduate courses outside the Department in areas related to the field of specialization. Students entering with a B.A. degree are required to take at least three courses in each of these three course categories as they progress to the Ph.D. degree; students entering with an M.A. degree must take at least two in each area.

A student may pursue the Ph.D. with particular emphasis in literary theory by taking additional course work in theory beyond the minimum number required.

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 written open book examinations involving clearly defined problems of a critical or historical nature. The student may be given from one to three days to answer any part of the examination. The oral Qualifying Examination assesses the student's knowledge of French literature and understanding of a given literary movement. The student will be examined on (a) five of the following six periods of French literature: Medieval; Sixteenth Century; Seventeenth Century; Eighteenth Century; Nineteenth Century; Twentieth Century; or four of these periods plus the development of a single literary genre through all periods of French literature; (b) a given literary movement (e.g., Romanticism, Baroque, etc.) in a non-French literature. The written and oral parts of the examination are based both on material covered in the graduate seminars and on the Ph.D. reading list. 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 by 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.

Lower-Division Courses in French

1A-B-C Fundamentals of French (5-5-5) 1A (F), 1B (W), 1C (F, 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.

S1A-B Fundamentals of French (7.5-7.5) Summer. First-year French in an intensified form.

R1 French for Reading (4). Serves those students not planning to major in French who want to develop their reading ability in French rapidly; recommended for graduate students in any field who need a reading knowledge of another language.

2A-B-C Intermediate French (4-4-4) 2A (F, W), 2B (W, S), 2C (F, 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. **(V)**

11 French Phonetics (4) W. Designed to help students improve their pronunciation; serves also as a preparatory course for language teaching, since it provides a basic understanding of the French sound system. Prerequisite: French 2C or equivalent.

13 Conversation (4) F, W, S. Helps students increase their fluency and enrich their vocabulary. Prerequisite: French 2C or equivalent.

50A-B-C French Connections (4-4-4) F, W, S. In English. This three-quarter sequence of courses introduces students to essential aspects of French culture from the Renaissance to modern times, from the perspective of France's interaction with other cultures. With special emphasis given to the study of the relations of France with England, America, and the Third World, the literature, art, and philosophy of France are studied in order to understand the role of France in the formation of the modern world. **(IV)**

Upper-Division Courses in French

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.

100B Essay Writing (4) W, S. Drawing topics for weekly compositions from texts of literary, historical, and social interest, this course 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. Prerequisite: French 2C or equivalent; 100A or equivalent is the prerequisite for 100B.

101A-B-C Introduction to French Literature: Poetry, Theatre, Novel (4-4-4) F, W, S. This series aims to expose students to an investigation of major literary trends as seen in the development of the genres (poetry, theatre, novel). The study of literature is also placed in the larger context of France's cultural/historical changes and of the relationship between literature and other contemporary art movements.

101A Introduction to Poetry (4) F

101B Introduction to Theatre (4) W

101C Introduction to Novel (4) S

105 Advanced Composition and Style (4). Helps the student attain greater proficiency and elegance in the written language. Prerequisite: French 100A-B.

The prerequisite for the following upper-division courses, except French 113 and 131, is French 101A-B-C or the equivalent. The content of these upper-division courses changes yearly. Students should consult the offerings in linguistics under the Program in Linguistics. NOTE: Courses numbered 110A-B-C through 140A-B-C, except 113, may be repeated for credit.

110A-B-C French Civilization (4-4-4)

112A-B-C French Culture (4-4-4). This sequence applies either to the major with emphasis in Literature or with emphasis in Civilization.

113 Introduction to French Linguistics (4)

115A-B-C Medieval Literature and Culture (4-4-4)

116A-B-C Sixteenth-Century French Literature (4-4-4)

117A-B-C Seventeenth-Century French Literature (4-4-4)

118A-B-C Eighteenth-Century French Literature (4-4-4)

119A-B-C Nineteenth-Century French Literature (4-4-4)

120A-B-C Twentieth-Century French Literature (4-4-4)

125A-B-C African Literature of French Expression (4-4-4)

130 Junior-Senior Seminar in French Literature (4). These seminars provide students with a chance to work on original projects. May be repeated. Prerequisite: two upper-division literature courses beyond French 101.

131 Junior-Senior Seminar in French Linguistics (4). Prerequisite: Linguistics 50 or consent of instructor.

140A-B-C Readings in French Literary Genre (4-4-4)

150A-B-C Topics in French Literature and Culture (4-4-4). In English. May not be counted toward the major.

160 French Cinema (4). In English. May not be counted toward the French major. Same as Humanities 160.

199 Special Studies in French (4-4-4) F, W, S. By consent and arrangement. To be taken only when the materials to be studied and the topic to be pursued lie outside the departmental offerings, when the student will have no formal chance in the course of several years to pursue the subject of interest, and when the subject fits significantly into the student's major program. Before enrolling in this course, the student must have the consent of the instructor and the Department Chair. To obtain consent the student must submit a written description of the course to the Chair prior to the end of the first week of classes.

Graduate Courses in French

The content of these courses changes yearly. Students should also consult the offerings of the Program in Linguistics.

In addition to the following courses, graduate students in French might find these Humanities courses of special interest: **Humanities 200 (The Nature and Theory of History); Humanities 210 (Approaches to Linguistic Study); Humanities 220 (Literary Theory); and Humanities 230 (Philosophical Analysis).**

200 Selected Topics in French Linguistics (4). May be repeated.

201 History of the French Language (4)

202 Contrastive French Phonology (4)

203 Contrastive French Morphology and Syntax (4)

208 Stylistics (4)

NOTE: Courses numbered 210A-B-C through 252A-B-C may be repeated for credit.

210A-B-C Studies in Medieval Literature (4-4-4)

216A-B-C Studies in Renaissance Literature (4-4-4)

217A-B-C Studies in Baroque and Classical Literature (4-4-4)

218A-B-C Studies in Eighteenth-Century Literature (4-4-4)

219A-B-C Studies in Romanticism and Symbolism (4-4-4)

219D-E Studies in Naturalism and Realism (4-4)

220A-B-C Contemporary Novel (4-4-4)

221A-B-C Contemporary Poetry (4-4-4)

222A-B Contemporary Theatre (4-4)

230 Studies in Dramatic 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)

251A-B-C Theory of Literature I (Comparative Methods) (4-4-4)

252A-B-C Theory of Literature II (Study of Genre) (4-4-4)

260A-B Literary Criticism (4-4)

270 Writing and Style (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. For all 290s a project proposal must be written up 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 put in the student's file. This procedure must be completed before or after registration or at the very latest 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.

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.

Lower-Division Courses in Italian

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 contempory 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 (V)

99 Special Studies in Italian (4-4-4) F, W, S. By consent and arrangement. Both student and professor will arrive at the theme of the course and the critical approach to be followed in consultation. This tutorial is intended to offer courses in Italian otherwise unavailable. Such courses may fulfill requirements for the Humanities Major with Emphasis in Italian. Before enrolling in this course, the student must receive consent of both the instructor and Department Chair. To obtain consent the student must submit a written description of the course to the Chair prior to the end of the first week of classes.

Upper-Division Courses in Italian

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 at least Italian 2C or equivalent.

101 Introduction to Italian Literature. In this series of courses students learn to analyze and interpret creative literature by genre and are introduced to various critical techniques.

101A Introduction to Poetry (4)

101B Introduction to Theatre (4)

101C Introduction to Novel (4)

140A-B-C Readings in Medieval and Renaissance Literature. (4-4-4). In English.

150 Topics in Modern Italian Culture (4). In English; no prerequisites. May be repeated.

160 Italian Cinema (4). In English; no prerequisites. May be repeated. Same as Humanities 160.

199 Tutorial in Italian Literature and Culture (4-4-4) F, W, S

DEPARTMENT OF GERMAN

Thomas P. Saine, Ph.D. Yale University, *Chair of the Department and Professor of German*

Anton Kaes, Ph.D. Stanford University, *Associate Professor of German and Comparative Literature and Director of the Program in Comparative Literature*

Meredith Lee, Ph.D. Yale University, *Assistant Professor of German*

Herbert Lehnert, Ph.D. University of Kiel, *Professor of German*

William J. Lillyman, Ph.D. Stanford University, *Professor of German and Dean of the School of Humanities*

Bert Nagel, Ph.D. University of Heidelberg, *Professor Emeritus of German*

Wilfried M. Voge, Ph.D. University of California, Berkeley, *Lecturer in German and Linguistics*

The Department of German sees its contribution in the context of the humanistic endeavor to understand and evaluate Western culture. We can understand ourselves and our immediate culture more clearly through the study of allied and diverse languages and cultures. The study of German (which is closely related to English) and a comparative study of the historical and social development of German-speaking peoples provide the student with another aspect of our common culture. The Department offers courses on the German language and on German literature. The study of German literature is pursued from various critical perspectives. Some courses emphasize its historical, social, and political significance and setting; in others literature is approached as an imaginative experience which transcends its immediate context. The history of German literature and criticism, the theory of literature and literary criticism, and the relations of German literature to other literatures are also studied in the Department's courses.

Undergraduate Program

The German major offers alternative emphases, one in literature and another in linguistics.

All courses in the Department are taught in German to the extent compatible with the aim of the course. In the basic courses the student will develop an understanding of the nature of the language, based on linguistic principles, while learning the

necessary skills. Use will be made of the Language Laboratory. At the end of the first year, students will have attained mastery of the basic structure of the language.

At the intermediate and advanced levels the student's ability to read and write German will be gradually developed. A third-year course of two quarters will stress composition as opposed to translation. It will be followed by a course in phonetics which will aim to perfect the pronunciation as well as to introduce historical and dialectal variants. The introductory course in literature, also in the third year, will present a first view of some periods of German literary history, familiarize the student with German terminology used in the interpretation of literature, and use these concepts in practical interpretations. A certain number of courses in the series German 117, 118, 119, 120 will be designated as "core courses" which are especially recommended for majors. It is assumed that the student is familiar with basic concepts of literature in English.

Students are given the opportunity to participate in programs of study abroad during the summer and the junior year in Göttingen.

Students entering UCI with previous German training will be given advanced standing as follows: 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.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

German Major with Literature Emphasis: German 100A-B-C; German 101; eight courses drawn from German 102-199, the selection to be approved by the student's advisor; at least one course selected from the following: Linguistics 50; Comparative Literature 50A-B-C; courses in German history and German philosophy (advisor's approval required).

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.

German Major with Linguistic Emphasis: German 100A-B-C; German 101; five literature courses drawn from German 102-199, to be approved by the advisor; Linguistics 50, 110, 120; at least one of the following: Linguistics 130; Introduction to Middle High German or History of the German Language (these courses are offered under German 220).

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.

Graduate Program

In its graduate courses the Department stresses theoretical understanding of the nature of literature in its specific application to literature written in the German language. Courses also are offered elucidating the structure and history of the German language.

The German Graduate Program 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. 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, e.g., 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 in 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. Candidates should indicate on the list a number of works with which they are especially familiar. In its final form (e.g., including works read during the year 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 Course in University Teaching (399)

One Year of Residence

Ph.D. in German

The Department requires a minimum of 24 approved courses from students entering with a bachelor's degree. Students entering with the master's degree will be advised individually as to remaining course requirements. These may include courses in philosophy, history, comparative literature, etc., suitable for the individual student's program of study. The Introduction to Middle High German and one course in medieval German literature are required. The student also will enroll 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.

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 24 required courses 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 a 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 will demonstrate reading competence in two languages or extensive competence in one language other than German or English. Choice of this language depends on the student's area of specialization. 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 by 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 title page of the dissertation.

Lower-Division Courses

A student may take any one of the three first-year courses: German 1A-B-C; R1A-B-C; 11.

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. Open to nonmajors.

R1A-B-C Fundamentals of German (with emphasis on reading) (5-5-5) F, W, S. For students not planning to major in German who want to develop reading ability rapidly. Open to nonmajors. Not offered 1981-82.

S1A-B Fundamentals of German (7.5-7.5) Summer. First-year German in an intensified form.

11 Intensive Individualized Instruction (10) W. Intensive program covering material of German 1A-B in one quarter. Regular consultation with an instructor. Small group activities, film, laboratories. Conducted in German. Open to nonmajors.

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. Open to nonmajors. Prerequisite: German 1C. **(V)**

53 Advanced Conversation (2) S. Includes reading of political and cultural material. Prerequisite: German 2C.

Upper-Division Courses

100A-B Advanced Composition (4-4) F, W. Competence in writing expository German. Prerequisite: German 2C.

100C German Phonetics (4) S. Contrastive analysis of the sound of English and German. Emphasis on standard German pronunciation. Prerequisite: German 2C.

101 Introduction to Literature (4) F. Sample interpretations of poetry and prose. Introduction to critical language in German. Prerequisite: German 2C.

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.

102B Literature and Society 1918-1945 (4). See above description. Prerequisite: German 2C or consent of instructor.

Courses numbered 117 to 199 may be repeated provided course content changes. German 101 or consent of instructor is prerequisite for courses 117 to 120.

117 Topics in German Literature 750-1750 (4). Specific course content determined by individual faculty members. Example: Literary and Polemical Writing of the Reformation.

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.

119 Studies in Nineteenth-Century German Literature (4). Individual authors such as Büchner, Grillparzer, Keller, and Nietzsche, or broader social-literary phenomena.

120 Studies in Twentieth-Century German Literature (4). Individual authors such as Thomas Mann, Brecht, Kafka, Rilke, and Grass, or topics addressing questions of genre such as the drama of German Expressionism.

130 Topics in German Literature (4). Literary works not fully contained within the period listed above, such as "German Comedy," "The Novel from Wieland to Fontane."

150A-B-C German Literature in Translation (4-4-4) F, W, S. Major German literary works in translation. Open to nonmajors.

160 German Cinema (4). Historical, theoretical, and comparative perspectives of German cinema.

199 Special Studies in German (4) F, W, S

Graduate Courses

All graduate courses offered in the Department will fall under the following generic headings. All courses may be repeated, provided course content changes.

200 Literary Criticism (4)

210 Literary Theory (4)

220 Selected Topics in German Linguistics (4)

230 Literary and Cultural History (4)

240 Colloquium (2-2) W, S. Not offered 1982.

299 Tutorial (4) F, W, S

398A-B The Teaching of German (2-2) F, W. Required of all Teaching Assistants in the German Department. Also open to present and prospective German instructors who are not Teaching Assistants.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF HISTORY

Spencer C. Olin, Jr., Ph.D. Claremont Graduate School, *Chair of the Department and Professor of History* (American social and political)

Kendall Bailes, Ph.D. Columbia University, *Professor of History and Associate Dean for Undergraduate Study, School of Humanities* (modern Russian and Soviet)

Kenneth P. Bailey, Ph.D. University of California, Los Angeles, *Senior Lecturer in History and Education and Director of Teacher Education*

Jonathan S. Dewald, Ph.D. University of California, Berkeley, *Associate Professor of History* (early modern European social)

John P. Diggins, Ph.D University of Southern California, *Professor of History* (American intellectual)

Richard I. Frank, Ph.D. University of California, Berkeley, *Associate Professor of History and Classics* (Roman empire; classics)

Christine L. Heyrman, Ph.D. Yale University, *Assistant Professor of History* (American intellectual and social)

Lamar Mott Hill, Ph.D. University of London, *Associate Professor of History* (Britain in the Tudor-Stuart era)

Karl G. Hufbauer, Ph.D. University of California, Berkeley, *Associate Professor of History* (social history of science)

Jon S. Jacobson, Ph.D. University of California, Berkeley, *Associate Professor of History* (European intellectual)

Michael P. Johnson, Ph.D. Stanford University, *Associate Professor of History* (American social and political)

Theodore S. Koditschek, Ph.D. Princeton University, *Assistant Professor of History* (nineteenth- and twentieth-century European social)

Samuel C. McCulloch, Ph.D. University of California, Los Angeles, *Professor of History* (British empire and commonwealth, nineteenth-century)

Henry Cord Meyer, Ph.D. Yale University, *Professor Emeritus of History*

Keith L. Nelson, Ph.D. University of California, Berkeley, *Associate Professor of History* (American foreign relations)

Patricia A. O'Brien, Ph.D. Columbia University, *Associate Professor of History* (modern European social and urban)

Mark S. Poster, Ph.D. New York University, *Professor of History* (modern European intellectual)

Jaime E. Rodríguez, Ph.D. University of Texas, *Associate Professor of History and Dean of Graduate Studies and Research* (Latin America; Mexico)

Mary P. Ryan, Ph.D. University of California, Santa Barbara, *Professor of History* (American social and family)

Gerald T. White, Ph.D. University of California, Berkeley, *Professor Emeritus of History*

Jonathan M. Wiener, Ph.D. Harvard University, *Associate Professor of History* (history and social theory)

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 offers a variety of approaches to history, and each emphasizes basic disciplinary skills: weighing evidence, expository writing, constructing logical arguments, and exploring the role of theory in historical analysis and human action.

In addition to offering a number of lower-division history courses open to nonmajors, the Department requires all History majors to participate in an introductory core course, History 29A-B-C. This is a comparative course that acquaints students with the modern world by examining some of the basic characteristics of modernity and by focusing on the historic process of modernization in several different societies.

From this introductory course the student moves on to a series of upper-division courses, the contents of which range from the examination of individual nation-states (e.g., British History), to studies of the relations among nation-states (e.g., European International History), to analyses of political, socio-economic, and cultural factors as they have developed through time (e.g., Mass Movements and Social Control). Students are also provided the opportunity for small-group learning experiences in a series of colloquia in the following areas: social history, political history, international history, intellectual history, social thought, and comparative history. These courses bring a definite focus to the undergraduate major. Finally, colloquia and seminars for seniors concentrate on a particular aspect of more general phenomena (e.g., Hitler and World War II).

The training and discipline derived from historical studies provide a valuable experience for all educated persons seeking to understand themselves and their world. They also provide a useful preparation for professional careers in teaching, law, librarianship, journalism, and business administration.

Faculty members in the Department of History work closely with their students. Elected student representatives—both graduate and undergraduate—participate regularly with faculty at Department meetings and serve on major Department committees. Students also participate in the evaluation of teaching by faculty and Teaching Assistants. All upper-division History majors are assigned a faculty advisor, whom they are encouraged to consult at least once each quarter.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

Fourteen courses are required, including History 29A-B-C (for which transfer students may substitute such year-long surveys as European, American, Asian, or Latin American history), six upper-division Historical Studies, three colloquia, and a senior seminar (two-course sequence) or two additional colloquia.

Graduate Program

The graduate program leading to the M.A. and Ph.D. degrees in History is designed to provide students with both basic histori-

cal skills and a rigorous grounding in social and other comparative theory. This combination of theoretical study with training in historical method reflects the Department's conviction that scholars should be encouraged to deal with broad 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 any 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 or Associate.

Basic to the Department's curriculum is a year-long course in History and Theory which deals with both theoretical texts and historical studies that have tested the theorists' concepts and models. The History and Theory course also examines the phenomenon of moderniziation—the general world transformation of the past four hundred years—and seeks to understand the social institutions through which this process occurred and continues. The course directs attention to the diverse implications of modernity in the modern world, to the groups which 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-conciousness and methodological facility have been systematically and carefully developed.

A two-quarter research seminar is offered fall and winter quarters every year and is required of all graduate students (including those entering with an M.A. degree) in both their first and second years. This course familiarizes students with at least one of the functional approaches to history (e.g., social, political, intellectual, international), the modes in which it has been written, and the methodologies available within it. At the same time the course makes it possible for students to begin carrying out projects of original research.

The colloquium, a reading course that examines the chief historical works in a "time-place" field, enriches the student's knowledge of the main areas of historical research and develops critical reading skills. Colloquia are offered yearly in American history and modern European history, and biannually in Early Modern European history, Latin American history, and Ancient history. A student may prepare a dissertation in any of these fields. In addition, independent reading and research courses are provided for advanced, specialized study in a tutorial form.

The immediate objective for the doctoral student is to develop four fields of competence in preparation for comprehensive examination. These fields are: history and theory; first "time-place" field (field in which the dissertation is written); second "time-place" field; "focus" field (such as social, political, intellectual, or international history).

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 Irvine 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. Though it is desirable that an applicant have the equivalent of an undergraduate major in History, the Department also welcomes 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 3.0 (B) is required for admission, with evidence of better work in history. In addition, all applicants are asked to submit three letters of recommendation, aptitude scores from the Graduate Record Examination, and examples of written work in history from their undergraduate classes. Students living in Southern California must arrange to come to UCI for an interview with the Department Chair or the Coordinator of Graduate Advising. Students are admitted for fall quarter only, and the deadline for application for fall admission is May 1.

Program of Study. The M.A. program emphasizes the theoretical, comparative, and social dimensions of the field in general, and of European, American, or Latin American history in particular. Each candidate for the M.A. will be assigned to a graduate advisor who will supervise the student's program. Nine courses are required for the degree: three in History and Theory (History 200A-B-C), three in "time-place" colloquia (taken in sequence, as a unit), two in a two-quarter research seminar, and one from other "time-place" colloquia or from upper-division offerings. 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 Requirements. 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 sequence of courses in communications science, statistics, or comparable studies for the M.A. foreign language requirement. Language proficiency can be demonstrated either by achieving a score of at least 500 on the appropriate ETS examination or by passing a departmental examination.

Comprehensive Examination. At the end of the final quarter the M.A. candidate must pass a comprehensive examination covering the student's major field (e.g., American, Early Modern Europe) and focusing upon material assigned in the three-quarter "time-place" 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. Continuing students must have satisfactorily passed a departmental evaluation in order to be admitted to the doctoral program.

New students must undergo a more formal admissions procedure, submitting transcripts, letters (three), papers, and aptitude scores from the Graduate Record Examination. These documents must be supplemented by an interview whenever possible.

It would be advisable for the potential doctoral student to begin graduate work on this campus, since the doctoral student who has taken the M.A. elsewhere will be expected to enroll in most of the same courses required of incoming M.A. students (greater experience will work to advantage later, in the second and third years, in speeding the student to examinations).

Incoming students are admitted for fall quarter only, and the deadline for application for fall admission is May 1.

Program of Study. The Department requires doctoral students to prepare themselves in four different areas:

1. History and Theory.

2. The first "time-place" 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 "time-place" field (such as American History), which is designed as a second teaching field.

4. A "focus" field (such as social history, etc.), which is designed to enhance the student's capability for dealing with the problems and phenomena of the field, to make comparisons, and to introduce the student to the theory and method of relevant related disciplines (e.g., sociology).

The courses required in this preparation include the History and Theory sequence, colloquia series in both time-place fields, and the two research seminar sequences (two quarters each). Beyond these, the remainder of the student's program during the first six quarters of residence will consist of those colloquia, seminars, and courses in Special Studies. The normal academic load is three courses per quarter.

Every doctoral student will be assisted by a departmental advisor in the same general area of study who will be responsible for approving defined fields, guiding the student to consultant faculty, and supervising the examinations.

Language Requirements. All students, except as specified below, must demonstrate a reading knowledge of one foreign language relevant to the field of graduate study, no later than the end of the second year in the program. Normally, the M.A. foreign language will fulfill this requirement, but proficiency can also be established by a score of at least 500 on the appropriate ETS examination or by passing a department test. Students in American history who have opted for a language substitute in completing the UCI Master's degree will be allowed to submit this work in fulfillment of the alternate skill requirements discussed below, and will not be subject to the time limit in achieving a foreign language competence.

Additional language requirements depend on the subject the student selects for the first "time-place" field and must be met before the student takes the candidacy qualifying examinations. An individual with a first "time-place" field in American history may either demonstrate a reading knowledge of a second useful foreign language (by achieving an ETS score of 500 or by passing a language test designed by the advisor), or complete, as a doctoral student, a sequence of courses in an alternate skill (e.g., communications science, statistics, computer work, content analysis, linguistics) that will be useful in mastering the chosen historical fields.

An individual with a first "time-place" field in a non-American subject must demonstrate a reading knowledge of a second foreign language. This may be done either by achieving an ETS score of 500 or by passing a language test arranged by the advisor.

Qualifying Examinations and Dissertation. After completing the appropriate courses and other preparatory work (normally seven to nine quarters after entering the graduate program at UCI), the student will take written examinations in the History and Theory and two "time-place" fields, followed by the oral Qualifying Examination in the "focus" field, first "time-place" field, and dissertation topic. Upon successful completion of these examinations, the student will be advanced to candidacy and will begin intensive work upon the dissertation. The research and writing involved in this effort are expected to require from one to two years. At the end of this period an oral defense of the dissertation 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 six years or less.

Undergraduate Courses

University Courses

Special studies of general interest for all students. No prerequisites.

6 Topics in Recent History (4-4-4) F, W, S. Historical analysis of forces which have shaped the contemporary world. Topics include war, revolution, communism and anti-communism, and new attitudes towards sex, family, and race. Content will vary. Course offered 1981-82: The Nuclear Age, F.

9 Historical Problems (4-4-4) F, W, S. How historians define problems and answer them is shown through careful study of particular questions. Courses offered 1981-82: War in the Twentieth Century, F; Astronomy Since Antiquity, F; Ancient Israel, W; Ecology and History, W; Womanhood—the Twentieth Century, S.

The Core Course

29 The Formation of Modern Society. Histories of Europe and the United States, focusing on general social transformation from traditional to modern industrial society. **(IV)** When taken in conjunction with Humanities 15-16, may also be used to satisfy the lower-division portion of the breadth requirement in Writing (Category I).

29A Traditional Societies: 1300-1815 (4) F. (IV)

29B The Impact of Industrialization: 1815-1900 (4) W. (IV)

29C The Twentieth-Century Crisis: 1900-Present (4) S. (IV)

Introductory Courses

Courses which indicate methods and premises of historical scholarship as well as survey particular fields. Designed for students with a particular interest in history. No prerequisites.

35 The Formation of Ancient Society. Cultures of the Mediterranean world in Antiquity down to the disintegration of the Roman Empire. Offered in 1981-82 as Classics 35A-B-C. **(IV)**

35A Myth and Religion in Ancient Society. (IV)

35B Literature and Ancient Society: Greece. (IV)

35C Archaeology and Ancient Society: Rome. (IV)

Historical Studies

Courses in which students gain experience in analysis, interpretation, and writing. No prerequisites.

Ancient History

101 The Roman Empire. Creation of a bureaucratic empire; rule by gentry and officers; official culture and rise of Christianity; social conflict and political disintegration. Not offered 1981-82.

101A Early Roman Empire (4)

101B Later Roman Empire (4)

102 The Classical Tradition (4) S. Not offered 1981-82.

Medieval and Early Modern European History

105 Early Modern Europe. A survey of European history, with special attention to political and social developments in France, Germany, and Italy.

105A Medieval Europe (4) W

105B Renaissance Europe (4) S

105C Reformation Europe (4) Summer 1981

Modern European History

110 Modern Europe. Political and social developments in England, France, and Germany. Not offered 1981-82.

110A Modern Europe: 1789-1850

110B Modern Europe: 1850-1914

110C Modern Europe: 1914-Present

112 European Intellectual and Cultural History. Main currents of Western thought, emphasizing English, French, and German thinkers. Not offered 1981-82.

112A The Enlightenment (4)

112B From Hegel to Nietzsche (4)

112C From Freud to Sartre (4)

113 European International History. Wars, politics, and diplomacy of the major powers.

113A From Napoleon to World War I (4). Not offered 1981-82.

113B From World War I to World War II (4). Not offered 1981-82.

113C Europe Since 1939 (4). Not offered 1981-82.

120 British History. British history from the Early Modern period to the present.

120A Constitutional and Legal History of England: From the Anglo-Saxons to 1485 (4) F

120B Constitutional and Legal History of England: From 1485 to the Present (4) W

120C English History in the Tudor-Stuart Period (4) F

120D British Traditions: The Four Georges and Queen Victoria (4) S. Not offered 1981-82.

120E Modern Britain, 1750-1870: The Rise of Modern Industrial Capitalism (4) W

120F Contemporary Britain, 1870-Present: The Crisis of Liberal Society (4) S

120G Australia and New Zealand: From Colony to Commonwealth (4) S

121 Modern France. Emphasis on social, economic, and cultural history of France since the Great Revolution.

121A France: 1789-1848 (4). Not offered 1981-82.

121B France: 1848-1914 (4). Not offered 1981-82.

121C France: 1914-Present (4) S

122 Modern Germany. Political, social, economic, and cultural history from 1848 to the present.

122A Germany: 1848-1917 (4) S

122B Germany: 1917-Present (4) F

123 Russian History. Political and social developments from Traditional Russia to the present Soviet Society.

123A Traditional Russia to 1689 (4). Not offered 1981-82.

123B Imperial Russia: 1689-1905 (4) W. Not offered 1981-82.

123C Russian Revolution and Soviet Society: 1905-1965 (4) F

124 Spanish History. Political and social developments from Early Modern period to Modern Society. Not offered 1981-82.

124A Early Modern Spain (4)

124B Modern Spain: Liberalism, Ideology, Dictatorship (4)

American History

130 The Development of the American Nation. Growth and development of a distinctively American society out of the colonial heritage, with emphasis on social and economic basis of culture and politics, sectionalism, industrialization, and the U.S. as a world power.

130A Colonial America (4) W

130B Revolutionary America (4) S

130C-D Nineteenth-Century America. Not offered 1981-82.

130E-F Twentieth-Century America. Not offered 1981-82.

133 American Intellectual and Cultural History

133A Puritanism and the Enlightenment (4) F

133B Transcendentalism and Civil War Crisis (4) W

133C Pragmatism — The Lost Generation and the Old and New Left (4). Not offered 1981-82.

134 History of American Foreign Relations

134A America's Emergence to World Power, 1750-1940 (4). Not offered 1981-82.

134B American Foreign Relations Since World War II (4). Not offered 1981-82.

134C Imperialism in American History (4). Not offered 1981-82.

134D America and the Communist World (4) S

135A-B Religion and Society in America (4-4) S. 135B not offered 1981-82.

136A-B Women and the Family in the United States (4-4). Not offered 1981-82.

Latin American History. Latin American history with special attention to political and social developments in Mexico from the Indian period to the present.

140A-B-C Mexico. Not offered 1981-82.

140A Mexico: Indian and Colonial Societies (4)

140B Mexico: Nineteenth Century (4)

140C Mexico: The Mexican Revolution — Twentieth Century (4)

Comparative History

151 Comparative Industrialization (4). Not offered 1981-82.

152 Comparative Urbanization (4). Not offered 1981-82.

154 Comparative Revolutions (4) F

155 War in the Twentieth Century (4). Offered as History 9.

160 Special Studies in the Methodology of Comparative History. Not offered 1981-82.

Special Studies. Topics with particular methodological focus. Content varies. May be repeated. See Department for 1981-82 offerings.

180 Special Studies in Socio-Economic History (4)

180A-B Economic History of the Modern World (4-4) F, W

180C History and Prose Composition: Topics in Tudor History (4) W

180D Age of Pericles (4) S

181 Special Studies in Political 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)

185A Marxist Theory (4) W

Historical Research for History Majors

190 Colloquium (4-4-4). 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; requires junior/senior standing and major in history or consent of instructor. Content varies; may be repeated.

Early Modern Europe, F, W, S

The Lost Generation, F

Utopian Experiments in American History, W

British Imperialism, S

192A-B Senior Seminar (4-4). Specialized courses dealing primarily with analysis of historical problems and use of primary sources; required reports and paper (interpretive essay). Each seminar reflects the instructor's intellectual interests and is conducted as a discussion. Limited to 12 students; requires senior standing and major in history or consent of instructor. Content varies.

United States Foreign Relations, F, W

Tudor-Stuart England, W, S

198 Directed Group Study (4-4-4) F, W, S. Special topics through directed reading. Paper required. Consent of instructor; two or more students.

199 Independent Reading (4-4-4) F, W, S. Investigation of special topics through directed reading. Paper required. Consent of instructor.

Graduate Courses

In addition to the following courses, graduate students in History might find these Humanities courses of special interest: **Humanities 210 (Approaches to Linguistic Study); Humanities 220 (Literary Theory); and Humanities 230 (Philosophical Analysis).**

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.

201A-B Focus Seminar (4-4) F, W. Two-quarter sequence required of all graduate students (including those entering with an M.A. degree) in both their first and second years. Extended practicum in the application of selected theory to research topics of the student's choosing.

Colloquia

210A-B-C The Literature and Interpretations of Ancient History (4-4-4) F, W, S. 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.

220A-B-C The Literature and Interpretations of Early-Modern Europe (4-4-4) F, W, S. First quarter: Political; second quarter: Social/Economic; third quarter: Intellectual/Cultural.

230A-B-C The Literature and Interpretations of Modern European History (4-4-4) F, W, S. First quarter: Germany; second quarter: Britain; third quarter: Russia.

250A-B-C The Literature and Interpretations of Latin American History (4-4-4). First quarter: Colonial Period; second quarter: Nineteenth Century; third quarter: Twentieth Century. Not offered 1981-82.

260A-B-C The Literature and Interpretations of American History (4-4-4) F, W, S. First quarter: Seventeenth and Eighteenth Centuries; second quarter: Nineteenth Century; third quarter: Twentieth Century.

Special Studies

290 Special Topics (4-4-4) F, W, S. Lectures, readings, and discussion on subjects more limited in scope than those included in the year-long colloquia.

291 Directed Reading (4-4-4) F, W, S. By consent.

295 Special Methods (4-4-4) F, W, S. Development of particular research skills.

298 Experimental Group Study (4-4-4) F, W, S. Open to four or more students. By consent.

299 Directed Research (4-4-4) F, W, S. By consent.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

SPECIAL PROGRAMS IN THE HUMANITIES

Undergraduate Major in Humanities

The 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 Linguistics, 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; Social and Religious Thought in the Age of the Reformation). 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. At the end of the senior year the student will prepare, under the advisor's supervision, a long paper in the area of the special major. This requirement is satisfied by taking Humanities 199. A student majoring in the Humanities must also meet the regular School, UCI, and University requirements for graduation. (See p. 14 and p. 110.) Inquiries by third-quarter sophomores should be addressed to the academic counselors in the School's Office of Undergraduate Study.

Concentration in Film Studies

Participating Faculty

Franco Tonelli, Ph.D. Louisiana State University, *Director* (film theory; French and Italian cinema)
Susan Barber, *Visiting Lecturer* (history of film; American cinema)
David Carroll, Ph.D. The Johns Hopkins University (film history and criticism; French cinema; film and society)
Eugenio Donato, Ph.D. The Johns Hopkins University (film theory; Italian cinema)
Thomas Girvin, *Visiting Lecturer* (film production)
Renée Riese Hubert, Ph.D. Columbia University (Surrealist film/fantastic film; early comedy)
Anton Kaes, Ph.D. Stanford University (semiology of film; history and sociology of German cinema)
Alejandro Morales, Ph.D. Rutgers University (Latin American film)

A student may major in Humanities with a concentration in Film Studies. The major centers on an interdisciplinary study of film history and criticism. The program is designed to study filmic concepts through a core of courses which will concentrate on film theory, history of film, formal structures, ideology, and relationship to the other art forms.

While the Humanities' concentration in Film Studies emphasizes history and theory of film, through courses such as Humanities 50A-B-C, Humanities 197, and Humanities 198 it tries to expose the student to practical and/or technical aspects of the study of cinema as well. In these latter courses students acquire practical experience in script writing, directing, camera, sound, editing, and applied aesthetic. The Theatrical Film Symposium (Humanities 50C) brings in a visiting writer, producer, director, performer, or the like to screen their latest work and discuss it with the students.

Students majoring in Humanities with a concentration in Film Studies may spend their junior year in France studying at the Inter-University Center for Film and Critical Studies in Paris, through a program sponsored by the University's Education Abroad Program (EAP). Information is available in the Film Studies Office and from the EAP Office.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Program Requirements:

Humanities 50, 101A-B-C, 110, 112 (two courses), 115, and 199, and four upper-division courses from the following: French 160, Italian 160, German 160, Russian 160, Spanish 160. These courses are cross-listed with Humanities 160. Humanities 197 or 198 can be substituted for one or two of the 160 courses.

Film Studies Courses

Humanities 50A-B-C

50A Study in Film Technique: Basic Technique of Film (4) F. Introduction to film's expression and aesthetic. Cinematic process, ideas, theory and elements, and vocabulary of production components are studied including camera and lenses, lighting, film stock, editing, sound.

50B Study in Film Technique: Filmic Expression (4) W. This course is a practicum in film production as related to filmic expression and aesthetics. Students produce individual film projects, utilizing equipment and concepts introduced in Humanities 50A. Prerequisite: Humanities 50A.

50C Theatrical Film Symposium (4) S. Each week a guest lecturer from the film industry will be introduced who presents his or her most recent work (often not yet released) and discusses with the students the problem and the nature of their activity in the film industry. Guests include producers, directors, screenwriters, actors, publicists, critics, etc.

Humanities 101A-B-C History of Film

101A History of Film: Beginnings to 1930 (4) F. A study of early silent films from Melies, Lumiere, Griffith, to the comedy of Chaplin and Keaton. The influence of Russian directors Eisenstein and Pudovkin along with French Surrealists and German Expressionists Murnau and Lang are explored. Also included are early sound films such as *The Jazz Singer* and *The Blue Angel*. Lecture/discussion and film screening.

101B History of Film: Silent to Sound (1930-1950) (4) W. Explores the decades linking silent film to innovation and trends in the late 1950s. The films of Riefenstahl *(Triumph of the Will)*, Welles *(Citizen Kane)*, Hitchcock *(The Lady Vanishes)*, Hawks *(His Girl Friday)*, Ford *(The Searchers)*, Renoir *(The Rules of the Game)*, Rossellini *(Open City)*, and others are studied. The influences of each director are traced. Lecture/discussion and film screening.

101C History of Film: 1950 to Present (4) S. Explores the New Wave in France, the self-conscious films of Fellini *(8½)* and Bergman *(Persona)*, the later style of Hitchcock *(Strangers on a Train, Vertigo)*, the influential works of Coppola *(The Conversation, The Godfather)*, the Italian and German directors of the 1970s (Bertolucci, Fassbinder, Herzog). Lecture/discussion and film screening.

Humanities 110 Theory of Film (4). Major theorists of film such as Eisenstein, Bazin, Kracauer, Arnheim, Weiz.

Humanities 112 Study in Film Genre (4). Particular film genre such as the western, the musical, the animated, the documentary, the fantastic film. May be repeated for credit when topic varies. Two quarters required for Film Studies concentration.

Humanities 115 Author Theory (4). Works of a single director in relationship to each other. Focus on director's development and place in film history. May be repeated if topic author changes.

Humanities 160 Topics in Film Studies (same as French, German, Italian, Russian, and Spanish 160) (4). May be repeated when topic varies.

Humanities 197 (varying credit) F, W, S. Individually arranged field study.

Humanities 198 (varying credit) F, W, S. Directed group study on special topics.

Humanities 199 (varying credit) F, W, S. Directed research for senior majors in Humanities. Students in Film Studies write an essay based on their studies. Although production of a film may be part of the project, research consists as well of a substantial essay on film criticism or film history. The student chooses a director of the project and a coreader.

Honors Concentration in Social Thought

The School of Humanities and the School of Social Sciences offer an honors concentration in Social Thought. The concentration offers undergraduates the opportunity to examine major social theories and their implications in a systematic and thor-

ough way. In exploring the intellectual foundations and contemporary development of modern social thought, students will develop their skills in critical analysis of society and theory.

The concentration identifies whole societies as its objects of knowledge. It has as its central focus alternative conceptions of society's structure, historical development, and future prospects as perceived and analyzed by political and social philosophers, historians, social scientists, and literary writers.

The concentration is taken in addition to a major in the School of Humanities or the School of Social Sciences. Thus, a student would major in, e.g., History and Social Thought or Political Science and Social Thought. Students interested in this program should apply to a member of the faculty steering committee. A student is admitted to the program on the recommendation of the steering committee. Students are selected on the basis of aptitude for theory. A grade point average of at least 3.2 is required for admission, and in order to complete the honors program a grade point average of at least 3.5 must be attained in courses in the Social Thought concentration.

Two core courses, two courses in surveys of theory, and two courses in intensive studies of theorists will be required. Additional problem-centered courses will be recommended. Lists of courses in these categories and of the current membership of the steering committee may be obtained from the Social Sciences Advising Office or the Office of Undergraduate Study in the School of Humanities. A senior honors thesis is required.

Concentration in Women's Studies

The Women's Studies concentration is not a major but is intended to allow a student to complement any major in the School of Humanities, the School of Social Sciences, or the Program in Social Ecology by studying systematically women in culture and society. The student will follow an interdisciplinary course of study designed in consultation with a faculty advisor from the Women's Studies Committee. In addition to the two-quarter upper-division core courses (Humanities 155A-B), the concentration also includes two courses each in the social sciences or social ecology, and the humanities. This will ensure that students acquire at least two different methodologies.

Undergraduate Courses

The following set of courses has no necessary relation to the undergraduate major in Humanities. The courses are, of course, 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 majors in Humanities.

Humanities 1A-B-C The Humanities Core Course (8-8-8) F, W, S. Required of all Humanities majors and to be taken in the freshman year. From year to year different problems of concern to the various humanistic disciplines are taken up, with emphasis on the careful reading of certain major texts that bear on these problems and on the development of the ability to think clearly and write well about the issues they raise. A writing program is an integral part of the course. **(I), (IV)**

Humanities 10 Humanities Skills Development (0) F, W, S. Noncredit adjunct to Humanities Core Course. Skill development in reading comprehension, critical analysis, fundamentals of composition, essay writing. May be repeated. Consent of instructor required.

Humanities 15 Humanities Writing Sequence (4) W. First quarter of lower-division Writing Requirement of the breadth requirement. (Category I), when taken with associated course such as English 28A-B-C or History 29A-B-C. Rhetoric and composition instruction related to basic concepts in respective discipline of associated course. Students *must* enroll concurrently in associated course (listed quarterly in Schedule of Classes). **(I)**

Humanities 16 Humanities Writing Sequence (4) S. Second quarter of lower-division Writing Requirement of the breadth requirement (Category I), when taken with associated course (see Humanities 15). Research, organization, composition, and revision of essays in respective discipline of associated course. Students *must* enroll concurrently in associated course (listed quarterly in Schedule of Classes). **(I)**

Humanities 20 Writing for Students for Whom English Is a Second Language (4) F, W, S, Summer. Grammar, sentence structure, and paragraph organization of formal written English.

Humanities 21 Communication Skills for Students for Whom English Is a Second Language (2) F, W, S, Summer. Listening and speaking skills for dealing successfully with lectures, seminars, discussion sections, and social activities.

Humanities 22 Reading for Students for Whom English Is a Second Language (2) F, W, S, Summer. Vocabulary, sentence structure, and paragraph organization needed for comprehension of academic reading.

Humanities 50A-B-C

50A Study in Film Technique: Basic Technique of Film (4) F. Introduction to film's expression and aesthetic. Cinematic process, ideas, theory and elements, and vocabulary of production components will be studied including camera and lenses, lighting, film stock, editing, sound.

50B Study in Film Technique: Filmic Expression (4) W. This course is a practicum in film production as related to filmic expression and aesthetics. Students produce individual film projects, utilizing equipment and concepts introduced in Humanities 50A. Prerequisite: Humanities 50A.

50C Theatrical Film Symposium (4) S. Each week a guest lecturer from the film industry will be introduced who presents his or her most recent work (often not yet released) and discusses with the students the problem and the nature of their activity in the film industry. Guests include producers, directors, screenwriters, actors, publicists, critics, etc.

Humanities 75 Biblio Strategy (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, but not limited, to students with assigned papers for other classes.

Humanities 93 Careers for Humanities Students (1) F, W, S. Evaluation of careers and occupational and educational trends in planning course work to meet career goals. Pass/Not Pass only.

Humanities 101A-B-C Undergraduate Humanities Colloquia: History of Film

101A History of Film: Beginnings to 1930 (4) F. A study of early silent films from Melies, Lumiere, Griffith, to the comedy of Chaplin and Keaton. The influence of Russian directors Eisenstein and Pudovkin along with French Surrealists and German Expressionists Murnau and Lang are explored. Also included are early sound films such as *The Jazz Singer* and *The Blue Angel*. Lecture/discussion and film screening.

101B History of Film: Silent to Sound (1930-1950) (4) W. Explores the decades linking silent film to innovation and trends in the late 1950s. The films of Riefenstahl *(Triumph of the Will)*, Welles *(Citizen Kane)*, Hitchcock *(The Lady Vanishes)*, Hawks *(His Girl Friday)*, Ford *(The Searchers)*, Renoir *(The Rules of the Game)*, Rossellini *(Open City)*, and others are studied. The influences of each director are traced. Lecture/discussion and film screening.

101C History of Film: 1950 to Present (4) S. Explores the New Wave in France, the self-conscious films of Fellini *(8½)* and Bergman *(Persona)*, the later style of Hitchcock *(Strangers on a Train, Vertigo)*, the influential works of Coppola *(The Conversation, The Godfather)*, the Italian and German directors of the 1970s (Bertolucci, Fassbinder, Herzog). Lecture/discussion and film screening.

110 Theory of Film (4). Major theorists of film such as Eisenstein, Bazin, Kracauer, Arnheim, Weiz.

112 Study in Film Genre (4). Particular film genre such as the western, the musical, the animated, the documentary, the fantastic film. May be repeated for credit when topic varies. Two quarters required for Film Studies concentration.

115 Author Theory (4). Works of a single director in relationship to each other. Focus on director's development and place in film history. May be repeated if topic author changes.

Humanities 155A-B Women's Studies Core Course (4-4). Basic component of Women's Studies concentration. Women in society and culture through anthropology, literature, history, psychology, sociology, and philosophy. Same as Social Sciences 173A-B and Social Ecology S155A-B.

160 Topics in Film Studies (same as French, German, Italian, Russian, and Spanish 160) (4). May be repeated when topic varies.

Humanities 197 (varying credit) F, W, S. Individually arranged field study.

Humanities 198 (varying credit) F, W, S. Directed group study on special topics.

Humanities 199 (varying credit) F, W, S. Directed research for senior majors in Humanities. Students in Film Studies write an essay based on their studies. Although production of a film may be part of the project, research consists as well of a substantial essay on film criticism or film history. The student chooses a director of the project and a coreader.

Ph.D. with Interdisciplinary Emphasis in Humanities

The School of Humanities offers no degree called the Ph.D. in Humanities. 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. At least one of the student's courses will be in the Humanities series 200-230. Those interested in an interdisciplinary degree should contact the Associate Dean for Graduate Study or the Graduate Advisor in their major department.

Graduate Courses

Graduate courses in Humanities are under the direction of the School's Associate Dean for Graduate Study.

These courses are designed for all graduate students in the School of Humanities, with the exception that students in philosophy may not count Humanities 230 as part of their degree program.

Humanities 200, 210, 220, and 230 introduce study in four 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.

Humanities 200 The Nature and Theory of History (4) F. Introduction to various approaches to historical inquiry. Speculative and critical history, as well as analytical history. Same as History 200A.

Humanities 210 Approaches to Linguistic Study (4) S. Linguistic theories and methods of language description, linguistic structure, language change, typology of grammars, theories of meaning. For students unfamiliar with basic principles of linguistics.

Humanities 220 Literary Theory (4) F. Introduction to criticism and aesthetics for beginning graduate students. Readings from continental, English, and American theorists.

Humanities 230 Philosophical Analysis (4). Fundamentals of philosophical analysis through application of techniques to selected problems in various "fields" of philosophy: ethics, philosophy of science, political philosophy, aesthetics, philosophy of religion.

Humanities 291 Interdisciplinary Topics (4) F, W, S. Group of seminars and colloquia in interdisciplinary topics or in topics in a particular discipline designed for students in other disciplines.

Humanities 399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

PROGRAM IN LINGUISTICS

Bernard Tranel, Ph.D. University of California, San Diego, *Director of the Program and Associate Professor of French and Linguistics*
Richard Barrutia, Ph.D. University of Texas, *Professor of Spanish and Linguistics (currently Education Abroad Program Director in Madrid)*
Peter Colaclides, Ph.D. University of Athens, *Professor of Classics*
Mary Ritchie Key, Ph.D. University of Texas, *Professor of Linguistics*
Tracy D. Terrell, Ph.D. University of Texas, *Associate Professor of Spanish and Linguistics*
Owen Thomas, Ph.D. University of California, Los Angeles, *Professor of Linguistics, English, and Education*
Wilfried M. Voge, Ph.D. University of California, Berkeley, *Lecturer in German and Linguistics*

(See also the School of Social Sciences for additional faculty in Linguistics.)

Linguistics is concerned with descriptions of human languages, with theories that seek to explain the nature of language, and with the various uses of language. Additionally, linguistics has potential relationships with other disciplines concerned with language. Because of the various possibilities in emphasis, the programs are highly flexible.

The undergraduate major in Linguistics is offered by the School of Humanities and by the School of Social Sciences. The UCI campus programs are administered by an inter-School Linguistics Committee. Students are able to select a Linguistics major in either School according to their interests.

There are three ways to major in Linguistics as an undergraduate. They are designated as Tracks I, II, and III.

Track I, *General Linguistics*, will appeal to students who wish to receive a broad introduction to the major subfields of Linguistics. Track I may be taken either through the School of Social Sciences or through the School of Humanities.

Track II, *Theoretical and Formal Linguistics*, will appeal to students in the cognitive sciences. Track II is available through the School of Social Sciences.

Track III, *Applied Linguistics* (Language Teaching and English as a Second Language), will appeal to students interested in language teaching including but not limited to the teaching of English as a second language. Track III is available through the School of Humanities.

Students may also major in Classics, French, German, and Spanish with an emphasis in Linguistics.

Students are encouraged to consider a double major in Linguistics and either English or a foreign language. This is especially recommended for students following Track III. Students who double major may not satisfy requirements in one major with courses which count for the other major, unless the same course is required for both majors.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Program Requirements

Track I General Linguistics

1. Linguistics 50.
2. Two courses in each of the following Core Groups:
   A-Phonetics and Phonology (110-119)
   B-Syntax and Semantics (120-129)
   C-Historical Linguistics (130-139)
   D-Psycholinguistics (140-149)
   E-Sociolinguistics and Special Topics (150-159)

Note that Linguistics 110 and 120 are prerequisites for many of the courses offered in their respective groups and should be taken as soon as possible.

Track II Theoretical and Formal Linguistics
Consult requirements of the School of Social Sciences.

Track III Applied Linguistics (Language teaching and English as a second language)
The following are required courses: Linguistics 50, 110, 111, 120, 132, 140, 158. In addition, the student will select any other five courses from the following list (or others with the prior approval of the advisor): Linguistics 112, 142, 146, 150, 152, 154.

All students who major in Linguistics within the School of Humanities will also take a single year of a foreign language other than the one used to satisfy the Humanities language requirement. Students are strongly urged to study a non-Indo-European language (such as Hebrew, Arabic, Chinese, Japanese, Swahili) whenever available.

Courses

50 Introduction to Linguistics (4) F, W, S. Linguistic analysis and language structures illustrated by languages from many areas of the world. (Linguistics 50 and Social Sciences 3 may not both be taken for credit.) **(V)**

110 Phonetics, Phonology, and Morphology (4). General phonetics with emphasis on articulatory phonetics, including practice in phonetic transcription. Phonological and morphological analysis of data from a wide variety of languages. Prerequisite: Linguistics 50 or equivalent. **(V)**

111 English Phonology and Morphology (4). Articulatory phonetics, pronunciation, phonological processes, orthography, and word formation (inflection, derivation, etc.). Includes the application for teachers as a second or foreign language. Prerequisite: Linguistics 50, Linguistics 110 recommended.

112 Advanced Phonology and Morphology (4). Phonological and morphological theories illustrated by analysis of data from a wide variety of languages. Prerequisites: Linguistics 50 and 110.

120 Introduction to Syntax (4). Linguistic intuition, well-formedness, constituent structure, transformation, derivation, argument, and counter-example. Emphasis on English syntax and what characterizes a linguistically significant generalization. Prerequisite: Linguistics 50. Same as Social Sciences 141A. **(V)**

122 Intermediate Syntax (4). Syntax and theory of grammar. Constraints on what linguistic rules can do. The relationship between linguistic theory and language learning. Prerequisite: Linguistics 120. Same as Social Sciences 141B.

124 Advanced Syntax (4). A small number of well-defined topics will be pursued intensively, with particular emphasis on recent articles that have had significant impact on the development of the theory of syntax. Prerequisite: Linguistics 122. Same as Social Sciences 141C.

126 Semantics (4). Analysis of various proposals for the treatment of semantics in an integrated linguistic theory. The boundary between syntax and semantics. Coreference phenomena. Contributions from philosophy of language. Prerequisite: Linguistics 120. Same as Social Sciences 141D.

130 Historical Linguistics (4). Methods of historical analysis of language. Classification of languages and aspects of language change by internal reconstruction and the comparative method. Prerequisite: Linguistics 50 or equivalent. Recommended: Linguistics 110.

132 History of English (4). External (historical and social) and internal (linguistic) changes which have affected the English language from its Germanic roots to the present day. Same as English 184. Recommended: Linguistics 50.

133 Indian Languages of the Americas (4). Survey of Indian languages illustrating sound systems and structures. Linguistic affinities between North and South American languages. Prerequisite: Linguistics 50 or equivalent.

140 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 50 or equivalent. Recommended: Linguistics 146.

142 Introduction to Psycholinguistics (4). Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Same as Social Sciences 142A.

146 Acquisition of Language (4). Lecture, two hours; discussion, one hour. 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. Recommended: Linguistics 50 or equivalent. Same as Social Sciences 50A.

150 Sociolinguistics (4). Sociolinguistic varieties of language examined from different points of view: geographical, temporal, and cultural. Prerequisite: Linguistics 50.

152 American Dialects (4). Variability theory as applied to research in American dialects, especially phonological variation and sound change in progress. Prerequisite: Linguistics 50. Recommended: Linguistics 110.

154 Paralanguage and Kinesics (4). Channels of nonverbal communication which correlate with speech. Extra-speech sounds and body movements. Recommended: Linguistics 50.

158 Methods of Teaching English as a Second Language. Methods and materials for teaching English to speakers of other languages. Includes methodology for teaching children, adolescents, and adults. Field experience required. Recommended: Linguistics 50 and 140. Same as Spanish 100C.

180 Studies in Linguistics. Topic varies depending upon availability and interest of faculty.

190 Directed Reading (4)

199 Individual Study (4)

200 Studies in Linguistics (4). Topic varies.

Additional Linguistics Courses

NOTE: For group classification of these courses see an advisor or the Director of the Program in Linguistics before taking the course.

English

English 181 The Structure of English (4)

English 184 History of English Language (4)

English 187 Selected Topics in English Linguistics (4)

English 200 Selected Topics in English Linguistics (4)

French

French 11 French Phonetics (4)

French 113 Introduction to French Linguistics (4)

French 131 Junior-Senior Seminar in Linguistics (4)

French 200 Selected Topics in French Linguistics (4)

French 201 History of the French Language (4)

French 202 Contrastive French Phonology (4)

French 203 Contrastive French Morphology and Syntax (4)

French 208 Stylistics (4)

German

German 100C German Phonetics (4)

German 220 Selected Topics in German Linguistics (4)

Philosophy

Philosophy 135 Philosophy of Language (4)

Russian

Russian 200 Selected Topics in Russian Linguistics (4)

Social Sciences

Social Sciences 3 Introduction to Cognitive Lingusitics (4)

Social Sciences 50A Acquisition of Language (4)

Social Sciences 141A Introduction to Syntax (4)

Social Sciences 141B Intermediate Syntax (4)

Social Sciences 141C Advanced Syntax (4)

Social Sciences 141D Semantics (4)

Social Sciences 142A Introduction to Psycholinguistics (4)

Social Sciences 142B Project in Child Language (4)

Social Sciences 142D Language and the Brain (4)

Social Sciences 142E Readings in Child Language (4)

Spanish

Spanish 11 Spanish Phonetics (4)

Spanish 113 Introduction to Spanish Linguistics (4)

Spanish 187 Selected Topics in Spanish Linguistics (4)

Spanish 200 Contrastive Analysis (4)

Spanish 201 History of the Spanish Language (4)

Spanish 202 Spanish of the Southwest (4)

Spanish 204 Recent Trends in Foreign Language Teaching (4)

Spanish 205 Spanish Dialectology (4)

Spanish 250A-B Romance Linguistics (4-4)

DEPARTMENT OF PHILOSOPHY

Nelson C. Pike, Ph.D. Harvard University, *Chair of the Department and Professor of Philosophy* (philosophy of religion; history of philosophy)

Ermanno Bencivenga, Ph.D. University of Toronto, *Assistant Professor of Philosophy* (logic, ancient philosophy; philosophy of language)

Viorica Farkas, M.A. University of California, Los Angeles, *Acting Assistant Professor of Philosophy* (history of modern philosophy; epistemology)

Gregory S. Kavka, Ph.D. University of Michigan, *Associate Professor of Philosophy* (social and political philosophy)

Joseph F. Lambert, Ph.D. Michigan State University, *Professor of Philosophy* (logic; philosophy of science; metaphysics)

A.I. Melden, Ph.D. University of California, Berkeley, *Professor Emeritus of Philosophy* (ethics, philosophy of the mind; social and political philosophy)

Terrence D. Parsons, Ph.D. Stanford University, *Professor of Philosophy* (metaphysics; philosophy of language)

Gerasimos Santas, Ph.D. Cornell University, *Professor of Philosophy* (ancient philosophy; history of philosophy, ethics)

Guy Sircello, Ph.D. Columbia University, *Professor of Philosophy and Dean of Undergraduate Studies* (philosophy of art; philosophy of the mind)

Brian Skyrms, Ph.D. University of Pittsburgh, *Professor of Philosophy* (philosophy of science; metaphysics)

David W. Smith, Ph.D. Stanford University, *Associate Professor of Philosophy* (phenomenology; metaphysics; epistemology; existentialism)

Gary Watson, Ph.D. Princeton University, *Assistant Professor of Philosophy* (ethical theory; philosophy of the mind; political philosophy)

Peter Woodruff, Ph.D. University of Pittsburgh, *Associate Professor of Philosophy* (philosophy of logic; metaphysics)

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 morality and religion, 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.

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 dialogues between student 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. Among these are courses in the

philosophy of science and of art. The staff 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 majors in philosophy whose intention may be either to enter some professional school upon graduation (e.g., law) or to engage in graduate work in philosophy.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

Philosophy 50, Philosophy 20 and 22 and either 21 or 23; two of the following: Philosophy 100A-B; 110A-B; 115A-B; two additional quarter courses from Philosophy 101-199.

Graduate Program

Students are encouraged to seek the council 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 committee of faculty members whose purpose is to oversee the student's progress through the major requirements for the advanced degree. The student consults with the committee 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 March. When the student has satisfied residency, language, 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. (see below). Please refer to the Graduate Studies and Research 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 and Research 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., thus allowing course work to 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 four years for the normally qualified student. In exceptional cases it may be possible to obtain the degree within three years. A Master's degree is not a prerequisite for the Ph.D. The following five items are requirements for the Ph.D. degree.

Tools of research, to be satisfied by demonstrating proficiency in a single appropriate foreign language* *or* by passing with a grade of B or better five to six courses at the graduate level in a discipline or disciplines outside of the Philosophy Department. Approval for the latter alternative will be granted by the Department only if, in its judgment, the courses form an integrated unit in light of the student's research interest.

Logic, to be satisfied by 1) passing Philosophy 151 with a grade of B or better, or passing an examination prepared by the Department on equivalent material, and 2) passing with a grade of B or better one course in a mathematically rigorous subject that requires the student to carry out detailed mathematical proofs of significant theorems. Examples of such subjects are: Proof Theory, Model Theory, Probability Theory, Game Theory, Mathematical Linguistics, Topology, Classical Mechanics, Relativity Theory, etc. Philosophy 153 will satisfy this portion of the requirement. Other courses will satisfy it only with the approval of the Department.

Portfolio of papers representing the student's best work in philosophy. The papers may be, or may be based upon, essays written for course work. The topics of the papers will cover four fields in philosophy as well as at least three of the following historical periods: Ancient, Medieval, Early Modern, Kant and Nineteenth Century, and Twentieth Century. Examples of fields in philosophy are metaphysics, epistemology, ethics, political philosophy, philosophy of religion, philosophy of science, aesthetics, and so on. Papers will be evaluated by the faculty for the purpose of determining whether or not the student is ready to seek admission to candidacy.

Advancement to candidacy and the writing of a thesis. Upon successful completion of the above requirements, the student will apply for advancement to candidacy for the Ph.D. degree by filling out the appropriate forms and returning them to the Philosophy Department Office. A Candidacy Committee including one or two members from an academic area outside of Philosophy is then appointed by the Graduate Council. This

*The foreign language examinations are administered by the Department of Philosophy. They are two hours in length and consist of translating, with the aid of a dictionary, passages from two authors. Students wishing information as to courses to prepare them for these examinations and dates when these examinations will be given should consult the Philosophy Department Office, 500 Humanities Office Building, (714) 833-6526.

Committee administers an oral Qualifying Examination to determine whether the student is qualified to begin work designed to lead to the completion of a thesis.

Upon passing this oral examination, the student becomes a candidate for the Ph.D. degree. The Doctoral Committee appointed by the Graduate Council supervises the student's further course work and research, as well as the actual writing of the doctoral thesis.

The defense of the thesis. At a suitable point during the development of the thesis, the Doctoral Committee administers an oral examination, the focus of which is the content of the thesis itself. If at all possible, this examination will be given while the student is still in residence.

Undergraduate Courses

5 Problems of Philosophy (4) F, W, S. An introduction to some basic philosophical problems, concepts, and methods. Varies in content from quarter to quarter. Emphasis on both discussion and writing. **(IV)**

7 Introduction to Phenomenology and Existentialism (4). A study of the doctrines of phenomenology and existentialism. Emphasis on their philosophical origins, contributions to traditional philosophical topics (e.g., metaphysics, epistemology, ethics) and influences on other disciplines (e.g., psychology, social science, literature, religion).

15 Introduction to Ethics (4). Selected topics from the history of ethics. Problems include the nature of the good life and the moral justification on conduct. **(IV)**

16 Contemporary Moral Problems (4). A study of some current moral issues, e.g., abortion, sexual morality, euthanasia, capital punishment, reverse discrimination, civil disobedience, and violence. **(IV)**

20 History of Ancient Philosophy (4) F. Examination of the central philosophical themes developed by the Pre-Socratics, Socrates, Plato, Aristotle, the Stoics, the Epicureans, and the Skeptics. **(IV)**

21 History of Medieval Philosophy (4). A study of some of the major theological and philosophical texts from the Medieval period. Philosophy 20 recommended as background. **(IV)**

22 History of Modern Philosophy (4) W. Major developments in Western Philosophy from Descartes to Kant. Readings from Descartes, Leibniz, Locke, Berkeley, Hume, and Kant. Philosophy 20 or 21 recommended as background. **(IV)**

23 History of Contemporary Philosophy (4) S. A study of recent philosophical developments in Anglo-American and Continental Philosophy. Figures to be studied may include Russell, Moore, Wittgenstein, Quine, Heidegger, and Sartre. Philosophy 22 is strongly recommended as background. **(IV)**

50 Introduction to Logic (4) F, W, S. A study of argument in everyday contexts. Formalization of varying types of arguments and the criteria by which arguments are evaluated.

60 Introduction to the Philosophy of Science (4). The characteristics and structure of the fundamental philosophical aspects of science.

65 Classical Problems in the Philosophy of Religion (4). The nature and existence of God. Readings taken mostly from Medieval theological sources (e.g., Thomas, Anselm, Augustine) with some modern and contemporary writings included as well.

Unless otherwise specified, one course in philosophy is required as a prerequisite for each of the following courses. In special cases this requirement may be waived.

100A-B Metaphysics (4-4). A study of one or more of the problems of "first philosophy," e.g., substance, free will, abstract entities, identity. **100A** is strongly recommended as background for **100B.**

110A-B Theory of Knowledge (4-4). 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 knowledge and belief, and the nature of truth and certainty. **110A** is strongly recommended as background for **110B.**

114 Ethical Issues in Biology (4). A study of the important ethical issues connected with the theory and practice of biological sciences. Topics may include the morality of abortion, the just distribution of medical resources, the use of animals for experimental purposes, and the sociobiology controversy.

115A-B Ethics (4-4). A study of some of the problems of contemporary moral philosophy. **115A** is strongly recommended as background for **115B.**

116 Issues in Social Philosophy (4). A study of one or more of the social issues of current concern, e.g., nuclear deterrence, obligations to future generations, socio-biology and human nature, world hunger.

117 Political Philosophy (4). A study of some of the central problems in political philosophy, e.g., the justification of authority, the concepts of the ideal state, political liberty, political obligation, and social justice.

118 Philosophy and Sexual Politics (4). Consideration of the philosophical issues raised by feminism, e.g., traditional views of male/female nature, whether sexual equality is desirable, standards for judging sexual relations.

119 Philosophy of Law (4). Legal systems and the concept of law. Topics include the nature and purpose of law, the nature of authority, the relation between law and morality, law and political-economic systems.

120 Ethical Issues in Engineering (4). Application of ethical theory to moral problems confronted by engineers, scientists, managers, and others involved in engineering. Topics include exercise of conscience and free expression with corporations; basis of professional obligations to the public; role of values in safety decisions; ethics codes; whistleblowing. Case studies.

121 Plato (4). The central issues in Plato's Dialogues. Topics include the nature of Socratic questions, Socratic ethics, Platonic ethics and social philosophy, Plato's theory of ideas and his views on knowledge and perception, language and art. Philosophy 20 is strongly recommended as background.

122 Aristotle (4). The basics of Aristotle's philosophy: his philosophy of language, logic, epistemology, philosophy of nature, metaphysics, ethics, and philosophy of art.

124 Nineteenth-Century Philosophy (4). A study of the major figures and movements in philosophy during the Nineteenth Century.

125 Medieval Philosophy (4). A study of some of the major issues of concern to Medieval philosophers, e.g., universals, the nature and existence of God, faith and reason.

126 Continental Rationalism (4). A study of some of the philosophical texts of Descartes, Malebranche, Spinoza, and Leibniz. Philosophy 21 strongly recommended as background.

127 British Empiricism (4). Locke, Berkeley, and Hume with attention to the problems of substance, perception, and knowledge. Philosophy 21 strongly recommended as background.

128 Kant (4). The first half of the *Critique of Pure Reason.* Philosophy 21 strongly recommended as background.

130 Frege (4). A study of Gottlob Frege's major philosophical writings on ontology, the foundations of mathematics and semantics.

131 Philosophy of Mind (4). Issues connected with the concept of mind, e.g., the relation between mind and body, the self, personal identity, perception, belief, memory, motivation, desire, consciousness, the unconscious.

132 Phenomenology (4). Foundations of phenomenology in Husserl. Backgrounds in Blazano, Frege, Brentano, Meinong, Kant, and Descartes. Topics include phenomenological method, theory of intentionability, meaning, perception, evidence, ego, other minds, intersubjectivity, and lifeworld.

133 Existentialism (4). Heidegger and Sartre with their backgrounds in phenomenology. Philosophy 7 or Philosophy 132 strongly recommended as background.

135 Philosophy of Language (4). Selected topics in the philosophy of language, e.g., reference and speech act theories, theories of meaning.

136 Philosophy of Language (4). More technical and intensive developments of topics introduced in Philosophy 135. Prerequisite: Philosophy 135 or consent of instructor.

138 Philosophical Psychology (4). Selected topics such as theories of love, self-deception, the emotions, motive and intention, empathy, and psychoanalysis.

139 Philosophical Issues in Parapsychology (4). Philosophical questions (apparently) raised by recent work in parapsychology, e.g., backwards causation (precognition), nonphysical processes (telepathy, psychokinesis), reincarnation and the nature of the mind (mediumship, possession).

143 History of Political Philosophy (4). A study of some of the classical works of political philosophy. Readings from Plato, Hobbes, Locke, Rousseau, Mill, and Marx.

144 Rational Action Theory (4). Selected problems in the theory of rational choice and action, e.g., subjective utility theory, subjective probability theory, choice under uncertainty, Newcomb's problem, Prisoner's Dilemma, Ellsberg's Paradox, and the Surprise attack problem. Prerequisite: one college-level course in mathematics or logic.

146 American Philosophy (4). A study of some of the major figures in American philosophy, e.g., Pierce, James, Dewey, Lewis, Sellars, and Quine.

150A-B Intermediate Logic (4-4). Syntax and semantics for first-order logic. **(V)**

153 Topics in Mathematical Logic (4). Selected topics in advanced mathematical logic, e.g., proof theory, model theory, recursive functions, set theory, combinatory logic. Prerequisite: Philosophy 150B or consent of instructor. **(V)**

155 Philosophy of Logic (4). Philosophical questions raised by contemporary formal logic. Topics include the existence and nature of propositions, theory of entailment, descriptions and existential presuppositions. Prerequisite: Philosophy 150B or consent of instructor.

156 Philosophy of Mathematics (4). A study of the nature of mathematical entities and mathematical knowledge. Prerequisite: Philosophy 150B or consent of instructor.

160 Philosophy of Science (4). Problems in the philosophy of science, e.g., the nature of scientific explanation and confirmation, the limits of scientific explanation, the nature of mathematics.

164 Christian Mysticism (4). A study of some of the texts of classical Christian mystical writers, e.g., St. Teresa of Avila, St. John of the Cross, Julian of Norwich. Emphasis on the phenomenological features of mystical experience. Philosophy 65 or 21 recommended as background.

165 Religion and Experience (4). An examination of the idea that the Western Concept of God is both rooted in and warranted by direct human experience. Topics include the phenomenology of religious experience, the argument from design for the existence of God and the problem of evil. Readings from Rudolf Otto, Martin Buber, David Hume, and others. Philosophy 65 or 21 recommended as background.

170 Aesthetics (4). Systematic presentation and defense of *A New Theory of Beauty.*

171 Theory of Art (4). Review and critique of one or more theories of art by traditional philosophers, e.g., Plato, Aristotle, Kant, Hegel, Schopenhauer, Dewey, or Heidegger.

180 Contemporary Philosophy (4). A selected topic such as the theory of perception, theory of action, free will, intentionality. May be repeated for credit.

190 Topics in Current Research (4)

198 Senior Proseminar (4)

199 Directed Special Studies (4) F, W, S

Graduate Courses

Since seminar and graduate course topics vary with the occasions on which they are offered, they may be repeated for credit. Open to graduate students and upper-division undergraduates by consent of instructor.

In addition to the following courses, graduate students in Philosophy might find these Humanities courses of special interest: **Humanities 200 (The Nature and Theory of History), Humanities 210 (Approaches to Linguistic Study), and Humanities 220 (Literary Theory).**

200 Seminar in Metaphysics (4)

210 Seminar in Theory of Knowledge (4)

215 Seminar in Ethics (4)

217 Seminar in Political Philosophy (4)

220 Seminar in History of Philosophy (4)

221 Seminar in Philosophy of Plato (4)

222 Seminar in Philosophy of Aristotle (4)

226 Seminar in Philosophy of Hobbes (4)

228 Seminar in Philosophy of Kant (4)

230 Seminar in Philosophy of Mind (4)

232 Seminar in Phenomenology (4)

235 Seminar in Philosophy of Language (4)

250 Seminar in Logic (4)

251 Seminar Logic Workshop

252 Seminar in Set Theory (4)

255 Seminar in Philosophy of Logic (4)

260 Seminar in Philosophy of Science (4)

265 Seminar in Philosophy of Religion (4)

270 Seminar Topics in Aesthetics (4)

280 Seminar in Contemporary Philosophy (4)

299 Directed Research (4-4-4) F, W, S

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

PROGRAM IN RUSSIAN

Helen Weil, M.A. California State University, San Diego, *Director of the Program and Lecturer in Russian* (Russian language and methodology; contemporary Soviet prose; Russian culture and civilization; nineteenth- and twentieth-century Russian literature)

Mark Altshuller, Ph.D. Leningrad State University, *Lecturer in Russian* (eighteenth-century Russian literature; golden age of Russian literature; history of Russian culture; Pushkin, his times, works, and life; modern Russian prose)

Guy de Mallac, Ph.D. Cornell University, *Professor of Russian* (modern Russian literature; comparative literature; literature and society; Russian intellectual thought; Pasternak's life and work)

Elena Dryzhakova, Ph.D. Leningrad State Pedagogical Institute, *Lecturer in Russian* (nineteenth-century Russian literature; Dostoevsky, his life and works; Herzen, his life and works; history of Russian and Soviet poetry; theory of poetry)

Michael A. Green, Ph.D. University of California, Los Angeles, *Assistant Professor of Russian* (Russian symbolist theater; relations between literature and the arts; eighteenth-century Russian theater, painting, and music)

Russian is a language spoken by 240 million people in the Soviet Union and ranks with English and Chinese as one of the three major world languages. Russian is a language of the Indo-European family and is thus related to English, French, and German. Russian is an infinitely rich language, as is English, and adapts itself well to a variety of styles and genres from lyric love poetry to the seeming harshness and brashness of the futurist poets.

For the first two years, the Program in Russian emphasizes a combination of speaking, writing, and reading skills. At the end of the senior year, the student can expect to have attained a rather high level of proficiency in all language skills—reading, writing, speaking, and understanding. By then students will have read a number of selected literary texts—including a fair portion of the significant masterworks—in the original. They will also have familiarized themselves with some of the historical background of the language and with its relation to other Slavic and European languages. And they will have achieved a reasonable degree of familiarity with the major cultural and social trends in Russian history.

In addition to the regular Russian major with emphasis on language and literature, the Program in Russian offers a modified major with emphasis on linguistics. This major was designed for those students who have no plans to pursue advanced study in Russian literature, while they wish to focus on the study of the structure of Russian viewed within the framework of Slavic and general linguistics.

The Program in Russian also offers a major with an emphasis in Russian civilization, which is geared to the interests of students who do not intend to specialize in Russian language and literature. This emphasis is based upon a multidisciplinary approach (through language, the arts, literature, history, study of institutions) to the rich variety of a culture that both before the Revolution and during the Soviet period has made an important contribution to mankind's heritage and endeavors. Various specializations and challenging new career possibilities in today's world are available to students electing this option.

The Self-Paced Program: 10A-B-C/11A-B-C

During the regular academic year, the Program in Russian offers students a self-paced option in the first and second years of language study. The Self-Paced Program is designed to accommodate students who cannot attend regular class meetings, or who wish to progress toward language competence at their own pace (please see 10A-B-C and 11A-B-C). Students interested in enrolling in the Self-Paced Program should contact the Director of the Program in Russian.

Students planning to major in Russian should obtain a copy of the brochure "Russian Language, Literature, and Civilization at UCI" from the Office of the Program in Russian. Students entering UCI with previous training in Russian will be given advanced standing as follows: 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 Russian will enroll in Russian 1B, 1C, 2A, and 2B respectively. Exceptions to this ruling can be made but must have the approval of the Program Director. Students with high school training in Russian should consult with the Russian staff before enrolling in Russian courses.

UCI Summer Russian Institute and Practicum

In planning their programs of study, students should note that certain courses bearing the designation **Summer** are also offered within the three-week UCI Russian Institute and Practicum (Russian 1A-B-C, 2A-B-C, 100A-B-C, 101A-B, 199, 220, 290, and 398). The UCI Russian Language Institute is a three-week, total-immersion program in Russian language and culture for students of all levels, conducted entirely in Russian and encompassing all of the student's daily activities. The Practicum adjunct of the Institute affords prospective and practicing language teachers an opportunity for intensive language review and participation in established and experimental teaching methods. For information and registration forms contact the Director of the UCI Russian Institute and Practicum, Program in Russian, University of California, Irvine; Irvine, California 92717.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

Russian Major with Emphasis on Literature: Russian 1A-B-C (or 10A-B-C); 2A-B-C (or 11A-B-C); 100A-B-C; 101A-B-C; 110A-B-C; 150A-B-C; 180; any two of the following: 20; 30; 40; 160; 170.

Russian Major with Emphasis on Linguistics: Russian 1A-B-C (or 10A-B-C); 2A-B-C (or 11A-B-C); 100A-B-C; 101A-B-C; two courses from 110A-B-C; two courses from 150A-B-C; 180; Linguistics 50; 110; 120; 130.

Russian Major with Emphasis on Civilization: Russian 1A-B-C (or 10A-B-C); 2A-B-C (or 11A-B-C); 20; 30; 40; 100A-B-C; 150A-B-C; two of the following: History 123A-B-C, Social Sciences 122A, Russian 160, 180.

Planning a Program of Study

The Program in Russian believes in close consultation with students on academic advising, program planning, and discussion of goals and direction. Students planning to major in Russian with an emphasis on literature or on linguistics are strongly urged to consult with the departmental faculty as early as possible, in order to familiarize themselves with the nature of the various programs.

After indicating an intention to major in Russian, the student is assigned to an academic advisor who will help in the task of selecting courses toward the completion of one of the three

options open to students majoring in Russian studies at UCI. Special attention is paid to the unique aspects of the Russian field. In particular, students' attention is alerted to the combined academic and career implications and potentialities of these major options.

Career Opportunities

The major in Russian may lead to the following careers: in education (in high school teaching, or, after appropriate graduate study, on the college and university levels); with the Federal Government (where there are a number of openings in such agencies as the Department of State, Department of Defense, Department of Health and Human Services, the U.S. Information Office, and the Library of Congress for translators and other positions requiring the knowledge of Russian); a career as interpreter or translator with private institutions; various careers in science and technology; library science; communications media (thus, the United States Information Agency's Voice of America offers many opportunities for Russian speakers: research, scriptwriting, editing, translating, and announcing); careers in private business corporations.

However, it is not the essential purpose of a major program in Russian language, literature, and civilization to provide specific vocational skills. The study of Russian language, literature, and civilization is primarily viewed as a valuable component of a liberal education; a knowledge of Russian literature, history, philosophy, and science provides an extremely important instrument for the investigation and appreciation of the modern world. Since Russian is second only to English as a world language of science, the study of the Russian language provides access to a vast corpus of scholarly, scientific, and technical literature.

Lower-Division Courses

1A-B-C Fundamentals of the Russian Language (5-5-5) F, W, S, Summer. The course focuses on reading, comprehension, basic composition, and conversation skills, and gives the student an initial exposure to the Russian cultural scene.

R1A-B-C Fundamentals of Russian (with emphasis on reading) (5-5-5) F, W, S. For students not planning to major in Russian who wish to develop reading ability in Russian rapidly.

2A-B-C Second-year Language Study (4-4-4) F, W, S, Summer. The student can expect to read simple passages from contemporary Russian literary texts and newspapers. Development of oral skills and exposure to Russian culture continue. **(V)**

10A-B-C Fundamentals of Russian (1 to 5 per quarter) F, W, S. A self-paced program designed to accommodate students who cannot attend the regular class meetings of 1A-B-C due to schedule conflicts or who desire to progress toward language competence at their individual pace.

11A-B-C Second-year Language Study (1 to 4 per quarter) F, W, S. A self-paced program covering the material of 2A-B-C designed to accommodate students who cannot attend the regular class meetings of 2A-B-C due to schedule conflicts or who desire to progress toward language competence at their individual pace.

12 Scientific and Technical Russian (4) S. Exposes the students to the typical terminology and idiomatic constructions common to natural and social sciences, economics, and computer science, technology, and commercial correspondence. Representative selections from major scientific publications and technical manuals examined and analyzed. Students train in the skills of interpreting and translating typical samples of scientific, commercial, and technical prose, and receive individual guidance.

20 Russian Civilization: Tsars to Commissars (4) F. Definition of Russian culture from the medieval to the modern period, with attention to political, philosophical, and literary interpretations. The power structures are related to their impact on the cultural scene. Based on a multidisciplinary approach. Lectures, readings, and discussions in English. **(IV)**

30 Russian Stage and Film Drama: From Icon to Kaleidoscopic Image (4) W. The development of the Russian theatre from earliest times through its transformation in the twentieth century into dramatic film art. Works from different periods and movements, as well as various cinematic works, will be studied. Soviet film masterpieces are viewed and discussed. Readings, lectures in English. **(IV)**

40 Russian Intellectual Thought: Prophets, Rebels, Mystics (4) S. Major exponents of Russian thought: religious, rationalist, and radical. Focusing on the polarity between religious-philosophical trends and radical systems and ideologies. Lectures, readings, and discussions in English. **(IV)**

Upper-Division Courses

100A-B Third-year Language Study (4-4) F, W, Summer. Continuation of second-year program, with emphasis on grammar review, development of oral and written composition skills, and reading comprehension.

100C Phonetics and Review Grammar (4) S, Summer. Contrastive analysis of sounds and intonation of Russian. Grammar concentrates on some of the more difficult points.

101A-B Fourth-year Language Study (4-4) F, W, Summer. Literary and expository texts, with emphasis on syntactic and stylistic analysis. Lectures and discussion conducted increasingly in Russian.

101C The History and Development of the Russian Literary Language (4) S. Philological introduction to the development of literary language from the eleventh through the twentieth centuries. Analysis of modern style from the viewpoint of previous changes in the language.

110A Russian Prose of the Nineteenth Century (4) F. First course in a two-quarter sequence covering representative examples of Russian fiction. Class discussion conducted largely in Russian.

110B Russian Prose of the Twentieth Century (4) W. In Russian.

110C Russian Poetry: Pushkin to the Present (4) S. Representative Russian poets from the "Golden Age" through Symbolism to the present day. Reading and discussion in Russian.

150A Russian Literature 1800-1880 (4) F. Development of Russian literature from classicism to modernism, stressing the evolution of Russian realism and the novel. Selected masterpieces of the major Russian writers from Pushkin to Dostoevsky within the milieu of the Western literary tradition and in the Russian cultural and sociopolitical context.

150B Russian Literature and Revolution (4) W. Development of Russian literature from 1880s to 1930s during the period of Modernism until the imposition of "Socialist Realism."

150C Contemporary Russian/Soviet Literature (4) S. Study of major works of "Socialist Realism" and of literature of the post-Stalinist era, focusing on the renaissance of critical/psychological realism in the 1960s and 1970s.

151C Russian and Soviet Prose 1910-Present (in Russian) (4) S. May be repeated for credit when topic changes.

160 Russian Cinema (4) W. Historical, theoretical, and comparative perspectives of Russian cinema.

170 Russian Literature (in Translation) (4) S. An exploration of a specific period or problem in Russian literature. Lectures, reading, and discussion in English. Topic varies. May be repeated for credit when topic changes.

180 Major Russian Literary Figure (4) F. The study of a major Russian literary figure of the nineteenth or twentieth century. Topic varies. Lectures, reading, and discussion in English. May be repeated for credit when topic changes.

195 Undergraduate Teaching of Russian (2-2-2) F, W, S, Summer. Intensive review of basic language concepts and introduction to language teaching methodology. Under supervision students will tutor the first two years of self-paced Russian language (Russian 10A-B-C, 11A-B-C). Prerequisites: an A average in first-year Russian or equivalent to tutor Russian 10A-B-C; an A average in second-year Russian or equivalent to tutor Russian 11A-B-C, and consent of instructor. May be repeated for credit.

NOTE: Courses numbered 198-291 are by special consent and arrangement, to be taken only when the materials to be studied and the topics to be pursued are not offered in scheduled courses by the Program, when the student will not have a formal chance to pursue the subject of interest in the course of the academic year. Before enrolling in these courses, students must have the consent of the instructor and the Program Director, and must submit a written description of the course plan to the Director by the end of the first week of instruction.

198 Guided Group Study. Special topics in Russian studies through directed reading and research. Consultation with instructor is required prior to registration. May be repeated for credit when topic changes.

199 Special Studies in Russian (1 to 4 per quarter) F, W, S, Summer. By consent of instructor. May be repeated for credit when topic changes..

200 Selected Topics in Russian Linguistics (4) S

220 Studies in Russian Literature (4) W, Summer

290 Reading and Conference (4) Summer

291 Guided Reading Course (4)

398 Teaching Russian (4) Summer. Problems and challenges involved in introducing Russian to students. Includes practice in lecturing and discussion as well as experimentation with teaching techniques and preparation of teaching and testing materials.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF SPANISH AND PORTUGUESE

Seymour Menton, Ph.D. New York University, *Chair of the Department and Professor of Spanish and Portuguese* (Latin American literature; prose fiction)

Richard Barrutia, Ph.D. University of Texas, *Professor of Spanish and Linguistics* (applied linguistics; bilingualism and English as a second language)

Anne Cruz, M.A. Stanford University, *Acting Assistant Professor of Spanish* (Golden Age Spanish and comparative literature)

Lucía Guerra-Cunningham, Ph.D. University of Kansas, *Associate Professor of Spanish* (Latin American literature; literary theory and women's studies)

Alejandro Morales, Ph.D. Rutgers University, *Associate Professor of Spanish* (Latin American and Chicano literature; film studies)

Dayle Seidenspinner de Núñez, Ph.D. Stanford University, *Associate Professor of Spanish* (medieval Spanish and comparative literature)

Héctor Orjuela, Ph.D. University of Kansas, *Professor of Spanish* (Spanish-American literature; poetry and essay)

Julian Palley, Ph.D. University of New Mexico, *Professor of Spanish* (modern Spanish literature)

María H. Sobek, Ph.D. University of California, Los Angeles, *Assistant Professor of Spanish* (Latin American and Chicano folklore; bilingualism)

Tracy Terrell, Ph.D. University of Texas, *Associate Professor of Spanish* (applied linguistics and dialectology)

Juan Villegas, Ph.D. Universidad de Chile, *Professor of Spanish* (literary theory; modern Spanish literature; Chilean poetry)

Zidia Webb, M.A. Michigan State University, *Lecturer in Spanish and Portuguese* (Brazilian literature and culture)

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 and a placement test. In general, one year of high school work is equated with one quarter of UCI work.

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 plane. Self-instructional courses in both Spanish and Portuguese are also available.

In the second year, emphasis is put on gradually raising the level of the student's ability to read and write. A third-year course of two quarters stresses composition as opposed to translation. Further, a course in phonetics perfects pronunciation, introduces theoretical considerations, and presents historical and dialect variants of Spanish. The introductory courses in literature, also in the third year, emphasize the analysis and appreciation of complete literary works by genre 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 no major in Portuguese is offered, advanced literature courses are available.

Students are encouraged to participate in programs of study abroad during the summer and the junior year.

Elected representatives of the undergraduate majors, the graduate students, and the Teaching Assistants participate with full voting rights in Department meetings.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 110.

Departmental Requirements

Spanish 10A-B, 11, 101A-B-C; 110A, B, or C. In addition, the student will choose one or more of the following emphases:

Literature and Culture: Seven upper-division courses in literature with a minimum of one in Spanish-American literature. Two courses in Hispanic culture and civilization may be substituted if desired.

Linguistics: Linguistics 50, 110, 120; Spanish 113 and any three upper-division or graduate Spanish linguistics courses such as 100A-B-C, 186, 200, 201, 204, 205.

Bilingualism and English as a Second Language: Spanish 100A (Multiple Subject), or 100B (Single Subject), Spanish 100C (ESL methods); one course in Chicano literature, one course in Chicano culture, Spanish 113, and two upper-division courses in literature at least one of which must be Latin American literature. (Education 140A-B-C is the same as Spanish 100A-B-C.)

For students who plan to teach Spanish, the following courses are strongly recommended: Linguistics 50, Linguistics 140 (Second Language Acquisition), Spanish 113 (Spanish Linguistics). Also, Spanish 200 and Spanish 204 should be taken as seniors or as members of the credential program.

Master of Arts in Spanish

The candidate is expected to have the equivalent of our undergraduate major. The student takes a minimum of 11 courses, eight of which must be at the graduate level. Two of the 11 courses must be in linguistics. Spanish 239, Methods of Literary Criticism, is required of all literature majors. A maximum of two courses may be transferred from another university, but a maximum of five from another University of California campus. Proficiency (defined as the equivalent of the level attained at the end of course 2C) in a foreign language other than the major language is required. The comprehensive examination, in part written, in part oral, will be based both on a reading list and the courses taken by the students and will also test the students' ability to express themselves correctly in Spanish. No thesis is required. The student may choose an emphasis in literature or linguistics. The M.A. requires a minimum of one year in academic residence and must be completed in no more than three years of graduate study. M.A. students are advised by a faculty member in their field of specialization. Normally only students who are studying for the Ph.D. are admitted to the graduate program. The comprehensive examination for the M.A. may be accepted as the written portion of the qualifying examination for the Ph.D.

M.A.T. in Spanish

This program is specifically directed at meeting 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. It is stuctured so that working teachers can take courses in late afternoons, evenings, and summers, and may be completed in one academic year and two summer sessions. 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 and literature; 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. M.A.T. students are counseled by a faculty member in the Department.

Bilingual/Cross-Cultural Emphasis

The bilingual/cross-cultural emphasis is a specialization in addition to the regular teaching credential for high school (Single Subject) or elementary school (Multiple Subject). Undergraduates may plan from the beginning to aim for this emphasis by preparing themselves with a proficiency in the Spanish language. See page 236.

Ph.D. in Spanish

The Department of Spanish and Portuguese offers a Ph.D. degree with a major in either Spanish or Spanish-American literature. The program attempts to integrate period and genre studies with work in literary theory, linguistics, and socio-historical studies. A number of courses outside of the Department are required. We thereby hope to aid in the formation of Ph.D. candidates who are not narrow specialists but rather scholars acquainted with the various fields that relate to their discipline. We are concerned also with the practical aspects of helping our graduates become good teachers.

The minor field can be Spanish literature, Spanish-American literature, Spanish linguistics, literary theory, comparative literature, or a non-Hispanic literature.

Language Requirements

A reading knowledge of Portuguese and other languages relevant to the student's area of specialization is required. The choice of language requires Department approval.

Course Requirements

A minimum of 23 courses is required for the Ph.D. as follows:

A. Two graduate courses in linguistics, diachronic and synchronic (the students who select Linguistics as a minor will substitute two courses in either Spanish or Spanish-American literature); a course in literary theory (genre studies, etc.); a course in methods of literary criticism; a course on the socio-historical context of the period of the student's specialization; a course in Brazilian or Portuguese literature (preferably related to the student's specialization); two courses outside of the Department in non-Iberic literatures; two courses in Spanish or Spanish-American literature, whichever is not the major. Ph.D. candidates should take one course in each genre within their area.

B. Additional courses for the major and the minor:

1. Ten courses in the major. Those students who major in twentieth-century Spanish-American literature are required to take Spanish 238A-B: Spanish-American Literature in the Colonial Period and in the Nineteenth Century.
2. Three courses in the minor.

Candidates who have the M.A. degree from another university will be interviewed by two professors representing peninsular and Spanish-American literature, in order to evaluate their past studies in terms of our doctoral program; it is recommended that the student's graduate advisor direct the doctoral dissertation and that the choice of dissertation and director be made as early as possible. Each incoming graduate student will be assigned a faculty advisor who will supervise the student's program and with whom the student should meet at least once each quarter. All graduate students will be formally evaluated at the end of each year by the faculty with whom they have studied. Students pursuing a full-time program of study ordinarily should be able to earn the Ph.D. degree within five years or less.

Teaching

Since the overwhelming majority of Ph.D. candidates plan to teach, the Department recognizes its responsibility to train them as teachers. Therefore, all Ph.D. candidates without previous teaching experience are required to teach under supervision and at UCI one course in each of three quarters.

All Ph.D. students will student-teach in an upper-division course related to the major. This will count as one of the required courses in the major.

Comprehensive Examination

The student is admitted to candidacy by passing, by a majority vote, an oral examination administered by a Candidacy Committee appointed by the Graduate Council. The Candidacy Committee is composed of five members, of whom four will be from the Department. The oral examination will be preceded by a written examination as follows:

A. Choice

The student, in consultation with the Doctoral Committee, may choose one of the following options:

1. A comprehensive examination including a dissertation project. The student will then take parts 1, 2, and 3 of the examination described below, and will submit a dissertation project.
2. A comprehensive examination including the minor instead of the dissertation project, part 4 of the examination described below.

B. The written comprehensive examination will consist of three parts:

1. A genre in all periods. The student will demonstrate knowledge of literary theory and methods of literary criticism.
2. A historical literary period, including all of the genres and the socio-historical context.
3. Textual analysis. A representative text in the student's genre of specialization will be given to the student at the time of the examination. If the genre is poetry, the text may be a complete poem or a section from a larger poem. In the case of the short story, novel, theatre, or essay, a relatively brief organic section will constitute the text. The student's analysis should be intrinsic; it should also demonstrate the relationship of the text to the total work as well as to the author's total production and the author's position in the literary history of the country or the continent.
4. Dissertation project. During the year preceding the comprehensive exams, the student will write a dissertation project of approximately 40 typewritten (double-spaced) pages which will be turned in one month before the comprehensive exams. The topic as well as the dissertation advisor will be chosen by the student. The essay should:
   a. Define clearly the topic of the dissertation and justify it by discussing its significance.
   b. Discuss previous studies on this topic and prove the originality of the new study.
   c. Describe and justify the critical method to be followed.
   d. Include a bibliography of special, general, and theoretical works.

Dissertation

A dissertation topic will be chosen by the candidate and normally, but not necessarily, will fall within one of the major fields covered by the Qualifying Examination.

Three faculty members appointed by the Graduate Council will constitute the Doctoral Committee which supervises the preparation and completion of the doctoral dissertation. The Doctoral Committee supervises a final examination, the focus of which is the content of the dissertation. Ordinarily, the final examination will not be given after the dissertation is completed, but rather at an appropriate point during its development. Such final examination normally will be given while the graduate student is in residence at UCI. The Doctoral Committee certifies that a completed dissertation is satisfactory through the signatures of the individual Committee members on the title page.

Courses in Portuguese

1A-B-C Fundamentals of Portuguese (4-4-4) F, W, S. Basic grammar, composition, and conversation with an initial exposure to Brazilian culture.

140A-B Brazilian Prose Fiction (4-4-4) W, S. Selected study of Brazilian novels from the classical style of Machado de Assís to the regionalist novels of Lins do Rego, G. Ramos, R. de Queiroz, J. Amado. Prerequisite: Portuguese 1C or equivalent.

141 Brazilian Civilization (4) F. History and culture of Brazil through sociological and literary works by contemporary authors. Prerequisite: Portuguese 1C or equivalent.

142 Brazilian Short Story (4). Nineteenth- and twentieth-century writers representing major literary trends: Machado, Mário Andrade, Lispector, and J. Veiga. Prerequisite: Portuguese 1C or equivalent.

143 Brazilian Poetry (4). Brazilian poets from the romantic period with emphasis on poets associated with Modernist Movement of 1922 and following poetic movements. Prerequisite: Portuguese 1C or equivalent.

144 Masterpieces of Portuguese Literature (4). The theatre of Gil Vicente, the epic of Camões, the realistic novel of Eça de Queiroz, and the modernist poetry of Fernando Pessoa. Prerequisite: Portuguese 1C or equivalent.

145 Brazilian Theatre (4). Contemporary plays with emphasis on the language and customs of the various cultural regions of Brazil. Prerequisite: Portuguese 1C or equivalent.

190 Individual Studies (4-4-4) F, W, S

290 Reading and Conference (4-4-4) F, W, S

Lower-Division Courses in Spanish

1A-B-C Fundamentals of Spanish (5-5-5), 1A (F), 1B (F, W), 1C (W, S) Summer. Natural approach with emphasis on conversational skills: the students and their environment, their experiences, and their opinions about issues. Reading and writing skills also introduced. Taught completely in Spanish.

R1A Reading Spanish (4). For nonmajors who need to learn to read material written in Spanish in their own field of study. Open to graduate students and to seniors with permission only. May not be used to satisfy undergraduate requirements.

S1A-B Fundamentals of Spanish (7.5-7.5) Summer. First year Spanish in an intensified form.

2A-B-C Intermediate Spanish (4-4-4), 2A (F, W), 2B (F, W, S), 2C (F, W, S). Conversation, reading, and composition skills are developed using texts of literary and social interest. Emphasis on grammar review in 2A. Prerequisite: Spanish 1C or equivalent. (V)

2HA-2HBC Intermediate Spanish Accelerated Honors Course (4-8) F, W. Grammar review, reading, and composition. Meets five hours per week for two quarters. Students will receive four quarter units for 2HA and eight quarter units for 2HBC. Prerequisites: grade of A in Spanish 1C or in third- or fourth-year high school Spanish and consent of instructor.

5 Spanish for Spanish Speakers (4) F. 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.

10A-B Advanced Composition (4-4) 10A (F, W), 10B (W, S). Compositions on a variety of themes, motivated and prepared in the classroom and arranged in order of difficulty. Review of selected grammatical topics. Prerequisite: completion of Spanish 2C or equivalent.

11 Spanish Phonetics (4) F, W, S. Comparison of English and Spanish phonetics. Introduction to Spanish dialectology. Prerequisite: Spanish 2C or equivalent.

50A-B-C The Individual and Society in Hispanic Literature (4-4-4) F, W, S. The topic is explored in Spanish works in translation during the first two quarters and in Latin American and Chicano works in the third quarter. Taught in English.

Upper-Division Courses in Spanish

The prerequisite for all upper-division literature courses is Spanish 101A-B-C or equivalent.

100A Bilingual/Cross-Cultural — Multiple Subject (4) W. Methods and materials for elementary bilingual classrooms; selection and use of children's literature, games, songs, and folklore; cross-cultural techniques in subject matter presentation; field experience required. Taught bilingually. Same as Education 140A.

100B Bilingual/Cross-Cultural — Single Subject — Language Arts (4) S. Oral and written interferences between Spanish and English; practice in various methods of presentation, e.g., the cognitive, audiolingual, and traditional approaches. Field experience required. Taught bilingually. Same as Education 140B.

100C ESL for Teachers of Spanish-Speakers (4) F. Methods and materials for teaching English to speakers of Spanish. Includes methodology for teaching children, adolescents, and adults. Field experience required. Recommended: Linguistics 50 and 140. Same as Linquistics 158 and Education 140C.

101A-B-C Introduction to Spanish Poetry, Theatre, Prose Fiction (4-4-4) F, W, S. Analysis and interpretation of the outstanding works of Spanish literature. Concepts of literary history and theory. Prerequisite: Spanish 2C or equivalent.

110A-B-C Hispanic Civilization (4-4-4) F, W, S. Each quarter focuses on a different country or topic. Content varies from year to year. May be repeated. Prerequisite: Spanish 10B or equivalent.

113 Introduction to Spanish Linguistics (4) W. 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 bilingualism. Linguistics 50 recommended.

117A-B-C Golden Age Literature (4-4-4) F, W, S

119A-B-C Nineteenth-Century Spanish Literature (4-4-4)

120A-B-C Twentieth-Century Spanish Literature (4-4-4)

130A-B-C Spanish-American Prose Fiction (4-4-4)

131A-B-C Spanish-American Poetry, Theatre Essay (4-4-4) F, W, S

133A-B Chicano Literature (4) 133A (F)

134 Chicano Culture (4) S. Current research and perspectives on different aspects of Chicano culture: political, economic, sociological, artistic, and folkloric. Topics may change from year to year.

150 Spanish-American Literature in Translation (4)

160 Topics in Hispanic Film Studies (4) S

185 Selected Topics in Spanish Literature (4)

186 Selected Topics in Latin American Literature (4) F, S

187 Selected Topics in Spanish Linguistics (4) F, W, S

190 Reading and Conference (4-4-4) F, W, S

Graduate Courses in Spanish

In addition to the following courses, graduate students might find these Humanities courses of special interest: **Humanities 200 (The Nature and Theory of History); Humanities 210 (Approaches to Linguistic Study); Humanities 220 (Literary Theory); and Humanities 230 (Philosophical Analysis).**

200 Contrastive Analysis (4)

201 History of the Spanish Language (4)

202 Spanish of the Southwest (4). Phonological, morphological, syntactical, and lexical differences and similarities with standard Latin American and Peninsular Spanish.

204 Recent Trends in Foreign Language Teaching (4) F

205 Spanish Dialectology (4)

210A-B-C Medieval Literature (4-4-4), 210A (F)

215A-B-C Golden Age Prose Fiction (4-4-4)

216A-B Golden Age Lyric Poetry (4-4), 216A (W)

217A-B Golden Age Theatre (4-4)

219 A-B-C Nineteenth-Century Spanish Literature (4-4-4), 219C (S)

220A-B Modern Spanish Novel (4-4)

221A-B Modern Spanish Poetry (4-4)

222A-B Modern Spanish Theatre (4-4)

232A-B-C Spanish-American Short Story (4-4-4) F, W, S

233A-B-C Twentieth-Century Spanish-American Prose Fiction (4-4-4)

234A-B-C Spanish-American Poetry (4-4-4) F, W, S

235A-B Latin-American Essay (4-4)

236 Selected Topics in Hispanic Civilization (4). May be repeated for credit.

237 Selected Topics in Chicano Literature (4) S

238A-B-C Studies in Spanish-American Literature (4-4-4)

239 Methods of Literary Criticism (4) F

240A-B-C Literary Criticism, Theory of a Genre (4-4-4) 240A (W), 240C (S)

250 Mexican Corrido (4) S

260 Seminar in Spanish (4) S. Topic variable.

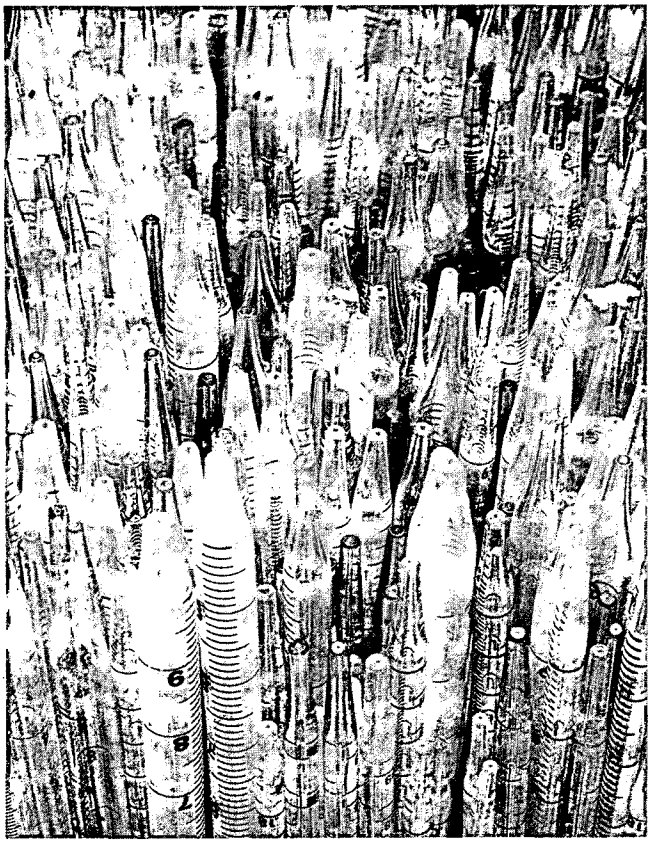
270 Creative Writing Workshop in Spanish (4-4-4) F, W, S

290 Reading and Conference (4-4-4) F, W, S

291 Directed Reading (4-4-4) F, W, S

299 Dissertation Research (4-4-4) F, W, S

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.



SCHOOL OF PHYSICAL SCIENCES

Myron Bander **Dean**

The School of Physical Sciences offers both professional training and general education in the Departments of Chemistry, Mathematics, and Physics. 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.

In recognition of the contribution students can make to the academic affairs of the School, a variety of responsibilities on School and departmental committees is given to undergraduate and graduate students.

Degrees

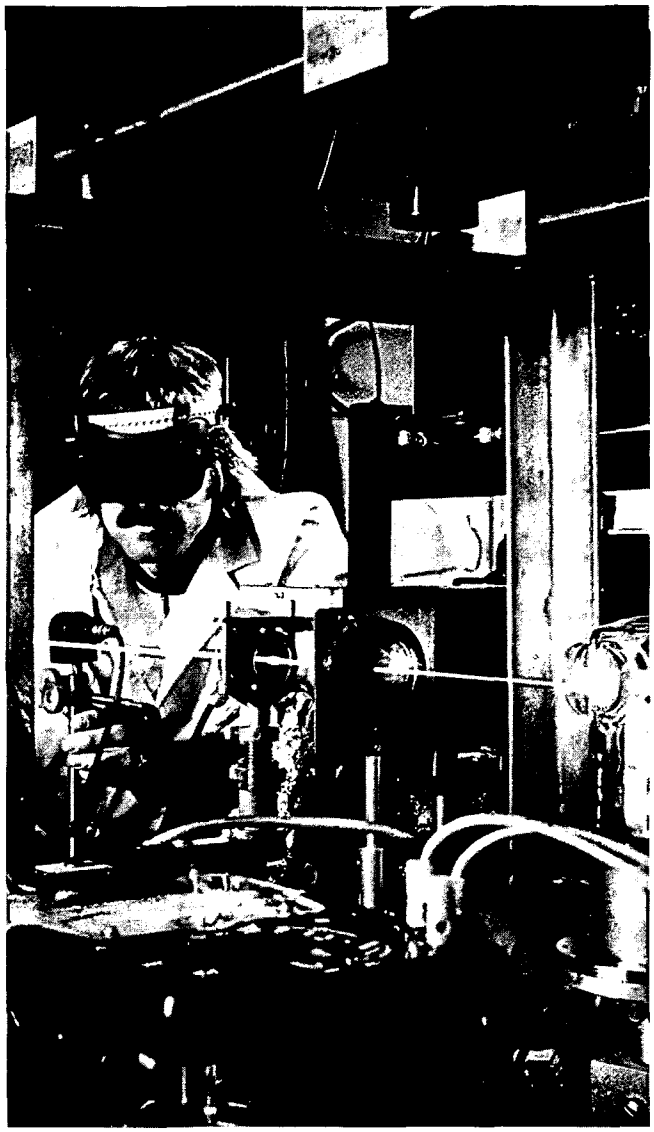
Chemistry ..... B.S., M.S., Ph.D.
Mathematics ..... B.S., M.S., Ph.D.
Physics ..... B.S., M.S., Ph.D.

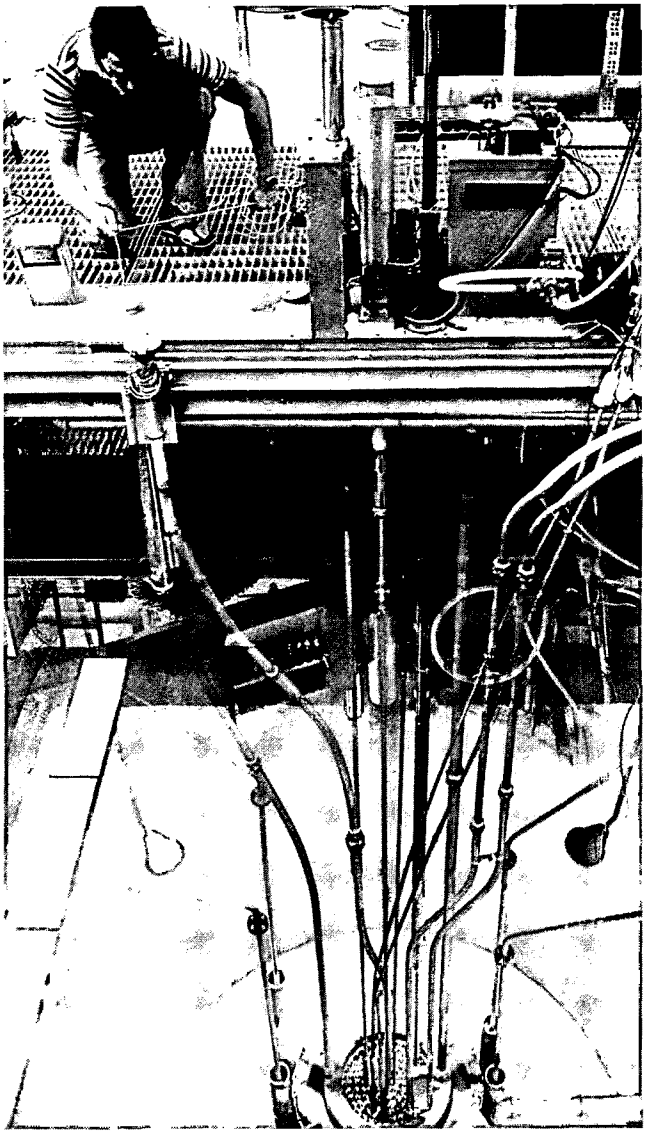
Honors

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 and cumulative grade point average. 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 introduc-





tion 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

Every undergraduate student who has chosen to major in Physical Sciences is assigned a faculty advisor. The name of this advisor is communicated to the student prior to enrollment or may be obtained from the Office of the Associate Dean or of the appropriate Department Chair. Students are free to change academic advisors at any time. Each department also has a Chief Academic Advisor who is responsible for interpreting degree requirements and dealing with special advising problems. An academic advising and counseling staff is also employed in the Associate Dean's Office and is available to serve a broad range of student advising needs. In consultation with the advisor the student should plan a course of study leading to a major in one of the departments of the School. In carrying out this major, the student 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 will usually 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 done by taking Information and Computer Science 1, Information and Computer Science 15, or Physics 1.

Requirements for the Bachelor's Degree

University Requirments: See page 14.

School Requirements

In addition to the courses taken in fulfillment of the UCI breadth requirement, students with a major in the School of Physical Sciences are required to take one additional approved three-course group chosen from one of the following breadth categories: Category III (Social and Behavioral Sciences); Category IV (Humanistic Inquiry); or the Language and Linguistics section of Category V. For purposes of this requirement, the approved sequences are the same ones listed for the UCI breadth requirement, with the exception that any three consecutive foreign language courses are acceptable.

Graduate Programs

A program of course work and research leading to the M.S. and Ph.D. degrees is offered in each of the three departments of the School. The individual programs are described in the following announcements of each department.

DEPARTMENT OF CHEMISTRY

David A. Brant, Ph.D. University of Wisconsin, *Chair of the Department and Professor of Chemistry*
Philip N. Borer, Ph.D. University of California, Berkeley, *Assistant Professor of Chemistry*
Marjorie C. Caserio, Ph.D. Bryn Mawr College, *Professor of Chemistry*
A. Richard Chamberlin, Ph.D. University of California, San Diego, *Assistant Professor of Chemistry*
Robert J. Doedens, Ph.D. University of Wisconsin, *Professor of Chemistry*
Fillmore Freeman, Ph.D. Michigan State University, *Professor of Chemistry*
Vincent P. Guinn, Ph.D. Harvard University, *Professor of Chemistry*
Warren J. Hehre, Ph.D. Carnegie-Mellon University, *Professor of Chemistry*
John C. Hemminger, Ph.D. Harvard University, *Assistant Professor of Chemistry*
Edward K. C. Lee, Ph.D. University of Kansas, *Professor of Chemistry*
Robert T. McIver, Ph.D. Stanford University, *Professor of Chemistry*
George E. Miller, D. Phil. Oxford University, *Lecturer in Chemistry and Reactor Supervisor*
Mario Molina, Ph.D. University of California, Berkeley, *Associate Professor of Chemistry*
Harold W. Moore, Ph.D. University of Illinois, *Professor of Chemistry*
Larry E. Overman, Ph.D. University of Wisconsin, *Professor of Chemistry*
F.S. Rowland, Ph.D. University of Chicago, *Professor of Chemistry*
Kenneth J. Shea, Ph.D. The Pennsylvania State University, *Associate Professor of Chemistry*
Constance E. Suffredini, M.S. Lehigh University, *Lecturer in Chemistry*
Mare Taagepera, Ph.D. University of Pennsylvania, *Adjunct Lecturer in Chemistry*
Robert W. Taft, Ph.D. Ohio State University, *Professor of Chemistry*
Max Wolfsberg, Ph.D. Washington University, *Professor of 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 (or the two-quarter course Chemistry 61A-B) 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 this introductory level. Chemistry 51A-B-C is a one-year sequence in Organic Chemistry which is required for Chemistry majors and for students of the life sciences. Certain more advanced courses required of Chemistry majors may also be of particular interest to the latter groups, among others.

The undergraduate program of the Chemistry Department emphasizes close contact with research. Chemistry majors are urged to engage in research under the direction of a faculty member.

Much of the important chemical literature is being and has been printed in foreign languages, principally German, Russian, 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 consult with their advisors and with the Office of Teacher Education early in their undergraduate careers. 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. Those intending to pursue graduate studies in chemistry should discuss their plans with their academic advisors.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 147.

Departmental Requirements

Basic Requirements: Mathematics 2A-B-C, Physics 5A-B-C and 5LA-LB-LC, Chemistry 1A-B-C and 1LB-LC or Chemistry 61A-B and 61 LA-LB, Chemistry 51A-B-C and 51LA-LB-LC, Chemistry 107 and 107L, Chemistry 131A-B-C or 130A-B-C, Chemistry 151.

Electives: Four courses chosen from the elective list below. These must include at least two courses offered by the Chemistry Department (Chemistry 180 may be counted no more than once, and Chemistry 192, 194, 196, and 199 may not be counted) and at least one of the laboratory courses in the following laboratory course group: Chemistry 152, Chemistry 153, Chemistry 160, Chemistry 170, Physics 150, Physics 151, Physics 152, Physics 153.

Elective List: Chemistry 125, 135 and all Chemistry courses numbered 152-235, Bio. Sci. 106 (Biochemistry), Bio. Sci. 107 (Molecular Biology), Molecular Biology and Biochemistry

205A-B (Biochemistry), Physics 111A-B (Classical Mechanics), Physics 112A-B (Electromagnetic Theory), Physics 113A-B-C (Quantum Physics), Physics 115 (Statistical Physics), Physics 116 (Thermodynamics), Physics 132 (Nuclear Physics), Physics 133 (Condensed Matter Physics), Physics 134 (Modern Optics), Physics 150 (Electronics for Scientists), Physics 151 (Advanced Laboratory), Physics 152 (Advanced Laboratory), Physics 153 (Advanced Laboratory).

Scientific Breadth Requirements: A total of six additional four- or five-unit courses chosen from the offerings of the Departments of Mathematics and Physics and the School of Biological Sciences. (These may be taken on a Pass/Not Pass basis subject to the usual restrictions on Pass/Not Pass enrollment.)

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, and a double major in Chemistry-Biological Sciences does not require much extra course work. The Department is accredited 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 necessary, it is desirable for students to pursue a course of study that the American Chemical Society judges to merit a certified degree. A certified degree specifically requires that the following courses be included in the program of study: Physics 5A-B-C; Mathematics 3 (any two quarters); Chemistry 152 and 153; Chemistry 160, 170, or 180.

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 51A-B-C and 51LA-LB-LC; the Physics 5A-B-C and 5LA-LB-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 School of Physical Sciences breadth requirement, the UCI breadth requirement, and the Chemistry Department scientific breadth requirement. In the junior year all Chemistry majors should enroll in the year sequence of physical chemistry (Chemistry 131A-B-C or 130A-B-C) and in Chemistry 107 (fall) and 151 (winter). During the junior and senior years the Chemistry Department electives requirement should be fulfilled, as should other University, School, and departmental requirements. There is no foreign language requirement, but Chemistry majors are urged to obtain reading competence in a foreign language through course work.

Outlines of several typical programs of study for Chemistry majors, American Chemical Society-certified Chemistry majors, and Chemistry-Biological Sciences double majors have been prepared. Students are urged to obtain copies of the sample programs from their academic advisors, from the Chemistry Department Office, or from the Physical Sciences Associate Dean's Office.

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. program are expected to demonstrate their knowledge of chemistry at the advanced level through satisfactory completion of a series of Cumulative Examinations. These examinations are designed to encourage the independent study of chemistry through reading of the classic and current chemical literature and attendance at advanced seminars and colloquia. Normally, beginning with the second year of graduate study, students must take the monthly examinations until four have been passed. This requirement must be satisfied within 12 consecutive Cumulative Examinations.

Following completion of the Cumulative Examination requirement, participants in the Ph.D. program take an oral examination for formal Advancement to Candidacy. This examination normally comes in a student's third graduate year and consists of an oral defense before a faculty committee of the student's dissertation research project and a second 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.

Students in the Ph.D. and M.S. Plan I (Thesis) programs are required to complete a minimum of seven approved courses, including six graduate-level courses in chemistry. The M.S. Plan II (Course Work) program requires that the student complete 10 graduate-level chemistry courses. Graduate students are expected to maintain a grade point average of B or better to remain in good academic standing.

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 three quarters during their graduate career.

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.

Some faculty from the Department of Chemistry are members of an interdisciplinary biophysics and biophysical chemistry group. The program provides an opportunity for interaction among graduate students and faculty from a number of UCI departments who share common interests in biophysics and biophysical chemistry. Participating graduate students pursue a degree in the department best suited to their own background and research interests. A program of seminars brings the group together monthly to discuss research problems of mutual interest, and a regular series of interdisciplinary courses is offered by the participating faculty to provide formal instruction in areas encompassed by biophysics and biophysical chemistry. See page 75.

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, including six graduate-level courses in chemistry (as specified by the Department and excluding Chemistry 280, 290, and 291) 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 in chemistry (excluding Chemistry 290 and 291 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, including six graduate-level courses in chemistry (as specified by the Department and excluding Chemistry 280, 290, and 291) 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.

Undergraduate Courses

NOTE: Students who have received credit for former courses Chemistry 1-2-3 should enroll in Chemistry 51A. Transfer students with credit for one year of General Chemistry should enroll in Chemistry 51A. Chemistry 107 replaces former Chemistry 6. Credit will not be given for both Chemistry 6 and 107.

1A-B-C General Chemistry (4-3-3) F, W, S. 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. Prerequisites for Chemistry 1A: high school chemistry, three years of high school mathematics; high school physics is recommended. Prerequisite for Chemistry 1B: passing grade in Chemistry 1A. Prerequisites for Chemistry 1C: passing grades in Chemistry 1B and 1LB. Corequisites for Chemistry 1B and 1C: concurrent enrollment in the corresponding laboratory courses. **(II)**

1LB-LC General Chemistry Laboratory (2-2) W, S. Laboratory, four hours. Training and experience in basic laboratory techniques. Chemical practice and principles illustrated through experiments related to lecture topics of Chemistry 1A-B-C. Prerequisite for 1LB: passing grade in Chemistry 1A. Prerequisites for 1LC: passing grades in Chemistry 1B and 1LB. Corequisites for 1LB and 1LC: concurrent enrollment in the corresponding segment of Chemistry 1. **(II)**

10 Elementary Physical Sciences (4) W, S. Lecture, three hours; discussion, two hours. The purpose of this course is to prepare the students for introductory courses in chemistry. Topics include units and systems of measurement, conversion factors, significant figures, experimental error propagation, methods of problem solving, atomic and molecular structure, phase change, solutions, ionization, chemical reactions, stoichiometry, oxidation-reduction, concepts such as pressure, volume, temperature, mass, density, force, energy, velocity, acceleration, momentum, heat capacity, electric charge, electric current, and the mole. Not open to students with grade C- or better in Chemistry 1A. Note: This course satisfies no requirements other than contribution to the 180 units required for graduation.

11B-C Honors General Chemistry (3-3). Lecture, three hours; discussion, one hour. Designed for the student with superior ability and preparation. Format and syllabus follow closely those of Chemistry 1, but topics will be developed more extensively. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 11L. Prerequisites: successful completion of previous quarters of General Chemistry and General Chemistry Laboratory and permission of the Department. Not offered 1981-82. **(II)**

11LB-LC Honors General Chemistry Laboratory (2-2). Laboratory, four hours. Similar to Chemistry 1LB-LC but provides greater opportunity for exercise of individual initiative in design and execution of experiments. Corequisite: concurrent enrollment in the corresponding segment of Chemistry 11. Prerequisites: successful completion of previous quarters of General Chemistry and General Chemistry Laboratory and permission of the Department. Not offered 1981-82. **(II)**

20 Scientific Controversy (4) F. Lecture, three hours. The speculations, arguments plus counter-arguments, false leads, and occasional fierce controversies that produce "well-established scientific knowledge" have an intellectual flavor that contrasts sharply with the processes required in learning the details of presently accepted scientific understanding. The nature of the scientific process is examined through study of specific arguments and controversies, both past and current. Current topics such as protective inoculation, pesticides in the environment, fluoridation, and artificial radioactivity have been considered in earlier versions of this course. Specific topics determined at beginning of course. Chemistry 1A-B-C not required. Not offered every year.

22 Radioactivity and Radiation (4) S. Lecture, three hours. Impact of nuclear science and technology on society. Uses of nuclear energy for electric power generation, transportation, medicine, criminology, and scientific research will be examined. Chemistry 1A-B-C not required. Not offered every year.

51A-B-C Organic Chemistry (3-3-3) F, W, S. 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. Prerequisites for 51A: Chemistry 1A-B-C and 1LB-LC. Prerequisites for 51B: passing grades in Chemistry 51A and 51LA. Prerequisites for 51C: passing grades in Chemistry 51B and 51LB. Corequisites for 51A-B: concurrent enrollment in the corresponding segment of Chemistry 51L.

51LA-LB-LC Organic Chemistry Laboratory (2-2-2) F, W, S. Laboratory, four hours. Modern techniques of organic chemistry, using selected experiments to illustrate topics introduced in Chemistry 51A-B-C. Prerequisites for 51LB: passing grades in Chemistry 51A and 51LA. Prerequisites for 51LC: passing grades in Chemistry 51B and 51LB. Corequisites for 51LA-LB-LC: concurrent enrollment in the corresponding segment of Chemistry 51.

61A-B University Chemistry (3-3) W, S. Lecture, three hours; discussion, one hour. A two-quarter sequence in the fundamental aspects of chemistry for students well prepared in physics and mathematics; this course may be substituted for Chemistry 1A-B-C to meet prerequisites and Chemistry degree requirements. Stoichiometry; properties of gases, liquids, solids, and solutions; chemical equilibrium; reaction thermodynamics and kinetics; atomic structures; chemical bonding and its relation to structure and properties; important industrial and environmental aspects of chemistry. Problem-solving will form a large part of the work load of this course. Use will be made of calculus. Engineering students normally take this course in their sophomore year. Prerequisites for Chemistry 61A: high school chemistry, Mathematics 2A-B-C or equivalent, Physics 5A-B-C or equivalent, or permission of the Department. Prerequisite for Chemistry 61B: passing grade in Chemistry 61A. Corequisite for Chemistry 61A: concurrent enrollment in Chemistry 61LA. Corequisite for Chemistry 61B: concurrent enrollment in Chemistry 61LB.

61LA-LB University Chemistry Laboratory (2-2) W, S. Laboratory, four hours. Training and experience in basic chemistry laboratory techniques illustrating concepts covered in the lecture course; this course may be submitted for Chemistry 1LB-LC to meet prerequisites and Chemistry degree requirements. Prerequisites for Chemistry 61LB: passing grades in Chemistry 61A and Chemistry 61LA. Corequisite for Chemistry 61LA: concurrent enrollment in Chemistry 61A. Corequisite for Chemistry 61LB: concurrent enrollment in Chemistry 61B.

101A-B Chemistry of Environmental Pollution (4-4). Lecture, three hours. Chemistry of air, water, and soil pollution. Chemical fate of pollutants will be traced from their sources, and remedial alternatives to current pollution patterns will be discussed from a chemical point of view. Prerequisites: Chemistry 1A-B-C. Not offered every year.

107 Inorganic Chemistry (3) F. Lecture, three hours; discussion, one hour. Introduction to modern inorganic chemistry. Principles of structure, bonding, and chemical reactivity with applications to compounds of the main group and transition elements. Organometallic and bioinorganic chemistry. Corequisite: concurrent enrollment in Chemistry 107L. Prerequisites: Chemistry 1A-B-C, 51A-B-C.

107L Inorganic Chemistry Laboratory (2) F. Laboratory, seven hours. Special guidance in use of the chemical library in conjunction with individualized experiments which relate to the lecture topics of Chemistry 107 and which use modern techniques of inorganic and organometallic chemistry. Corequisite: concurrent enrollment in Chemistry 107. Prerequisites: Chemistry 51C and 51LC.

125 Advanced Organic Chemistry (4) W. Lecture, three hours; discussion, one hour. Rapid-paced comprehensive treatment of organic chemistry, reinforcing the fundamental concepts introduced in the Chemistry 51A-B-C series. Lectures are broadly focused on molecular structure, reactivity, stability, and the scope and mechanisms of organic reactions. Within this framework, the following topics are discussed: 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. Designed for Chemistry majors and others interested in organic chemistry.

130A-B-C Physical and Biophysical Chemistry. Lecture, three hours; discussion, one hour. Corequisite for 130A: Physics 5C. Prerequisites for 130A: Chemistry 1A-B-C, Physics 5A-B, Mathematics 2A-B-C. Prerequisites for 130B-C: successful completion of previous courses in the sequence.

130A Chemical Thermodynamics (4) F. Classical thermodynamics of pure and multicomponent systems. Development of the conditions of chemical and heterogeneous equilibrium. Multiple equilibria. The properties of solutions.

130B Chemical Kinetics and Quantum Chemistry (4) W. Kinetics and mechanisms of chemical reactions, theory of chemical reaction rates, catalysis, chemical relaxation, atomic and molecular energy levels, chemical bonding, statistical thermodymanics.

130C Molecular Structure Determination (4) S. Determination of structure and properties of molecules and macromolecules using spectroscopic, thermodynamic, hydrodynamic, and radiation scattering methods. Same as Biological Sciences 123.

131A-B-C Physical Chemistry. Lecture, three hours; discussion, one hour. Corequisite for 131A: Physics 5C. Prerequisites for 131A: Chemistry 1A-B-C, Physics 5A-B, Mathematics 2A-B-C. Prerequisites for 131B-C: successful completion of previous courses in the sequence.

131A Quantum Chemistry (4) F. Principals of quantum mechanics with application to the elements of atomic structure and energy levels, diatomic molecular spectroscopy determination, and chemical bonding in simple molecules.

131B Chemical Thermodynamics (4) W. Chemical thermodynamics of pure and multicomponent systems in the solid, liquid, and gaseous states. Development of conditions of chemical and heterogeneous equilibrium with applications to systems of chemical interest.

131C Statistical Mechanics and Chemical Dynamics (4) S. Development of the relationship between the quantum mechanical properties of individual molecules and the thermodynamic properties of macroscopic collections of molecules. Kinetic theory and transport processes. Rates and mechanisms of chemical reactions.

135 Methods of Molecular Structure Determination (4) W. Lecture, three hours; discussion, one hour. Prerequisites: Chemistry 131A-B-C or 130A-B-C. Determination of molecular structure using spectroscopic, diffraction, and scattering techniques.

151 Quantitative Analytical Chemistry (5) W. Lecture, three hours; discussion, one hour; laboratory, six hours. Theoretical and practical aspects of important methods in analytical chemistry will be treated in lecture and illustrated with laboratory analyses of standard samples. Topics include statistical treatment of data, gravimetry, titrimetry, chromatography and other separation methods, spectrochemical and electrochemical measurements. The use of simple computer programs for data reduction will be encouraged. Prerequisites: General and Organic Chemistry (1A-B-C, 1LB-LC, 51A-B-C, and 51LA-LB-LC).

152 Advanced Analytical Chemistry (4) F. Lecture, three hours; discussion, one hour; laboratory, six hours. Lectures will treat in depth most modern instrumental methods for quantitative analysis of real samples and basic principles of instrument design. In the laboratory, experiments provide individual experience with use of electronic test equipment, microprocessor programming, and 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 for analysis of samples of industrial and environmental origins. Prerequisite: Chemistry 151.

153 Physical Chemistry Laboratory (4) S. Prelaboratory discussion, one hour; 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. Prerequisites: Chemistry 151 and Chemistry 130C or 131C (may be taken concurrently).

160 Qualitative Organic Analysis (4) S. Lecture, two hours; laboratory, eight hours. Emphasizes modern spectral and chemical methods of identification of organic compounds. Prerequisites: Chemistry 51A-B-C.

170 Radioisotope Techniques (4) F. Lecture, three hours; laboratory, four to six hours. Basic theory and practice of production, separation, and determination of radioactive isotopes with emphasis on particular applications in chemistry and biology. Prerequisite: Chemistry 151 or consent of the Department.

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 staff to sponsor and supervise such work. Prerequisite: consent of a faculty sponsor.

192 Tutoring in Chemistry (1 to 4 per quarter) F, W, S. Students may enroll in a section of this course to earn course credit for tutoring associated with the Chemistry Peer Tutoring Program or for activities as a student assistant in a specific chemistry course. Admission to the course will depend upon demonstration of suitable qualifications and approval of the instructor in charge. Pass/Not Pass credit only; the number of units per term (1 to 4) determined by the specific activities involved. Prerequisite: consent of the Department. Note: Satisfies no degree requirements other than contribution to the 180 units required for graduation. No more than 8 units earned in tutoring courses may be counted toward the required total of 180.

194 Use of the Chemical Literature (2). Lecture, one hour; library usage, three hours; discussion, one hour. Familiarization with the bibliographic sources of chemical information. Search strategies developed for the retrieval of chemical information by traditional and on-line use of computerized methods. Emphasis on the use of *Chemical Abstracts* and how to access its computer-based data files. Course designed for both students and practitioners of chemistry, and unrestricted as to area of chemistry. Direct student participation required in actual library and on-line searching.

196 Chemical Laboratory Safety (2) Summer, F. Lecture, two hours. Preparation for independent work in a chemistry research laboratory. Lectures, media presentations, guest lecturers, and practical demonstrations are used to examine the basic principles and practices relating to chemical toxicity, stability, and flammability; storage, handling, and disposal of chemicals; electrical, mechanical, and ionizing and non-ionizing radiation hazards; planning safe experiments and a safe laboratory; how to proceed if an accident occurs. Students may be asked to give oral presentations and write one paper on selected topics as well as doing homework problems. Prerequisites: General, Organic, Quantitative, Analytical Chemistry (1A-B-C, 1LB-LC, 51A-B-C, 51LA-LB-LC, and 151) or consent of Department.

199 Independent Study in Chemistry (1 to 4 per quarter). Prerequisite: consent of instructor.

Graduate Courses

201 Organic Reaction Mechanisms I (4) F. Lecture, three hours. Advanced treatment of basic principles of modern organic chemistry. Topics include molecular orbital theory, orbital symmetry control of organic reactions, aromaticity, carbonium ion chemistry, and free radical chemistry. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

202 Organic Reaction Mechanisms II (4) W. Lecture, three hours. Topics include the chemistry of carbenes and carbanions, conformational analysis, photochemistry, electrophilic substitutions, aromatic chemistry. Prerequisite: Chemistry 201.

203 Organic Spectroscopy (4) S. Lecture, three hours. Modern methods used in structure determination of organic molecules. Topics include mass spectrometry; ultraviolet, chiroptical, infrared, and nuclear magnetic resonance spectroscopy. Prerequisites: Chemistry 1A-B-C and 51A-B-C or equivalent.

204 Organic Synthesis I (4) W. Lecture, three hours. Fundamentals of modern synthetic organic chemistry will be developed. Major emphasis is on carbon-carbon bond forming methodology. Topics include carbonyl annelations, cycloadditions, sigmatropic rearrangements, and organometallic methods. Prerequisite: Chemistry 202.

205 Organic Synthesis II (4) S. Lecture, three hours. 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 Stereochemistry (4) F. Lecture, three hours. Fundamentals of stereochemical conformation of organic molecules. Topics include molecular symmetry; chirality; prochirality; determination of configuration; resolution methods; asymmetric synthesis and chiral recognition; stereospecificity and reaction mechanisms; stereoelectronic control; stereochemistry at nitrogen, sulfur, and phosphorus; conformational analysis of acyclic and cyclic molecules; conformation and reactivity. Prerequisites: Chemistry 1A-B-C and 51A-B-C or equivalent.

211 Chemical Thermodynamics (4) W. Lecture, three hours. A detailed discussion of the fundamental principles of chemical thermodynamics will be undertaken. The thermodynamics of single- and multicomponent gas phase and condensed phase systems will be discussed. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

213 Chemical Kinetics (4) S. Lecture, three hours. 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) F. Lecture, three hours. Principles of modern inorganic chemistry with applications to chemical systems of current interest. Major topics include the nature and properties of the chemical bond, inorganic stereochemistry, coordination and organometallic compounds, and physical methods in inorganic chemistry. Prerequisites: Chemistry 107 and 130A-B-C or 131A-B-C or equivalent.

216 Inorganic Chemistry II (4) W. Lecture, three hours. Inorganic reaction rates and mechanisms, including substitution, electron transfer, and organometallic reactions. Applications to selected synthetic and catalytic systems. Bioinorganic chemistry. Prerequisite: Chemistry 215.

230 Molecular Spectroscopy (4) S. Lecture, three hours. Theory and techniques of spectroscopy as used for the study of molecular structures and properties. Infrared, Raman, microwave, and magnetic resonance spectroscopy are covered. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent, Chemistry 231.

231 Quantum Chemistry (4) F. Lecture, three hours; discussion, one hour. Fundamentals of quantum mechanics. Application of quantum mechanics to problems in atomic systems will be considered. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent.

232 Statistical Mechanics (4) S. Lecture, three hours; discussion, one hour. The fundamental postulates of statistical mechanics will be examined and the formalism of the method developed. Applications to statistical thermodynamic problems of chemical interest, e.g., dilute and real gases, crystals, liquids, solutions, chemical equilibrium are considered. Prerequisites: Chemistry 130A-B-C or 131A-B-C or equivalent, Chemistry 211.

233 Nuclear and Radiochemistry (4) S. Lecture, three hours. Brief introductions to nuclear structure, nuclear reactions, nuclear energy, radiochemical analysis, isotope effects, radiation chemistry, hot-atom chemistry, tracer methods, and nuclear processes as chemical probes. Prerequisites: Chemistry 130A-B-C or 131A-B-C or consent of the Department.

234 Advanced Chemical Kinetics (4) W. Topics and format vary. Prerequisite: Chemistry 213 or consent of the Department.

235 Molecular Quantum Mechanics (4) W. Lecture, three hours; discussion, one hour. Application of quantum mechanics to calculation of molecular properties. Attention given to the electronic structure of molecules. Prerequisites: Chemistry 231 or equivalent.

240 Forensic Chemistry (4) S. Lecture, three hours. Some of the lectures may be presented by practicing criminalists. Application of chemical techniques to the problems of crime investigation. Prerequisite: consent of instructor. Not offered every year.

251 Special Topics in Organic Chemistry (4). Advanced topics in organic chemistry. Format, content, and frequency of the course are variable. Prerequisite: consent of the Department.

252 Special Topics in Physical Chemistry (4). Advanced topics in physical chemistry. Format, content, and frequency of the course are variable. Prerequisite: consent of the Department.

253 Special Topics in Inorganic Chemistry (4). Advanced topics in inorganic chemistry. Format, content, and frequency of the course are variable. Prerequisite: consent of the Department.

261 Biomolecular Structure (4) W. 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 261.

262 Biopolymers in Solution (4) S. 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. Same as Molecular Biology and Biochemistry 262 and Physiology 262.

263 Biochemical Dynamics (4). Lecture, three hours. Chemical mechanisms associated with enzyme function. Kinetics and multistep kinetics; active site factors and chemistry and biochemistry of cofactors. Prerequisites: Biological Sciences 123 or Chemistry 130A-B-C or 131A-B-C. Same as Molecular Biology and Biochemistry 263 and Physiology 263.

280 Research (2 to 12) F, W, S. Organic synthesis, reaction kinetics, radiochemistry, nuclear chemistry, photochemistry, theoretical chemistry, physical organic chemistry, inorganic chemistry, physical chemistry of macromolecules. Prerequisite: consent of the Department.

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 the Department.

399 University Teaching (4-4-4) F, W, S. Required of and limited to Teaching Assistants.

DEPARTMENT OF MATHEMATICS

James J. Yeh, Ph.D. University of Minnesota, *Chair of the Department and Professor of Mathematics*

Takeo Akasaki, Ph.D. University of California, Los Angeles, *Associate Professor of Mathematics*

Bruce M. Bennett, Ph.D. Columbia University, *Associate Professor of Mathematics*

Frank B. Cannonito, Ph.D. Adelphi University, *Professor of Mathematics*

Donald A. Darling, Ph.D. California Institute of Technology, *Professor of Mathematics*

Richard A. Denholm, Ed.D. Western Reserve University, *Supervisor of Teacher Education and Adjunct Lecturer in Mathematics*

William F. Donoghue, Jr., Ph.D. University of Wisconsin, *Professor of Mathematics*

Paul C. Eklof, Ph.D. Cornell University, *Professor of Mathematics*

Mark Finkelstein, Ph.D. Stanford University, *Associate Professor of Mathematics*

Michael D. Fried, Ph.D. University of Michigan, *Professor of Mathematics*

John C. Holladay, Ph.D. Yale University, *Professor of Mathematics*

Richard K. Juberg, Ph.D. University of Minnesota, *Professor of Mathematics*

Gerhard K. Kalisch, Ph.D. University of Chicago, *Professor of Mathematics*

Stepan Karamardian, Ph.D. University of California, Berkeley, *Professor of Mathematics and Administration*

Abel Klein, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Mathematics*

Ray A. Kunze, Ph.D. University of Chicago, *Professor of Mathematics*

Meinhard E. Mayer, Ph.D. Parhon University (Rumania), *Professor of Mathematics and Physics*

George S. McCarty, Ph.D. University of California, Los Angeles, *Associate Professor of Mathematics*

William Messing, Ph.D. Princeton University, *Associate Professor of Mathematics*

David L. Rector, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Mathematics*

Robert C. Reilly, Ph.D. University of California, Berkeley, *Associate Professor of Mathematics*

Bernard Russo, Ph.D. University of California, Los Angeles, *Professor of Mathematics*

Stephen Scheinberg, Ph.D. Princeton University, M.D. University of California, Irvine, *Professor of Mathematics*

William H. Smoke, Ph.D. University of California, Berkeley, *Associate Professor of Mathematics*

Howard G. Tucker, Ph.D. University of California, Berkeley, *Professor of Mathematics*

Robert W. West, Ph.D. University of Michigan, *Associate Professor of Mathematics*

Joel J. Westman, Ph.D. University of California, Los Angeles, *Associate Professor of Mathematics*

Robert J. Whitley, Ph.D. New Mexico State University, *Professor of Mathematics*

Janet L. Williams, Ph.D. Brandeis University, *Associate Professor of Mathematics*

The Department of Mathematics is engaged in teaching and fundamental research in a wide variety of basic mathematical disciplines. Its activity is reflected in undergraduate and graduate courses which are responsive to new developments at the research frontier and the ever-changing requirements of government, industry, and education. The Department of Mathematics offers undergraduate and graduate students the opportunity to fashion a thorough and soundly based 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. The Department maintains an LSI-11-based minicomputer and a number of programmable calculators that are available for student and faculty use and that supplement the campus Computing Facility.

Undergraduate Program

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.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 147.

Departmental Requirements

Mathematics Major: Mathematics 2A-B-C (or H2A-B-C); Mathematics 3A-B-C; 12 upper-division or graduate courses (48 units) in mathematics including Mathematics 120A-B-C and Mathematics 140A-B-C; three additional courses (12 units) in one discipline selected from the following: three courses from among Physics 5A-E; three courses in Information and Computer Science, excluding ICS 193; three upper-division courses in Engineering; three upper-division courses in Mathematics; or three interrelated courses which apply mathematics to another field (these must be approved by the Department of Mathematics).

Mathematics Major with a Concentration in Statistics: Mathematics 2A-B-C (or H2A-B-C); Mathematics 3A-B-C; Mathematics 120A-B-C; Mathematics 129A-B-C (or Mathematics 201A-B and 202); Mathematics 131A-B-C; Mathematics 140A-B-C; three mutually related upper-division courses (12 units) selected from a list of approved courses in a field of application; ability in computer programming (a knowledge of FORTRAN is recommended) demonstrated by completion of an approved course, or by equivalent experience approved by the Department Chair.

Planning a Program of Study

There is a variety of career patterns the Irvine 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.

In consultation with their faculty advisors, students planning to major in Mathematics or in Mathematics with a Concentration in Statistics can plan a program of study which will enable them to meet the requirements for the major and at the same time pursue studies directed toward other specific educational objectives such as preparation for graduate school, public school teaching, or biomedical statistics.

Suggested course work for the student majoring in **Mathematics** includes:

Freshman Year: Mathematics 2A-B-C (Calculus) or Mathematics H2A-B-C (Honors Calculus), Mathematics 13.

Sophomore Year: Mathematics 3A-B-C (Linear Algebra; Vector Calculus). Mathematics 120A-B-C (Abstract and Linear Algebra) for those students who have taken Mathematics H2A-B-C or who have gotten a grade of B+ or better in Mathematics 2A-B-C; Mathematics 140A-B-C (Elementary Analysis) may be considered in place of Mathematics 120A-B-C.

Junior Year: Mathematics 140A-B-C (Elementary Analysis) and Mathematics 120A-B-C (Abstract and Linear Algebra), if not taken as a sophomore; other upper-division mathematics courses.

Senior Year: Upper-division mathematics courses.

Students should consider taking more than the minimal number of courses including, specifically, courses offered by the Department of Information and Computer Science.

Students preparing for graduate work in mathematics should consider selecting their upper-division course work from among the following: Mathematics 141A-B (Introduction to Topology), 144A-B (Introduction to Complex Variables), 147A-B (Calculus on Manifolds), 150A-B-C (Mathematical Logic), 162A-B (Introduction to Differential Geometry), 210A-B-C (Real Analysis), 220A-B-C (Analytic Function Theory), and 230A-B-C (Algebra).

Students interested in scientific application of mathematics should consider Mathematics 105A-B-C (Numerical Analysis), Mathematics 142A-B-C (Differential Equations), Mathematics 143A-B-C (Methods of Mathematical Physics), Mathematics 144A-B (Introduction to Complex Variables), and courses in biological sciences, chemistry, engineering, information and computer science, or physics.

Suggested course work for the student majoring in **Mathematics with a Concentration in Statistics** includes:

Freshman Year: Mathematics 2A-B-C (Calculus) or Mathematics H2A-B-C (Honors Calculus), Mathematics 13.

Sophomore Year: Mathematics 3A-B-C (Linear Algebra; Vector Calculus), and Mathematics 129A-B-C (Sample Surveys).

Junior Year: Mathematics 120A-B-C (Abstract and Linear Algebra), Mathematics 131A-B-C (Mathematical Statistics), and other upper-division courses including courses in a field of application.

Senior Year: Mathematics 140A-B-C (Elementary Analysis), Mathematics 201A-B-C, and other courses.

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 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.

The general course requirement is satisfactory completion of 12 upper-division or graduate courses (48 units), at least eight of which (32 units) must be at the graduate level (200 series courses). The specific requirements of the three concentrations (Pure Mathematics, Applied Mathematics, Applied Statistical Mathematics) are described below. Each concentration has a core of nine courses, in each of which the student must earn a grade of B (3.0) or better. 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, Mathematics 220A-B-C, and Mathematics 230A-B-C. The student must complete three additional approved courses, one of which must be an appropriate course offered by a department other than Mathematics.

The nine required core courses for the Applied Mathematics concentration are Mathematics 210A-B-C, Mathematics 220A or 230A, Statistics (Mathematics 131A-B-C or 201A-B-C) *or* Differential Equations (Mathematics 142A-B-C or 295A-B-C), plus two additional graduate courses in Mathematics. The student must complete three additional approved courses, including two appropriate courses offered by a department other than Mathematics.

The nine required core courses for the Applied Mathematical Statistics concentration are Mathematics 201A-B-C, Mathematics 202, Mathematics 204A-B, and three additional approved graduate courses in Mathematics or an appropriate applied area. The student also must complete Mathematics 129A-B-C.

Ordinarily, the final examinations in the courses listed below will comprise the comprehensive examination for the Master's degree.

Pure Mathematics: Mathematics 210C, Mathematics 220C, and Mathematics 230C.

Applied Mathematics: Mathematics 210C; Mathematics 220A or 230A; and Mathematics 131C or 201C, *or* Mathematics 142C or 295C.

Applied Mathematical Statistics: Mathematics 201C, Mathematics 202, and Mathematics 204B.

The student must satisfy the language requirement for the Master's degree by demonstrating reading proficiency in French, German, or Russian; *or* by demonstrating programming proficiency in one higher level programming language.

The residency requirement for the Master's degree 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.

Ph.D. in Mathematics

To be admitted to the doctoral program in Mathematics, an applicant must have completed a Master's degree in Mathematics with distinction.

When accepted into the doctoral program, the student embarks on a program of formal courses, seminars, and individual study courses to prepare for the Ph.D. qualifying examination and dissertation. A candidate for the Ph.D. should have both breadth and depth of knowledge. Breadth is demonstrated by advanced knowledge and competence in algebra and analysis. Depth of knowledge is demonstrated by profound familiarity with a well-defined subject in mathematics, e.g., Banach algebras, categorical algebra, group theory, operator theory, probability theory, or topology.

After an appropriate period of advanced study, the Graduate Studies Committee will invite the student to prepare for the qualifying examination (or recommend that the student withdraw from the program). This decision will be reached after consultation with the student's faculty advisor and a review of the instructors' evaluations of the student's performance in courses and seminars. To prepare for the qualifying examination, the student should study, in depth, two topics selected with the approval of the Graduate Studies Committee.

The oral qualifying examination is conducted by a candidacy committee, appointed by the Dean of Graduate Studies and Research on behalf of the Graduate Council, including at least one member of the faculty outside of the Mathematics Department. Following a successful examination, the committee recommends admission of the student to candidacy for the Ph.D.

The Ph.D. in Mathematics requires a demonstration of the ability to read the literature of mathematics in two of these languages: French, German, or Russian; and the ability to program in a higher level programming language.

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 Dean of Graduate Studies and Research on behalf of 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.

Lower-Division Courses

1 Pre-Calculus Mathematics (4) F, W, S, Summer. Lecture, two hours; laboratory, two hours. Prepares student for calculus and other mathematics courses. Inequalities, exponentials, logarithms, trigonometry, elementary analytic geometry, and systems of simultaneous equations. Offered on a self-paced basis, P/NP only. Satisfies no requirements other than contribution to the 180 units required for graduation.

2A-B-C Calculus. Lecture, three hours; quiz, two hours. Prerequisite: Mathematics 1 or a score of at least 3 on the Advanced Placement Examination in calculus. Waiver of prerequisites: At certain times throughout the year, the Mathematics Department will offer an examination for those who wish to waive the Mathematics 1 prerequisite. Examination must be passed within one year prior to enrolling in Mathematics 2A. In addition, waiver of prerequisites may be granted by consent of instructor. **(V)**

2A (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. Differentiation and integration of sines and cosines. **(V)**

2B (4) F, W, S, Summer. Definite integrals, their applications (areas, volumes, etc.), and methods of integration. Logarithmic and exponential functions. **(V)**

2C (4) F, W, S, Summer. Analytic geometry and polar coordinates. Multiple integrals. Infinite sequences and series, Taylor series. **(V)**

H2A-B-C Honors Calculus (4-4-4) F, W, S. Lecture, three hours; quiz, two hours. Prerequisites: same as for Mathematics 2A-B-C; in addition, the consent of the instructor is required. Subject matter is that of Mathematics 2A-B-C, presented more rigorously. Students will be expected to do proofs. Note: may be substituted for Mathematics 2A-B-C in fulfilling any campus requirement. **(V)**

3A Introduction to Linear Algebra (4) F, W. Lecture, three hours; quiz, two hours. Vectors, matrices, linear transformations, dot products, determinants, systems of linear equations, vector spaces, subspaces, dimension. Prerequisites: Mathematics 2A-B-C.

3B-C Vector Calculus. Lecture, three hours; quiz, two hours. Prerequisite: Mathematics 3A.

3B (4) W, S. Vector functions and their derivatives, directional derivatives, chain rule, curvilinear coordinates, surfaces and tangents, multiple integrals.

3C (4) S, Summer. Theorems of Green, Gauss, and Stokes. Maxima and minima of functions of several variables, Taylor expansions, Fourier series, heat and wave equations. Prerequisite: Mathematics 3B.

3D Elementary Differential Equations (4) W, S. Lecture, three hours; quiz, two hours. Linear differential equations, variation of parameters, Green's functions, constant coefficient cookbook, systems of equations, Laplace transforms, series solutions. Prerequisite: Mathematics 3A.

4A-B-C Mathematics for Elementary Education (4-4-4) F, W, S, Summer. Lecture, three hours. Meets the certification requirement for the Multiple Subject teaching credential in the State of California. Fundamental ideas of logic and set theory. Basic arithmetic properties of the real number system. Geometry in two and three dimensions. Topics in elementary number theory, probability, and statistics. Same as Education 103A-B-C.

5A-B-C Mathematics for the Social and Natural Sciences (4-4-4) F, W, S, and W, S, F. Lecture, three hours; quiz, two hours. Fundamentals of modern statistics. Topics in probability theory include sampling, conditional probability and Bayes' rule, binominal distribution, normal distribution and random variables. Topics in statistics include sampling and sampling distributions, estimation, hypothesis testing, analysis of variance, nonparametric methods, regression, and correlation. **(V)**

6 Finite Mathematics. Lecture, three hours; quiz, two hours. Designed primarily for computer science majors. **(V)**

6A (4) F. Combinatorics and graph theory. Prerequisite: Mathematics 2C. **(V)**

6B (4) W. Logic and Boolean algebras. **(V)**

6C (4) S. Linear algebra. **(V)**

7 Basic Statistics (4) F, W, S, Summer. Lecture, three hours; quiz, 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. Examples from many fields will be given to illustrate effective uses of statistics. **(V)**

13 Introduction to Abstract Mathematics (4) S. Lecture, three hours. The purpose is to expose students to the style of precise definition and rigorous proof which is characteristic of modern mathematics. Actual mathematical content is purposely kept elementary—sets, countability, ordered sets, and so on—so that students can focus main efforts on learning to follow, and even produce, closely reasoned mathematical deductions. Strongly recommended for freshman and sophomore mathematics majors as preparation for upper-division courses such as Mathematics 120 and 140. Nonmajors with an interest in rigorous thought are also welcome. **(V)**

14A-B-C Mathematical Methods in Biology and Ecology (4-4-4). Lecture, three hours. For the Applied Ecology major. **14A** Topics from calculus that are of use in studying the ecology of biological populations. **14B** Discrete probability theory and its applications to practical problems of hypothesis testing, in particular to analysis of categorical data. **14C** Some standard methods of statistical inference used in biological experimentation. Not offered 1981-82. **(V)**

Upper-Divison Courses

105A-B-C Numerical Analysis (4-4-4) F, W, S. Lecture, three hours. Introduction to methods, pitfalls, applications of practical numerical computation; discussion of accuracy, stability, and efficiency of several standard numerical methods; function approximation, solution of polynomial equations, linear systems of algebraic equations, the algebraic eigenvalue problem; interpolation, quadrature, initial value problems, fast Fourier transform. Prerequisites: Mathematics 2A-B-C and some acquaintance with the elements of linear algebra, differential equations, Fourier series, and computer programming. Not offered every year.

111A-B-C Projective Geometry (4-4-4) F, W, S. Lecture, three hours. Elementary plane projective geometry. Axioms, the real projective plane, finite geometries, Desargues' theorem, Pappus and Pascal theorems, coordinate systems. Not offered every year.

120A-B-C Abstract and Linear Algebra (4-4-4) F, W, S. Lecture, three hours. Introductory course in which students will be expected to do proofs. Approximately one-third of the course devoted to topics in abstract algebra (such as groups, rings, and fields); remainder covers theoretical basis of linear algebra: vector spaces, linear transformations, matrices, determinants, inner products, canonical forms. Prerequisites: Mathematics 2A-B-C. Corequisite: Mathematics 3A.

121A-B-C Topics in Algebra (4-4-4) F, W, S. Lecture, three hours. Various topics in abstract algebra such as groups, rings, fields, modules, Galois theory. Prerequisites: Mathematics 120A-B-C or consent of instructor. Not offered every year.

122A-B Elementary Number Theory (4-4-4) F, W, S. Lecture, three hours. Primes, congruences, diophantine equations, quadratic reciprocity, and selected other topics. Prerequisite: one year of college mathematics. Not offered every year.

123A-B-C Applied Modern Algebra (4-4-4) F, W, S. Lecture, three hours. Set theory, state machines, trees, algebraic switching theory, semigroups and groups, morphisms, the semigroup of a machine and the machine of a semigroup, various codes, Polya enumeration, linear algebra, more coding. Prerequisites: Mathematics 2A-B-C, 3A.

128 Mathematics of Finance (4) W. Lecture, three hours. Mathematical theory of interest: measurement of interest, accumulation and discount, equations of value, annuities and perpetuities, amortization and sinking funds, yield rates, bonds, depreciation, depletion. Topics covered are those included in the section on interest in the third actuarial examination. Prerequisites: Mathematics 2A-B-C.

129A-B-C Mathematical Theory of Sample Surveys (4-4-4) F, W, S. Lecture, three hours; laboratory, two hours. Basic concepts of probability, sample selection, stratification, cluster sampling, double-sampling procedures. Nonsampling errors and other developments. Applications to problems in economics, business, public health, agriculture, and the social sciences. Prerequisites: Mathematics 2A-B-C.

130A-B-C Probability and Stochastic Processes (4-4-4) F, W, S. Lecture, three hours. Introductory course emphasizing applications. Discrete and continuous probability distributions. Distributions of sums and limit theorems. 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 probability and mathematical statistics. Probability distributions. Expectation. Point estimation and confidence intervals. Fundamental theory of hypothesis testing. Applications. Prerequisites: Mathematics 2A-B-C.

133A-B Applied Probability Theory (4-4) W, S. Markov chains, exponential distribution and Poisson processes, exponential models and continuous-time Markov chains, renewal theory, reliability. Not offered every year.

140A-B-C Elementary Analysis (4-4-4) F, W, S. Lecture, three hours. Introduction to real analysis, including real number system, infinite series, sequences of functions, differentiation, integration, and elements of the calculus of scalar- and vector-valued functions of several variables. Students will be expected to do proofs. Prerequisites: Mathematics 3A-B-C.

141A-B Introduction to Topology. Lecture, three hours. Mathematics 141A-B strongly recommended for students planning to take graduate courses in mathematics.

141A Metric Spaces (4) W. Elements of naive set theory and the basic properties of metric spaces. Prerequisite: Mathematics 140A.

141B Point Set Topology (4) S. Introduction to topological spaces and topological properties. Prerequisite: Mathematics 141A or consent of instructor.

142A-B-C Differential Equations (4-4-4) F, W, S. 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 3A-B and 3C or 3D, the latter being strongly recommended. Not offered every year.

143A-B-C Methods of Mathematical Physics (4-4-4) F, W, S. Same as Physics 110A-B-C . Lecture, three hours. Introduction to applied mathematics, especially differential equations, for physical sciences and engineering students. First quarter: ordinary differential equations; methods of solution, applications, existence, uniqueness and stability, linear equations with constant and variable coefficients, and the Laplace transform. Second quarter: series expansions; complex analysis; Fourier series; and introductory partial differential equations. Third quarter: partial differential equations and their applications. Prerequisites: Mathematics 3A-B-C or consent of instructor.

144 A-B Introduction to Complex Variables (4-4) W, S. Lecture, three hours. Introductory course emphasizing applications. Complex numbers, analytic functions. Reimann mapping theorem with applications to boundary value problems. Theory of residues, power series expansions. Prerequisites: Mathematics 3A-B-C.

145A-B-C Topics in Analysis (4-4-4) F, W, S. Lecture, three hours. Second year in analysis for mathematicians, physical scientists, and engineers. Prerequisites: Mathematics 140A-B-C or consent of instructor. Not offered every year.

147A-B Calculus on Manifolds (4-4) W, S. Lecture, three hours. Theory of differentiation and integration in euclidean space and its generalization to manifolds. Inverse and implicit function theorems, differential forms, Stokes' theorem. Prerequisites: Mathematics 120A, 140C, and 141A, or consent of instructor. Not offered every year.

150A-B-C Mathematical Logic (4-4-4) F, W, S. Lecture, three hours. Introductory course in mathematical logic. One quarter will cover set theory, including an axiomatic development, and cardinal and ordinal numbers. Two quarters will be concerned with logic and recursion theory, including effective procedures, propositional and predicate calculus, and incompleteness and undecidability. Prerequisite: consent of instructor. Not offered every year.

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 3C. Not offered every year.

171A-B-C Mathematical Methods in Operations Research. Lecture, three hours; discussion, one hour. Prerequisite: consent of instructor. Not offered every year. Same as Engineering EE181A-B-C.

171A Linear Programming (4) F, Summer. Simplex algorithm, duality, optimization in networks.

171B Nonlinear Programming (4) W. Conditions for optimality, quadratic and convex programming, geometric programming, search methods.

171C Integer and Dynamic Programming (4) S. Multistage decision models, applications.

192 Tutoring in Mathematics (1 to 4 per quarter) F, W, S. Students may enroll in a section of this course to earn course credit for tutoring associated with the Physical Sciences Peer Tutoring Program or for activities as a student assistant in some specific mathematics course. Admission to the course will depend on demonstration of suitable qualifications and approval of the instructor in charge. P/NP credit only; the number of units per term (1 to 4) determined by the specific activities involved. Prerequisite: consent of the Department. Note: Satisfies no degree requirements other than contribution to the 180 units required for graduation. No more than 8 units earned in tutoring courses may be counted toward the required total of 180.

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 of current interest. Prerequisite: Department approval.

Graduate Courses

201A Theory of Mathematical Statistics (4) F. Lecture, three hours; laboratory, two hours. Point and interval estimation, sufficient statistics, hypothesis testing, analysis of categorical data, the multivariate normal distribution, sequential analysis. Laboratory devoted to applications of the theory, writing computer programs, report writing, and consulting experiences. Prerequisites: Mathematics 131A-B-C and 120A-B-C or consent of instructor.

201B Linear Regression Analysis (4) W. Lecture, three hours; laboratory, two hours. 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.

201C Experimental Design (4) S. Lecture, three hours; laboratory, two 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.

202 Non-parametric Statistical Inference (4) F. Lecture, three hours; laboratory, two hours. Standard non-parametric tests for comparison of two or more treatments, tests for randomness and independence. Corequisite: Mathematics 201A.

204A-B Multivariate Statistical Analysis (4-4) W, S. Lecture, three hours; laboratory, two hours. The Wishart distribution, Hotelling's T^2-distribution and its applications, discriminant analysis, principal components, factor analysis. Prerequisite: Mathematics 201A. Corequisite: Mathematics 201B.

210A-B-C Real Analysis (4-4-4) F, W, S. Lecture, three hours. Measure theory, Lebesgue integral, Lp 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. Not offered every year.

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.

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-B-C or equivalent or consent of instructor.

Courses numbered 231 through 295 are not offered every year. In addition to the courses listed below, which are presented on a rotating schedule, other courses are offered as interest and demand dictate.

231A-B-C Group Theory (4-4-4). Lecture, three hours. Introduction to abstract theory of groups. Prerequisites: Mathematics 230A-B-C 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.

235A-B-C Algebraic Geometry (4-4-4). Lecture, three hours. Introduction to algebraic varieties and schemes. Dimension theory, cohomology, flatness, GAGA type theorems, deformation theory, examples. Prerequisites: Mathematics 220A-B-C and 230A-B-C or consent of instructor.

237A-B-C Algebraic Number Theory (4-4-4). Lecture, three hours. Modules over Dedekind domains, finiteness of class number and Dirichlet unit theorem, decomposition of prime ideals in cyclotomic fields and quadratic reciprocity, zeta functions and Dirichlet's theorem on primes in an arithmetic progression. Class field theory, reciprocity laws. Arithmetic theory, diophantine equations. Prerequisites: linear algebra and Galois theory.

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. Prerequisite: Mathematics 141A-B or consent of instructor.

241A-B-C Topics in Lie Groups and Lie Algebras (4-4-4). Lecture, three hours. Introduction to Lie theory with emphasis on the structure of semisimple matrix groups and their representations. Prerequisites: linear algebra, point set topology, and basic analysis.

250A-B-C Algebraic Topology (4-4-4). Lecture, three hours. Topics vary with instructor. Prerequisites: Mathematics 121A-B-C and 141A-B, or equivalent, or consent of instructor.

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.

274A-B-C Topics in Probability (4-4-4). Lecture, three hours. Prerequisites: Mathematics 270A-B-C or consent of instructor.

280A-B-C Mathematical Logic (4-4-4). Lecture, three hours. Prerequisite: 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.

297A-B-C Colloquium (1-1-1) F, W, S. Weekly colloquia on topics of current interest in mathematics. Prerequisite: graduate standing.

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.

299A-B-C Supervised Reading and Research (4-4-4) F, W, S

399 University Teaching (1-4) F, W, S. Limited to Teaching Assistants and can be taken S/U only. Does not satisfy any requirements for the Master's degree.

DEPARTMENT OF PHYSICS

Richard F. Wallis, Ph.D. Catholic University of America, *Chair of the Department and Professor of Physics*

Myron Bander, Ph.D. Columbia University, *Dean of the School of Physical Sciences and Professor of Physics*

Gregory A. Benford, Ph.D. University of California, San Diego, *Professor of Physics*

Alfred M. Bork, Ph.D. Brown University, *Professor of Physics and Information and Computer Science*

Herbert H. Chen, Ph.D. Princeton University, *Professor of Physics*
Jon M. Lawrence, Ph.D. University of Rochester, *Associate Professor of Physics*
Mark A. Mandelkern, Ph.D. University of California, Berkeley, M.D. University of Miami, *Associate Professor of Physics and Pathology*
Alexei A. Maradudin, Ph.D. University of Bristol, *Professor of Physics*
Meinhard E. Mayer, Ph.D. Parhon University (Rumania), *Professor of Physics and Mathematics*
Roger D. McWilliams, Ph.D. Princeton University, *Assistant Professor of Physics*
Douglas L. Mills, Ph.D. University of California, Berkeley, *Professor of Physics*
Elliott W. Montroll, Ph.D. University of Pittsburgh, *Professor of Physics and UCI Distinguished Professor*
Riley Newman, Ph.D. University of California, Berkeley, *Associate Professor of Physics*
William H. Parker, Ph.D. University of Pennsylvania, *Professor of Physics*
Franklin Potter, Ph.D. Texas Tech University, *Adjunct Lecturer in Physics*
Frederick Reines, Ph.D. New York University, *Professor of Physics and Radiological Sciences*
Norman Rostoker, D.Sc. Carnegie Institute of Technology, *Professor of Physics*
James E. Rutledge, Ph.D. University of Illinois, *Assistant Professor of Physics*
Nathan Rynn, Ph.D. Stanford University, *Professor of Physics*
Jonas Schultz, Ph.D. Columbia University, *Professor of Physics*
Gordon L. Shaw, Ph.D. Cornell University, *Professor of Physics*
Dennis J. Silverman, Ph.D. Stanford University, *Associate Professor of Physics*
Virginia L. Trimble, Ph.D. California Institute of Technology, *Professor of Physics*
Sukekatsu Ushioda, Ph.D. University of Pennsylvania, *Professor of Physics and Vice Chair of the Department*
Gerard Van Hoven, Ph.D. Stanford University, *Professor of Physics*
Joseph Weber, Ph.D. Catholic University of America, *Visiting Professor of Physics*

Physics is that branch of science concerned with the study of natural phenomena at the fundamental level. Physicists study the smallest structure of matter (quarks, nuclei, and atoms); 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. In the past century applications of phenomena encountered in the field of physics have led to more changes in our lifestyle than have occurred in the previous millenium. These changes have brought us a "high" standard of living on one hand, and a threat of societal extinction on the other. The knowledge gained in physical studies has affected our daily life, our view of life, our philosophies, and our religions. A subject of so great and general an influence is not only of interest to the specialist but should be understood in its scope, power, and promise for the future by every educated person.

The Department offers courses for students of various interests, from those in the liberal arts to those in 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, and condensed matter at both advanced and undergraduate course levels. Instruction varies in approach from traditional lecture courses to seminars at various levels, to independently constructed programs, and to experimental computer teaching. The faculty is generally young, 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, and faculty members lead the lower-division discussion sections. The Department consists of people committed to intellectual activities and is exciting to those who are so inclined.

Undergraduate Program

Courses in the Physics Department are designed to meet the needs of many kinds of students, from those students without facility in mathematics whose main interests lie in the humanities or the arts to those students with professional goals in science and engineering. In addition to the regular Physics major, a concentration in Applied Physics and a concentration in Biomedical Physics are offered. The three 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 in the following table:

PHYSICS 3	PHYSICS 5	PHYSICS 10-24
Intended Audience		
Premedical students, Biological Sciences majors	Physics, Chemistry, and Engineering majors	Nonscience majors
Mathematical Prerequisites		
Algebra and trigonometry; concurrent enrollment in Math 2 or Math 14	Math 2A (Calculus); knowledge of computer programming is recommended	None
Preparation for Advanced Courses		
Physics 5C with permission	All upper-division courses in physics	None

Requirements for Bachelor's Degree

University Requirements: See page 14.

School Requirements: See page 147.

Departmental Requirements

Physics 5A-B-C-D-E with laboratory; Physics 111A-B, 112A-B, 113A-B, and 115; two quarters of advanced laboratory (Physics 150-153); Mathematics 2A-B-C (or H2A-B-C); Mathematics 3A-B-C; three courses from Physics 110A-B-C, Mathematics 140A-B-C, 142A-B-C, or 144A-B with Physics 110A-B-C particularly recommended; and three additional coherently related upper-division courses chosen from the Schools of Physical Sciences, Biological Sciences, Engineering, or the Department of Information and Computer Science. Students should be aware that alternative programs can be developed to meet their special interests and that graduate courses can be used to satisfy undergraduate requirements.

Applied Physics Requirements

The requirements of the concentration in Applied Physics include all the requirements of the Physics degree *plus* six courses in engineering approved by the Physics Department. One quarter of the advanced laboratory requirement may be waived with appropriate engineering laboratory work.

Biomedical Physics Requirements

The requirements of the concentration in Biomedical Physics include the requirements of the Physics degree, except as noted below, *plus* the following: Biological Sciences 101, 103, and 104 with associated laboratories; Chemistry 1A-B-C with laboratory; a three or four quarter sequence of courses in a specific area. Suggested sequences are as follows:

1. Chemistry 51A-B with laboratory; Biological Sciences 106 and 107
2. Biological Sciences 105 plus two psychobiology courses
3. Chemistry 130A-B-C
4. Radiological Sciences 200A-B plus one additional Radiological Science course

Approval must be obtained from the program coordinator. Sequences other than those above may be acceptable. The requirement for three additional coherently related upper-division science courses does not apply to students in this concentration.

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 with strong orientation toward modern physics. Laboratory work accompanies the course. Nonscience majors with some mathematical skill may wish to consider Physics 3 as an alternative to Physics 10-24.

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 premedical physics requirements may be met with Physics 3 or with Physics 5A-B-C.

Physics 5 is an intensive five-quarter course for students in physics, chemistry, engineering, and other areas 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 3A concurrently with Physics 5C. Students planning to enroll in only three quarters of Physics 5 need not enroll in Mathematics 3A. The recommended knowledge of computer programming may be gained by enrolling in Information and Computer Science 1, usually in the fall quarter of the freshman year, or in Physics 1. Biological Sciences majors with facility in calculus should consider Physics 5 as an alternative to Physics 3.

Physics courses numbered between 10 and 24 are general education courses intended for nonscience majors. Physics 13A-B is particularly oriented toward students in Social Ecology. The content and format of Physics 21-24 will vary from year to year. In general, these courses will not include regular laboratory work.

Courses numbered 110 and above are for Physics majors and other qualified students. This series of courses in the upper-division curriculum is sufficiently broad to provide programs both for the Physics major who does not intend to pursue the study of physics beyond the Bachelor's degree level and for the Physics major preparing for a professional career in physics. The Physics major with a career goal in medicine, law, teaching, or business, for example, should emphasize the Physics 130 series, which covers most of the important phenomena of physics. The Physics major preparing for graduate work in physics should cover most of the Physics 110 series. Any major who is so inclined can take more than the minimum two quarters of advanced laboratory work. Able students may begin the Physics 111 series in their sophomore year.

Sample Programs — Physics

A typical course program for Physics majors considering the possibility of graduate study in physics or astronomy is shown below. Three of the electives in the senior year may be physics graduate courses. A student with a weak background may want to postpone Physics 113A-B-C until the senior year.

	Freshman	Sophomore	Junior	Senior
FALL	Math 2A	Math 3A	Physics 110A	Elective
	Chem. 1A	Physics 5C	Physics 111A	Physics 151
	ICS 1 or Physics 1	Elective	Physics 113A	Physics 112B
	Elective	Elective	Elective	Elective
WINTER	Math 2B	Math 3B	Physics 110B	Math 144A
	Chem. 1B	Physics 5D	Physics 111B	Physics Elective
	Physics 5A	Elective	Physics 113B	Physics 115
	Elective	Elective	Elective	Elective
SPRING	Math 2C	Math 3C	Physics 110C	Math 144B
	Chem. 1C	Physics 5E	Physics 112A	Physics 153
	Physics 5B	Elective	Physics 113C	Physics 116
	Elective	Elective	Elective	Elective

Courses numbered between 110 and 116 emphasize the mathematical and theoretical structures that have unified our understanding of nature. Those numbered between 130 and 149 emphasize particular domains of the structure of matter. Laboratory work is assigned to separate courses, 150-153.

Transfer students are specifically advised to seek individual consultation with a member of the Physics faculty before deciding on a program of courses.

Since many graduate physics departments require a reading knowledge of one foreign language, Physics majors planning graduate work should, if possible, study some Russian, German, or French. Introductory courses in biology and chemistry are also recommended options. Every Physics major should avoid overspecialization and wisely use undergraduate years to explore some areas remote from physics.

Physics majors with interests other than graduate work in physics or astronomy need not take as many physics courses as indicated above. Note also that alternatives to Physics major requirements can be approved upon petition to the Department and the Office of the Associate Dean. As a guide to preparing a suitable program, the Department makes the following suggestions:

Physics majors considering the possibility of graduate school in engineering should complete the Applied Physics requirements.

The course program of Physics majors considering graduate work in chemistry, biology, or various interdisciplinary areas should contain:

Chemistry 1A-B-C and 51A-B-C, and Biological Sciences 101, 103, and 104.

The concentration in Biomedical Physics is offered for Physics majors who wish to follow an integrated program which combines biology and/or chemistry with physics, and is suitable preparation for a graduate career in one of these interdisciplinary areas.

The course program of Physics majors considering a teaching career in the public schools or the community colleges should contain:

Education 171 and 170, or 172; and additional preparation in some other area of science or mathematics. Courses from the Physics 10-24 sequence may be appropriate.

The course program of Physics majors considering graduate work in the history of science should contain at least:

History 29A-B-C. Courses from the Physics 10-24 sequence may be appropriate.

Sample Program — Applied Physics

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, particularly electrical 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 Department. Examples of appropriate courses include Engineering 80B, 101C, EE110A, EE110B, EE114A, EE114B, EE176, and EE178. Upon completion of the Applied Physics concentration, the student will receive a B.S. degree in Physics.

A typical course program for Physics majors in the Applied Physics concentration differs from the Physics major program only in the junior and senior years.

	Junior	Senior
FALL	Physics 110A	Physics 113A
	Physics 111A	Physics 112B
	Engr. 80B	Physics 151
	Elective	Engr. EE114A
WINTER	Physics 110A	Physics 113B
	Physics 111B	Physics 115
	Engr. EE110A	Engr. EE114B
	Elective	Engr. EE176
SPRING	Physics 110C	Physics 113C
	Physics 112A	Physics 133
	Engr. EE110B	Elective
	Elective	Engr. EE178

Program Planning — Biomedical Physics

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, except as noted in the Biomedical Physics requirements, as are six quarters of basic courses in biology and chemistry. (See table on p. 161.)

A sequence of three or four integrated additional courses which must be approved by the program coordinator completes the program. 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.

Graduate Program

The Department offers the M.S. and the Ph.D. degrees in Physics, the first in recognition of demonstrated knowledge of the basic facts and theories of physics, the second primarily in recognition of demonstrated capacity for independent research.

In general, graduate study in physics is expected to be a full-time activity. Other proposed arrangements should be approved by the Graduate Committee.

Complementing the formal courses, the Department offers regular colloquia and informal seminars. The graduate student is a member of an intellectual community and is 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.

About 60 graduate students of physics were enrolled in 1980-81. Active programs of research are underway in high energy physics, condensed matter physics, low temperature physics, plasma physics, mathematical 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 booklet *Physical Sciences* from the Department.

Master of Science in Physics

The requirements for the M.S. degree are: (1) at least three quarters of residence; and (2) mastery of graduate course material, which may be demonstrated either (a) by passing, with an average grade of B or better, a *minimum* of nine quarter courses numbered between 200 and 259, including 211, 213A-B, 214A, and 215A-B, and a written comprehensive examination; or (b) by passing the Ph.D. qualifying examination. Under special circumstances, a research project and thesis may be accepted in lieu of proficiency in some of the graduate course material. There is no foreign language requirement for the M.S. degree. In addition to the stated course requirements, all students who have not passed the Ph.D. qualifying examination must register continuously for Physics 264A-B-C (Seminar in Conceptual Physics).

A typical program in preparation for the written examination for the M.S. degree would consist of 12 courses:

211 (Classical Mechanics)

212A-B (Mathematical Physics)

213A-B (Electromagnetic Theory)

214A-B (Statistical Physics)

215A-B (Quantum Mechanics)

Three electives chosen from Physics 212C, 214C, 215C, 216-219, or undergraduate upper-division courses in related areas.

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 for the Ph.D. degree.

Course Requirements. The student is required to exhibit mastery of the basic sequences, Mathematical Physics, Classical Mechanics and Electromagnetic Theory, Quantum Mechanics, Relativistic Quantum Mechanics, and Statistical Mechanics. A *minimum* of 15 quarter courses numbered between 200 and 259, *including* 211, 212A-B, 213A-B, 214A-B, and 215A-B, must be passed with an average grade of B or better. In addition, all students who have not passed the Ph.D. qualifying examination are required to register for Physics 264A-B-C. It is expected that students, having selected a research specialty, will ordinarily take the core course in that subject (237A-B-C, 238A-B-C, or 239A-B-C) early in their graduate career.

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 covers a broad range of fundamentals of physics at the advanced undergraduate and graduate levels. The first part of the oral examination will be administered shortly after the written examination. All members of the first oral committee will be faculty from the Physics Department. 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 Physics Department. The second oral will cover principally material related to the broad and general features of the student's dissertation area. The written portion of the qualifying examination will be given once per year, generally in the fall. The examination may be taken by some students after one year of graduate study. A second attempt will be permitted if the first is not successful. A third attempt will be permitted only in extraordinary circumstances.

Teaching Program. Experience in teaching is an integral part of the gradute program, and all graduate students are expected to participate in the teaching program for at least three quarters during their graduate careers.

A typical course program for Physics majors in the Biomedical Physics concentration differs from the Physics major program in the sophomore, junior, and senior years.

	Sophomore	Junior	Senior
FALL	Physics 5C, 5LC	Physics 110A	Physics 113A
	Math 3A	Physics 111A	Physics 112B
	Biology 101	Program elective	Elective
	Elective	Bio. 104, 104L	Elective
WINTER	Physics 5D, 5LD	Physics 110B	Physics 113B
	Math 3B	Physics 111B	Physics 152
	Breadth	Program elective	Physics 115
	Elective	Elective	Elective
SPRING	Physics 5E, 5LE	Physics 110C	Physics 113C
	Math 3C	Physics 112A	Physics 153
	Bio. 103, 103L	Program elective	Elective
	Elective	Elective	Elective

Dissertation. A dissertation summarizing the results of original research performed by the student under the supervision of a doctoral committee appointed by the Graduate Council will be required for the Ph.D. degree. The 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 Physics Department at UCI.

Defense of Dissertation. Upon completion of the dissertation, the student will take an oral examination, open to the public, before the doctoral committee.

Suggested Course Sequence. Typical programs for the first two years designed to prepare the student for Ph.D. qualification and provide the foundation necessary for understanding and participating in modern research might include:

First Year: 211 (Classical Mechanics); 212A-B-C (Mathematical Physics); 213A-B (Electromagnetic Theory); 215A-B (Quantum Mechanics); 215C (Relativistic Quantum Mechanics).

In the second year of graduate study, the student may begin to take courses that will provide a broad background for the dissertation area. The following sequences represent a typical second-year program:

For the student with an interest in condensed matter physics:

221 (Elasticity); 222 (Hydrodynamics); 214A-B (Statistical Physics); 214C (Many Body Theory); 235A (Advanced Quantum Mechanics); 232A-B (Group Theory); 218 (Condensed Matter Physics); 220 (Plasma Physics).

For the student with an interest in elementary particle physics:

235A-B (Advanced Quantum Mechanics); 232B (Group Theory); 216 (Particle Physics); 217 (Nuclear Physics); 219 (Astrophysics); 214A-B (Statistical Physics); 214C (Many Body Theory) or 218 (Condensed Matter Physics).

For the student with an interest in plasma physics:

221 (Elasticity); 222 (Hydrodynamics); 214A-B (Statistical Physics); 214C (Many Body Theory); 216 (Particle Physics); 217 (Nuclear Physics); 218 (Condensed Matter Physics); 219 (Astrophysics); 220 (Plasma Physics).

Lower-Division Courses

1 Introduction to Physics (4) F. Lecture, three hours. Introduction to and overview of physics. Computing for the scientist and engineer. Mathematical review and introduction to calculus. Analysis of experimental data. Physical units.

3A-B-C Basic Physics (4-4-4) F, W, S, Summer. Lecture, three hours; discussion, one hour. Fall: survey of physical theory; Newtonian mechanics. Winter: electricity and magnetism; radiation and waves; optics; heat phenomena. Spring: twentieth-century physics; relativity; quantum ideas; atomic and nuclear physics. Concurrent enrollment in Physics 3L required each quarter (laboratory requirement may be waived by consent of instructor). Prerequisites: Mathematics 2A-B-C or 14A-B-C (prior or concurrent). **(II)**

3LA-LB-LC Basic Physics Laboratory (1-1-1) F, W, S, Summer. Laboratory accompanying Physics 3, three hours. **(II)**

5A-B-C-D-E Fundamental Physics (4-4-4-4-4) W, S, F, W, S; 5A-B (Summer). Lecture, three hours; discussion, one hour. **5A** Newtonian mechanics; facility in calculus is assumed; knowledge of computer programming is recommended. (Corequisite: Mathematics 2B.) **5B** Wave phenomena; relativity. (Corequisite: Mathematics 2C.) **5C** Electrostatistics; magnetostatics; current and fields; circuit elements; Maxwell's equations. (Prerequisites: Mathematics 2A-B-C.) **5D** Quantum theory; atoms and nuclei. (Corequisite: Mathematics 3B.) **5E** Statistical physics; thermal phenomena. Concurrent enrollment in Physics 5L is required each quarter (laboratory requirement may be waived by consent of instructor). 5A-B-C **(II)**

5LA-LB-LC-LD-LE Fundamental Physics Laboratory (1-1-1-1-1) W, S, F, W, S; 5LA-LB (Summer). Laboratory accompanying Physics 5, three hours. **5LA-LB-LC (II)**

Courses for Nonmajors

Course numbers between 10 and 24 are assigned to courses especially designed for students majoring in programs other than the physical sciences. Each course will generally be given every other year, except 19 and 20.

13A-B Physics in the Environment (4). Lecture, three hours, with demonstrations. For students with an interest in contemporary environmental problems and in understanding physical mechanisms involved with them. Topics include thermodynamics and heat as applied to internal combustion and other engines; transportation; air pollution; energy production, storage, new sources, conservation; other topics as relevant. No mathematics required but high school algebra recommended. **(II)** Not offered 1981-82.

14 Geophysics: The Making of the Earth (4). Formation of planets and moons; structure and evolution of the earth; what makes continents and oceans, volcanoes and earthquakes; mantle convection, plate tectonics, and continental drift; evolution and effects of the atmosphere. Primarily for students not majoring in Physics. **(II)** Not offered 1981-82.

15 Space Sciences (4). Lecture, three hours. Topics include description of the origin and evolution of the solar system, formation of the earth; comets, planetary motion, eclipses; solar flares and solar wind and their effects upon the earth and its magnetic field; aurorae and cosmic rays; the launch and orbital dynamics of space vehicles and our knowledge of other planets. Intended primarily for students outside physical sciences. **(II)** Not offered 1981-82.

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 as well as their philosophical implications discussed. Course brings students up to date with ideas behind field theories which promise to integrate our understanding of the forces that bind the quarks, the fundamental constituents of matter. No mathematics background required, but high school algebra recommended. **(II)**

18A-B-C Earth Sciences. Not offered every year. **(II)**

18A The Earth, Its Fluid Envelope (4). Lecture, three hours; laboratory, three hours and field trips. Introduction to atmospheric and biotic phenomena and processes associated with earth's surface and gaseous envelope. Topics include earth's astronomical relationships, mapping, weather and climate, oceanic circulation, and vegetation. **(II)**

18B The Earth, Its Crust and Interior (4). Lecture, three hours; laboratory, two hours and field trips. Introduction to the physical development of earth. Emphasis on materials (rocks and minerals), processes (weathering, erosion, mountain building), structures (folds and faults), and current theories regarding the earth's crust and interior. **(II)**

18C The Earth, Its History of Life as Revealed in Rocks (4). Lecture, three hours; laboratory, three hours and field trips. Physical and biological history of the earth, with emphasis on the principles by which this history can be ascertained. **(II)**

19 Cosmology — Man's Place in the Universe (4) S. Lecture, three hours. Overall structure of the universe and its changes in time; the evolution of galaxies, stars, and planets; the conditions necessary for life and possibilities for extra-terrestrial intellegent life. **(II)**

20 Observational Astronomy (4) F, W. Lecture, two hours; laboratory, two hours. Motions of planets and stars in the sky. Use of telescopes and location of prominent astronomical objects. **(II)**

21-24 Special Topics in Physics (4). Lecture, three hours. Topics of special interest varying from year to year. Past courses included Super-Cold, Newton, Physics via Demonstration, and Rainbows and Things. May be repeated for credit if topic varies. Not offered 1981-82.

Upper-Division Courses

110A-B-C Methods of Mathematical Physics (4-4-4) F, W, S. Lecture, three hours; discussion, one hour. Provides mathematical tools for upper-division physics courses. Topics include ordinary and partial differential equations, special functions, boundary value problems. Fourier and Laplace transforms, linear algebra and tensor analysis, and complex functions. Application of mathematical methods to physical problems will be stressed. Prerequisites: Mathematics 3A-B-C or equivalent. Same as Mathematics 143A-B-C.

111A-B Classical Mechanics (4-4) F, W. Lecture, three hours; discussion, one hour. Mechanics of particles through Lagrangian and Hamiltonian methods; rigid bodies; relativity; coupled systems. Prerequisite: Physics 5D or consent of instructor.

112A-B Electromagnetic Theory (4-4) 112A (S), 112B (F). Lecture, three hours; discussion, one hour. Electrostatics; magnetostatics; properties of matter; Maxwell's equations; relativity; radiation; optics. Prerequisite: Physics 5C; prior or concurrent enrollment in Mathematics 3B.

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 Schrödinger 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 5A-B-C-D-E or equivalent; Mathematics 3A-B-C or equivalent. Concurrent enrollment in Physics 110 (Mathematics 143) and Physics 111 is recommended.

115 Statistical Physics (4) W. Lecture, three hours. Microscopic theory of temperature, heat, and entropy; kinetic theory; multicomponent systems; quantum statistics. Prerequisites: Physics 5E, Mathematics 3C.

116 Thermodynamics (4) S. Lecture, three hours. Macroscopic theory of temperature, heat, and entropy; mathematical relationships of thermodynamics; heat engines; phase transitions. Prerequisites: Physics 5E, Mathematics 3C.

132 Introduction to Nuclear Physics (4) S. 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 5D-E.

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 112B 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. Prerequisites: Physics 5D-E.

136 Introduction to Particle Physics (4) W. Lecture, three hours. Experimental techniques and theoretical concepts of high-energy phenomena: accelerators and detectors; classification of particles and interactions of particle properties; symmetries and mass multiplets; production and decay mechanisms. Prerequisite: Physics 113A.

140 Physical Basis of Modern Technology (4) S. Lecture, three hours. Semiconductor physics; modern computers; information transmission, noise, signal, and band-width; laser physics; laser communication systems; holography. Prerequisites: Physics 5A-B-C-D-E.

144A Astrophysics: Stellar Structure and Evolution (4). Lecture, three hours. Stars: their structure and evolution; physical state of the interior; the Hertzprung-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. Not offered 1981-82.

144B Spectroscopy and Stellar Atmospheres (4) W. Lecture, three hours. Stellar spectra: observational and theoretical aspects. Radiative transfer and formation of spectral lines; temperature, density, and composition of stars; sunspots and solar activity; spectra of nebulae and other dilute gases. Prerequisite: Physics 5E or consent of instructor.

145 High Energy Astrophysics (4) S. Lecture, three hours. Production of radiation by high energy particles. Evolution of galactic nuclei, radio galaxies, quasars, and pulsars. Cosmic rays and the cosmic background radiation. Prerequisite: Physics 5E or consent of instructor.

146 Galaxies and Cosmology (4). 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. Not offered 1981-82.

150 Electronics for Scientists (4) F. 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.

151, 152, 153 Advanced Laboratory I, II, III (4-4-4) 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. Prerequisites: Physics 112A, 113A, and 150. Physics 150 may be waived by consent of instructor.

195 Undergraduate Research (4). Open to seniors and occasionally to juniors with consent of the Department.

199 Readings on Special Topics (4). With consent of the Department.

Graduate Courses

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) F, W, S. 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.

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.

214A-B Statistical Physics (4-4) F, W. Lecture, three hours. Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics; ensemble theory, ideal and imperfect gases; thermodynamic properties of solids; cooperative phenomena; phase transitions of first and second order; fluctuations.

214C Many Body Theory (4) S. Lecture, three hours. The Green's function approach to the theory of many body systems at finite temperatures will be discussed. The techniques of diagrammatic perturbation theory will be introduced and applied to a few specific problems to illustrate the methods.

215A-B-C Quantum Mechanics (4-4-4) F, W, S. Lecture, three hours. Foundations of quantum theory; Dirac notation, basic operators and their eigenstates; perturbation theory; variational method; spin; Clebsch-Gordon coefficients; structure of atomic systems; scattering theory; formal collision theory; semi-classical radiation theory; quantization of the electromagnetic field; relativistic quantum mechanics; second quantization of many body systems.

216 Particles (4) W. Lecture, three hours. An advanced survey of high energy phenomenology. Elementary particle quantum numbers, isotopic and unitary spin multiplets, symmetries (e.g., parity, charge conjugation, and time reversal), basic forces, and current theoretical ideas. May be repeated for credit.

217 Introduction to Nuclear Physics (4) S. Lecture, three hours. Properties of nuclei, the two-body problem, low energy nucleon-nucleon scattering, structure of light nuclei, nuclear reactions and resonances, models of complex nuclei, theories of the fission process, nuclear shapes and deformations, and decay processes.

218 Introduction to Condensed Matter Physics (4) S. Lecture, three hours. Possible topics include crystal properties, lattice dynamics of solids, electronic band structure of solids, theories of metals and semiconductors, magnetism and superconductivity, with special emphasis on elementary excitation in solids.

219 Introduction to Astrophysics (4) S. Lecture, three hours. Stellar structure and evolution; formation of the elements; supernova; pulsars; quasars; origin of cosmic rays.

220 Introduction to Plasma Physics (4) F. Lecture, three hours. Orbit theory, hydromagnetics, plasma waves and instabilities, plasma diagnostics, applications to astrophysics and controlled fusion.

221 Elasticity (4). Lecture, three hours. Analysis of strain and stress; elasticity of crystals; equilibrium of isotopic elastic solids and of half-spaces; bending of rods and plates; two-dimensional elastic systems; propagation of waves in elastic solid media; surface waves; piezo-electric solids; dislocations; thermoelasticity. Not offered 1981-82.

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. Not offered 1981-82.

232A-B Applications of Group Theory (4-4) W, S. Lecture, three hours. The role of symmetry in physical problems. First quarter, finite groups; second quarter, 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.

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 Solid State Theory (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 super conductors; many-body perturbation theory.

239A-B-C Plasma Physics (4-4-4). 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. Not offered 1981-82.

248 Special Topics in Condensed Matter Physics (4) S. Lecture, three hours.

249A-B-C Special Topics in Plasma Physics (4-4-4) F, W, S. Lecture, three hours. For advanced students of Plasma Physics. Three quarters are offered, one quarter each in turbulence and diagnosis of laboratory plasmas, pulse power beams, and beam-plasma interactions. Prerequisites: Physics 239A-B-C or the equivalent.

255 General Relativity (4). Lecture, three hours.

Seminars and Research (260-299)

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. 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 239 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.

264A-B-C Seminar in Conceptual Physics (1-1-1) F, W, 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.

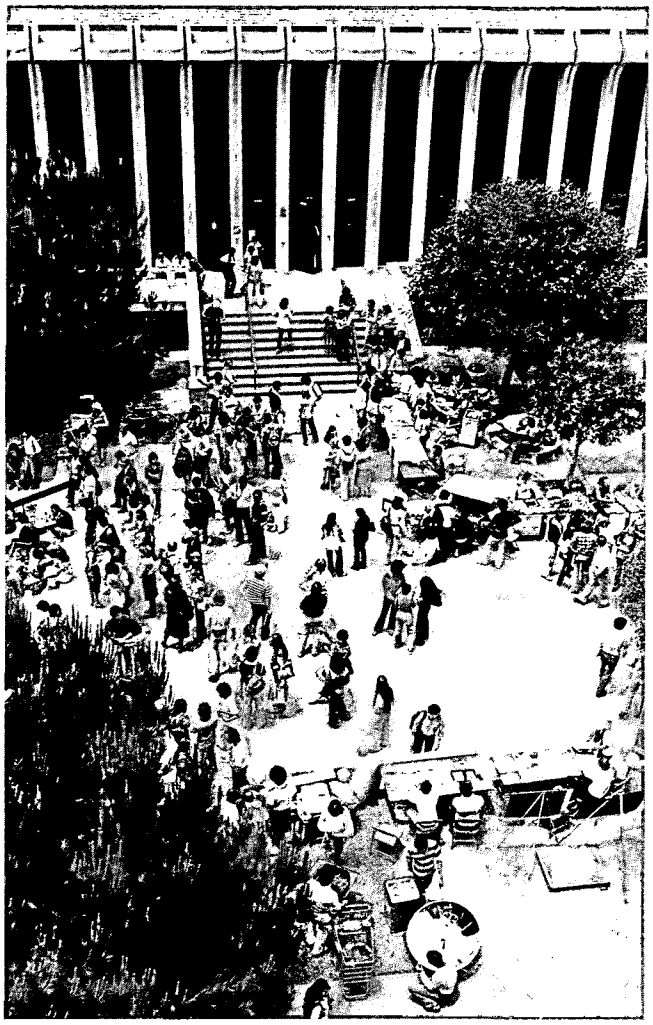
267A-B-C Current Problems in High Energy Physics (4-4-4) F, W, S. Lecture, three hours. Presentation and discussion of current research and theory in high energy physics. Lectures given by staff and students. Course can be repeatedly taken for credit.

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 low temperature physics, plasma physics, spectroscopy, solid state physics, and elementary particle 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 solid state physics, low temperature physics, plasma physics, and elementary particle physics.

299 Reading of Special Topic (4). 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 (4-4-4) F, W, S. Required of and limited to Teaching Assistants.



SCHOOL OF SOCIAL SCIENCES

Linton Freeman **Dean**

Stanley Aronowitz, Ph.D. Union Graduate School, *Professor of Comparative Culture and Social Science*

William Batchelder, Ph.D. Stanford University, *Professor of Psychology*

Duran Bell, Ph.D. University of California, Berkeley, *Associate Professor of Economics*

Isabel Birnbaum, Ph.D. University of California, Berkeley, *Professor of Psychology*

John P. Boyd, Ph.D. University of Michigan, *Associate Professor of Mathematical Anthropology*

Myron L. Braunstein, Ph.D. University of Michigan, *Professor of Psychology*

Dickson D. Bruce, Jr., Ph.D. University of Pennsylvania, *Associate Professor of Comparative Culture and Social Science and Associate Dean for Undergraduate Studies, School of Social Sciences*

Michael L. Burton, Ph.D. Stanford University, *Associate Professor of Anthropology and Associate Dean for Graduate Studies and Research, School of Social Sciences*

Michael Butler, A.B. Harvard University, *Associate Professor of Social Science and Director of the Farm School*

Francesca M. Cancian, Ph.D. Harvard University, *Associate Professor of Sociology*

Frank Cancian, Ph.D. Harvard University, *Professor of Anthropology*

Douglas K. Chalmers, Ph.D. University of Iowa, *Associate Professor of Psychology*

Norma Chinchilla, Ph.D. University of Wisconsin, *Assistant Professor of Comparative Culture and Social Science*

Peter Clecak, Ph.D. Stanford University, *Professor of Comparative Culture and Social Science*

Jay Cohn, Ph.D. University of California, Irvine, *Clinical Professor of Psychiatry & Human Behavior and Lecturer in Social Science*

Benjamin N. Colby, Ph.D. Harvard University, *Professor of Anthropology*

Tom N. Cornsweet, Ph.D. Brown University, *Professor of Psychology*

Peter W. Culicover, Ph.D. Massachusetts Institute of Technology, *Professor of Linguistics and Social Sciences*

James N. Danziger, Ph.D. Stanford University, *Associate Professor of Political Science*

Richard L. Degerman, Ph.D. The Johns Hopkins University, *Associate Professor of Psychology*

Harry Eckstein, Ph.D. Harvard University, *Professor of Political Science and UCI Distinguished Professor*

Raul Fernandez, Ph.D. Claremont Graduate School, *Associate Professor of Comparative Culture and Social Science*

Gordon J. Fielding, Ph.D. University of California, Los Angeles, *Professor of Social Science and Administration and Director, Institute of Transportation Studies—Irvine*

James J. Flink, Ph.D. University of Pennsylvania, *Professor of Comparative Culture and Social Science*
Linton Freeman, Ph.D. Northwestern University, *Dean of the School of Social Sciences and Professor of Social Science*
Creel Froman, Ph.D. Northwestern University, *Professor of Social Science.*
Amihai Glazer, Ph.D. Yale University, *Assistant Professor of Economics*
Gilbert Gonzalez, Ph.D. University of California, Los Angeles, *Associate Professor of Comparative Culture and Social Science*
Louis Gottschalk, M.D. Washington University School of Medicine, *Professor of Psychiatry & Human Behavior, Social Ecology, and Social Science*
Bernard N. Grofman, Ph.D. University of Chicago, *Professor of Political Science and Social Psychology*
Henry Hamburger, Ph.D. University of Michigan, *Associate Professor of Social Science*
Tarow Indow, Ph.D. Keio University, *Professor of Psychology*
John Johnston, Ph.D. University of Wales, *Professor of Economics*
Joseph G. Jorgensen, Ph.D. Indiana University, *Professor of Comparative Culture and Social Science*
Sheen T. Kassouf, Ph.D. Columbia University, *Professor of Economics*
Mary-Louise Kean, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Linguistics and Social Science*
George Kent, Ph.D. University of California, Berkeley, *Associate Professor of Social Science*
Jerome Kirk, Ph.D. The Johns Hopkins University, *Associate Professor of Anthropology and Sociology*
Leah Larkey, Ph.D. University of Minnesota, *Assistant Professor of Psychology*
Charles Lave, Ph.D. Stanford University, *Professor of Economics*
Jean C. Lave, Ph.D. Harvard University, *Associate Professor of Anthropology*
Karen Leonard, Ph.D. University of Wisconsin, *Associate Professor of Social Science and History*
Gary Lynch, Ph.D. University of Chicago, *Professor of Psychobiology and Social Science*
Craig MacAndrew, Ph.D. University of Chicago, *Associate Professor of Psychology*
Julius Margolis, Ph.D. Harvard University, *Professor of Economics*
James L. McGaugh, Ph.D. University of California, Berkeley, *Executive Vice Chancellor and Professor of Psychobiology, Psychiatry & Human Behavior, and Social Sciences*
Frederick L. McGuire, Ph.D. New York University, *Professor of Medical Psychology, Psychiatry & Human Behavior, and Social Sciences in Residence*
Duane Metzger, Ph.D. University of Chicago, *Professor of Anthropology and Social Science*
Carlton Moss, *Lecturer in Comparative Culture and Social Science*
Louis Narens, Ph.D. University of California, Los Angeles, *Professor of Social Science and Psychiatry & Human Behavior*
Robert Newcomb, Ph.D. University of California, Santa Barbara, *Lecturer in Social Science and Teacher Education*
M. Ross Quillian, Ph.D. Carnegie-Mellon University, *Associate Professor of Social Science*
George O. Roberts, Ph.D. Catholic University of America, *Professor of Comparative Culture and Social Science*
A. Kimball Romney, Ph.D. Harvard University, *Professor of Social Science and Anthropology*
William R. Schonfeld, Ph.D. Princeton University, *Associate Professor of Political Science*
Caesar D. Sereseres, Ph.D. University of California, Riverside, *Associate Professor of Political Science*
Arnold Starr, M.D. New York University School of Medicine, *Department Chair and Professor of Neurology, Professor of Social Science, Physiology, and Psychobiology*
Rein Taagepera, Ph.D. University of Delaware, *Professor of Social Science and Political Science*
Dickran Tashjian, Ph.D. Brown University, *Professor of Comparative Culture and Social Science*
Gary Thom, Ph.D. Yale University, *Assistant Professor of Political Science*
Roger N. Walsh, M.B.B.S., Ph.D., University of Queensland, *Associate Professor of Psychiatry & Human Behavior and Social Science*
W.C. Watt, Ph.D. University of Pennsylvania, *Professor of Anthropology and Cognitive Sciences*
Susan C. Weller, Ph.D. University of California, Irvine, *Assistant Professor in Residence, Pediatrics and Social Science*
Christian Werner, Ph.D. The Free University of Berlin, *Professor of Geography*
Kenneth Wexler, Ph.D. Stanford University, *Professor of Psychology*
Douglas R. White, Ph.D. University of Minnesota, *Professor of Comparative Culture and Social Science*
Joseph L. White, Ph.D. Michigan State University, *Professor of Comparative Culture and Psychology*
John I. Yellott, Jr., Ph.D. Stanford University, *Professor of Psychology*

Undergraduate and graduate education in the School of Social Sciences at UCI represents a commitment to modern social science. The classic subject matter 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 three-way emphasis:

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, comparative culture, and psycholinguistics. Therefore, many courses and course modules are built around social science phenomena, rather than representing social science disciplines.

Third, the School shares the academic philosophy that considers the design of hypotheses and of systems of interrelated ideas about the possible structure of the world to be 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.

Opportunities for students in the School of Social Sciences to participate in the educational process extend well beyond attendance at courses. Students may develop independent study proposals in cooperation with interested faculty members; 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 occupies the entire fourth floor of the Social Sciences Laboratory Building. The facility contains 40 experiment and control rooms situated around a central core where two PDP 11-44 computers are available for experimental research. The laboratory is used for faculty and student research.

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. Each quarter undergraduates receive course credit for assisting staff teachers, for developing educational materials, and for observing and analyzing child behavior at the school.

The Anthropology Laboratory provides research facilities which include computer terminals for statistical studies and for the analysis of texts and other verbal material. The laboratory is also available for undergraduate and graduate instruction in field methodology and analytical techniques through the use of video-cassettes, films, tapes, computer quizzes, and artificial intelligence programs that simulate interviewing situations.

The School also maintains a Video Laboratory where social science students and faculty can produce and edit video-tapes for various purposes. The facility currently contains a tape library used extensively in the study of conversation and interaction.

Degrees

Anthropology	B.A.
Comparative Culture	B.A., M.A., M.A.T., Ph.D.
Economics	B.A.
Geography	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.

Graduate study in the School of Social Sciences is offered in the following areas of emphasis:

Anthropology (Ph.D. in Social Science)
Cognitive Sciences (Ph.D. in Psychology or Social Science)
Comparative Culture (Ph.D. in Comparative Culture)
Politics, Society, and Social Issues (Ph.D. in Political Science or Social Science)
Social Relations (Ph.D. in Social Science or Psychology)

Honors

Honors at graduation, e.g., *cum laude, magna cum laude,* or *summa cum laude,* are awarded on the basis of grade point average. Of the graduating seniors, approximately 1 percent will be awarded *summa cum laude,* 3 percent *magna cum laude,* and 8 percent *cum laude.* In order to be considered for honors, a student must have a *minimum* of 72 units in residence at UCI immediately prior to graduation and must submit an application for the B.A. degree by the end of winter quarter of the senior year.

Undergraduate Program

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements

A. Familiarity with some basic mathematical, computational, and statistical tools underlying modern social science. This requirement is met by passing three courses in mathematics (Mathematics 5A-B-C, Mathematics 2A-B-C, Social Sciences 11A-B-C, or Social Sciences 100A-B-C) and one course in computer science (Information and Computer Science 1).

B. An understanding of the fundamental concepts, analytical tools, and methods of social science. This requirement is met by taking two courses in the School of Social Sciences bearing a one-digit course number.

C. 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 a module. (See "Courses in Social Sciences" below for a discussion of course modules.) 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 below. Information and Computer Science 1 and Social Sciences 100A, however, 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.

Major Requirements: Requirements for each of the majors in the School of Social Sciences are listed below. Courses taken to fulfill major requirements may be applied toward School requirements B through D above.

Anthropology

School requirements must be met and must include six courses (24 units) as specified below:

A. One introductory course in anthropology (four units), chosen from Social Sciences 2A, 2B, 2C.

B. Five upper-division anthropology courses (20 units); three of these courses must form a module.

In meeting the requirements, majors are encouraged to take at least one course from each of the following three areas: Cultures, Subcultures, and Societies: Social Sciences 31D, 131M, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H, 172J, 173A-B, Art History 100; Methods and Models: Social Sciences 31A-B-C, 31D, 70A, 133A-B, 162C, 171A; Theory, Sub-

fields, and Topics: Social Sciences 30A, 61B, 131A, 131D, 131E, 131J, 131R, 132A, 132B, 132D, 136A, 136B, 161A, 161D, 170A, 171B, 171C, 171D, 171E, 171F.

Courses in social science disciplines outside Anthropology may include relevant courses in social ecology and art history with permission of the faculty advisor.

Comparative Culture

School requirements must be met and must include 14 courses (56 units) as specified below:

A. Two introductory social science courses (eight units), chosen from Social Sciences 1-8.

B. Social Sciences 70A and 71A.

C. Four courses (16 units) selected from one or a combination of the following modules: Social Sciences 170; 171.

D. Three courses (12 units) selected from one or a combination of the following modules: Social Sciences 172; 173.

E. Three courses (12 units) designated as Social Sciences 179 (Special Topics).

Economics

Alternative 1

School requirements must be met and must include 10 courses (40 units) as specified below:

A. Social Sciences 12A-B-C; this course is prerequisite for almost all junior-senior economics courses. It is recommended, but not required, that Social Sciences 4 be taken prior to this series.

B. Social Sciences 111A-B and 111C.

C. 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 (Social Sciences 101A-B-C) or the econometrics sequence (Social Sciences 101D-E).

Alternative 2

A student who has not completed the economics requirements specified above may obtain a B.A. degree in Economics by meeting the School requirements and following a program of study in the area, planned in consultation with a faculty advisor. The program is certified through a petition signed by the Dean and two regular members of the economics faculty. Students who wish to pursue this alternative are strongly advised to consult a faculty advisor well in advance of submitting a petition.

Geography

A B.A. degree in Geography may be obtained by meeting the School requirements and following a program of study in the area, planned in consultation with a faculty advisor. The program is certified through a petition signed by the Dean and two regular members of the Geography faculty. Students who wish to pursue this major are strongly advised to consult a faculty advisor well in advance of submitting a petition.

Linguistics

Theoretical and Formal Linguistics

School requirements must be met and must include 14 courses (56 units) as specified below:

A. One introductory course in linguistics, either Linguistics 50 or Social Sciences 3.

B. Social Sciences 50A.

C. Six upper-division courses with emphasis in linguistics: Social Sciences 141A, 141B, 141D, 142A, Linguistics 110, 112.

D. Six upper-division elective courses in linguistics chosen from: Social Sciences 141C, 141E, 142B, 142C, 142D, 151T, 156A, 156B, Linguistics 140, Information and Computer Science 162.

General Linguistics

May be taken as a Social Sciences or as a Humanities major. If taken as a Social Sciences major, School requirements must be met and must include 14 courses (56 units) as specified below:

A. One introductory course in linguistics, either Linguistics 50 or Social Sciences 3.

B. Two upper-division courses in each of the following modules:
- A—Linguistics 110-119
- B—Social Sciences 141 series (same as Linguistics 120-129)
- C—Linguistics 130-139
- D—Social Sciences 142 series (same as Linguistics 140-149)
- E—Linguistics 150-159

C. One year (three courses) in a single foreign language. Students are strongly urged to study a non-Indo-European language (such as Hebrew, Arabic, Chinese, Japanese, Swahili) whenever available.

In addition, students may elect a third linguistics track in Applied Linguistics. For information on the requirements for this track as well as those for General Linguistics when taken through the School of Humanities, see page 127.

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, Social Sciences 6A-B-C.

B. Two lower-division courses in political science (eight units).

C. Six upper-division courses in political science (24 units). Three of these courses must form a module.

Honors Program in Political Science: The honors program in Political Science, open to selected students, provides for advanced work in either of two areas: Theory and Research, or Internship and Research. Admission to the program is based on a formal application normally submitted during the fall quarter of the student's junior year. In order for an application to be considered, two conditions must be met. The student must have

an overall grade point average of at least 3.2, and the student must have completed at least five political science courses (with a grade point average of 3.5 or higher) by the end of fall quarter of the junior year. Successful completion of the honors program requires attendance at the Honors Seminar, completion of an honors thesis, and the passing of an oral examination administered by three faculty members of the political science faculty.

Psychology

School requirements must be met and must include 15 courses (60 units) as specified below:

A. Social Sciences 7.

B. Two four-unit lower-division psychology courses selected from courses listed in the following three groups. The student is strongly encouraged to take courses from two different groups.

Group A: Social Sciences 50K; 52A; 55D; 61A; 61B.

Group B: Social Sciences 3; 50A.

Group C: Social Sciences 50Q; 50T; 51A.

C. Social Sciences 2A or 2B, and 8, or approved substitutes (eight units).

D. Ten four-unit upper-division courses with emphasis in psychology, distributed as follows:

(1) Three courses (four or more units each) taken from *one* of the following modules: Social Sciences 141; 142; 151; 152; 153; 154; 155; 162.

(2) Three four-unit courses from any module or combination of modules other than the module selected to satisfy (1) above.

(3) Four additional four-unit upper-division psychology courses. These may be selected from any of the modules listed above, including the module used to satisfy (1), as well as from special topics courses which are psychology-related. Students are also encouraged to take psychology courses outside the School of Social Sciences if such courses are appropriate to their educational goals.

Social Science

Requirements for the B.A. degree in Social Science are met by completing the School requirements on page 167.

Sociology

School requirements must be met and must include 11 courses (44 units) as specified below:

A. Social Sciences 8.

B. Social Sciences 61E.

C. Two lower-division courses (eight units) that emphasize sociology. It is strongly recommended that students take one course on sociological methods (such as Social Sciences 61C or 1A) and one course on a special area of sociology (such as Social Sciences 61B).

D. Three upper-division courses (12 units) that emphasize sociology.

E. Four courses (16 units) in social science disciplines outside sociology, or in history or social ecology. Three of these courses must be in the same field, e.g., three courses in economics or three in history. These courses may be upper- or lower-division. They may not be counted as part of the breadth requirement.

Double Majors

In order to double major within the School of Social Sciences, the following conditions must be met:

(1) Normally, neither major program may be the general social science program.

(2) Major and School requirements must be met for *both* majors with no overlap of courses except for those used to satisfy the mathematics, computer science, and introductory social science requirements. The mathematics and computer science 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 would like to major in psychology and anthropology may take one of the mathematics sequences, Information and Computer Science 1, 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.

Honors Concentration in Social Thought

The School of Humanities and the School of Social Sciences offer an honors concentration in Social Thought. The concentration offers undergraduates the opportunity to examine major social theories and their implications in a systematic and thorough way. For a complete description of the concentration, see page 131.

Concentration in Women's Studies

The Women's Studies concentration is not a major but is intended to allow a student to complement any major in the School of Humanities, the School of Social Sciences, or the Program in Social Ecology by the systematic study of women in culture and society. For further information on the concentration, see page 132.

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 their assigned faculty advisors or visit the Undergraduate Advising Office (627 Social Science Tower) to design an appropriate program of study.

Students who elect one of the Social Sciences 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.

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: Junior transfers electing to major in one of the School's degree programs and with good records at other accredited colleges and universities normally will be presumed to have satisfied School requirement B and the University requirements, with the exception of the upper-division Writing Requirement of the breadth requirement (Category I). Students anticipating transfer to UCI in their junior year, however, should plan their programs so as to anticipate the special mathematics requirements of the program (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.

The 3-2 Program with the Graduate School of Management

Students who are interested in a career in administration and who have completed all of the course requirements for the B.A. degree in one of the major programs in the School of Social Sciences may apply to the Graduate School of Management for their 3-2 Program. Application should be made early in the junior year. During the senior year, students will take courses in management which will count toward the 180 total units needed to receive a bachelor's degree. Upon successful completion of the required courses and units, usually at the conclusion of four years of undergraduate study, a B.A. degree will be awarded in the student's major by the School of Social Sciences. A Master's degree in Administration will be awarded after successful completion of all requirements for the advanced degree, usually at the end of the fifth year.

Teaching Credentials

Students planning to seek State of California teaching credentials in social science should discuss their undergraduate curriculum plans with the School's academic counselors. Students completing any of the B.A. programs in the School qualify for a waiver of the Single Subject Credential Examination in social science. For additional information about teaching credentials, see the Teacher Education section.

Mathematics and Social Science

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 these fields, to the analysis of data, and to an intelligent use of models in social sciences. 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.

Graduate Programs

Graduate education within the School of Social Sciences is focused upon Cognitive Sciences; Comparative Culture; Politics, Society, and Social Issues; and Social Relations (including anthropology). Four interdisciplinary groups of faculty are responsible for graduate study in these areas of emphasis. A fifth faculty group with shared interests in economic theory, public economics, and the evaluation of public policy is developing an emphasis in Economics and Public Policy. A sixth faculty group is developing an emphasis in Networks.

Most entering Ph.D. students will be admitted to one of the groups and assigned a faculty advisor by that group. Independent doctoral study may be offered to a limited number of students interested in an interdisciplinary area of social science not encompassed by one of the groups. The work of these students will be guided by a faculty committee of at least three members that is appointed by the Associate Dean for Graduate Studies.

Doctoral study in Comparative Culture leads to the Ph.D. in Comparative Culture. Doctoral study in one of the other groups or under the interdisciplinary committee system leads to the Ph.D. in Political Science, Psychology, or Social Science, depending upon the focus of the student's dissertation. All candidates for the Ph.D. must satisfy the general requirements of the School of Social Sciences and of the Division of Graduate Studies and Research. The graduate program of the School does not include educational, counseling, or clinical psychology.

The School does not offer a program leading to a Master of Arts degree, although the M.A. degree in Comparative Culture or Social Science may be conferred upon doctoral students who

satisfy the requirements of the Division of Graduate Studies and Research. Applications for admission to the M.A.T. program in Comparative Culture are not being accepted at this time.

Admissions

Potential graduate students should apply to the Division of Graduate Studies and Research for admission to the graduate program of the School of Social Sciences, indicating the title of the degree which they intend to pursue (Ph.D. in Comparative Culture, Political Science, Psychology, or Social Science), and the academic area in which they expect to concentrate. In addition to the Division admission requirements, each group may prescribe special requirements or expectations of applicants. All applicants are required to submit scores for the Graduate Record Examination Aptitude Test. Letters of recommendation are an important factor in the admission decision. The Program in Comparative Culture admits new graduate students only for the fall quarter of even-numbered years.

Financial Aid

Limited financial support in the form of teaching assistantships and fellowships is available to qualified students. There may be research assistantships available under grants to individual faculty. Students are expected to seek aid for which they are eligible from sources external to the University.

General Requirements for the Ph.D. Degree in Political Science, Psychology, or Social Science

The general requirements for the Ph.D. in Political Science, Psychology, or Social Science (in addition to those which apply to all UCI graduate students) are summarized below. Each recognized group within the School of Social Sciences may describe additional requirements, subject to the approval of the Graduate Council.

Length of Study

The faculty envisions a student's Ph.D. program to be of approximately four to five years duration.

Residence

Because the intellectual training the School proposes requires full-time study and constant contact with the faculty, the School does not accept part-time students.

Language

A knowledge of one foreign language, appropriate to the student's research concerns, is required. Each student's group or candidacy committee will prescribe specific requirements. For those proposing to engage in field research, this may involve interviewing capabilities.

Quantitative Methods

Candidates for the Ph.D. degrees in Social Science, Political Science, or Psychology must satisfy a quantitative methods requirement. This may be met by (1) satisfaction of the quantitative methods requirement of the student's group, or (2) completion of two years of college-level mathematics, statistics, logic, or applications of statistics to social science research problems, in courses approved by the student's group or committee. In the latter option, courses may include one computer science course; ordinarily at least one year of these quantitative methods courses will be taken during the student's graduate career.

Examinations

The scope and format of the qualifying examinations will be determined by the student's candidacy committee. These examinations may be written or oral, or both, and usually will be conducted after approximately two years of residence. Also, a student may be required to take additional examinations, submit research papers, or conduct experiments which the committee deems appropriate to the student's interests and goals. Upon satisfactory completion of the qualifying examinations, and approval of the dissertation topic, the candidacy committee will recommend that the student be advanced to candidacy for the Ph.D. degree.

Dissertation

Following advancement to candidacy, the dissertation is supervised by a doctoral committee ordinarily consisting of three members of the candidacy committee. The purpose of the dissertation is to demonstrate the student's ability to originate interesting and significant research problems, to investigate such problems both broadly and deeply, and to write scholarly material of publishable quality.

Cognitive Sciences

William Batchelder: Mathematical Models, Measurement, and Cognitive Processes
Isabel Birnbaum: Learning and Memory
Myron Braunstein: Visual Perception and Computer Applications
Tom N. Cornsweet: Visual Psychophysics and Psychophysiology
Peter W. Culicover: Linguistics
Richard Degerman: Multivariate Analysis and Perception
Henry Hamburger: Mathematical Linguistics
Tarow Indow: Mathematical Psychology and Perception
Mary-Louise Kean: Linguistics and the Biology of Language
Leah Larkey: Speech Perception, Psycholinguistics, Perception and Cognition
Louis Narens: Measurement and Logic
W.C. Watt: Cognitive Semiotics
Kenneth Wexler: Theoretical Psycholinguistics
John I. Yellott, Jr.: Mathematical Models and Visual Perception

The Cognitive Sciences group is made up of certain faculty of the School of Social Sciences and graduate students who are pursuing the Ph.D. in either Psychology or Social Science, all of whom share common research interests in human cognition.

The Cognitive Sciences group is concerned with how the human mind works. It conducts research and provides advanced graduate training in cognitive psychology and theoretical linguistics. The group lays special stress on precise, scientific approaches to issues in human cognition. It views the formation of formal models as instrumental in understanding what the human mind is all about.

The group takes as its intellectual domain the following: mathematical psychology, perception (visual and auditory), cognitive development, problem solving, learning, memory, psycholinguistics, iconics, and theoretical linguistics. It does not

emphasize traditional training in psychology or linguistics per se; rather, it stresses the integration of research in the areas mentioned above (and related areas) into a discipline whose central focus is the study of human knowledge and human information processing, regardless of the medium in which it is expressed.

Admissions

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. Advanced courses in some of the following fields are considered highly desirable: computer science, mathematics and the physical sciences, biology, logic, and linguistics. Each admission application will be considered on its own merits.

Requirements

Each student is expected to take two three-course graduate sequences. The first is a three-quarter methods sequence covering the areas of probability and statistics, experimental design, and mathematical models of language. The other is a pro-seminar sequence covering areas such as learning, memory, perception, and linguistics. Suitable substitutes may be made with written approval of the group. Additional advanced course work in other fields relevant to the student's interests will supplement the required courses.

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 complete a research project of a scope and nature that potentially could be published in a relevant journal. The student's advisor is responsible for assisting in the planning and other facets of the project. Students are expected to write a paper based on their research and to present a talk to the "Cognitive Sciences Seminar" or another appropriate forum by the end of the spring quarter of their second full year in the graduate program.

Reviews

At the end of each academic year, the faculty in the group will meet to discuss the progress of each of its students and to provide feedback on the progress and perceived deficiencies for each student.

The advancement-to-candidacy examination will consist of an oral examination and possibly a written examination as well. Normally this step will be completed by the end of the third or beginning of the fourth year of the program. The examination will be based on the student's dissertation proposal. If the student should fail the examination the first time, there will be, at most, one additional opportunity to take the examination. A student who fails the examination twice will be asked to withdraw.

Prior to submission of the final version of the dissertation the student will be expected to defend the dissertation in a public colloquium.

Comparative Culture

Stanley Aronowitz: Political Economy and Sociology of Work and Labor Movements; Sociology of Literature, Popular Culture; Social and Cultural Theory; Class and Stratification

Dickson D. Bruce, Jr.: American Social and Cultural History

Norma Chinchilla: Political Economy, Women and Work, Agrarian Structures in Latin America

Peter Clecak: Social Theory; Classical and Contemporary Marxism; Comparative Socialist Systems; Postwar U.S. Society and Culture; American Higher Education

Raul Fernandez: Economics, Marxist Studies, Latin American and Chicano Culture

James J. Flink: American Social and Cultural History, Historiography, Comparative American Cultures, Automobile History

Gilbert Gonzalez: U.S. History (Progressive Movement in Education; Education History of U.S.); Latin American History, Chicano and Latin American Cultures; Chicanos and the Educational System

Joseph G. Jorgensen: Mathematical Comparative Ethnology; Native American Language and Culture; Explanations, Theory, and Method in Social Inquiry

Carlton Moss: The Media and Its Impact on Society

George O. Roberts: Terramedia (Africa and the Middle East) as a Socio-Cultural Entity; Role of Foreign Aid in African Nation-Building; Multi-Cultural and Cross-Cultural Approaches to Effective Public Education

Dickran Tashjian: American Art and Literature, Material Culture

Douglas R. White: Anthropology, Social Networks and Relations, Cross-Cultural Comparison, Mathematical Models of Social Constraints, Decision-Making Networks and Social Processes

Joseph L. White: Black Psychology, Community Mental Health, Child Development, and Psychotherapy

The doctoral program in Comparative Culture emphasizes study centering on the cultures of the United States, including dominant and minority cultures and their antecedents. The program is designed to educate interdisciplinary intellectuals, teachers, and research scholars. The range of cultures found in America is studied on a comparative basis, with some students concentrating upon the expressive forms of culture (literature, religion, myth, and the arts) and others on culture from the perspective of social inquiry (history and the social sciences). However, all students will gain interdisciplinary training as comparative analysts in both broad areas. Finally, the program is intended to prepare graduate students for academic positions in interdisciplinary programs as well as in departments of humanities and social sciences.

Admission

Requirements and standards for admission into the program are in keeping with those of the University of California as a whole. Students with a B.A. degree will be considered for admission on the basis of past academic performance and present academic interests. In addition to the general application material, Graduate Record Examination Aptitude Test scores are required. Applicants who are admitted to the program begin their study in the fall quarter of the academic year. The deadline for applications is February 1. The program admits new graduate students only for the fall quarter of even-numbered years.

Residence

Although the University residence requirement for the Ph.D. is a minimum of six quarters, doctoral students in Comparative Culture must complete three years of course work (108 units). Normally, three courses (12 units) will be completed per quarter.

Required and Elective Courses

The program requires 21 courses (84 units for the doctorate). Courses are selected in consultation with the academic advisor, to prepare the student for the comprehensive first-year examination, the qualifying examination, and the development of a dissertation topic.

The Proseminar in Expressive Forms (Social Science 270A-B) and the Proseminar in Social Inquiry (Social Science 273A-B) are required of all first-year graduate students. In addition each student must enroll in five approved electives. Electives may be taken in Comparative Culture or other areas pertinent to the program.

During the second year, a course sequence in Nondominant American Classes and Cultures (Social Science 274A-B) is required of all doctoral students. For students emphasizing Social Inquiry, Cross-Cultural Comparisons, a methodological sequence (Social Science 275A-B-C) is also required while Expressive Forms students must complete a methodologies sequence (Social Science 276A-B-C) or approved alternative courses. Each second-year student must enroll in four approved electives totaling 16 additional units.

During the third year, all doctoral students must enroll in three approved electives (12 units).

All graduate students, including Teaching Assistants and Associates, are expected to enroll for a minimum of 12 units of academic credit (ordinarily, three courses) each quarter. Any student who wishes to take more than four courses (16 units) must petition the Graduate Committee and gain approval of the Dean of Graduate Studies and Research.

Incomplete grades will not be assigned for year-long courses except in extenuating circumstances.

Credit for Previous Academic Work

Students entering with an M.A. degree may request credit for a maximum of nine courses (36 units). These courses might be accepted in lieu of electives. A written petition requesting an acceptance of previous work in lieu of electives should be made to the Graduate Committee after consultation with the academic advisor. Approval of the Dean of Graduate Studies and Research is required.

Language Requirements

One foreign language and one "alternate skill" are required. The language will be decided upon by the student in consultation with the advisor. The language requirement must be satisfied either through a standard ETS examination or by another method approved by the Graduate Committee. The "alternate skill" may be another language, or a sequence of two courses in statistics, linguistics, or computer science, or some acceptable skill from the arts which is necessary for research. Both the language and the alternate skill must be satisfied before the qualifying examination can be taken.

Comprehensive First-Year Examination

Prior to the commencement of class work for the fall quarter, second-year doctoral students are administered a comprehensive examination which covers the materials from the two proseminars offered during the first year, including reading lists provided in those seminars. An ad hoc examination committee appointed by the Chair reads the examinations. It is possible for students who fail this examination to take it a second time. A second failure results in academic disqualification and no degree will be awarded. A student who passes the first or second examination may be awarded the M.A. degree.

On the basis of students' performance in courses and on the comprehensive examination, the program faculty will decide which students to invite to continue studies toward the Ph.D. degree.

Master of Arts Degree

Those doctoral students who pass the first-year comprehensive examination but do not continue beyond that point, or those who have passed the Ph.D. Qualifying Examination, may be awarded the Master of Arts degree by (a) completing 36 units (nine courses), 24 units (six courses) of which must be in Comparative Culture and 12 units (three courses) of which are approved electives in Comparative Culture or a related area; and (b) demonstrating proficiency in a second language or an alternate skill.

The Ph.D. Qualifying Examination

Doctoral students are administered two examinations, one written and one oral. The written examination is scheduled after the completion of course work and language requirements. The student's committee, formed by the Chair of the Graduate Committee in consultation with the student, is responsible for formulating the examination questions. The examination will be based on program courses and electives taken by the student during the second and third years. The entire program faculty can be called upon to submit questions for the examination, and the entire faculty will read the examinations. If the student passes the examination, the student will then be advanced to the oral examination. The oral examination follows successful completion of the written examination by two weeks or less and is conducted by a candidacy committee (normally the student's advisory committee) appointed in the name of the Graduate Council. This committee normally consists of five members of the UCI Academic Senate or persons with equivalent qualifications, and will include at least one member who does not hold a faculty appointment in Comparative Culture. The committee recommends advancement to candidacy for the Ph.D. if the candidate successfully completes the oral examination.

Students who fail the written examination may, upon petition, take it a second time. Two failures result in academic disqualification.

The Dissertation

The final requirement for the Ph.D. degree is completion of a dissertation which is approved by the doctoral committee appointed by the Graduate Council.

Master of Arts in Teaching in Comparative Culture

This graduate degree program is designed primarily for those who want to pursue a career in education at the elementary, secondary, or community college level. M.A.T. students may work concurrently toward a California Teaching Credential, or

may be experienced teachers who wish to upgrade their professional preparation. Based upon an interdisciplinary and comparative framework embracing the range of cultures found in the United States, the M.A.T. prepares its graduates to teach and facilitate the development of multicultural studies in several subject areas. Specifically, our M.A.T. program focuses on the study of Comparative Culture with a special concentration in literature, history, and social sciences relating to various ethnic groups of America. These emphases will be framed by the students' interests and needs with respect to their career goals in the field of education. Since the M.A.T. and Ph.D. programs in Comparative Culture have different goals, the students in the M.A.T. program are not automatically advanced to doctoral training. Students who wish to pursue the doctoral degree in Comparative Culture must apply to the Graduate Committee of Comparative Culture.

Admissions

At the present time applications for the M.A.T. program are not being accepted.

Residence

The minimum residence requirement for the M.A.T. is three quarters.

Required and Elective Courses

In addition to the courses which may be required for the credential, the M.A.T. program consists of at least nine courses (36 units), six of which must be at the graduate level. Outside of the required three-quarter sequence core course, Multicultural Foundations of Education, each student may establish an individualized program in consultation with the M.A.T. program advisor. The student will develop and carry out an appropriate project in the teaching of ethnic cultures and/or minority students, and submit a report of the project demonstrating an integration of theoretical knowledge and applied skills for the approval of the thesis committee.

Language Requirement

For those who are recommended to acquire proficiency in a second language or alternate skills pertinent to cultural education, additional courses may be required.

Politics, Society, and Social Issues

James Danziger: Urban Political Systems and Public Policy Analysis, Technology and Politics
Harry Eckstein: Macropolitics and Authority Relations
Creel Froman: Human Analysis
Bernard Grofman: Mathematical Models of Collective Decision Making, Formal Democratic Theory, Sequential Decision Making, and Politics of Small Groups
Julius Margolis: Economic Analysis of Government Behavior
N. Ross Quillian: Mass Communication, Participatory Forms of Social Organization, Sociological Theory, Sociology of Science, and Artificial Intelligence
William Schonfeld: Authority, Democratic Theory, and Comparative Politics
Caesar Sereseres: U.S. Foreign Policy, U.S.-Latin American Relations, Mexican-American Politics
Rein Taagepera: Mathematical Models and Quantitative Analysis of Elections; Inequality, Arms Races, and Growth-Decline Phenomena
Gary Thom: Political and Social Theory

The group in Politics, Society, and Social Issues is composed of faculty and students trained in various disciplines who share a common interest in authority, participation, and public policy formation. Members are committed to studies involving the application of social science theory to the solution of social issues. The Ph.D. is granted in either Political Science or Social Science.

The group places special emphasis on recruiting students who propose to pursue research in the following areas: (a) authority, power, and value allocations—relating to public policy, to organization, to participation, and to relationships within and between social and political units; (b) change and structure of cultures and of social and political units; and (c) empirical theory, mathematical models, and quantitative analysis of political phenomena.

Faculty are currently conducting research on authority relations, organizational theory, and bureaucratic behavior; economic models of political behavior; mass media and society; democracy and participation; public policy; political thought; quantitative political science; foreign policy and international relations; and comparative politics with an emphasis on Europe and Latin America.

Two University research institutes affiliated with the group through joint faculty appointments—the Institute of Transportation Studies and the Public Policy Research Organization—are located at the University of California, Irvine. Both sponsor theoretical and applied research on social issues. They also may provide research funding for graduate students who select public policy or transportation as a specialized field.

Admissions

Students are normally expected to have a grade point average above 3.0 and scores on the two parts of the Graduate Record Examination (GRE) Aptitude Test which total over 1,100. Decisions on admission are strongly influenced by letters of recommendation and the statement of student interest. International students will be evaluated primarily on the basis of letters of recommendation and completed seminar or research papers, but GRE scores are required in all cases.

Requirements

The following is in addition to the general School and campus requirements. Each year a core program, focusing upon methodology and substantive problems of current interest, will be outlined for entering graduate students. Those who have not already taken college mathematics are required to take at least three quarters of approved mathematics or statistics courses. At the completion of the first year, the performance of each student is reviewed and the faculty will indicate whether the student should continue. Attendance in a colloquium series also is required for all graduate students during their first two years in residence.

Reviews and Examinations

At the completion of the first year, a review of performance in the core program will be conducted for each student by the Network faculty. Students ordinarily are expected to maintain a grade point average of 3.5 or better.

Comprehensive written examinations are required before a student can be advanced to candidacy. The level of competence required in mathematics and language will be decided by the student's candidacy committee.

Students may take the comprehensive examination on two occasions. Students who have not been advanced to candidacy at the end of nine quarters of graduate study may be disqualified for unsatisfactory academic progress.

Social Relations

Michael L. Burton: Cognitive Anthropology, Economic Anthropology, Social Organization, Cross-Cultural Comparisons
Francesca M. Cancian: Sociology, Social Movements, Social Change, Theory, Family and Friends
Frank Cancian: Anthropology, Social Stratification, Economic Anthropology, Agriculture
Douglas K. Chalmers: Social Psychology
Norma Chinchilla: Political Economy, Women and Work, Agrarian Structures in Latin America
Benjamin N. Colby: Anthropology, Culture Theory, Artificial Intelligence, Narrative Comprehension, Social Pathology
George Kent: East Asian Thought, History of Thought, Philosophy and Semantics, Cultural Morphology
Charles A. Lave: Economics, Migration, Economic Development, Methodology
Jean C. Lave: Anthropology, Cross-Cultural Research on Cognition, Comparative Models of Social Organization
Karen Leonard: Social History of India, Comparative History of Women and the Family
Duane Metzger: Cognitive Anthropology, Belief Systems, and Semantic Analysis
Robert Newcomb: Statistics, Research Methods in the Social Sciences and Education, Use of Computers in Education
W.C. Watt: Iconics, Linguistics, Anthropology

The faculty in Social Relations shares with traditional anthropology an interest in whole systems and a willingness to consider long- as well as short-run sociocultural effects. It has a commitment to include the meaning and content of the actions, events, and phenomena it studies from the micro- to the macro-level. The faculty also is concerned about similarities and differences among people living at different times and in different places. Unlike traditional anthropology, however, we have not limited our interests to small communities nor to traditional forms of data collection or analysis. In addition, the program leading to the Ph.D. in Social Science with emphasis in anthropology is distinct from more traditional anthropology programs in that it includes no requirements in archaeology or physical anthropology.

Admissions

We welcome students from diverse educational and social backgrounds. Students who have research interests corresponding to those of specific faculty members are especially encouraged to apply to this apprenticeship-type program. They should familiarize themselves with the publications of the faculty before applying.

Requirements

Students are admitted by the entire Social Relations faculty. New students are assigned an advisor who serves until a three-person committee is formed, which occurs by the middle of the second year of residence. The committee oversees the student's academic work and ordinarily is chaired by the faculty member with whom the student plans to work most closely.

A core seminar which meets weekly throughout the year is required of first-year graduate students. Students are expected to attend the Social Relations Colloquium Series throughout their graduate careers. In addition, two quarters of statistics, mathematics, computer science, or other appropriate analytical methods are required. Normally these will be completed during the first two years of study.

Reviews

During the first year each student will prepare an original paper under the committee's direction. The paper will be presented by the student at a meeting of the Colloquium Series, normally during the spring quarter of the first year. The student's committee members will provide the student with a detailed written critique of the paper as part of the first-year evaluation of the student's overall progress.

The second review takes the form of an advancement-to-candidacy examination. This ordinarily is conducted by the student's committee and two additional faculty members from the campus. Students are expected to take this examination no later than the spring quarter of their third year.

Satisfactory completion of the dissertation is the final requirement in completing the Ph.D.

Foreign Language

A speaking or reading knowledge of one foreign language is required.

Economics and Public Policy, and Networks

Faculty with shared interests in (1) economic theory, public economics, and public policy, or with shared interests in (2) relations among social units with an emphasis on mathematical and computer techniques in data analysis and modeling, are developing interdisciplinary emphases in these two areas within the School of Social Sciences. At present, there is no formal graduate curriculum leading to the Ph.D. in the areas described below. Rather, individual programs under the interdisciplinary committee system may be approved for selected graduate students, leading to the Ph.D. in Social Sciences. Prior to application, prospective students whose interests include economics and public policy or networks are advised to consult with one of the faculty listed under the appropriate headings below.

Economics and Public Policy

Duran Bell: Formal Models, Labor Economics
Frank Cancian: Economic Anthropology
Gordon J. Fielding: Urban Theory and Transportation Policy
Amihai Glazer: Industrial Organization and Policy Analysis
Bernard Grofman: Public Choice, Law and Economics, and Models of Collective Decision Making
John Johnston: Econometrics
Sheen T. Kassouf: Econometrics and Economics of Uncertainty
Charles A. Lave: Transportation Policy, Economics of Energy, and Social Change

Julius Margolis: Economic Analysis of Government Behavior: Positive and Normative
Christian Werner: Mathematical Geography and Transportation Networks

Economists and faculty from the other social sciences who share interests in public economics, evaluation of public policy, and economic theory are developing an area of emphasis in Economics and Public Policy. This specialization was chosen for two reasons: first, governments and nonprofit institutions now occupy a primary role in our society so that an understanding of their behavior has become critical to understanding the economy in general; second, public economics has become one of the most intellectually exciting frontiers in economic analysis.

Special emphasis is on research in the following areas: public choice, political economy, public policy, and organizational behavior. Graduate courses taught by the faculty listed above focus on positive and normative analysis of the behavior of government in formulating and implementing public policy. Theory building is emphasized, as well as empirical studies in governmental behavior and substantive areas of public policy.

The School of Social Sciences has strengths in formal social analysis which are valuable adjuncts to economic theorizing about the public sector. Members of the group are affiliated with two major research institutes, the Institute of Transportation Studies and the Public Policy Research Organization. Public policy and economics are central issues of both institutes. These research institutes provide funding for graduate students who select public policy or transportation as a specialized field. The existing academic programs in medicine and social ecology also provide intellectual support.

Networks

William Batchelder: Mathematical Models, Measurement, and Cognitive Processes
Duran Bell: Formal Models, Labor Economics
John P. Boyd: Mathematical Anthropology
Michael Burton: Cognitive Anthropology, Economic Anthropology, Social Organization, Cross-Cultural Comparisons
Douglas Chalmers: Social Psychology
Linton Freeman: Social Networks and Social Structure
Tarow Indow: Mathematical Psychology and Perception
Jerome Kirk: Sociology, Social Anthropology, Social Psychology, Social Control and Politics
Craig MacAndrew: Psychology, Personality Theory
Duane Metzger: Cognitive Anthropology, Belief Systems, and Semantic Analysis
Louis Narens: Measurement and Logic
A. Kimball Romney: Social Sciences, Social Anthropology, Cognitive Anthropology
Rein Taagepera: Mathematical Models and Quantitative Analysis of Elections; Inequality, Arms Races, and Growth-Decline Phenomena
Douglas R. White: Networks and Social Structure, Cross-Cultural Comparisons, Mathematical Anthropology, Division of Labor

The faculty developing an area of emphasis in Networks focuses on relations among social units. These units may be individuals, organizations, or collectivities, but in every case, stress is placed on the patterns of relationships among them.

The faculty shares an emphasis in mathematical and computer techniques in data analysis and modeling. Although no single mathematical tool can be said to dominate the field, its practitioners frequently use the theories of graphs, automata, semigroups, and stochastic processes. Computers are used for multidimensional scaling and statistical analysis, as well as for simulations.

The School of Social Sciences has always emphasized formal analysis, and it is out of this tradition that the faculty listed above draws strength. Many are affiliated with other programs, which underscores the interdisciplinary nature of the group. Several also belong to the Social Networks Focused Research Program, which supplies support to the group.

At present, there is no formal set of courses leading to a doctoral in Networks. Rather, individual programs of directed study with an emphasis in Networks are available for selected graduate students, leading to the Ph.D. in Social Sciences. Students applying for admissions to the Social Science Ph.D. program with an emphasis in Networks should first consult with a member of the Group.

Courses in Social Sciences

Courses in the School do not always resemble conventional university courses either in content or in format. Students at any level are encouraged to suggest areas of individual study and may (with faculty approval) pursue any intellectually challenging area within the social sciences. Such courses may include special seminars, study projects, individual papers, or any other useful educational activity. The faculty encourages students to present evidence that they have done interesting and original work and to receive official credit for that work by enrolling in an individual study course. Such courses are numbered 198 and 199 (undergraduate) and 299 (graduate).

Students from other schools are encouraged to take courses and talk with faculty within the School. In addition to the introductory courses, many of the upper-division courses are open to students without previous work in social science. Since many of the courses touch on several areas of social science, a list of major areas of concentration is normally included in the description of a course. The classification terms used for this purpose are anthropology, comparative culture, economics, geography, political science, psychology, and sociology. Most upper-division courses are arranged in modules in order to provide continuity over individual courses, to facilitate long-range planning by students, and to encourage the pursuit of interdisciplinary programs of study. Students are encouraged to take advantage of the module concept to acquire experience in several integrated sets of courses. *It is not necessary, however, for students to take all courses listed in a module; module courses may be taken individually, as long as course prerequisites have been met.*

The specific courses offered in module form may vary from year to year, but the structure of the curriculum will remain stable. Ordinarily, a student can expect to find at least one module offered in each broad area each year. By observing the content area of courses and by making effective use of module sequences, a student can assemble an individual program of study in a particular discipline or in an interdisciplinary area.

Listed below are course descriptions of some of the proposed courses to be offered during 1981-82. A final, complete listing

of the courses offered will be available prior to the beginning of each quarter in 627 Social Science Tower. Students who are interested in obtaining this material may receive copies by visiting or writing to the School of Social Sciences.

NOTE: Students who entered UCI before fall quarter, 1980 should refer to the 1979-80 UCI General Catalogue and previous editions for information on the course numbering and lettering system prior to fall 1980.

Lower-Division Courses

1A Introduction to Analysis (4) F, Summer. Lecture, two hours; discussion, one hour. Basic introduction to the art of using analytical models: how to create, test, use, and love them. Primary emphasis on developing skill and creativity in using concepts to predict, understand, and influence human behavior. **(III)**

1B-C Honors Introduction to Social Science Analysis (4-4). Lecture, two hours; discussion, one hour. Introduction to mathematical models in Social Sciences. Sample topics: arms races; ecological models; linear programming; voting procedures; measurement theory; utility theory; Markov processes; models of cultural stability; paired-associate learning. Prerequisite: Mathematics 2A, or four years of high school mathematics, or equivalent.

2 Introduction to Anthropology. Basic introduction to anthropology.

2A Introduction to Biological Anthropology (4) F, Summer. Lecture, two hours; discussion, one hour. Evolutionary theory and adaptation, human evolution, human fossils, and race differences. **(III)**

2B Introductory Social Anthropology (4) S. Lecture, two hours; discussion, one hour. Study of present-day primitive and complex societies; current theory and methodology in social anthropology. **(III)**

2C Introductory Archaeology (4) W. Lecture, two hours; discussion, one hour. Archaeological theory and cultural processes with emphasis on the American Southwest, Meso-America, and Mesopotamia. **(III)**

2D Introduction to the Study of Symbols (4) F. Lecture, two hours; discussion, one hour. Insights into the nature of the symbol and of symbolic communication; steps toward determining the cognitive reality of symbols. An introduction to symbolic anthropology and semiotics. **(III)**

2E Area Studies: An Introduction to the Major Culture Areas of the World with Emphasis on Different Approaches to Areal Study (4) W. Lecture, two hours; discussion, one hour. Techniques of analysis of ecological, political, and cultural systems. **(III)**

3 Introduction to Cognitive Linguistics (4) F. Lecture, two hours; discussion, one hour. Emphasis on the notion that language is a remarkable achievement of the human mind. Current insights into the nature of language; how language is to be described, and why it makes a difference how one describes it; language and thinking; related topics. (Social Sciences 3 and Linguistics 50 may not both be taken for credit.)

4 Introduction to Economics (4) W, S. Lecture, two hours; discussion, one hour. 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. **(III)**

5 Introduction to Geography (4) F. Lecture, three hours. Basic introduction to geography.

6 Introduction to Political Science. Basic introduction to politics, society, and social issues.

6A Introduction to Political Science: Political Analysis (4) F. Lecture, two hours; discussion, one hour. Presents various modes of understanding politics. Emphasis on basic approaches to political analysis, their uses in constructing theories, and their application to particular national levels. **(III)**

6B Introduction to Political Science: Macropolitics (4) W. Lecture, two hours; discussion, one hour. Introduction to political analysis on the national level. Three major questions are addressed: Why do political systems perform well or poorly? Who wins or loses in political competition? Why do politics experience gradual adaptation or revolutionary change?

6C Introduction to Political Science: Micropolitics (4) S. Lecture, two hours; discussion, one hour. 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)**

7 Introduction to Psychology (4) F, W, S, Summer. Lecture, three hours; quiz, one hour; laboratory, one hour. Weekly topics include human development, memory and problem solving, learning theory, perception, biological mechanisms, emotion and motivation, personality theory, social psychology, and behavior disorders. Students are expected to volunteer for participation in several ongoing laboratory experiments. **(III)**

8 Introduction to Sociology (4) W, S, Summer. Lecture, three hours. Introduction to sociology and social psychology. **(III)**

11A-B-C Probability and Statistics in the Social Sciences (4-4-4) F, W, S. Lecture, three hours; laboratory, one hour. An introduction to probability and statistics. Emphasis on thorough understanding of probabilistic and statistical logic and methods, as used in the social sciences. Examples from anthropology, economics, geography, political science, psychology, and sociology. **(V)**

12A-B-C Basic Economic Theory I, II, III (4-4-4) F, W, S. Lecture, three hours. The fundamentals of economic theory: microeconomics and macroeconomics. Theory of the behavior of firms and the behavior of consumers: markets, supply/demand, utility maximization, resource allocation, and efficiency. Government behavior: monetary and fiscal policy, inflation and unemployment. This is the fundamental course required for all upper-division economics courses. Social Sciences 4 is recommended, but not required. **(III)**

13A Advertising and American Culture (4) Summer. Examines both the relationship of advertising to the culture it inhabits and the structure and functions of an advertising agency. Understanding what ads can tell us about cultural values and norms, discovering how an ad campaign is undertaken for a product, and analyzing how a product image is created and comes to represent the product itself in the minds of the public. Analysis of trends in advertising in order to make assumptions and predictions about changes in American culture. Certain ad campaigns such as those for Volkswagen, Avis, Marlboro, and Virginia Slims are studied in detail.

14A The Evolution of Landforms (4) F. Lecture, three hours. 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. (Emphasis: geography)

23A International Relations (4) F. Lecture, three hours. 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 also are examined. (Emphasis: political science) **(III)**

23B Introduction to Theorizing about Politics (4) F. Lecture, two hours; discussion, one hour. 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 work of Rousseau, Locke, Mill, and Marx are read. **(III)**

23C Introduction to Comparing Political Systems (4) W. Lecture, three hours; discussion, one hour. 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)**

23D Introduction to American Society and Politics (4) S. Lecture, two hours; discussion, one hour. Provides a public policy approach to the study of the American political process; explores the impact of such factors as centralization, bureaucratization, and technology. Each quarter deals with specific public policy issues such as minority politics, etc. **(III)**

23E Introduction to Measuring Politics (4) S. Lecture, three hours; discussion, one hour. Sample topics: measurement of inequality and concentration, arms race models, growth patterns of empires, indices of political power, relations between seats and votes.

24A Political Propaganda I (4). Lecture, three hours. Covers a range of propaganda techniques from logical fallacies and the art of lying with statistics to studies of political campaign techniques and political cartooning. The aim is to train students as reasonably sophisticated consumers of the political propaganda which is omnipresent in our environment. A large part of the course is devoted to analysis of the news and information features of the mass media. (Emphasis: political science) **(III)**

24B Introduction to Authority (4) W. Lecture, three hours. An analysis of the nature, ubiquity, and types of authority relations. Attention is directed at the conditions for and bases of compliance and rebellion. Authority behavior in families, schools, work groups, and politics, as well as in "deviant" subcultures such as the "Mafia," are examined. (Emphasis: sociology, political science) Same as Social Sciences 62B. **(III)**

25A Introduction to Party Politics (4). Lecture, three hours. The course examines existing typologies of party organizations and party systems. Specific party organizations from one-party, two-party, and multiparty systems are studied in depth. Examples are taken from Western Europe, Eastern Europe, and Third World countries. (Emphasis: political science)

25B Contemporary Models of Man (4). Lecture, three hours. How conceptions of human nature affect the maladies we perceive, the goals and ideals we advocate, and the views of society and politics we entertain. Prerequisite: Social Sciences 6A. (Emphasis: political science)

26A Small Group Behavior (4) F, S. Lecture, three hours. 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, etc. (Emphasis: economics, sociology, political science)

26B Fundamental Social Issues (4) F, W, S. Lecture, three hours. Four issues relevant to contemporary society are considered: 1) more versus less equal distribution of wealth; 2) participatory forms of power versus economic and bureaucratic forms; 3) free versus systematically influenced public opinion; and 4) the possibility versus impossibility of effecting major, beneficial changes in the structure of existing societies. Fundamental proposals and positions on each of these issues are discussed. (Emphasis: political science) **(III)**

30A Anthropology and the Family (4) F. Lecture, three hours. The family is examined by comparing the various forms of intimate social organization that are, or have been, found in the world. Emphasis placed on families in non-Western societies, although American and animal families also are studied. The "nature versus nurture" question is addressed in its modern form, sociobiology versus learning theory. It is argued that while some kinds of familial behavior can best be explained by sociobiology, and other kinds are best viewed as due to social learning, the majority is best explained by a combination of the two.

31A-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. (Emphasis: anthropology)

31D The Ixil Maya (4) F, S. Lecture, one hour; laboratory, two hours. A case study in ethnography. The life and culture of the Ixil Maya Indians of highland Guatemala are described and analyzed. Prerequisite: Social Sciences 2. (Emphasis: anthropology) **(III)**

50A Acquisition of Language (4) W. Lecture, two hours; discussion, one hour. 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 146. (Emphasis: psychology, sociology, anthropology) **(V)**

50K Introduction to Applied Behavioral Science (4) F, S, Summer. Lecture and discussion, three hours. An introduction to applied behavioral science with emphasis on behavioral patterns of and factors which influence the learner. Students learn and put into practice cognitive and behavioral self-help principles and skills. Theories of learning, personality, and behavior modification are applied to various learning situations. (Emphasis: psychology)

50Q Introduction to Visual Perception (4) W, S. Lecture, three hours. An introductory survey of the scientific study of vision. (Emphasis: psychology) **(III)**

50T Introduction to Human Memory (4) S. Lecture, three hours. Covers the core concepts of modern research and theorizing about human behavioral memory, including structural subdivisions (e.g., perceptual memory, short-term memory, long-term memory), different measures of memory (e.g., recall, recognition), and some practical applications of memory research (e.g., mnemonics). (Emphasis: psychology) **(III)**

51A Seminar in Experimental Psychology (4) F, W, S. Seminar, three hours. Discussion and analysis of problems involved in doing experiments and in drawing conclusions. For students who might consider a research career in the social sciences, particularly psychology. Focus on questions such as "How are hypotheses developed and tested?" and "What problems arise in designing experiments and in collecting and interpreting data?" (Emphasis: psychology)

51B Scientific Method in Psychology (4). Lecture and discussion, three hours. An introduction to the bases for scientific inquiry. What is "science"? Goals, methods, and assumptions of experimental psychology. (Emphasis: psychology)

52A Children (4). Lecture, three hours. A multidisciplinary introduction to the study of children, drawing on material from psychology, sociology, anthropology, political science, linguistics, animal studies, folklore, art, and history. The course stresses the different perspectives of different disciplines. **(III)**

55C Adolescent Psychology (4). Lecture, three hours; discussion, one hour. Focus on the psychosocial dynamics of today's adolescent in America in terms of the ongoing quest for identity, independence, values, and sexual preference. Analysis of the power struggle and conflict between the adolescent and adult worlds as manifested in the family, school, and other institutions; new choices and new conflicts for the adolescent female; special needs of the culturally different adolescent; and strategies for helping the distressed and troubled adolescent. Prerequisite: Social Sciences 7. **(III)**

55D Introduction to Developmental Psychology (4). A multifaceted focus on the child's growth from prebirth to adolescence. Emphasizes the notion of a continuous flow of physical language and of cognitive and social change from one stage of development into the next. Major theorists are reviewed; for example, Piaget will provide part of the framework for analyzing the child's cognitive development. Familial, cultural, and social shaping and intervention are also reviewed. Child development as a concept is discussed within the larger context of the human life cycle. **(III)**

61A Introduction to Social Psychology (4) F, W, Summer. Lecture, two hours; discussion, one hour. The study of the 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. (Emphasis: psychology, sociology) **(III)**

61B Introduction to Marriage and the Family (4). Lecture, three hours. Basic issues concerning marriage, family, and kinship. Emphasis on cross-cultural and cross-societal comparisons. Kinship groups, the nature of human marriage, relationships of the family to other social institutions, child rearing, plural marriages, family politics, speculations concerning the future of the family. (Emphasis: anthropology, sociology, psychology) **(III)**

61C Understanding Social Facts (4). Discussion, two hours; laboratory, two hours. 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. (Emphasis: sociology, anthropology, psychology, economics) **(III)**

61E Introduction to Social Theory (4). Seminar, three hours. This is a broad survey of sociological theories. Its central purpose is to provide the student with an introduction to the field's historical development and current theoretical work. (Emphasis: sociology) **(III)**

62A The Women's Movement (4). Lecture and discussion, three hours. The social changes that caused the current movement, the movement's ideology and organization, and the success of the movement in changing sex roles. Emphasis on historical data and sociological theories of social movements. (Emphasis: sociology)

62B Introduction to Authority (4) W. Lecture, three hours. An analysis of the nature, ubiquity, and types of authority relations. Attention is directed at the conditions for and bases of compliance and rebellion. Authority behavior in families, schools, work groups, and politics, as well as in "deviant" subcultures such as the "Mafia," are examined. (Emphasis: sociology, political science) Same as Social Sciences 24B. **(III)**

70A Comparing Cultures (4). Introduces students to the scope of cross-cultural comparisons by analyzing the theories, methodologies, and facts used by selected anthropologists, sociologists, social psychologists, political scientists, and historians in comparing cultures. (Emphasis: comparative culture) **(III)**

70T The Image of Minorities in American Films (4) F. An examination of the cultural content of American motion pictures as it applies to the resident minority groups in the United States. Films projecting an image of Blacks, Asians, American Indians, Chicanos, and Africans screened. (Emphasis: social science)

70U Women in Film (4) W. Lecture, three hours. Raises women's issues; illustrates differing cultural and political roles of women in societies; produces a critical awareness of the role of visual media in modern society; raises the "consciousness" of participants.

70X The Motion Picture in Contemporary American Society (4) S. A brief history of the commercial motion picture's social and economic development: how and by whom theatrical films are made; the motives, machinations, and techniques of filmmakers in the creation, distribution, and promotion of commercial motion pictures; the contributions and special problems of the various types of people involved in modern filmmaking. (Emphasis: social science)

71A Scope and Problems of Interdisciplinary Studies (4). An exploration of the problems of interdisciplinary scholarship and the interrelationship among social science and humanities disciplines, focusing on the transferability of conceptual systems and the development of meta languages. (Emphasis: comparative culture)

74A History of the Documentary Motion Picture (4) W. Lecture, three hours. Documentary films from their prenatal stirrings in 1874 to the present. Films screened trace the evolution of documentary techniques, styles of leading documentarists, and the importance of the documentary film in the American motion picture industry. Students with special interest in documentary film production, writing, distribution, and criticism may develop field projects that give them an opportunity to see their area of interest in operation. (Emphasis: social science)

80A Perspectives of Human Analysis (4). Lecture, three hours. Social analysts have different perspectives or ways of looking at human behavior. This course introduces students to the idea that they may not only "choose" the perspective or perspectives they think most interesting and stimulating, but may also devise ones of their own. (Emphasis: social science)

81A Introduction to Parapsychology (4) Summer. Surveys the controversy over the findings of parapsychology. Topics include strategies for faking psychic phenomena; range of currently understood means of communication; findings and current status of new research; implications for our current body of knowledge; social implications of new forms of communication.

81B Workers in Industrial Society (4). Lecture, three hours. A survey of radical and liberal views of the behavior, status, and evolution of workers within Western industrial economies. (Emphasis: social science)

Upper-Division Courses

Quantitative Social Science

Course modules emphasizing quantitative social science are assigned numbers from 100-109.

100 Quantitative Methods

100A-B-C Social Science Statistics (4-4-4) F, W, S. Lecture, four hours; laboratory, three hours. Presents the statistical concepts and techniques most widely used in social science research and provides a practical experience, via Social Sciences 100D, wherein these are employed. The first two quarters are devoted to descriptive statistics. The third quarter focuses on inferential statistics. Weekly laboratories employ computer graphics to investigate concepts. Fulfills the social science mathematics requirement. Same as Social Ecology 166A-B-C. **(V)**

100D Introduction to Survey Analysis (4) S. Seminar, three hours; laboratory, two hours. Student research teams analyze survey-generated data using the techniques from 100A-B-C. Students present their results at a symposium for that purpose. Concurrent enrollment in Social Sciences 100C is required. Same as Social Ecology 166D.

100E Introduction to Statistical Computing (4) W. 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. Prerequisites: Social Sciences 100A and concurrent enrollment in Social Sciences 100B. Same as Social Ecology 166E.

100F Introduction to Survey Sampling (4) F. Lecture, three hours. Types of survey sample designs. Criteria for determining the most appropriate design. Techniques for calculating the optimal sample size, for selecting the sample, and for calculating unbiased point estimates, standard errors, and confidence limits. P/NP only. Prerequisites: Social Sciences 100A-B-C, or Social Ecology 166A-B-C, or consent of instructor. Same as Social Ecology 169.

100H Structures (4) F. Lecture, three hours. Introduction to structural models of human thought, language, and social behavior. Mathematics used in these models is taught, including abstract algebra, graph theory, and formal languages. Prerequisites: Mathematics 5A-B-C or 2A-B-C. (Emphasis: anthropology, psychology, sociology)

101 Analysis of Data

101A-B-C Data Analysis I, II, III (4-4-4) 101A (W), 101B (S). Lecture, three hours. Practical applications-oriented course on multiple regression. How to discover and explore general socioeconomic models in your data. Prerequisites: simple probability and statistics.

101D-E-F Econometrics I, II, III (4-4-4). 101D-E W, S. Lecture, three hours, plus one-hour tutorial. Specification, estimation, and testing of econometric models. Applications in various areas of microeconomics and macroeconomics. Prerequisites: Mathematics 2A-B-C and 5A-B-C, or Social Sciences 11A-B-C, or consent of instructor. **101F** Seminar course in which students complete either an applied or theoretical econometric research project. (Emphasis: economics)

101G-H Techniques of Data Collection and Analysis (4-4) F, W. Lecture, three hours. Basic methods and theories of similarity data collection. Includes survey of data collection methods, the choice and design of data collection instruments, collection of data from one semantic domain by several methods (e.g., item-by-use matrices, sorting, triads). Prerequisites: Mathematics 5A-B-C or consent of instructor.

101K Computer Programming FORTRAN Laboratory (2) W. This course is a laboratory section for Social Sciences 101A, although it may be taken without enrolling in 101A. Emphasis on the kinds of practical data manipulation problems encountered with social science data. Students learn to write programs that sample, reorder, tabulate, transform, or plot data. Prerequisite: Information and Computer Science 1 or equivalent.

101L-M Seminar in Regression I, II (4-4). Seminar, three hours. Advanced topics in regression analysis, illustrated by student-initiated research projects. Prerequisites: at least one quarter of multiple regression analysis and consent of instructor.

Economic and Geographical Analysis

Course modules emphasizing economic and geographical analysis are assigned numbers from 111-118. Students interested in economic anthropology should see Social Sciences 131E.

111 Economic Theory

111A-B Microeconomics I, II (4-4) F, W. Lecture, three hours. Fundamentals of price theory; determinants of supply and demand; operation of competitive and monopolistic markets; resource allocations; basic concepts of economic efficiency and of costs and benefits; imperfections of the market system. Prerequisites: Social Sciences 12A-B-C or consent of instructor. (Emphasis: economics)

111C Macroeconomics (4) S. Lecture, three hours. Analysis of the factors which influence unemployment, inflation, recessions, and depressions, and the public policy measures available for dealing with these problems. Prerequisites: Social Sciences 12A-B-C or consent of instructor. (Emphasis: economics)

111D-E Advanced Microeconomics Theory I, II (4-4) F, W. Lecture, three hours. A presentation of the theory of production and distribution, relying heavily upon formal mathematical methods. Prerequisites: Social Sciences 111A-B or equivalent. (Emphasis: economics)

112 Individual and Collective Choice

112A Individual Decision Making (4) F. Lecture, three hours. Consideration of the problems associated with decision making under uncertainty. Discussion of the foundations of modern utility theory, random variables, probability distribution, opportunity loss, the value of perfect information, and Bayes' theorem. Prerequisites: Social Sciences 12A-B-C. Same as Social Sciences 126G. (Emphasis: economics, psychology)

112B The Economics of Risk and Uncertainty (4). Lecture, three hours. The theory of insurance and joint-ownership of risky enterprises; optimal procedures for the allocation of uncertain payoffs. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

112C Portfolio Selection and Capital Market Theory (4). Lecture, three hours. Optimal design of portfolios based upon mean-variance characteristics. An examination of the efficiency of present day capital markets. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

113 Economics of Public and Private Organizations

113A-B-C Economic Analysis of Government Behavior I, II, III (4-4-4) F, W, S. Lecture, three hours. Demand for and supply of government activities. Analysis of individual and group behavior and choice of instruments to influence governments. Analysis of parties; legislative, executive, and bureaucratic behavior in the supply of governments. Role of constitutional codes. Special topics: regulation, public production, taxation, federalism. Prerequisites: Social Sciences 12A-B-C. Same as Social Sciences 126D-E-F. (Emphasis: economics)

113 F-G Economics of Law I, II (4-4) W, S. 113F Lecture, three hours. An examination of several economic concepts which are useful in the understanding of legal rules. Among the topics to be covered are externalities, the assignment of property rights, and Coase's theorem. Examples illustrating the use of these concepts are drawn from the fields of pollution control, no-fault insurance, medical malpractice, and product liability. **113G** Lecture, three hours. An in-depth analysis of a legal problem using the concepts studied in Economics of Law I. The topic to be chosen will depend, in part, on students' preferences. Prerequisites: Social Sciences 12A-B-C.

113H-I-J Industrial Organization I, II, III (4-4-4) 113H Lecture, three hours. The theory of monopoly and oligopoly, including price discrimination, the welfare loss due to monopoly, advertising, and product quality. **113I** Lecture, three hours. Regulation of industries such as airlines, trucks, and utilities. The actual performance of such regulation, as well as its rationale, is examined. Some time can also be devoted to product and safety regulation. **113J** Lecture, three hours. Antitrust. A study of current practice in the light of economic theory concerning efficiency and the behavior of monopolists. Prerequisites: Social Sciences 12A-B-C.

113L Benefits-Costs Analysis (4) F. Lecture, three hours. Theory and practice of economic evaluation of government policies, programs, and projects. Critical study of role of economic analysis and methodology of studies. Applications to resources, transportation, urban and human resources programs. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

113P Economics of Pollution (4). Lecture, three hours. Economic approaches to understanding and solving pollution problems. The nature and causes of air, water, and chemical pollution, and technological methods of control. Economic externalities, kinds of pollution taxes, cost-benefit analysis, public goods, relationship between pollution and GNP. Related legal, political, and international factors. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

113R Public Policy (4). Lecture, three hours. Environmental protection policy and its implications. Prerequisites: Social Sciences 12A-B-C.

114 Human Resources

114A Labor Economics (4) F. Lecture, three hours. Focuses on the role played by labor in the production and distribution of goods and services in an economy such as we have in the United States. A particular concern is the analytical framework used by economists to investigate labor's role in the economy. This analytical framework also provides the basis for examining such topics as unemployment, unions, government policy toward labor, wages and inflation, and discrimination. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

114B The Economics of Discrimination (4). Lecture, three hours. Examination of differential wage rates between races. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

114C Economics of Crime I (4) W. Lecture, three hours. A survey of work by economists on the analysis of criminal behavior. Issues of deterrence and differential opportunity are stressed. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

114D Economics of Crime II (4). Seminar, three hours. The economics of crime, stressing original research by students. Prerequisites: Social Sciences 114C and 12A-B-C. (Emphasis: economics)

115 Macroeconomics

115A Money and Banking (4) F. Lecture, three hours. The conditions for the existence of money in an economy. The neutrality of money; dichotomies; and the real balance effect. Supply and demand for money. The relationship of money to output and employment. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

115B International Finance (4) F. Lecture, three hours. A survey of the activities of multinational firms since World War II with an emphasis on the effects of direct foreign investment on the economics of underdeveloped countries. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

115C International Trade and Commercial Policy (4). Lecture, three hours. Determination of trade flows and international prices. Effects of trade on income distribution and welfare. Economic growth and the terms of trade. Trade restrictions and effective protection. Economic integration, common markets, and commercial policies of the United States and European Economic Community Trade and Development; policies of GATT (General Agreement on Trade and Tariffs) and UNCTAD (United Nations Commission on Trade and Development). Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

115D Economic Development (4) W. Lecture, three hours. Characteristics of underdeveloped economies. Theories of underdevelopment and development. Domestic and international policies for economic development. Prerequisites: Social Sciences 12A-B-C. (Emphasis: economics)

117 Special Topics (4-4-4) F, W, S

118 Geographical Analysis

118A Natural and Man-Made Networks I (4) W. Lecture and seminar, two hours. Emphasis on mathematical structure of network phenomena. Models of network development and operation constructed and tested against empirical examples—highways, subways, pipelines, rivers, etc. Prerequisites: Mathematics 5A-B-C. (Emphasis: geography)

118C Transportation Theory (4) F. Lecture, three hours. 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: Mathematics 5A-B-C. (Emphasis: geography)

118D Urban Policy (4). Lecture, three hours. 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. (Emphasis: geography)

118E Urban Theory (4) F. Lecture, three hours. 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 Sciences 114L or consent of instructor. (Emphasis: geography)

118F Urban Analysis (4) S. Lecture, three hours. Analysis of urban activity systems combined with an in-depth study of one Southern California community encountering social and economic change. Focus on the applicability of various theories of urban structure. Economic base studies, demography, and social area analysis. Prerequisite: consent of instructor. (Emphasis: geography)

119 Special Topics (4-4-4) F, W, S

Politics, Society, and Social Issues

Course modules emphasizing society, politics, and social issues are assigned numbers from 120-128.

121 American Society and Politics

121A American Urban Politics (4) W. Lecture, three hours; optional discussion, one hour. 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 (e.g., education, poverty, finances, crime), particularly from the perspective of the "underclass." (Emphasis: political science)

121B Politics, Public Policy, and the Mexican-American (4) W. Lecture, three hours. What is unique about "minority" politics in American society? A public policy perspective provides a political overview of the Spanish-speaking (Mexican-American) community, the fastest growing population in the United States. "Chicano politics" and public policy issues are examined and linked to local, state, regional, national, and international politics. (Emphasis: political science)

121C City Politics: Ideology, Conflicts, and Democracy in Urban and Suburban Settings (4). Lecture, three hours. Based on case studies of eastern and western American cities, the course attempts to determine the nature of urban politics. Emphasis is placed on the selection of urban municipal elites, the structure of decision making, and the role of pressure groups and minority groups. (Emphasis: political science)

121D Urban Policy Problems (4) S. Seminar, three hours. Problem-oriented approach to urban political systems. Evaluation of the nature and quality of alternative analyses of a series of policy problems, such as low-cost housing, welfare policy, municipal transportation, law enforcement, community control, etc. Readings include "conservative" and "radical" perspectives. Prerequisite: consent of instructor. (Emphasis: political science, sociology, economics)

121E Introduction to the Study of Law (4). The political implications of selected legal issues. Introduces students to the relationships between the political system and the legal system. Among the topics to be examined are the franchise, taxation, equal protection (e.g., affirmative action), land use issues (e.g., eminent domain), healing (e.g., the right to use Laetrile), and legislative abuse. Prerequisite: upper-division standing.

122 World Political Systems

122A-B Soviet Society and Politics I, II (4-4) W, S. Lecture, three hours; discussion, one hour. An overview of the present socio-political structure and of the major national cultures within the Soviet Union. Ideology and pre-1965 history are discussed only to the extent that they help to explain the current structure and trends. The emphasis is on getting a feel for how the system works, before evaluating it.

122C Politics in Britain (4) F. Lecture, three hours. An examination of 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. Issues to be explored include racism and immigration policy; economic stagnation and entry into the Common Market; Northern Ireland; the linkages between social class and politics. (Emphasis: political science)

122D French Politics and Society (4). Seminar, three hours. 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. (Emphasis: political science)

122G Seats and Votes (4). Lecture, two hours; laboratory, one hour. A worldwide survey of electoral laws and their political consequences. Facts and theories about the U.S. elections: campaign resource allocation strategies; penalties on small states and parties; effect of the Electoral College. Prerequisite: one year of college mathematics or Social Sciences 6B or consent of instructor. (Emphasis: political science)

122J Growth of Empires (4) F. Lecture and seminar, three hours. As rapid change makes the present an uncertain guide to the future, the deeper insight supplied by history becomes ever more important and relevant. This course surveys the major empires throughout history, East and West, and analyzes their patterns of size, duration, growth, and decline. (Emphasis: political science, geography)

123 Politics Between Nations

123B U.S.-Mexico Foreign Relations (4) F. Lecture and discussion, three hours. Despite the historical and cultural conflict between the United States and Mexico, a relationship of interdependency has evolved as a result of a 2,000-mile "open border," billions of dollars in trade and investment, and the constant legal and illegal flow of people across the border. This course examines (1) the conflict in the U.S. between the domestic and foreign policy interests that seek to influence the relationship and (2) a negotiation framework that incorporates the need for cooperation between the two countries for purposes of dealing with drug smuggling, oil/natural gas, population, economic development, and trade questions. (Emphasis: political science)

123C Issues in U.S.-Latin American Relations (4). Lecture, three hours. Examines the changing patterns of hemispheric relations in political, economic, and military spheres. Special attention given to such foreign policy issues as military dictatorships, human rights, arms sales, economic development, dependency, and multinational corporations, and the expanding influence of nonhemispheric countries in Latin America. (Emphasis: political science)

123D U.S. National Security and World Order (4) S. Lecture, three hours. By the 1970s, in an increasingly interdependent world, U.S. national security became closely linked to the "stability" and "order" of world politics and economic conditions. The course examines the bureaucratic, psychological, and domestic political environments which affect the manner in which national security managers react to nuclear proliferation, the sale of conventional arms, human rights violations, population growth and food shortages, the availability of raw materials and natural resources, armed disputes, military regimes, and leftist movements and governments throughout the world. (Emphasis: political science)

123E International Politics of Weak Nations (4). Lecture, three hours. Current theories of international politics stress the roles of the "super-industrial" and "regional" powers. This course examines the capabilities of the "smaller" and "weaker" nations of the world to exploit their dependency and their own resources in gaining leverage with larger, more powerful nations. Discussions center on specific country studies and on the contributions of power, dependency, interdependency, and bargaining/leverage theories of international relations. Prerequisite: one course in U.S. foreign policy or international politics.

123G United States Foreign Policy (4) W. Lecture and discussion, three hours. Stresses the changing international perspectives, policy instruments, and processes of decision making in the six U.S. presidential administrations since 1945. (Emphasis: political science) **(III)**

124 Participation and Communication

124A Comparative Communications Systems (4) F. Lecture, three hours. Comparison of current communication practices in science, the mass media, and the American intellectual community. A general theory to explain differences in the diversity, bias, and the general quality level of such communication systems is considered. (Emphasis: political science, sociology)

124B Alternative for the Mass Media (4) W. Lecture, three hours. Criticisms, defenses, and proposed changes in the mass media, especially a particular change that would radically increase citizen participation and control. Readings are a general survey of literature on mass communications. (Emphasis: political science, sociology)

124C Radical Social Proposals (4) S. Lecture, three hours. An examination of certain current proposals for alternative political and economic systems, especially proposals aimed at increased citizen participation and control, and at much more equal distribution of wealth. Some consideration of the problems in current countries that motivate such proposals, and examples such as present-day China, which tend to inspire them. Prerequisite: upper-division standing. (Emphasis: political science, sociology)

124D Public Opinion (4). Lecture, three hours. A mixture of lectures and student research on the nature of public opinion and opinion change. Participants conduct individual or group research projects and participate in an experiment on changing group opinions.

124E Political Rhetoric (4). Lecture, three hours. Examines the nature of political argument, focusing on trends of practical reasoning. Teaches basic skills of closely reasoned critical argumentation. Useful for students planning on careers in law or public service.

124G Political Satire (4). Seminar, three hours. Focuses on political satire and the analysis of satirical techniques. Examples are drawn from classics such as Swift's *Gulliver's Travels* and France's *Penguin Island* and more contemporary material such as Heller's *Catch-22*, Roth's *Our Gang*, and Orwell's *Animal Farm*.

124J Authority and Elites (4) S. Lecture, three hours. Examines the formative experiences of political leaders and elites in authority relations, and the way these experiences influence their behavior and effectiveness as rulers. Emphasis on U.S., British, and French cases.

125 Political Theory

125A Modern Democratic Theory (4) S. Lecture, three hours. An examination of contemporary theories of democracy. Some of the major questions considered are: What is democracy? What accounts for its stability or persistence? What is the meaning and role of participation in democratic theory? (Emphasis: political science)

125B Political Thought since Hobbes (4) S. Lecture, three hours. Political thought since Hobbes, with particular attention to the principal themes of Hobbes, Kant, Rousseau, Marx, and Nietzsche. Short introductory lectures dealing with the historical setting and relevant biographical data are combined with discussions and assignments, using an approach that is primarily analytic and thematic. Emphasis on defining and articulating the student's own political values—their identity, their sources, their consequences—in connection with these classical statements of political values. Prerequisite: upper-division standing. (Emphasis: political science)

125F Modern Political Theory: Crisis of Liberal Democracy (4) W. Lecture, three hours. Close examination of selected perspectives on the alleged crisis of liberal democracy. Prerequisite: Social Sciences 6A.

125J Advanced Macropolitics (4) S. Lecture, three hours. Advanced political analysis on the national level. Three major questions are addressed. Why do political systems perform well or poorly? Who wins or loses in political competition? Why do polities experience gradual adaptation or revolutionary change? Prerequisite: Social Sciences 6B.

126 Social Systems

126C Collective Dynamics (4). Lecture, three hours. 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 and fashions, public opinion, and symbolic and mythical elements in collective culture. Prerequisite: Social Sciences 4 or 6A or 8. (Emphasis: sociology, political science, economics)

126D-E-F Economic Analysis of Government Behavior I, II, III (4-4-4) F, W, S. Lecture, three hours. Demand for and supply of government activities. Analysis of individual and group behavior and choice of instruments to influence governments. Analysis of parties; legislative, executive, and bureaucratic behavior in the supply of governments. Role of constitutional codes. Special topics: regulation, public production, taxation, federalism. Prerequisites: Social Sciences 12A-B-C. Same as Social Sciences 113A-B-C. (Emphasis: economics)

126G Individual Decision Making (4) F. Lecture, three hours. Consideration of the problems associated with decision making under uncertainty. Discussion of the foundations of modern utility theory, random variables, probability distribution, opportunity loss, the value of perfect information, and Bayes' theorem. Prerequisites: Mathematics 5A and Social Sciences 12A-B-C, or 111A-B, or consent of instructor. Same as Social Sciences 112A. (Emphasis: economics, psychology)

Special Topics

129A Technology and Politics (4) W. Seminar, three hours. Explores the interactions between technology and the political system. Major themes include the implications of a technological perspective on public policy; the role and political use of "intermediate" and "high" technology by the government; the use of scientific and technical information for policy making and policy monitoring; the role and impact of scientists and technologists in government; appropriate public policies toward specific technologies such as nuclear power; visions of a technologically based socio-political system. Prerequisite: upper-division standing or consent of instructor.

129B Junior Seminar in Political Science (4-4-4) W. Seminar, three hours. Awareness of recent trends in political science is developed through attending faculty colloquia and talks on current faculty research, and through abstracting and discussing these talks. Prerequisite: upper-division standing.

Cultural and Cognitive Anthropology

Course modules emphasizing cultural or cognitive anthropology are assigned numbers from 130-139. NOTE: Students wishing to complete a module in the anthropology series may do so by taking any three upper-division anthropology courses.

131 Anthropological Theory

131A Kinship and Social Organization (4) W. Lecture, three hours. Organization of social life primarily in preindustrial societies. Theories of kinship, marriage regulations, and social roles. Comparisons of psychological, sociological, and economic explanations of social organization. (Emphasis: anthropology, psychology, sociology, economics)

131D Social Stratification in Small Communities (4). Lecture, three hours. Course looks at social inequality in small communities in various cultures, mostly in Third World countries. Cases include hunting and gathering societies, and agricultural societies in Africa, India, Latin America, and the Pacific.

131E Economic Anthropology (4). Lecture, three hours. The anthropological study of systems for production, distribution, and exchange of goods and services. Topics include cultural rules for appropriate economic behavior; exchanges of ceremonial goods; primitive money; and the ethnographic study of American economic behavior. Prerequisite: one introductory course in general social science, anthropology, economics, or geography. (Emphasis: anthropology, economics)

131H Cultures of Sub-Saharan Africa (4). Lecture, three hours. Comparative studies of the cultures and societies of Sub-Saharan Africa, with emphasis on ecological adaptations, social organization, languages, and social change. Prerequisite: Social Sciences 2A or 2B. (Emphasis: anthropology)

131J Cultural Ecology (4) W. Lecture, three hours. People's relationships to their environments; strategies for managing the environment and its resources; effects of environment on culture and society; impact of human management on the ecosystem; ways in which human groups view their surroundings. Prerequisite: Social Sciences 2A or 2B.

131M Comparative Mythology (4) S. Lecture, three hours. Reading and analysis of mythological literature from the Classical West, the Near East, Central Asia, and the Far East: the mythopoeic process, and modern uses of mythology in politics, religion, and social thought.

131P Philosophical Anthropology (4) W. Lecture, three hours. Reading and comparative analysis of theories of human nature, conduct, and history as found in selected philosophical and literary works by major writers in the Western and Eastern cultural traditions; emphasis on cultural anthropology, from Plato, Gotama Buddha, and St. Paul in ancient times to modern theories of man as formulated by dialectical materialism, psychoanalysis, and existentialism.

131R Sex Roles: Cross-Cultural Studies (4) S. Lecture, three hours. An anthropological approach to the study of sexual division of labor, marriage systems, and systems for the control of reproduction. These aspects of human culture and behavior are studied in relationship to competing explanations that have been offered by sociobiologists and cultural materialists. Prerequisite: Social Sciences 2A or 2B.

131S Women in Asia (4) S. Lecture, three hours. Compares the changing position of rural and urban women in India, China, and other selected areas in Asia over time (primarily the twentieth century).

131U Anthropological Major Seminar (4) W. Seminar, three hours. A course in anthropological theory designed especially for majors in Anthropology. Different issues are considered in different years. Several Anthropology faculty participate in discussions of readings in major issues in the field. Nonmajors must obtain permission from the instructor. Majors may take the course more than once.

132 Cognitive Anthropology

132A Psychological Anthropology (4). Lecture, three hours. Children of different cultures often have radically different experiences with adults, other children, and their physical environment which produce differences in what is learned, felt, and believed. Psychological anthropology is the study of these differences in experience and their consequences for the psychology of the adult. Prerequisite: Social Sciences 2 or 7. (Emphasis: anthropology, psychology)

132B Cognitive Anthropology (4) S. Lecture, three hours. 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. (Emphasis: anthropology)

132D The Cross-Cultural Study of Learning and Thinking (4). Lecture, three hours. Recent cross-cultural research on learning and thinking and discussion of the benefits and limitations of cross-cultural experiments. (Emphasis: anthropology, psychology)

132E Magic, Witchcraft, and Science (4) W. Lecture, three hours. A study of witchcraft, demonology, magic, and divination in primitive societies and in our own. The occurrence of these themes in literature and movies is considered.

133 Mathematical Anthropology

133A-B Mathematical Anthropology (4-4). Lecture, three hours. The aim of this course is to consider a variety of substantive problems dealt with by anthropologists and to see what can be done through formalizing this organized complexity, using a variety of formal, mathematical, statistical, or computer-based techniques.

134 Area Studies

134A Oceania (4). Seminar, three hours. The cultural history and recent developments among the Pacific peoples of Polynesia, Micronesia, Melanesia, New Guinea, and Australia.

134B Europe (4). Seminar, three hours. Traditional anthropological enthnographies of peasant societies in Europe, and national character studies of the major European countries.

134C Asian Cultures in Southern California (4) S. Lecture, two hours; discussion, one hour. Culture change among immigrants from India, China, Vietnam, Thailand, Korea, Japan, and other Asian countries.

136 Visual and Material Culture: Semiotics

136A The Study of Symbols and Designs (4). Lecture, three hours. An introduction to iconics, the study of visual languages such as the Chinese characters, Nevada cattle-brands, ancient and modern alphabets, Mayan design motifs, devil signs, and so on. Ancient and present day "errors" as evolutionary forces are studied with the aid of formal models. (Emphasis: anthropology) **(V)**

136B Advanced Iconics (4). Lecture, three hours. The rigorous study of visual languages, including models for how they are learned, stored, used, and involuntarily altered through time. Prerequisite: Social Sciences 136A. (Emphasis: anthropology)

136C The Symbolic Environment I (4) W. Lecture, three hours. Architecture is looked at from its anthropological perspective, i.e., as a visual and material expression of and influence on the culture from which it grows. Examples studied range from the pretechnological Dogon to modern imperialist/Fascist; an examination of the intended purposes of architecture will contrast Ruskin and Viollet-le-Duc. Gothic, "Gothick," and Gothic Revival are investigated. (Emphasis: anthropology)

136D The Symbolic Environment II (4). Lecture, three hours. The natural and man-made environments are looked at from the standpoint of what they convey and have conveyed in the past. Past and present theories of the "meaning" of buildings, cities, and landscapes are considered with examples from movies, literature, and direct observation. (Emphasis: social science)

136G Introduction to Semiotics (4) F. Lecture, three hours. An introduction to the scientific study of symbol systems, from both the philosophical point of view represented by Peirce and the linguistic point of view represented by Dalgarno and de Saussure. Modern developments, including the work of Lévi-Strauss and colleagues, are considered. (Emphasis: anthropology)

139 Special Topics (4-4-4) F, W, S

Cognitive Linguistics

Course modules emphasizing cognitive linguistics are assigned numbers from 140-149. NOTE: Students wishing to complete a module in the cognitive linguistics series may do so by taking any three upper-division cognitive linguistics courses.

141 Linguistic Theory

141A Introduction to Syntax (4) W. Lecture, three hours. Linguistic intuition, well-formedness, constituent structure, transformation, derivation, argument, and counter-example. Emphasis on English syntax and what characterizes a linguistically significant generalization. Prerequisite: Social Sciences 3 or Linguistics 50. (Emphasis: cognitive linguistics) Same as Linguistics 120. **(V)**

141B Intermediate Syntax (4) S. Lecture, three hours. Further topics in English syntax and theory of grammar. Constraints on what linguistic rules can do. The relationship between linguistic theory and language learning. Prerequisite: Social Sciences 141A. (Emphasis: cognitive linguistics) Same as Linguistics 122.

141C Advanced Syntax (4). Lecture, three hours. A small number of well-defined topics is pursued intensively, with particular emphasis on recent articles that have had significant impact on the development of the theory of syntax. Prerequisite: Social Sciences 141B. (Emphasis: cognitive linguistics) Same as Linguistics 124.

141D Semantics (4) F. Lecture, three hours. Analysis of various proposals for the treatment of semantics in an integrated linguistic theory. The boundary between syntax and semantics. Coreference phenomena. Contributions from philosophy of language. (Emphasis: cognitive linguistics) Same as Linguistics 126.

141E Pragmatics (4). Lecture, three hours. The study in linguistic theory of the use of language by speakers as a tool for communication in context. Prerequisite: Social Sciences 141A. Same as Linguistics 145.

142 Psycholinguistics

142A Introduction to Psycholinguistics (4) F. Lecture, three hours. Study of a particular topic in the psychology of language with particular emphasis on syntax and semantics. Prerequisite: Social Sciences 50A or a course in linguistics, or consent of instructor. (Emphasis: cognitive linguistics) Same as Linguistics 142.

142B Project in Child Language (4) S. Seminar, three hours. Begins with an intensive review of previous work on child language in which problems and methodology are discussed: projects specified. Remainder devoted to the projects and to discussing the problems and results which arise from doing them. Prerequisite: Social Sciences 50A or consent of instructor. (Emphasis: cognitive linguistics, psychology, anthropology, sociology)

142C Meaning of Words (4). Lecture, three hours. Descriptive semantics of words, with special attention given to (1) the empirical basis of such descriptions and (2) the relation of the representation of meanings to such questions as the learning of the meaning of words by children and to the processing of meanings. Discussion of work in psychology, linguistics, and anthropology. Each student undertakes a project which involves the representation of meaning. Not offered 1981-82.

142D Language and the Brain (4) W. Lecture, three hours. An analysis of current research on the biological bases of human linguistic capacity. Topics to be discussed include development, focusing on hemispheric specialization and plasticity; the localization of specific linguistic functions in adults, with an emphasis on the study of aphasias; the relation of linguistic capacity to general cognitive capacity, considering especially research on retardation. Prerequisites: Social Sciences 3 or 50A, or Linguistics 50.

149 Special Topics (4-4-4) F, W, S

Individual and Small Group Behavior

Course modules emphasizing individual or small group behavior are assigned numbers from 150-158.

151 Experimental Psychology

151A Experimental Psychology (6) F. Lecture, three hours; laboratory, three hours. Emphasis on design of experiments and analysis of results. Experiments are conducted in laboratory sections. Prerequisites: Social Sciences 7 and one college-level mathematics course. (Emphasis: psychology)

151B Advanced Experimental Psychology (6) W. Lecture, three hours. Design and analysis of multivalent, factorial, and correlational studies. Students prepare proposals for independent research. Prerequisite: Social Sciences 151A. (Emphasis: psychology)

151C 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: Social Sciences 151B. (Emphasis: psychology)

151D Visual Experience (4) S. Lecture, three hours. Focus on facts about vision that can be appreciated directly by simply looking at things. Emphasis on demonstrations and miniature experiments. Potential topics: visual acuity, color vision, memory and after images, visual reaction time, depth perception, adaptation to distortion of visual output. Prerequisite: senior standing preferred. (Emphasis: psychology)

151E Introduction to Psychological Measurement (4) F. Lecture, three hours. 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: Social Sciences 7 and 11A-B-C or equivalent.

151F Motivation (4) W, S. Lecture, three hours. 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: Social Sciences 7. (Emphasis: psychology)

151G Analysis of Counted Data (4). Lecture, three hours. Counting responses, especially along the time dimension, are being used in various fields in experimental psychology and behavioral science, i.e., responses in psychophysical experiments, learning processes of animals and children, retrieval from memory, behaviors in social levels such as purchasing behaviors. Prerequisite: Mathematics 2A.

151H History of Psychology (4) S. Lecture, two hours; discussion, one hour. A history of the development of various schools and systems of psychological thought. Prerequisite: Social Sciences 7. (Emphasis: psychology)

151J Introduction to Scaling (4). Lecture, three hours. 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: Mathematics 2A or equivalent.

151L Computers in Psychological Research (4) S. Lecture and laboratory, three hours. An overview of the use of computers in psychology. Computations, generating displays, testing implications of models, computer models of behavior, brain simulation, heuristic programming, and simulation of complex information processing. Prerequisite: Social Sciences 7, Information and Computer Science 1, or consent of instructor. (Emphasis: psychology) (V)

151N Introduction to Color Science (4). Lecture, three hours. Psychological problems in colorimetry; color systems; models of color perception. Use and control of color in industry discussed with illustration by color slides. Prerequisite: Mathematics 2A or equivalent.

151Q Perceptual Development in Children (4). Lecture, three hours. Investigation of the development of various perceptual processes in children. Course restricted primarily to visual and auditory perception; touches briefly on the perception of people, time, and the influence of personal values on perception. Prerequisite: Social Sciences 7.

151R Visual Information Processing (4). Seminar, three hours. Topics in current vision research, e.g., short-term visual storage, eye movements, temporal image development, adaptation, perceptual anomalies. Prerequisites: Mathematics 5A-B-C or 2A-B-C; Social Sciences 151D, or 151A-B-C, or consent of instructor. (Emphasis: psychology)

151T Introduction to Auditory Perception (4). Lecture, three hours. An introduction to the scientific study of hearing. Prerequisite: Social Sciences 7.

152 Learning

152A-B-C Creative Learning in Children (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 and the children range in age from five to 12. Students in any major are eligible for the course. We are particularly interested in students who know something—like programming, music, biology, mathematics, Spanish, improvisational dance, etc.—and care about it. (Emphasis: psychology, sociology)

152D Learning Theory (4) S. Lecture, three hours. Investigation of the learning and memory processes of humans and animals. Basic experimental approaches to learning, empirical results, and theoretical interpretations of the evidence. Prerequisite: Social Sciences 7. (Emphasis: psychology)

152E Human Memory (4) S. Lecture, three hours. A number of developments in the area of memory are presented. The first half of the course deals with the history of memory research as well as theories of the nature of memory. Among the topics covered are visual memory, recognition memory, high speed scanning, free recall, short-term memory, mnemonics, retrieval, and the relationship of memory to thinking. The second half of the course focuses on selected theoretical formulations for memory. Mathematical, information processing, and computer models are considered. Prerequisites: Social Sciences 7 and Mathematics 5A-B, or consent of instructor. (Emphasis: psychology)

153 Rules and Decision Strategies

153A Concept of Rules (4). The concept of rules has the same status in social science as does the concept of law in the natural sciences. This assumption initiates readings and discussions of ways of formulating rules for understanding human activities. Because language is so obviously rule-governed, it serves as a paradigm for this investigation. Prerequisite: upper-division standing.

153B Games as Models of Social Phenomena (4). Lecture, two hours; discussion, one hour. 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 mathematics. (Emphasis: psychology)

153C The Psychology of Chess (4) S. Lecture, three hours. Reviews recent psychological literature on chess and gives chess demonstrations of the points made. Included are the psychoanalysis of chess players, artificial intelligence, chess programs, the relationship of eye movements to chess thinking, perception and memory of the chess master, blindfold chess playing, and the relationship of chess thinking to more general problem solving. Students should know chess. Prerequisite: consent of instructor. (Emphasis: psychology)

153D Human Problem Solving (4) W. Lecture, three hours. Modern developments in the psychology of human problem solving. Among the topics considered: concept identification, arithmetic, sets, logic puzzles, story problems, group problem solving, chess, and theorem proving. Prerequisites: Social Sciences 7 and upper-division standing. (Emphasis: psychology)

153E Models of Group Size (4). Lecture, three hours. Probabilistic, fame-theoretic, and graph theoretic techniques to model the implications of variations in group size and group decision rules. The areas covered include helping behavior, jury decision making, size of legislatures, group conformity models, group problem solving, etc. Prerequisites: Mathematics 5A-B-C, or Social Sciences 11A-B-C, or equivalent.

153F Simulation and Games (4). Lecture, three hours. A seminar to develop heuristic-based computer programs capable of playing a number of familiar games such as Monopoly, Clue, and Risk. Appropriate mathematical skills, e.g., game theory, graph theory, Markov chain theory, are taught as needed. Students work in teams to develop a program capable of playing one of these games with minimal sophistication. Prerequisites: Mathematics 2A-B-C and Information and Computer Science 1. (Emphasis: psychology) (V)

154 Personality Theory

154A-B-C Personality Theory in the Twentieth Century (4-4-4) F, W, S. Lecture, three hours. An overview of the evolution of personality theory during the present century. The first quarter addresses the classical theories of Freud, Jung, and Janet. The second quarter focuses on the cultural, learning theory, and psychometric formulations. The third quarter surveys the various forms that a renewed interest in the body has taken over the previous decade. Prerequisite: upper-division standing. (Emphasis: psychology)

154D-E Theories of Personality (4-4). Lecture, three hours. Non-Freudian theories of personality: existentialist, behaviorist, and communication. Advanced personality theory. (Emphasis: psychology)

155 Social and Personal Adjustment

155A Theories of Deviance (4) Summer. Seminar, three hours. Perspectives on deviance and criminality in behavior, institution, community, and myth. The suitability of contemporary theories of deviant behavior. (Emphasis: sociology)

155B Abnormal Psychology (4) F, Summer. Lecture, three hours. Introduction to psychopathology and behavioral deviations, and the concepts and theories regarding these conditions. Prerequisite: Social Sciences 7. (Emphasis: psychology)

155C Problem Drinking and Alcoholism (4). Lecture, three hours; discussion, one hour. A review of the literature in the field, including patterns of alcohol use and abuse and their relation to sociocultural, personality, developmental, and treatment variables. Theories of etiology and treatment are emphasized. (Emphasis: psychology, sociology)

155E Psychology of Consciousness (4) Summer. The psychology of human consciousness is examined through the study of biofeedback, meditation, and brain research. The benefits and hazards of current popular approaches to "mind-training" through certain self-regulatory therapies and seminars are considered. The course includes an overview of the history of the study of consciousness from Mesmer, through the nineteenth-century schools of hypnosis, William James' studies on consciousness and psychical research, to the current theories on transpersonal psychology and alerted states of consciousness.

155F Psychology of Dreams (4) Summer. Psychological literature on the brain and chemistry of the dreamer is reviewed. The content of dreams is examined through the psychoanalytic tradition of Jung, Freud, and others, as well as through other psychological traditions and mythology and literature. Current research on dreams is included.

155G Delusional Thought (4) W. Lecture, two hours; discussion, one hour. Various types of delusional thought from other cultures and our own are analyzed with respect to how they interrelate with the everyday life of the believers of the delusions. (Emphasis: psychology, sociology)

156 Semiotics

156A Introduction to Cognitive Semiotics (4). Lecture, three hours. 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. (Emphasis: psychology, cognitive linguistics)

156B Introduction to Cognitive Iconics (4) W. Lecture, three hours. The study of writing systems (alphabets, runes; Mayan and Egyptian hieroglyphics), and in particular of their evolution and modern changes introduced spontaneously through "mistakes," with a view toward exploring aspects of the human mind. (Emphasis: psychology, cognitive linguistics)

159 Special Topics (4-4-4) F, W, S

Social Interaction

Course modules emphasizing social interaction are assigned numbers between 160-168.

161 Sociological Theory

161A Social Change (4). Lecture, two hours; discussion, one hour. Different theories of social change are presented including Marx, Weber, and evolutionary and cyclic theories. These theories are used to examine recent changes in industrialized societies, e.g., the growth of the state, the status of minority groups and women, the search for intimacy and community. (Emphasis: sociology)

161D Comparative Social Inequality (4). Lecture, three hours. Introduction to social stratification and social class in modern and traditional societies, including the origins of inequality, class, caste, social mobility, and social justice. (Emphasis: sociology, anthropology)

162 Interactions

162A Personality Impression Formation (4). Lecture, three hours. Exploration into the body of knowledge concerning how we form, maintain, and change judgments of people. Prerequisite: upper-division standing. (Emphasis: psychology)

162C-D Family and Community (4-4) S. Seminar, three hours. 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.

169 Special Topics (4-4-4) F, W, S

Comparative Culture

Course modules emphasizing Comparative Culture are assigned numbers from 170-178.

170 Disciplines and Culture Study

170A Philosophy of Culture (4) F. An introduction to philosophies of culture that have been formulated by philosophers, historians, anthropologists, and sociologists over the past four centuries. Evolutionary, functional, ecological, psychological, Marxist, structuralist, phenomenological, culture historical, kulturkreise, and culture area philosophies and explanations are analyzed.

170B Economics and Culture (4). The economic problems of groups and ways of approaching them. A basic examination of people, ideas, and economic systems.

170C Politics and Culture (4) W. An introductory examination of the relationship of political ideas to the socioeconomic structure of American society.

170D Society and Culture (4) S. An introduction to issues in the study of society and culture through the works of major classical theorists such as Marx, Weber, and Durkheim.

170E History and Culture (4). An introduction to ethnohistory, focusing on the contributions of history to the interdisciplinary study of sociocultural systems.

171 Expressive Forms of Culture

171A Cultural Analysis of Literature (4) W. Starting from an analysis of literature in itself, the course proceeds to study literature as a cultural document. The relevance of a formalist approach which views literature as autonomous is assessed against a consideration of the cultural and social factors in illuminating a literary work, which in turn is considered for the ways it might shed light on its social and cultural context.

171B Folklore and Popular Culture (4). A survey of forms of folklore and their relationships to popular culture and to social and cultural analysis.

171C Comparative American Folklore (4) F. A study of major genres of folk expression in American history, focusing on how folklore contributes to an understanding of American culture. Attention is given to the songs, folktales, and folklife of various American groups.

171D Religion and Culture (4) S. A survey of the major issues in the comparative study of religious beliefs and behavior. The course examines forms of religious expression and organization and their relationship to social and cultural forces.

171E Comparative Religion (4). An introduction to the comparative study of religion as it occurs in the major traditions of the Western and non-Western worlds, including Judaism, Christianity, Islam, Hinduism, Buddhism, Confucianism, Taoism, and Shinto. Theories and origins of religious behavior are considered.

171F Cultural Analysis of Visual Arts (4) W. This course explores the relationships between the visual arts and the culture and society of which they are a part. The visual arts are defined broadly as painting, sculpture, assemblage, and photography, seen as aspects of material culture. The works of nonliterate societies as well as those of the Western world are analyzed and compared.

171G Language and Culture (4). A lecture and discussion course in the nature of languge, its spoken and written forms, and its relation to thought and other forms of human culture: the verbalization of morality, values, religion, aesthetics, and politics; problems in the interpretation of ideological works in ancient and recent times; semantics and psychology of speech, image, gesture, and onomatopoesis as communication—beyond the dictionary.

172 World Cultures

172A African Culture (4) F. A survey course including the history of major African societies and states and contemporary forms of social and cultural life.

172B American Culture (4) S. A survey of the historical development of dominant American society and culture. The course aims to identify dominant social values and to explore their implications for the development of American society.

172C Latin American Culture (4) S. A study of political, social, economic, and intellectual forces in Latin America. Major topics include Latin American thought; social stability and instability, including revolutionary change; changing Latin American cultures.

172D Japanese Culture (4) S. Japan from ancient times to the present.

172E Chinese Culture (4) W. China from ancient times to the present.

172F Indian Culture (4) W. A survey of the history of India, with emphasis on elements of cultural and structural continuity in Hindu civilization.

172G Asian-American Culture (4). A survey course in which socio-political-economic dimensions of Asian-American people are be analyzed—their past, present, and future.

172H 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 as well as contemporary forms of Afro-American social and cultural life.

172I 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. The class concludes with lectures on race and class within the context of the Chicano experience.

172J Native American Culture (4) F. 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.

173 Women's Studies

173A-B Women's Studies Core Course (4-4) W, S. Basic component of Women's Studies Concentration. In-depth study of women in society and culture, through literature, psychology, sociology, and philosophy. Same as Humanities 155A-B.

179 Special Topics (4-4-4) F, W, S. Special topics courses are offered from time to time, but not on a regular basis. These courses probe a single ethnic group or culture, or take up a special cultural problem or an aspect of culture for consideration. Possible subject matters are Film and Visual Arts; The Image of Minorities in American Films; Comparative American History Through Literature; Women in Film; American Autobiography; American Ideologies; Comparative Ethnic Politics; Chicano Historical Experience; Contemporary China; Contemporary Japan; Afro-American History; History of Education in America.

Special Courses—Upper-Division

180 Upper-Division Special Topics

180A Exploring Society Through Photography (4). Seminar and laboratory, three hours. 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 is stressed. Prerequisite: basic photo techniques. (Emphasis: anthropology, sociology)

180B Things Are Not What They Seem (4). Lecture, three hours. When people attempt to come to grips with the world about them, they have an opportunity to create a world of their own. That most of us live in the "worlds" of others is both a subject for discussion and a challenge to one's intellect. (Emphasis: social science)

180C Social and Psychological Dimensions of the Movie (4). Lecture, three hours. Movies are looked at from their anthropological perspective, i.e., as visual expressions of and influences on the culture from which they grow. The course scrutinizes films whose intent is to propagandize, arouse, terrify, amuse, revolt, and so on; the "language of the film" is studied from the semiotic viewpoint. (Emphasis: anthropology)

185 Advanced Seminars

185A-B-C People in Society (4-4-4). For seniors who would like to do a senior project on a topic having to do with people in society. A year-long seminar with emphasis on independent reading, research, and writing, and mutual help and criticism. Prerequisite: senior standing or consent of instructor.

190 Senior Thesis

197 Field Study

198 Group Independent Study

199 Independent Study. Prerequisite: School approval.

Graduate Courses

201A Applied Multivariate Statistics (4) W. Lecture, four hours; laboratory, two hours. Mathematical tools to organize and illuminate the multivariate methods. Multiple regression analysis, multidimensional scaling, and cluster analysis. Statistical computing via MDS(x), BMDP, and SPSS. Prerequisite: graduate standing or consent of instructor. Same as Social Ecology 290A.

201B Applied Multivariate Statistics (4) S. Lecture, four hours; laboratory, two hours. Conceptual overview of multivariate statistical methods. Criteria for appropriate use. Meaning of key measurements within methods. Statistical computing via MDS(x), BMDP, and SPSS. Prerequisite: Social Sciences 201A or Social Ecology 290A. Same as Social Ecology 290B.

204A Algebraic Theories in the Social Sciences (4). Seminar, three hours. Various applications of abstract algebra to the social sciences. The unifying mathematical framework is categorical algebra including such basic ideas as category, functor, natural transformations, and universality. Examples drawn from such areas as pattern recognition (group theory), formal languages and social relations (semigroups), and the general problems of inducing structure from behavior (data). This course requires some mathematical maturity, but no specific knowledge. Prerequisite: graduate standing or consent of instructor.

205C Alcohol and Behavior (4). Focuses on the effects of alcohol on behavior, with emphasis on memory and cognitive processes. Primary attention is given to research results and research potential. What studies have been done and what studies need to be done? Each student selects one area to review. Previous familiarity with the topic is not required. Prerequisite: graduate standing or consent of instructor.

220A-B-C Research Seminar in Politics, Society, and Social Issues (1.3-1.3-1.4) F, W, S. Seminar, two hours. Weekly reports and colloquia by faculty, students, and visitors. Students required to report on one research project over the course of three quarters. Prerequisite: admission to graduate program in Social Sciences or consent of instructor.

221A-B-C Theoretical Approaches to Urban and Transportation Analysis (4-4-4). Seminar, three hours. Selected theoretical perspectives on urban and transportation analysis based upon the study of human behavior. The seminar is to assist graduate students and faculty associated with the Institute of Transportation Studies to formulate and complete research programs emphasizing interdisciplinary collaboration in the social sciences. Research findings are presented by students, faculty, and invited guests. Prerequisite: graduate standing.

224A Empirical Democratic Theory (4). Seminar, three hours. An examination of contemporary political science and sociological research designed to analyze the nature of democratic government and to account for the stability and persistence of such regimes. Readings will include, but not be limited to, the works of Bachrach, Dahl, Eckstein, Lipset, Pateman, and Verba.

225B Politometrics Seminar (4). Seminar, two hours. Discussion of individual research projects and of recent literature, i.e., quantitative political science and international relations. Prerequisite: graduate standing or one previous politometrics course or consent of instructor.

228A Models of Collective Decision Making (4). Seminar, three hours. Mathematical models of decision making and communication processes, focusing on small group applications such as juries, legislative committees, courts, etc. Prerequisites: Social Sciences 11A-B or equivalent.

229A Topics in Politics, Society, and Social Issues (4-4-4) F, W, S. Seminar, three hours. Current research in politics, society, and social issues is presented. Topics vary.

230A-B-C Current Research in Social Relations (4-4-4) F, W, S. Seminar, three hours. Research seminar in which a number of Social Relations faculty members present and discuss their current research. A core course for first-year graduate students in social relations and anthropology.

230D-E-F Cultural Synergy I, II, III (4-4-4). A year-long seminar on the analysis of cultural synergy and its application in social criticism and in designing new institutions and environments. **I** concentrates on the use of questionnaires, content analysis, and computer interviewing techniques to measure conditions of cultural synergy. **II** is concerned with the application of the theory in social criticism, including the linkage of synergy conditions to social indicators and the culture of poverty. **III** addresses the problem of designing biostructures and satellite communities to maximize cultural synergy. Prerequisites: must begin seminar in fall quarter; consent of instructor.

231A-B-C Systems of Belief I, II, III (4-4-4) F, W, S. Seminar, three hours. Approaches to exploring and understanding particular belief systems in unfamilar cultures.

232A-B Advanced Experimental Anthropology (4-4) W, S. Seminar, three hours. This seminar deals with the major topics in experimental anthropology. It has a heavy anthropological emphasis. Individual research projects required from each participant. Prerequisite: consent of instructor.

233A-B Mathematical Anthropology (4-4). Seminar, three hours. A variety of substantive problems dealt with by anthropologists and what can be done through formalizing this organized complexity, using mathematical, statistical, and computer-based techniques. Models of the structure, process, and evolution of cognitive, social, and ecological aspects of culture considered.

234A The Design of Field Research (4). Seminar, three hours. A seminar on basic issues in the design of field research for anthropologists and other social scientists. Special attention given to problems of preparing dissertation proposals and applications for research grants.

234B-C Inequality in Rural Societies (4-4). Seminar, three hours. Social inequality (stratification) in small communities in the Third World with emphasis on the interaction of stratification systems and socio-economic change. Class sessions include lectures, discussions, and presentation of research results. Prerequisite: graduate standing or consent of instructor.

235D Cross-Cultural Research on Cognition (4). Seminar, three hours. Focuses on current research on cognition using cross-cultural methodology. Both the cultural concomitants of cognitive skills and their development over time are explored. Each student prepares a paper in the form of a research proposal which surveys existing work in some subarea and formulates a new research problem. Prerequisite: graduate standing or consent of instructor.

239A Topics in Anthropology (4-4-4) F, W, S. Seminar, three hours. Current research in anthropology is presented. Topics vary.

240A-B-C Research Seminar in Mathematical and Experimental Social Science (1.3-1.3-1.4) F, W, S. Seminar, two hours. Weekly reports and colloquia by faculty, students, and visitors. Prerequisite: admission to graduate program in Cognitive Sciences or consent of instructor. (Emphasis: psychology, economics)

241A Introduction to Mathematical Statistics (4) F. Seminar, two hours. Probability spaces, random variables, random sampling, maximum likelihood estimation, central limit theorems, hypothesis testing. Prerequisite: calculus or elementary statistics.

241B Analysis of Variance and Experimental Design (4). Seminar, three hours. Discussion of the logic of experimental design and inferential statistics. Presentation of some of the mathematical ideas behind inferential statistics and analysis of variance; however, main emphasis is on understanding the ideas at a usable level rather than mathematical formalism. Prerequisite: graduate standing or consent of instructor.

241C Mathematical Linguistics (4). Seminar, three hours. Formal languages and their relationship to abstract machines. Learnability of families of languages under various conditions of input information and processing capability. Prerequisite: graduate standing or consent of instructor.

241D Correlation and Applied Multiple Regression (4). Seminar, three hours. Correlation theory and principles of multiple regression analysis as applied to social science data. Topics include linear and nonlinear regression, time series analysis, varieties of correlation, and the general linear model. Prerequisite: graduate standing or consent of instructor.

242A-B-C Proseminar in the Cognitive Sciences (4-4-4) F, W, S. Seminar, three hours. 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.

244A Linguistic Theory (4). Seminar, three hours. An analysis of recent developments in linguistic theory. Discussion centers on the formulation of the goals of linguistic theory and on the use of linguistic data in relationship to these goals. Prerequisites: Social Sciences 141A or equivalent; graduate standing or consent of instructor.

244B Seminar in Semantics and Cognitive Structure (4). Seminar, three hours. Concentrates on recent research in semantic and cognitive structure. Prerequisite: some background in linguistics or psycholinguistics.

247B Research Seminar in Psycholinguistics (4). Seminar, three hours. This seminar consists of informal presentation and discussion of ongoing research in psycholinguistics on the part of the participants. Those people wishing to take the course who are not currently engaged in a research project will design and execute one. Prerequisites: consent of instructor and graduate standing.

247C Language and Its Use: A Seminar in Pragmatics (4). Seminar, three hours. This seminar covers selected topics dealing with the relationship between language and language use, including the work of some of the ordinary language philosophers, more recent developments in linguistics, and relevant efforts in psychology. Prerequisite: consent of instructor.

249A Topics in Cognitive Sciences (4-4-4) F, W, S. Seminar, three hours. Current research in cognitive sciences is presented. Topics vary.

251A-B Mathematical Models of Cognitive Processes I, II (4-4). Lecture, three hours. Mathematical models of various cognitive processes that have been developed mostly 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.

253A-B-C Visual Perception (4-4-4). Seminar, three hours. General introduction to visual perception for graduate students. Current research topics emphasized. Prerequisite: graduate standing or consent of instructor.

253D-E-F Electro-optical Instrumentation Related to the Human Eye (4-4-4). Seminar, three hours. In order to perform research on human vision, sophisticated electro-optical instrumentation is often required. Many optical and electro-optical instruments are designed to be used in connection with the human eye, and their design requires an understanding of the properties of human vision. Some of these instruments use the eye as a sensor (e.g., telescopes, fluoroscopes, etc.) and some are used to examine the eye (e.g., ophthalmoscopes, eye movement detectors, etc.). The course covers basic principles of the design of electro-optical systems and the relevant parameters of the human visual systems.

262A-B-C Research Methodology (4-4-4) F, W, S. Seminar, three hours. Seminar to help students focus on their dissertation topics and to help the instructors audition their current research interests. Graduate students at all levels and instructors make presentations describing their ongoing work.

263A Social Movements and Public Policy (4). Seminar, three hours. Several recent changes in the U.S. have resulted from the interaction of a social movement, a new ideology, and government policies. This seminar focuses on how these factors have changed the status of women. Changes in the status of minority groups also are considered.

263B Seminar in Social Structure (4). Seminar, three hours. Alternative theoretical approaches and research strategies for examining topics such as stratification, modernization, and socialization. Readings include Marx, Weber, Dahrendorf, Sahlins, and Lenski.

264A Seminar in Structuralism and Semiotics (4). Seminar, three hours. A fresh look at structuralism and semiotics to determine whether there are some symbolic systems (e.g., myths, designs, food, clothes) that are enough like language to profit from the comparison. Prerequisite: graduate standing or consent of instructor.

270A-B-C Proseminar in Expressive Forms (4-4-4). A survey of the literature pertaining to the cultural and social analyses of expressive forms. The first quarter emphasizes general theoretical approaches to such analyses; the second quarter is devoted to a study of myth and ritual; the third quarter explores literature and the visual arts. Extensive reading is stressed, with short essay assignments and a final examination each quarter. Not offered 1981-82.

272A-B-C Multicultural Foundations of Education (4-4-4) F, W, S. A three-quarter examination of public education in America, and of the forces that influence the philosophy, attitudes, and programs pertaining to ethnicity and the implications of dominant-minority relations.

273A-B Proseminar in Social Inquiry (4-4). 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. Not offered 1981-82.

274A-B Nondominant American Classes and Cultures: Literature and Interpretations (4-4) F, W. A survey of the literature and interpretations of nondominant social classes and ethnic/racial cultures in the United States. Emphasis on similarities and differences with one another and on their relationships with the dominant classes and culture. *Required of all second-year doctoral students in Comparative Culture.*

275A-B-C Cross-Cultural Comparisons (4-4-4) F, W, S. Analysis of the logic and methodologies of research in cross-cultural studies. Focus on explanations, methodological assumptions, research techniques, and introduction to statistics for comparative research. *Required of all second-year students focusing on social inquiry.*

276A-B-C The Methodologies of Expressive Forms (4-4-4) F, W, S. Sequence devoted to the study of the methodologies of the expressive forms of culture. Because expressive forms are so diverse and methodologies so varied, students might take courses elsewhere in the School or on campus to satisfy this requirement. With the concurrence of the academic advisor, for example, courses in literary theory and criticism, art history, or musicology might suit the student's individual needs. *Required of all second-year students focusing on expressive forms.*

279A Industrialization and Agrarian Crisis in Mexico (4) F. A seminar on the impact of planned and unplanned economic change upon Mexican society and culture.

279B National and International Dimensions of Third World Education (4) W. An examination of the nature and consequences of alien incursion into the education of Third World societies.

279C-D Imperialism and World Poverty I, II (4-4) F, W. A two-quarter seminar on core-peripheral relationships and neo-colonialism, and their role in creating and alleviating world poverty.

279E-F Southern California: The Technological Society I, II (4-4) F, W. A two-quarter seminar focusing on the history, evolution, and consequences of technology in Southern California.

279G Family, Sex, and Economy (4) F. An examination of theories and case studies pertaining to the interrelationships among family structures, sexual differences, and economic systems.

279H-I Topics in Marxist Sociology I, II (4-4) W, S. A two-quarter seminar on new developments in Marxism (theoretical and methodological) as they pertain to political economy, class, the state, imperialism, sexism, and racism.

279J Semiotics and Structuralism (4) W. An examination of the theoretical foundations, socio-historical context, and assumptions of semiotics, and their application of the tests of culture.

279K The State in Advanced Industrial Societies (4) F. An examination of the problems of political and social power, bureaucracy, government administration, legitimacy, and the relation of social class to political power.

279L Workshop on Dissertation Writing (4) S. Topics include conception, organization, and style.

279M-N America in the 1960s and 1970s I, II (4-4) F, W. A two-quarter seminar that examines the conceptualization and methodology of American politics and culture. Topics include feminism, neoconservatism, neo-evangelicanism, and the new left.

279P Issues of Terramedian Independence (4) S. A seminar on global issues generated by the modern sovereignty of societies of Africa and the Middle East.

290 Dissertation Research (4)

291 Directed Reading Examination Preparation (4)

299 Independent Study (4)

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

PROFESSIONAL AND INTERDISCIPLINARY STUDIES

DEPARTMENT OF INFORMATION AND COMPUTER SCIENCE

Julian Feldman **Chair**

Lubomir Bic, *Assistant Professor of Information and Computer Science* (systems based on the principles of dataflow; architectures and languages for such systems; dataflow principles for database applications)

Alfred M. Bork, *Professor of Physics and Information and Computer Science* (computer-based learning; production systems for computer-based learning; screen design; simulation; computer graphics)

Julian Feldman, *Professor and Chair of the Department of Information and Computer Science* (management of computing resources; problems involved in managing the computer resources of an organization, including resource allocation and financing organizations; the teaching of programming, and development of techniques which will facilitate the learning of programming)

Peter Freeman, *Associate Professor of Information and Computer Science* (software engineering methods, tools, and management, especially for analysis and design; reusability; study of design representation; development of design training methods)

Richard H. Granger, *Assistant Professor of Information and Computer Science* (cognitive science; natural language processing; memory models)

C. Scott Huddleston, *Visiting Lecturer in Information and Computer Science* (analysis of algorithms; concrete complexity; paradigms for algorithm design; high-level languages; program verification)
Keith E. Justice, *Associate Professor of Population and Environmental Biology and Information and Computer Science* (computer modeling of ecological phenomena)
Dennis F. Kibler, *Assistant Professor of Information and Computer Science* (learning control knowledge; planning and problem solving; parallel processing of logic programs)
John King, *Assistant Professor of Information and Computer Science and Graduate School of Management* (economics of computing, policies for computer management and use in organizations; public policy and social impact aspects of computer use)
Rob Kling, *Associate Professor of Information and Computer Science* (social analysis of computing—computer technology and public policy, sociology of computing)
Nancy Leveson, *Assistant Professor of Information and Computer Science* (information systems design; software safety and reliability; programming language semantics; database systems)
George S. Lueker, *Assistant Professor of Information and Computer Science* (computational complexity; probabilistic analysis of algorithms; data structures)
Jim Meehan, *Assistant Professor of Information and Computer Science* (natural language processing and its relation to problem-solving techniques in artificial intelligence; AI programming languages and programming environments; computer models of music theory)
Jack Sklansky, *Professor of Electrical Engineering, Radiological Sciences, and Information and Computer Science* (computer vision; pattern recognition; biomedical information engineering)
Thomas A. Standish, *Associate Professor of Information and Computer Science* (programming environments; data structures)

The development of the modern digital computer has made possible the solution of large-scale information processing problems in science, industry, and government. These problems include predicting the orbit of a satellite, simulating the economy, keeping track of inventories, and sending mail electronically. Such problems are solved by having the computer execute a procedure—a sequence of information processing operations including, but not limited to, arithmetic operations, testing and comparing numbers and representations of alphabetic information, and changing the sequence of operations within the computer. Information and computer science is concerned with the development of procedures which are effective and efficient, languages suitable for stating these procedures, systems for executing procedures, and the social setting in which they are used.

The implications of research in the development of information processing procedures and of systems for preparing and executing these procedures extend beyond the direct applications in using the modern digital computer to solve problems ranging from bookkeeping to the control of orbiting satellites. Many animate and inanimate systems can be usefully viewed as information processing systems and analyzed in terms of the way they represent, store, and process information. Thus information and computer science provides a point of view, an approach, for studying phenomena in many sciences.

Computing resources available to students include interactive access to the systems in the campus Computing Facility: a DECsystem-10, a Xerox Sigma-7, a DEC PDP-11/45, and 12 Teraks. The departmental computing laboratory equipment includes a DECsystem-2020, several minicomputers, a complement of peripheral devices, and several microcomputer-based systems.

On the basis of our experience over the past several years, we anticipate that the number of incoming freshmen and advanced-standing students who elect ICS as a major in the fall of 1982 will exceed the number of positions available. In the fall of 1981 about half of the incoming applicants who elected ICS were admitted to the major.

To ensure that their application is considered for the fall of 1982, students should be sure to file their application so it arrives on campus before November 30, 1981. The selection criteria will include grades, test scores, and affirmative action considerations.

Students interested in using computers as an adjunct to their major field of study will be able to enroll in the introductory programming sequence (ICS 1, 2, and 3).

The Department is considering modifications to its rules for allowing students on campus to change majors to ICS, to its rules for admitting advanced-standing students, and to its undergraduate degree requirements. Please contact the Department for the current status of these rules.

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 on the basis of grade point average and the student's performance on research. Approximately 12 percent of the graduating seniors are selected for honors.

Undergraduate Program

The undergraduate program in Information and Computer Science (ICS) is designed for students preparing for professional careers and for students preparing for graduate study in information and computer science. It is designed to acquaint the student with the currently available methods of information and computer science which are useful in solving problems of science, industry, and government; to prepare the student for the additional formal and self education required in this rapidly developing field; and to foster and extend the student's abilities to solve the kinds of problems encountered in information and computer science. The use of the computer as a problem-solving tool and the effects of its adoption on procedure and data representation are the underlying themes of the program.

Students enrolled in other degree programs who are interested in digital computer programming will normally begin their studies with Introduction to Programming and Problem Solving I (ICS 1) and continue in the programming sequence with Programming and Problem Solving II (ICS 2) and Programming and Problem Solving III (ICS 3) as far as their interests require and their programs permit. Students who are doing, or planning to do, extensive work with numerical problems are advised to consider courses in numerical analysis.

Students interested in courses in computer engineering and digital systems should consult the list of Engineering courses. Stu-

dents can declare a double major in Engineering and ICS; early consultation on such a double major is advisable.

Students are advised on academic matters by faculty and staff. Advising of undergraduate students is coordinated by the departmental counselor who also provides information on vocational and counseling services available on the campus.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

Departmental Requirements

Information and Computer Science 1, 2, 2L, 3. Any six of the following eight Information and Computer Science courses, provided that at least one course is chosen from each pair: 141, 142; 151, 152; 161, 162; 171, 172. Any two of the following Information and Computer Science courses: 145, 155, 175, 195, Information and Computer Science 193.

Mathematics 2A-B-C, 6A-B-C, and a three-quarter sequence of any upper-division Mathematics course.

Each quarter the Department publishes a newsletter for undergraduate students containing other rules and regulations. Students may inquire at the Information and Computer Science Counseling Office for a copy.

The 3-2 Program with the Graduate School of Management

Information and Computer Science majors may enter a cooperative 3-2 program offered by the Graduate School of Management. The special five-year program for selected students leads to both a Bachelor of Science degree in Information and Computer Science and a Master of Science degree in Administration. Inquiries should be directed to the Graduate School of Management.

Graduate Program

M.S. Degree

The course of study leading to the Master's degree in ICS provides advanced education in information and computer science for computer professionals with a B.S. in computer science or a related area. The program combines advanced study in basic areas of computer science with opportunities for specialization in software design and analysis, information systems, or computer systems organization. The program can be completed in two years or less of full-time study, or can be taken on a part-time basis.

Software Design and Analysis—emphasis on the analysis, design, implementation, and management of software systems, such as operating systems, translators, and information retrieval systems.

Information Systems—emphasis on the analysis of information requirements in organizations and the design of systems to meet those requirements.

Computer System Organization—emphasis on the specification and synthesis of computer systems, particularly their organizational and hardware aspects.

Admission to the program requires a baccalaureate degree, including two years of course work beyond the introductory level in computer science and at least two years of college-level mathematics or equivalent work experience. The Graduate Record Examination (GRE) Aptitude Test is required, and the GRE Advanced Test in Computer Science is strongly recommended.

The departmental Graduate Advisor for the M.S. program should be consulted upon entrance, and periodically thereafter, for guidance in the selection of appropriate courses. The Graduate Advisor also is an important source of information about other academic matters. When the student is prepared to begin work on the thesis and is advanced to candidacy for the M.S. degree, a formal thesis committee will be appointed to supervise the thesis and to accept it on behalf of the Graduate Council.

The program consists of 12 courses (48 units). Three may be upper-division undergraduate courses. If appropriate to the program, up to three graduate courses (12 units) may be accepted as transfer credit from other institutions.

Three courses (12 units) are required of all students in the M.S. program:

ICS 221 (Analysis of Computer Systems)

ICS 231 (Formal Analytic Techniques)

ICS 245 (Introduction to Software Engineering)

A thesis reporting on a major piece of technical work also is required.

The program is available to students who are unable to study full time because of personal or professional commitments.

Ph.D. Program

The program leading to the Ph.D. in Information and Computer Science is research-oriented and encourages students to work together with faculty to solve advanced problems in computer science. Currently, active research groups are working in analysis of algorithms, artificial intelligence, machine architecture, programming environments, software engineering, and social impacts of computing. All of these studies have extramural funding. Students as well as faculty are active professionally; a number of student papers have recently been accepted for publication in the proceedings of national conferences. The Ph.D. program is designed for full-time study, and can be completed in four to five years, depending upon the focus of research.

Admission

Approximately 15 students are admitted each year. Applications are evaluated on the basis of the student's prior academic record and potential for creative professional contributions. Applicants are expected to have good skills in computer programming and skills in mathematics equivalent to those obtained by students who complete college-level courses in logic and set theory, analysis, linear algebra, and modern algebra or probability and statistics. Computer science undergraduate training is not required, but some familiarity with machine organization, data structures, software systems, and formal models is helpful.

Applicants should take both the GRE Aptitude Test and the GRE Advanced Test in Computer Science. Where feasible, personal interviews are desired, but inability to have one does not prejudice an application. Additional information on application procedures can be obtained from the Division of Graduate Studies and Research. Further information on the Department and the graduate program can be obtained by writing to the Department.

Financial Assistance

Financial assistance is available to students in the form of teaching and research assistantships. Stipends vary, depending on the duties involved, and range up to $7,000 for the academic year. Students who also teach or assist with faculty research during the summer may earn an additional $2,000 to $4,000 per year. More than half of the doctoral students in residence receive financial assistance.

General Requirements for the Ph.D.

The Ph.D. degree is attained in three phases.

Phase I. Breadth: The purpose of the breadth phase is to develop the student's understanding of broad areas in computer science.

Understanding is certified by satisfactory performance on a written preliminary examination which examines knowledge in five areas:

1. Architecture and Operating Systems
2. Programming Languages and Data Structures
3. Formal Methods
4. Artificial Intelligence
5. Design, Analysis, and Impact of Systems

The examination is designed to test both basic knowledge and problem-solving ability. It is given twice a year, once in October and once in May. Students are required to pass the examination by the end of their second year.

Phase II. Directed Research: Research under faculty direction in this phase is intended to develop research skills such as use of the literature; problem identification, definition, and analysis in depth; and creative problem solving. This research may be conducted individually or with other students. Phase II concludes with an oral qualifying examination conducted by a formal candidacy committee, appointed by the Dean of Graduate Studies and Research. In this examination the student must demonstrate the essential research skills.

Phase III. Dissertation: This phase is devoted almost exclusively to the dissertation. When the student has passed the formal qualifying examination and advanced to candidacy, a doctoral committee is appointed to supervise the dissertation and approve it on behalf of the Graduate Council.

The timing and methods chosen by students and their faculty advisors to develop competence in different areas are expected to vary. Typically the student and the advisors will outline a program for each area that makes use of a combination of the following resources: courses, individual study, project work, directed research.

Colloquium: Each student shall present a colloquium to the Department in the area of interest prior to entering the dissertation phase.

Teaching Requirement: All ICS graduate students are required to participate in teaching activities before being advanced to candidacy. Teaching activities in summer or night school, service at other universities, etc., may be accepted as fulfillment of the requirement.

Programming Competence Requirement: A computer scientist must be able to read and write programs in assembly, algebraic, and nonnumerical languages.

Faculty Research Interests

Research areas of the faculty include multimachine and distributed machine architecture, data flow and reduction language machines, data flow representations of data base, programming languages, program development and maintenance environments, data structures, analysis of algorithms and concrete complexity, natural language processing, knowledge representation, computer models of music theory, software engineering tools and methods especially for analysis and design, social impacts of computing, and management of computing resources.

Lower-Division Courses

1 Programming and Problem Solving I (4) F, W, S. 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. (ICS 1 and Engineering 10 may not both be taken for credit.)

2 Programming and Problem Solving II (4) F, W. Logical basis of computers and their structure; representation of instructions and data, codes, and number bases. Stack systems and other organizations. Assembly, linking, and loading. Computer as interpreter: microprogramming and interpretation. Programming in a higher-level language and in assembly language. Prerequisite: ICS 1 or equivalent.

2L Laboratory for Programming and Problem Solving II (2) F, W. Programming projects in macro-assembly language to develop, in depth, ideas introduced in ICS 2. Corequisite for ICS majors: ICS 2.

3 Programming and Problem Solving III (4) W, S. Basic concepts of data structures and related algorithms. Arrays, lists, queues, stacks, strings, trees, and graphs; discussion of various implementations of these data objects. Investigation of effects of implementation choice on efficiency of an algorithm. Storage allocation and garbage collection. Sorting and searching. Comparison of data structuring features of several programming languages. Prerequisite: ICS 2.

10 Computers and Society (4) F. Introduction to the current state of information and computer science and technology for the nontechnical student. An overview for the person who wants to understand computers and automation as a major element in our technological society. Terminology and concepts; information structures; hardware and software; programming languages; applications in business, science, and education; implications. May not be taken for credit by ICS majors.

15 Semantics of Computing (4). Introduction to computers intended primarily for students in the social sciences, fine arts, and humanities. Stress on the nonnumeric uses of computers including their use as powerful symbol manipulators. Emphasis on discovery of computing concepts through actual use of computers. Credit may not be received for both this course and ICS 1.

90 Survey of Programming Languages (4) S. Presentation and comparison of the procedural and data representation capabilities of several programming languages. Computer solution of problems in each language. Prerequisite: ICS 1 or equivalent.

Upper-Division Courses

141 Programming Languages (4) F. In-depth study of several contemporary programming languages stressing variety in data structures, operations, notation, and control. Examination of languages for list, string, and array manipulation; languages for structured programming and systems programming; command and query languages; and general purpose languages. Principles of programming language design; programming style; run-time representations, environments, and execution strategies. Prerequisites: ICS 2 and 3.

142 Compilers and Interpreters (4) W. Introduction to theory of programming language processors. Study of compilers focusing on lexical analysis, syntax analysis, and compile-time mechanics including code generation and optimization. Study of interpreters focusing on execution of interpretive representations (such as postfix), on mechanics of interpretation, and on run-time management of data structures. Prerequisite: ICS 141.

145 Language Processor Construction (4) F, S. 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.

151 Elements of Digital Computers (4) F. First part of course deals with important concepts of switching theory: Boolean algebra, combinatorial circuits, synchronous sequential circuits, minimization, Mealy and Moore machines. Second part of course deals with register-transfer level of digital computers: instruction set processors, I/O controllers, interprocessor communication mechanisms, and memory organizations. Emphasis on current state of hardware technology and impact of technology on system design. Prerequisites: ICS 2L and 3. (ICS 151 and Engineering EE131 may not both be taken for credit.)

152 Process and Resource Management in Computer Systems (4) W. 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 context of several well-known systems. Prerequisites: ICS 141 and 151.

155 Project in Computer System Organization (4) W, S. Detailed specification and design of an actual computer system. Hardware-software tradeoffs. Emphasis on logical organization of system and on communicating design to others through documentation suitable for generating a concrete implementation. Prerequisite: ICS 152.

161 Design and Analysis of Algorithms (4) F. Discussion of 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: Mathematics 6A-B-C and ICS 3.

162 Formal Languages and Automata (4) S. 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: Mathematics 6A-B, and either ICS 141 or 161.

171 Introduction to Heuristic Problem Solving in Artificial Intelligence (4) W. 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: Mathematics 6A-B and ICS 3.

172 Programming Techniques in Artificial Intelligence (4) S. The study of the language LISP and its derivatives, as used in problem-solving sytems requiring simple recursion, procedural embedding of information, production-system control structures, pattern-directed function invocation, and a variety of access and control mechanisms. Prerequisites: ICS 141 and 171.

175 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 and 172.

180 Special Topics in Information and Computer Science (4) F, W, S.

181 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. ICS 1 recommended.

182 Tutoring in ICS (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 will depend on the courses with which the student is working, as determined by the instructor in charge. In most cases they will include some time in individual tutoring and a term paper on a project.

183 Data Processing Principles and Techniques (4) F. Primary emphasis on Cobol programming and its application in a business environment. Several programming projects required. Focus on development and implementation of business financial applications. File organization, access methods, introductory concepts in data base development. Prerequisite: ICS 1 or equivalent.

184 File and Data Base Management (4) S. Data base system architecture—data structures, storage structures, and data languages. Alternate approaches to data base management systems—relational approach, hierarchical approach, network approach. Data base security and integrity. Query processing. ICS 3 recommended.

186 Computer Graphics (4). 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 man-computer communication media. ICS 3 recommended.

191 System Measurement and Evaluation (4). Framework and methodology for determining the performance of existing and proposed information processing systems. Evaluation from the viewpoints of users, designers, and customers. Prerequisites: ICS 3, ICS 152.

193 Individual and Organizational Factors in Computing (4) F, S. Specification and impacts of information systems in organizations. Computers as a tool from a societal-cultural perspective; computers and the public; social accountability of computing. Computing as a professional activity; issues of recognized standards of performance, licensing of practitioners, code of ethics. Prerequisite: ICS 1. English WR 39 recommended.

195 Project in System Design (4) F, W. Specification, design, implementation, testing, and documentation of a software system. Emphasis on methods essential to creating software systems: logical design, effective oral and written communication of concepts, proper programming style, well-planned testing, and group cooperation. Prerequisites: ICS 141 and senior standing.

199 Individual Study (4) F, W, S

Graduate Courses

211 Data Structures (4) F. An in-depth treatment of a variety of data structures and their associated management algorithms. Queues; stacks; arrays and their address mapping functions; list structures including garbage collection, compacting, copying and equality; trees, subtrees, free and binary trees, balanced trees, AVL trees, and the use of trees in sorting and searching; multilinked structures including storage allocation strategies; tables, hash codes, comparison of search methods; strings, encrypting, compression and minimal length encodings; files, records, file structures; and theories and formalisms for data description.

212 Programming Language Processors (4) W. Theory and construction of compilers and interpreters for programming languages. Lexical Analysis: use of finite state automata, regular expressions, fast membership and conversion techniques. Syntax Analysis: Top-down, Bottom-up, Cocke's Algorithm, Earley's Algorithm, precedence techniques and left-to-right shift-reduce techniques such as LR(k), SLR(k), LALR(k), and reduction analysis. Compiling Mechanisms: symbol tables, chaining, floating addresses, dope vectors, thunks. Code Optimization: constant propagation, register minimization, code motion, reduction in operator strength, interval analysis, and other techniques. Run-Time Mechanics: Algol displays, heaps. Anatomy and Construction of Interpreters: intermediate forms such as postfix, interpretive execution of intermediate forms. Prerequisite: ICS 211.

221 Analysis of Computer Systems (4) W. Comparison of architectures of several important systems of current and historical interest. Comparisons are based on instruction set processors, addressing schemes, I/O structures, memory organization, resource and process management, protection schemes, and the degree of parallelism. Both hardware and software realizations of these architectural features are studied.

222 Design of Computer Systems (4) S. Design methodologies for computer systems. Hardware-software tradeoffs. Hardware and software description languages. Functional description of systems before they are built. Impact of hardware technology on systems. Discussion of current trends in organization of systems. Prerequisite: ICS 221.

231 Formal Analytic Techniques (4) S. Introduction to some theoretical aspects of computer science which are related to applications. Topics from analysis of algorithms, operations research techniques, and formal models of computer systems (intended primarily for M.S. students).

232 Models of Computation (4) S. Fixpoint theory of program semantics; flow chart and recursive schemes. Various models of asynchronous computation, including flow graph schemata and data flow models such as Petri nets and programming-oriented systems. Focus in these latter models is on various properties such as determinacy, deadlock, race conditions, and on the modeling of processes and interprocess communication. Implications for machine architecture and network.

233 Analysis of Algorithms (4) W. Analysis of correctness and complexity of various efficient algorithms; discussion of problems for which no efficient solutions are known. Set manipulation, graph algorithms, matrix multiplication, fast Fourier transform, pattern matching, and NP-complete problems. Prerequisite: ICS 161.

241 Computer Models of Human Behavior (4) W. Study of experimental and analytical techniques appropriate to the development of computer models of human behavior with special emphasis on information processing models. Problems of induction and testing of models are also presented.

242 Knowledge Representation in Artificial Intelligence (4) S. Investigation of approaches to representation of knowledge for machine intelligence. Need for such knowledge as exhibited by examples of human behavior. Evaluation of current models and representations.

245 Introduction to Software Engineering (4) F. Survey of concepts and techniques in design and development of large software systems. Fundamental problems and applicable research in needs analysis, specification, design, programming, testing, project management, and software quality.

246 Economics and Administration of Computing (4) W. Approaches to providing computing services in the context of large organizations. Determination of goals, selection of equipment, management of programming staff, coping with change, marketing services, keeping up with technology, pricing and other techniques for allocation of services, financing, vertical versus horizontal organizations. Same as Social Ecology 246.

Graduate-level seminars and workshops are not offered each year but are offered as student and faculty interests dictate.

250 Seminar in Programming Languages, Translators, and Systems (4)

251 Seminar in Artificial Intelligence (4)

252 Seminar in Automata Theory (4)

253 Seminar in Formal Languages (4)

254A-B-C Seminar in Pattern Recognition (4-4-4)

255A-B Seminar in Self-Organizing Systems (4-4)

256 Seminar in Computer Architecture (4)

257 Seminar in the Economics of Computation (4)

258 Seminar in the Social and Economic Implication of Computers and Automation (4)

259 Seminar in Optimization Techniques (4)

260 Seminar in Natural Language Processing (4)

261 Seminar in Numerical Analysis (4)

262 Seminar in Models of the Brain (4)

270 Workshop in Programming Languages, Translators, and Systems (4)

271 Workshop in Artificial Intelligence (4)

272 Workshop in Automata Theory (4)

273 Workshop in Formal Languages (4)

274 Workshop in Pattern Recognition (4)

275 Workshop in Self-Organizing Systems (4)

276 Workshop in Computer Architecture (4)

280 Special Topics in Information and Computer Science (4) F, W, S

290 Research Seminar (2) F, S. 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 (4) F, W, S

295 Colloquia-Orientation (2) F, W, S. Graduate orientation program and colloquium series. Required of all Phase I Ph.D. students each quarter. Satisfactory/Unsatisfactory only.

298 Thesis Supervision (4) F, W, S

299 Individual Study (4) F, W, S

PROGRAM IN SOCIAL ECOLOGY

Joseph F. DiMento **Director**

Arnold Binder, Ph.D. Stanford University, *Professor of Social Ecology and Psychiatry & Human Behavior*

Arthur S. Boughey, Ph.D. Edinburgh University, *Professor Emeritus of Social Ecology*

Ralph A. Catalano, Jr., Ph.D. Maxwell School, Syracuse University, *Associate Professor of Social Ecology*

Steven D. Colome, S.M. Harvard University, *Acting Assistant Professor of Social Ecology*

Ross F. Conner, Ph.D. Northwestern University, *Associate Professor of Social Ecology*

Thomas J. Crawford, Ph.D. Harvard University, *Associate Professor of Social Ecology and Psychiatry & Human Behavior*

T. Timothy Crocker, M.D. University of California, San Francisco, *Professor and Chair, Department of Community & Environmental Medicine, and Professor of Social Ecology*

Joseph F. DiMento, Ph.D., J.D. University of Michigan, *Director of the Program in Social Ecology and Associate Professor of Social Ecology*

C. David Dooley, Ph.D. University of California, Los Angeles, *Associate Professor of Social Ecology*

Kenneth W. Dumars, M.D. University of Colorado, *Associate Professor of Pediatrics, Physical Medicine & Rehabilitation, and Social Ecology*

Claibourne I. Dungy, M.D. University of Illinois, Chicago, *Assistant Professor of Pediatrics and Social Ecology*

Gary W. Evans, Ph.D. University of Massachusetts, *Associate Professor of Social Ecology*

Gilbert L. Geis, Ph.D. University of Wisconsin, *Professor of Social Ecology*

Michael P. Golden, M.D. University of California, Los Angeles, *Assistant Adjunct Professor of Pediatrics, Family Medicine, and Social Ecology*

Louis A. Gottschalk, M.D. Washington University Medical School, *Professor of Psychiatry & Human Behavior, Social Ecology, and Social Science*

Ellen Greenberger, Ph.D. Harvard University, *Professor of Social Ecology*

William M. Michelson, Ph.D. Harvard University, *Professor of Social Ecology*

Thos. L. Nelson, M.D. University of California, San Francisco, *Professor of Pediatrics, Associate Dean, College of Medicine, and Professor of Social Ecology*

Raymond W. Novaco, Ph.D. Indiana University, *Associate Professor of Social Ecology*

Betty H. Olson, Ph.D. University of California, Berkeley, *Associate Professor of Social Ecology*

Donald P. Orr, M.D. Case Western Reserve University School of Medicine, *Assistant Professor of Pediatrics and Social Ecology*

Henry N. Pontell, Ph.D. State University of New York, Stony Brook, *Assistant Professor of Social Ecology*

Karen S. Rook, Ph.D. University of California, Los Angeles, *Assistant Professor of Social Ecology*

Benson Schaffer, J.D. Southwestern University School of Law, *Visiting Lecturer in Social Ecology*

Peter L. Scharf, Ed.D. Harvard University, *Assistant Professor of Social Ecology*

Amy Somers, Ph.D. Duke University, *Assistant Professor of Social Ecology*

Laurence D. Steinberg, Ph.D. Cornell University, *Assistant Professor of Social Ecology*

Daniel S. Stokols, Ph.D. University of North Carolina, *Associate Professor of Social Ecology*

Carol K. Whalen, Ph.D. University of California, Los Angeles, *Professor of Social Ecology and Psychiatry & Human Behavior*

John M. Whiteley, Ed.D. Harvard University, *Professor of Social Ecology and Vice Chancellor—Student Affairs*

The Program in Social Ecology applies interdisciplinary scientific methods to the study of a wide range of recurring social and environmental problems. Among the issues of longstanding interest to the Program are violence in society, social influences on normal and atypical human development over the life span, and aspects of the physical environment which have an impact on human health and behavior.

The curriculum is organized around three major problem areas (Environmental Analysis, Criminal Justice, Social Behavior) rather than by traditional academic disciplines (e.g., regional planning, criminology, psychology). The Program in Social Ecology 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. Social ecologists also use laboratory, questionnaire, and interview methods to study human social and environmental problems.

The faculty of Social Ecology is *multidisciplinary.* It includes psychologists who have specialized in developmental, environmental, community, and social psychology; sociologists; planners; environmental health scientists; and lawyers. While faculty members are firmly grounded in their parent disciplines and teach basic courses in them, they concentrate their efforts on teaching and research with a problem orientation. In these problem-oriented courses, they 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). Another feature of instruction in Social Ecology is the use of lecturers from the community, individuals whose academic qualifications are complemented by their experiences with practical applications. For example, a judge, an architect, and a former police officer are among those who teach courses in the Program. A number of social ecologists 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.

Degrees

Social Ecology ..... B.A., M.A., Ph.D.
Applied Ecology (offered jointly with the School of Biological Sciences) ..... B.A.

Honors

Honors at graduation will be awarded to about 12 percent of the graduating seniors. Initial eligibility for such honors will be on the basis of grade point average. Final decisions concerning the awards of *summa cum laude, magna cum laude,* and *cum laude* will reflect a number of other factors, including quarters of work completed at UCI, number of graded units of course work in Social Ecology, and the quality of papers written for field study and independent study. Decisions about the award of honors are the responsibility of a committee chaired by the Associate Director for Undergraduate Studies.

Undergraduate Program in Social Ecology

Social Ecology classes are oriented toward both theoretical and applied learning, so that each enhances and enlarges the other. The undergraduate program is organized around four curricular components: a Principles and Methods cluster and three subareas concerned broadly with problems of Environmental Analysis, Criminal Justice, and Social Behavior. Students do not major in a particular subarea; rather, they are expected to develop a degree of competence in each.

Field Study. An important characteristic of the undergraduate program is its field study requirement for majors. Field study is open *only* to Social Ecology majors. In faculty-supervised field study situations, students relate theories learned in the classroom to actual social-environmental problems, use acquired skills to collect meaningful data, and test findings from controlled laboratory studies in the more complex settings in which significant behaviors and events actually occur. The settings provided for field study include a wide range of problem-oriented institutions and agencies, e.g., Orange County Planning Department, Orange County Department of Mental Health, Orange County District Attorney's Office, California Youth Authority, Environmental Education Council. Other field study placements may be generated by faculty and students to fit their particular interests. All field studies are taken on a Pass/Not Pass basis. Field studies may not be added after the second week of classes. Further information on field study, including information about sign-up procedures, may be obtained from the Social Ecology Counseling Office.

Career Opportunities. Graduates of the Program in Social Ecology bring a distinctive cross-disciplinary perspective to the job market. The Program provides a solid foundation for those students who seek jobs in planning departments, mental health settings, and a variety of community and governmental agencies. Many Social Ecology students find that their interdisciplinary training is also useful for careers in management and personnel. The Program 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. Further information on career opportunities and graduate school preparation can be found in the Sample Programs section on page 199.

Major Subareas

Environmental Analysis

The Environmental Analysis subarea is concerned with the impact of the physical environment on human health and behavior. Students begin with basic courses in human ecology, environmental quality, environmental psychology, and planning and public policy. Subsequent course work moves toward problem-oriented courses, enriched by ongoing faculty and student research. Such course work covers the effects of environmental stressors (e.g., crowding, smog, noise); the biology and politics of water pollution; the degree of compliance of different California counties with changes in environmental regulations designed to improve the quality of the environment; the way in which economic changes in a community affect the health and well-being of its residents; the psychological determinants of the decision to have children; and the effects of stress on health.

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, and community environmental education. Graduate and professional opportunities related to environmental analysis include urban and regional planning, architecture, environmental psychology, ecology, and public health. 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 at the Orange County Planning Department, the offices of private architectural firms, environmental information centers, pollution control agencies, and health agencies.

Criminal Justice

The Criminal Justice subarea is concerned with the social control of criminality and violence. The subarea focuses on factors that promote criminal behavior, and on the institutions, such as prisons and courts, that attempt to control criminality. Basic courses cover forms of criminal behavior and introduce the student to the criminal justice system. Subsequent course work is complemented by ongoing faculty and student research. Thus, students learn about the prediction of individual violence; the determinants of police decisions to shoot; the relative effects of the law and of peer group norms on the use of illegal drugs; characteristics of persons and of situations which promote intervention by "good Samaritans" at the scene of crimes; violence against women; and the control of delinquency through family counseling and crisis intervention.

The Criminal Justice subarea provides Social Ecology students with opportunities to examine critical issues in regard to criminal and delinquent behavior and society's reaction to crime. The course of study prepares students for careers in law enforcement and corrections, as well as for law school and

other graduate programs, including criminology and sociology. Offerings examine social problems that involve crime, society's reactions to these problems, and assess the organization and operation of the criminal justice system as it now functions. Field study placements are available in police departments, prosecutor's and public defender's offices, probation and parole agencies, consumer affairs agencies, and the state juvenile detention system.

Social Behavior

The Social Behavior subarea is concerned with the relationship between the social environment and human behavior. The central objective is to study variations in social settings (e.g., the family, school, work place) that have implications for healthy and unhealthy development over the course of the life cycle. Students begin with basic course work in human life cycle development, social psychology, community psychology, and abnormal psychology. Subsequent course work, enriched by research, examines the effects of different types of day care facilities on young children's development; psychological consequences of psychostimulant medication in the treatment of childhood hyperactivity; social and economic factors associated with child abuse; the impact of early work experience on adolescents' economic power, psychological and social development, and career attitudes; and the role of social support (family and friendship networks) in moderating stressful life events.

Approximately 50 agencies are available for field study in this subarea, including schools, child care facilities, community clinics, hospital settings, and social service agencies. A major objective is to give students a foundation which will enable them to work in the private or public sectors or to do graduate work in psychology, and fields related to mental health, human development, and education after graduation from UCI.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

Social Ecology Requirements

Social Ecology 1 (Principles of Social Ecology) and 10 (Research Design); any three of the following introductory Social Ecology courses: J4 (Introduction to Criminal Justice), E5 (Introduction to Environmental Quality and Health), E6 (Populations and Environments), E7 (Introduction to Planning and Public Policy), E8 (Introduction to Environmental Analysis), or S9 (Introduction to Human Behavior); required prerequisite courses for field study in a given subarea; Social Ecology 197A followed by two quarters of field study: E197, S197, or J197, to be elected during the junior and senior years; and five upper-division courses (those numbered 100-196) from Program in Social Ecology offerings.

Planning a Program of Study

As noted earlier, students who major in Social Ecology do not limit themselves to a single subarea of interest. Rather, they are encouraged to develop an appreciation of a wide array of person-environment problems. The strongest program of study also will include basic course work in at least one of the social, biological, or physical sciences. Students who enter the major as freshmen should plan to complete the required lower-division courses by the end of the junior year. Transfer students and students who declare a major in Social Ecology after entering UCI should work with the Social Ecology Counseling Office to develop a plan for meeting the requirements of the major in an orderly fashion.

The Social Ecology Counseling Office is prepared to help all students in planning a program of study. Contact with this Office is important so that students will develop a broad, yet coherent, series of courses. Students who expect to pursue graduate study should consult also with appropriate faculty members to ensure proper preparation.

Sample Programs

Many Social Ecology majors plan to attend graduate or professional schools. Since the appropriate undergraduate preparation will vary depending upon the student's postgraduate plans, the Program makes the following suggestions.

Psychology. Social Ecology offers a strong program of courses for students who are interested in careers or graduate education in psychology. Specifically, half the faculty have backgrounds in psychology and offer courses in developmental, environmental, community, social, and clinical psychology. Relevant Social Ecology courses for students pursuing career paths in these areas include the following: 10, 166, S9, S11, S20, S21, S84, S86, S104, S106, S107, S110, S114, S116, S119, S122, S124, S138, S143, J42, J190, E87.

In addition, a number of courses from the Schools of Social Sciences and Biological Sciences would strengthen an applicant's preparation for graduate work in psychology (e.g., Social Sciences 7 and 151A-B-C and Biological Sciences 80 and 81).

Law. Most law schools prefer applicants with a broad and varied undergraduate preparation over those who have concentrated their studies heavily in a narrowly specialized topic. Consequently, Social Ecology majors who plan on a career in law should take a diversified program of courses both within the Social Ecology program and in their non-Social Ecology elective courses (e.g., political science, economics, history, and a wide-ranging selection of courses in the sciences and the humanities). Social Ecology courses that are relevant to a career in law include: J4, J30, J80, J132, J137, J139, J144, J147, J181, J182, J190, E30, E82, E89, E162, E181, S9, S20, S105, S161, S162, S163.

Administration. Students interested in careers in administration or management in business, health care, or governmental agencies should consider selecting several of the following courses: 113, 166, E7, E82, E89, E113, E116, E118, E162, E168, E172, E177, E178, E192, J80, J132, J142, J182, S84, S86, S110, S126, S138, S161.

Individuals interested in combining work in Social Ecology and a Master's degree in Administration may apply to the UCI Graduate School of Management for admission to their 3-2 Program. Such students must have completed all of the course requirements for the B.A. degree in Social Ecology by the end of their junior year. Applications should be made early in the junior year. During the senior year, students will take courses in administration which will count toward the 180 total units needed to receive the Bachelor's degree. Upon successful com-

pletion of the required courses and units, usually at the conclusion of four years of undergraduate study, the B.A. degree in Social Ecology will be awarded. The M.S. degree in Administration will be awarded after successful completion of all requirements for the advanced degree, usually at the end of the fifth year. See page 228.

Education. Students who plan to obtain a teaching credential or a higher degree in the field of education should consult with counselors in the Office of Teacher Education early in their college careers. Students completing a B.A. in Social Ecology may qualify for a waiver of the Single Subject Credential Examination.

Social Ecology courses that are relevant to a career in education include: S9, S11, S14, S21, S101, S104, S106, S107, S114, S119, S121, S122, S124, S127, S128, S129, S130, S134, S140, S145, S161, S168, S172, E5, E6, E54, E87, E89, E158, E160, J42, J80, J132.

For additional information about teaching credentials, see page 232.

Urban Sociology and Criminology. The program of courses for students who are interested in careers or graduate education in urban sociology or criminology should include some of the following courses: E32, E33, E135, E139, E173, S72, S86, S139, S176, J4, J41, J44, J132, J133, J142. Other relevant course work is offered in the School of Social Sciences.

Urban and Regional Planning. Social Ecology provides undergraduates with a broad preparation for careers or graduate study in planning. Relevant courses include: 113, 166, E5, E6, E7, E30, E87, E89, E112, E114, E117, E141, E162, E168, E172, E176, E177, E181, E182.

Public Health. Social Ecology majors who are considering the possibility of graduate school in public health will want to include a number of the following courses in their program of study: E5, E6, E7, E30, E53, E110, E116, E120, E125, E140, E156, E158, E160, E162, E165, E167, E171, E173, E174, S9, S11, S20, S105, S106, S110, S119, S138, 166.

It should be noted that a concentration in many graduate-level specialties within the field of public health requires a strong undergraduate preparation in the physical and biological sciences.

Further information about appropriate preparation for these and other graduate programs may be obtained from the Social Ecology Undergraduate Counseling Office.

Undergraduate Major in Applied Ecology

The Program in Social Ecology and the School of Biological Sciences offer a new program of undergraduate instruction leading to a B.A. degree in Applied Ecology. The objective is to integrate concepts of theoretical ecology and environmental planning and resource management into an advanced educational framework. By presenting an interdisciplinary approach, the curriculum furnishes a strong undergraduate foundation for students interested in advanced study in environmental planning and resources 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. These courses blend theoretically with applied knowledge. 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.

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. Also, students are encouraged to explore the concentration in Ecology and Environmental Biology, leading to a B.S. degree in Biological Sciences, offered by the School of Biological Sciences.

Requirements for the Bachelor's Degree in Applied Ecology

University Requirements: See page 14.

Applied Ecology Requirements

Biological Sciences 90, 101, 102, 102L, 103, 103L, 104, 104L, 105, 106, 106L, 120, either 171 or 174, and either 169 or 179; Chemistry 1A-B-C, 1LB-LC, 51A, and 51LA; Mathematics 2A-B and 7 or Mathematics 2A-B and Social Ecology 10; Physics 3A-B, 3LA-LB; Humanities 1A-B-C, or another option of the lower-division Writing Requirement of the breadth requirement (Category I) and a three-quarter sequence in either Humanities or Literature (Category IV, Humanistic Inquiry); Social Ecology 1, E5, E7, E162, E168, E173, E178, and either E125 and E125L or E156A or E146; and Social Ecology 197A and two quarters of Social Ecology E197.

Students must attain at least a 2.0 grade point average in required courses in Biological Sciences and Social Ecology, and a 2.0 grade point average in required upper-division courses in Biological Sciences and Social Ecology.

NOTE: Students entering college prior to fall 1980 may follow the Core Curriculum numbered 101A-B-C-D-E-F; 101LA-LB-LC-LE-LF.

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 (544 Engineering Building) or the Biological Sciences Student Affairs Office. Faculty academic advisors may be either Social Ecology or Biological Sciences faculty members.

Graduate Program in Social Ecology

The Program in Social Ecology offers graduate education leading to the Master of Arts and Doctor of Philosophy degrees. Students desiring a Ph.D. should apply directly for the Ph.D. program. Only individuals interested in the M.A. as their final degree in Social Ecology should apply for admission at the Master's level. The emphasis in Social Ecology graduate study is primarily upon theory and research which have implications for policy and social action. Clinical training is not offered. All applicants for either the M.A. or Ph.D. should submit undergraduate transcripts, three letters of recommendation, Graduate Record Examination Aptitude Test scores, and a formal application to the Division of Graduate Studies and Research before February 1. Interested persons may call the Social Ecology Graduate Counselor, Jan Martin, (714) 833-5917, for further information.

The Program in Social Ecology is organized around the study of contemporary problems in the social and physical environment. Problems are studied from the diversified viewpoints of a multidisciplinary faculty, including specialists in community, environmental, social and developmental psychology; planning; urban sociology; law; criminology; and public health. Graduate education emphasizes this multidisciplinary orientation rather than the focused perspective of a single discipline.

Social Ecology is committed to an empirical approach to the study of social problems. Program evaluation, questionnaire and survey methods, field research, naturalistic observation, and quasi-experimental techniques are emphasized as much as laboratory experimentation.

A sampling of faculty research and teaching interests includes, but is not limited to, human stress, psychosocial aspects of physical and emotional health, program evaluation, economic change and behavioral disorders, atypical child development, effects of employment on adolescent social and cognitive development and adult well-being, police use of deadly force, legal sanctions and deterrence, white collar crime, effects of the physical environment upon feelings and behaviors, childbearing decisions, urban decentralization, social support systems among the elderly, water quality, air quality, the use of scientific information in public policy formation, and environmental regulatory processes.

Collaborative research with faculty members is an important component of graduate education in Social Ecology. Prospective graduate students should contact the Social Ecology Graduate Counselor for more detailed information concerning the current research interests of Social Ecology faculty members.

M.A. Program

Each incoming Master's student is assigned a faculty advisor with whom the student discusses an individual program of graduate 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 (200), Research Methods (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 to be exclusive of any directed study, independent study, or thesis courses (298, 299, or 295). One four-unit field study (297) course may be counted as one of the seven required courses. 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 appointed, after a review of their graduate work and thesis plans by a faculty committee. All M.A. students who have not advanced to candidacy will be formally evaluated by the Social Ecology faculty at the end of each academic year. At that time the faculty may recommend that the student continue toward the M.A. or cease study in the Program. Evaluation of M.A. students who have advanced to candidacy is the responsibility of the student's Master's thesis committee. One year of academic residence is required, but completion of all M.A. requirements, including a thesis approved by the student's committee, ordinarily takes about two years.

The M.A. degree in Social Ecology may be useful in obtaining a variety of positions. Many recent M.A. graduates are now employed in federal, state, county, city, and private agencies in such areas as planning, mental health and welfare, and probation and parole. A number of students with the Master's degree in Social Ecology have entered Ph.D. programs at other universities.

Ph.D. Program

The doctoral program offers advanced training that prepares students for research and teaching positions. Graduates may be particularly qualified for positions with private or governmental agencies where they can bring advanced academic training, insight, and expertise to bear upon such issues as environmental quality, urban planning, criminal justice, and functional and dysfunctional social development. 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. degree in four to five years.

Each incoming Ph.D. student will be assigned a faculty advisor with whom the student should meet at least once every quarter to discuss an individualized program of graduate education. Required for all Ph.D. students are: Seminar in Social Ecology (200), Research Methods (201), two approved quarters of graduate-level statistics, Program Evaluation (291), and Issues in Social Interventions (213).

In addition to these six required core courses, doctoral students must also complete a minimum of six other approved graduate level courses before advancement to candidacy. These six additional required courses are exclusive of any field study, directed study, independent study, or dissertation research courses (297, 298, 299, or 296). All Ph.D. students who have not been advanced to candidacy will be formally evaluated by 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., complete the M.A. degree only, or cease graduate studies in the Program. Evaluation of Ph.D. students advanced to candidacy is the responsibility of the student's doctoral dissertation committee. Prior to the award of the Ph.D., each doctoral student must serve as a Teaching Assistant under faculty supervision for at least two quarters.

All Ph.D. students are required to complete a research project before advancement to candidacy for the Ph.D. The method of research may include experiments, questionnaire and survey studies, systematic field observation, computer simulation, etc. It is expected that students will begin this project during their first year in residence and that it will be completed during the second year. The written report of the project may be equivalent to a Master's thesis and may be submitted as such if the student has been advanced to candidacy for the M.A. degree.

Also required for the Ph.D. degree in Social Ecology is a written review of the literature relevant to a social or environmental problem or process. This paper constitutes the written portion of the qualifying examination. In meeting this requirement the student works closely with a committee of three Social Ecology faculty members. The scope and boundaries of the literature review are determined by the student in consultation with committee members. The literature review paper and the doctoral dissertation often deal with closely related topics; therefore the same faculty members frequently serve on the committees responsible for guiding and approving these steps in the doctoral program.

A student may be formally advanced to candidacy for the Ph.D. when the literature review paper and the student's dissertation plan have been approved by the candidacy committee appointed by the Graduate Dean on behalf of 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 (often, part or all of the review paper completed earlier); its current status; the way in which the proposed research will further knowledge; a detailed specification of the proposed method of approach to the problem; and a description of the planned methods for analyzing research findings.

Formal advancement to candidacy for the Ph.D. will be made by the Dean of Graduate Studies and Research 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 in the name 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.

Undergraduate Courses

Principles and Methods

1 Principles of Social Ecology (4) F, S. Introduction to the ecological paradigm through a consideration of the classic and recent works in human, cultural, and social ecology. Emphasis on the use of the ecological paradigm as an aid in analyzing societal problems and prescribing for their amelioration. **(III)**

10 Research Design (4) F, W, S, Summer. 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. Prerequisites: Social Ecology 1, majors only.

85 Science and Ethics (4). Discussion of ethical problems which arise from man's social and technological development. Emphasis on population control, organ transplantation, genetic engineering, biological and chemical warfare, nuclear testing, etc. For each topic the focus will be on establishing the psychological and sociological determinants of our present moral values.

113 Social Interventions (4) S. Interdisciplinary course involving analyses of several social change issues common to Social Ecology subareas. Focus is on assessment for and design of social interventions in settings ranging from the small group through the community. Especially recommended to students concurrently taking field study.

166A-B-C Social Science Statistics (4-4-4) F, W, S. Lecture, four hours; laboratory, three hours. Presents the statistical concepts and techniques most widely used in social science research and provides a practical experience, via Social Ecology 166D, wherein these are employed. The first two quarters are devoted to descriptive statistics. The third quarter focuses on inferential statistics. Weekly laboratories employ computer graphics to investigate concepts. Same as Social Sciences 100A-B-C.

166D Introduction to Survey Analysis (4) S. Seminar, three hours; laboratory, two hours. Student research teams analyze survey-generated data using the techniques from 166A-B-C. Students present their results at a symposium for that purpose. Corequisite: enrollment in Social Ecology 166C. Same as Social Sciences 100D.

166E 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 covered. Students also are introduced to FORTRAN programming. Prerequisites: Social Ecology 166A and concurrent enrollment in 166B, or consent of instructor. Same as Social Sciences 100E.

169 Introduction to Survey Sampling (4) F. Beginning with a review of the concepts of statistical inference, presents the four most common sample survey designs—simple random sampling, stratified random sampling, cluster sampling, and systematic sampling. Prerequisites: upper-division standing and consent of instructor.

177 Senior Seminar in Social Ecology (4) S. An overview of Social Ecology and discussion of its theoretical conceptualizations. The application of the concepts of Social Ecology to problems such as poverty, drug addiction, or planned communities. Prerequisites: Social Ecology 1, senior standing.

197A Introduction to Field Study (4) F. Students are introduced 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 E197, J197, or S197, and preferably in the same academic year that the first of these courses is elected. Enrollment in discussion section is required. Prerequisites: Social Ecology 10, majors only.

198 Directed Studies—Principles and Methods (4) F, W, S

Environmental Analysis

E5 Introduction to Environmental Quality and Health (4) W. A preliminary survey of people's interaction with the physical and biological environments. Components included are water, air, food, noise, and housing. Included are elements of environmental administration, environmental education, and consumer protection. International aspects of these factors examined.

E6 Populations and Environment (4) S. Principles of ecology: application to populations, communities, ecosystems, and humans. Same as Biological Sciences 1C.

E7 Introduction to Planning and Public Policy (4) W, S. Objectives are to expose students to the seminal works concerned with the city; to describe the models of the city which have been derived from these works; and to demonstrate the nexus between the models and the policies pursued by the planning profession. **(III)**

E8 Introduction to Environmental Analysis (4) W. An overview of the analytic techniques and theoretical principles shared by public health, urban planning, and environmental design. Convergence and divergence among these disciplines for research and practice are discussed. **(III)**

E30 Environmental Impact Studies (4). 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.

E32 Urban Sociology (4) W. The city is viewed both as a significant development in civilization and a complex mechanism serving as a context for the everyday functioning of individuals, groups, and institutions. A sociological introduction to cities according to diverse but complementary perspectives. **(III)**

E33 Urban and Rural Change (4) W. Analyzes current trends of urban deconcentration and nonmetropolitan growth. Changes in demand for "new rural lifestyles," in outward expansion of central city functions, and in rates of urban growth are examined in light of policy and planning implications for both urban and rural areas.

E53 Man and Natural Disasters (4). Examines how public policies can intensify or reduce urban exposure to earthquakes, floods, drought, and other natural hazards. Includes physical traits of hazards and hazardous lands, economic and social pressures to risk hazard, current disaster scenarios, and current status of hazards planning. Local disaster preparedness plans are reviewed. Two field trips.

E54 Man and the Oceans (4). Interaction of physical and social forces in the coastal and marine environment. Topics include the ocean as a cultural and political force in history, the ocean as a natural phenomenon, the ocean as a resource, the ocean as a political phenomenon, new technology for ocean development, and the competition for marine resources.

E70 The Limits to Growth (4) F. An examination of the present predicament of mankind in terms of limited natural resources, industrial growth, population expansion, increasing pollution, and per capita food production. Study of problems involved in equating growth with progress, especially as outlined originally by the Forrester models, and subsequently developed by the Club of Rome and M.I.T.

E82 Legislative Process and Social Issues (4). The role of Congress as it operates in present day American society, along with its present-day relationship with the people, the President, and the Supreme Court, as well as its own operating procedure. Emphasis on how policy and legislation (environmental, civil rights, etc.) is made and how citizens are affected by Congressional elections. Speakers, such as currently serving United States Representatives or Senators, may meet with class.

E87 Environmental Psychology (4) F, W. 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. **(III)**

E89 Introduction to the American Legal System (4) F. A social ecological look at the American legal system. Investigates roles of courts, legislatures, executive branches, administrative agencies, and private citizens in attempts to respond to major social problems. Among the topics for analysis are environmental quality, free speech, domestic relations, and violent crime. **(III)**

E102 Environment and Behavior (4) S. First part of the course is an in-depth treatment of theoretical and empirical work relevant to selected topics in environmental psychology. In the second part, students go into the field in collaboration with architectural consultants and develop environmental evaluation instruments, collect data, and report their findings to the architectural consultants who then provide feedback to the students on the usefulness of the data. Prerequisites: Social Ecology 10 and E87.

E110 Introduction to Environmental Standards (4). Examines water, ambient and work place air, noise, radiation, and pesticide standards. Each topic is analyzed in terms of standard development, enforcement at state and federal levels, and the validity of the standard's ability to protect health. Prerequisite: Social Ecology E5 or consent of instructor.

E112A-B Design and Behavior (4-4). E112A Tools of architectural analysis and programming are explored. Aim is to teach social scientists basic graphic communication tools. **E112B** Techniques of design evaluation are stressed from the perspectives of social science and architecture. Both interior and exterior design projects are considered. Prerequisites: Social Ecology E87; E112A for E112B.

E113 Technology and Public Policy (4) W. Examines the use, impact, and control of technological development; the nature of public policies affected by science; decision-making roles of different groups; and methods for promoting responsible planning. Cases may include airport sitings, energy technologies, and environmental pollution.

E114 Methods of Systematic Planning (4) S of even years. An introduction to the rational planning model and its use in formulating public policy. Topics include the formulation of objectives, the analysis of the system being considered, and the evaluation of alternative plans. Prerequisite: Social Ecology 10 or consent of instructor.

E117 Seminar on Social Psychological and Organizational Aspects of Planning (4) F. Investigates, through field research, social psychological and organizational issues in planning including the organization of planning efforts, resistances to planning, capacities of humans to plan, and the relationship of the environment to the planning effort. Recommended: Social Ecology E7.

E118 Local Government and Planning Process (4) S. Focuses on the institutional and political contexts of planning at the local level. Investigates the interactions of planners, public officials, and citizens in the local planning process through such topics as transportation, land-use development, housing, and environmental quality. Prerequisite: Social Ecology E7.

E120 Topics in Applied Ecology (4) F. A survey of how ecological concepts are used in dealing with selected environmental management problems, such as pollutant cycling, agricultural practices, water quality, pest management, and the promotion of desirable species. Legal, social, and economic implications of the topics will also be considered. Prerequisite: Social Ecology E5 or course in ecology.

E121 Topics in Environmental Health (4) S. Environmental issues of current and past concern are examined from chemical, biological, social, legal, and economic perspectives. Subjects covered include air, noise, water, nutrition, environmental carcinogens, and pesticides. Prerequisite: Social Ecology E5 or E8. May be repeated once for credit.

E125 Microbial Ecology of Natural and Polluted Waters (4) S. Examines microorganisms and their functions in the aquatic environment, specifically microorganisms' role in the biogeochemical cycles of nitrogen, sulfur, and mercury, and how man's activities are affecting these cycles. In addition, considers how and why indicator organisms are used in the determination of water quality for public health. Prerequisite: Social Ecology E5 or a course in biology. Same as Biological Sciences 118.

E125L Microbial Ecology of Natural and Polluted Waters Laboratory (4) S. Covers experiments that deal with the enumeration and identification of microorganisms from various aquatic environments. Microbial mediation of the sulfur, nitrogen, and mercury cycles is examined in the laboratory. Public health aspects of water quality are also examined. Prerequisite or corequisite: Social Ecology E125. Same as Biological Sciences 118L.

E135 The Structure and Functioning of Cities (4) F. Examines the city as a unique entity with wide-ranging fiscal, management, and decision-making needs, providing an arena for an ever-changing blend of participants. Such topics as urban needs and problems, power structure, citizen participation, city-suburban differences, mass society, and planning.

E139 Urbanization and Social Change (4) S. Examines interactions between social structure and physical space in three contexts: (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 reemergence of cities in Medieval Europe.

E140 The Chemical Components of Water Quality (4) F. A survey of the chemical properties of water used for drinking, agriculture, and industry. The lecture portion of the course covers basic chemical analyses of water and the significance of these tests in determining water quality. Prerequisites: Chemistry 1A and Social Ecology E5. Same as Biological Sciences 119.

E141 Water Resources (4) S. Examines the role of state and federal agencies and judicial decisions which alter or mandate actions for the management of water resources in California. The relationship of water agencies and delivery systems, water rights, quality, reclamation, and water conservation is discussed in terms of management schemes. Prerequisite: Social Ecology E5.

E146 Environmental Health Impact Assessment (4) S. Examines methodologies for assessing environmental health and safety impacts of proposed projects and programs. Topics include environmental epidemiology and the adequacy of existing health data. Methodologies are explored through selected case studies, e.g., community development and power plant siting. Prerequisite: Social Ecology E5 or consent of instructor.

E156A-B Methods of Environmental Testing: The Work Setting (4-4) W, S. Introduction to the science of identification, evaluation, and control of environmental hazards and stresses. Students use field monitoring equipment to evaluate noise, heat, ventilation, lighting, and particulate and gaseous pollutants in the air. Prerequisite: Social Ecology E5; a course in statistics or research is desirable.

E158 Community Health: An Epidemiological Approach (4) W. An examination of the distribution and dynamics of human health problems on the community level and exploration of the principles and procedures of scientific investigation used to determine circumstances under which diseases occur or health prevails. The broadened scope of epidemiology including environmental, genetic, nutritional, and social ramifications, in addition to the classical concern about infectious diseases and their role in social upheavals, is surveyed. Prerequisite: consent of instructor.

E160 Humans, Food, and Nutrition (4). Review and analysis of the usage of foods and the nutritional status of different peoples. Principles of nutrition, and the effects of malnutrition and hunger on the physical, behavioral, and mental development of humans are studied.

E162 Environmental Law (4) W. Environmental law is a combination of traditional legal principles and newly created statutes, rules, and decisions applied to the area of environmental protection. Course investigates roles of courts, legislature, executive branch and administrative agencies, and private citizens attempting to regulate environmental quality. Federal and state laws are utilized.

E163 Environmental Perception and Cognition (4) F. Investigates the problem of how human beings acquire, process, and store information about the world as they experience it in real-world settings. The effects of learning, culture, and the physical environment on perception are examined, as well as how individuals form and store representations (cognitive maps) of their environment. Prerequisites: Social Ecology E87.

E164 Analysis and Design of Behavior Settings (4) S. The research of Roger Barker and others on behavior settings is discussed. Subsequently, an intensive naturalistic observation of a community behavior setting is undertaken by members of the class. Students will analyze the dynamics of the setting and propose strategies for the design of similar settings in the future. Prerequisites: Social Ecology E87 and 10.

E165 Health and the Social Environment (4). Focuses upon three major issues: the delineation and measurement of psychological, social, and cultural factors in the etiology of disease; analysis of variables which affect the extent of behavioral compliance on the part of individuals with prescribed medical regimens; and identification of factors which influence a community's response to public health programs.

E167A History of Water Pollution: Biological (4) F. Sources of water pollution are followed from the Middle Ages to the present. Investigation of how these problems were viewed in relationship to health and to problem solving. The design of the course is to acquaint the students with previous practices and to compare those practices with those used today. Prerequisite: Social Ecology E5 or consent of instructor.

E167B History of Water Pollution: Chemical (4) W. Traces the history of chemical pollutants, including organics, heavy metals, and inorganic compounds. over the nineteenth and twentieth centuries. Compounds are reviewed in terms of their impact on human health and the aquatic environment. Prerequisite: Social Ecology E5.

E168 Economics of Ecology (4). Investigation of the goal of "maximizing wealth" in relation to economic policy and environmental degradation; review of the historical and economic sources of the "maximize wealth" goal and its implications for the environment and population growth; exploration of alternate social goals for environmental protection policy and their implications.

E171 Dynamics of Human Populations (4) S. Focuses on the dynamics of human populations. Topics include natality, mortality, natural increase, in and out migrations, age distribution, life tables, carrying capacities and optimum population levels, fluctuations in and regulation of population densities.

E172A-B Social Planning (4-4) F, W. Aimed at providing a conceptual framework for planned social change. Focus of first quarter is assessment of the setting and framework for design of organizational and community change attempts. Second quarter focuses on change attempts and articulation of strategies for implementation of social interventions. Participants divide time between lectures and involvement in work groups. Plans are evaluated by a jury of community representatives and other experts.

E173 Human Ecology (4) W, Summer. Lecture, three hours. Consideration of demographic features, intrinsic rate of increase, and carrying capacity. Encompasses effects of human population on their environment, and also of environment on human populations, settlement patterns, and societal evolution.

E174 Seminar in Social Psychological Perspectives on Human Fertility (4). Theory and research on the influence of personality needs and traits, social norms, and perceived costs and benefits upon childbearing behavior. As project, students are expected to design a study of social psychological causes and correlates of human fertility. Prerequisite: Social Ecology 10 or consent of instructor.

E176 Planning Theory (4) F. Deals with "planning" in the generic sense, as well as public sector and urban planning. Topics include: "Planning—The Ultimate Presumption?" "Planning—The Ideal Context," "Planning vs. Democracy," "Planning—The American Context," "Planning Is as Planners Do," and "Is It Better to Have Planned and Lost, Than Never to Have Planned at All?" Prerequisite: Social Ecology E7.

E177 Analysis of Metropolitan Areas (4) S. Hypotheses concerning the nature and problems of metropolitan areas are tested using statistical data. Introduction to the census and other sources of descriptive data useful in understanding dynamics of urban social and economic change. Prerequisites: Social Ecology 1 and 10.

E178 Economic Principles and the Public Interest (4). An introduction to economic principles with special effort to discover and criticize those concepts and analytic techniques which might be helpful to students seeking to define and serve "the public interest."

E181 Land Use and Public Policy (4) F, Summer. An introduction to contemporary understanding of land use dynamics and implications for urban and regional planning.

E182 Housing and Public Policy (4). Housing is analyzed as a multidisciplinary phenomenon and as a process involving many types of persons, groups, institutions, and policies. American housing policies are examined in an international perspective, indicating opportunities and constraints facing decisionmakers.

E192 Workshop in Administrative Problem Solving (4). Interdisciplinary exploration of community interrelationships by means of simulation exercises based on the METRO-APEX program, which provides experience in community role-playing and the implementation of community projects. Prerequisite: consent of instructor.

E197 Environmental Analysis Field Study (2 to 8 per quarter) F, W, S. Prerequisite: Social Ecology E5, E6, or E7.

E198 Directed Studies—Environmental Analysis (2 to 4 per quarter) F, W, S

E199 Individual Studies—Environmental Analysis (4 per quarter) F, W, S

Criminal Justice

J4 Introduction to Criminal Justice (4) F, S. Traces our legal system from its common law heritage. An introduction to criminal and constitutional law in the United States providing basis for discussion of our court structure, corrections, probation and parole, and the police activities of arrest, search and seizure, and interrogations. Juvenile Court law and procedure discussed. **(III)**

J30A-B Concepts of Criminal Justice: A Parallax View (4-4). J30A Emphasis is on criminal law as it is actually practiced daily in the courts, and the how and why of decision making in the criminal justice system. Among the topics covered are the perspectives of the district attorney and public defender, legal elements of crime, overview of selected crimes, and legal theories of justification and mitigation. J30B Emphasis is on criminal law as it is actually practiced daily in the courts, and the how and why of decision making in the criminal justice system. Among the topics covered are the functions of the prosecution, defense, and judiciary; the concept of proof and sentencing; and a comparison with foreign criminal justice systems.

J40 Forms of Criminal Behavior (4) F. "Crime in the streets" and "crime in the suites" have aroused public concern. Political agitation surrounds crimes of violence; reformers demand equivalent sanctions against the white-collar criminal. **(III)**

J41 The Police (4) W. A socio-psychological study of the police. Examines the nature and structure of police organizations and discusses their relationship to the social environment.

J42 Perspectives on Juvenile Delinquency (4). An examination of patterns of delinquent behavior, theories of juvenile delinquency, and classic and contemporary research on proscribed behavior among juveniles.

J44 Crime and Society (4). Examination of the sources of crime in contemporary American society and the concept of crime as one form of "deviance." Review of social policy in crime control, and discussion of the organization and structure of police forces and correctional agencies.

J45 The Police and Social Change (4). An examination of the history and philosophy of police organization and administration with special emphases on how society determines the role of the police and the influence of changing social conditions on the role of the police.

J80 Law and Society (4). A survey of man's relationship with law including an analysis of the theoretical and practical role of law in the evolution of Western civilization with emphasis on modern American society. Examines current issues in the sociology and psychology of law. **(III)**

J110 Problems in Criminal Justice Research (4). Examines the special problems of conducting research both on criminal behavior and in criminal justice agencies. Specific topics include problems in using control groups and working within legal definitions of criminality, the reliability and validity of data, and the application of observational, interview, questionnaire, case study, and analytic induction techniques to this area.

J130 Seminar in Criminal Behavior (4). Focuses on a specific aspect of criminal activity, depending upon student and instructor interests. Possible subjects include crimes of violence, sexual offenses, political crimes, property crimes, and professional or organized crime. Topics are examined in depth, historically, cross-culturally, theoretically, and in terms of specific studies of aspects of the behavior. Students expected to prepare reports relating to the chosen topic.

J132 Perspectives on Juvenile Justice and Diversion (4). An examination of the relationships among officially defined parameters of delinquent behavior, prevention and control programs, and the administration of juvenile justice. Particular emphasis on theoretical rationales for intervention, the delinquent as recipient of prevention-control efforts, and the roles of different agencies in administering juvenile justice. Introductory course on criminal justice helpful (Social Ecology J4).

J133 Deviance (4). Surveys the major theoretical perspectives on why socially prohibited behavior occurs and examines conditions under which deviance is identified and defined as a social reality. Also explores the effects of institutionalization upon the deviant and efforts at eradication of negative societal labels.

J134 Victimless Crimes (4). An examination of criminal offenses in which there are apt to be no complaining witnesses—homosexuality, prostitution, gambling. Implications of the use of criminal law to control these behaviors in terms of the individuals involved in the offenses, other persons, and the society in general are considered, and various alternative social policies are reviewed and evaluated.

J135 Police in the Community (4). A consideration of the role of police in a democratic society, including issues such as policing the ghetto and campus, corruption, centralization, violence, and disruption. Police agencies examined as a part of criminal justice, legal, governmental, and political systems.

J137 Criminal Procedure (4). Mainly through examination of Supreme Court cases, course deals with important criminal procedure issues, including search and seizure, arrest, wiretap, stop and frisk, self-incrimination, entrapment, plea bargaining, double jeopardy, cruel and unusual punishment, right to counsel and jury trial. Fourteenth Amendment implications for indigent defendants analyzed.

J138 Victims of Crime (4). 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.

J139 Strategies of Control: Imprisonment and Parole (4). An examination of historical and contemporary resolutions to the dilemma posed by pressures to punish and control criminals and the need to preserve civil liberties and human dignity, of the politics of control strategies, of the future of imprisonment in a "free" society, of the use and misuse of parole and the indeterminate sentence, and of alternatives to incarceration.

J140 Prisons, Punishment, and Corrections (4) F. A review of the history and present conditions regarding treatment of law violators. The conflict among rehabilitation, vengeance, and deterrent principles. Analysis of civil rights, racial antagonism, and politicalization in the contemporary American correctional system.

J141 Seminar in Criminal Justice (4). Selected topics in the field of criminal justice examined. 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. Prerequisite: Social Ecology J4.

J142 White-Collar Crime (4). Criminal activity of business and corporate enterprise, both in terms of theoretical insights into the explanations of criminal behavior and in terms of social concerns with deterrence. The pioneering work of Edwin H. Sutherland and the contemporary investigations of Ralph Nader provide substantive background. Specific cases and specific forms of social response to white-collar crime reviewed.

J143 Theories of Punishment (4) F. 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). Deals specifically with substantive nature of criminal law as opposed to criminal procedure which is concerned with how the criminal law is enforced. Considers three types of crime: offenses against the person, including laws of homicide, assault, and battery; offenses against habitation and occupancy, including laws of burglary and arson; and offenses against property, including laws of larceny, robbery, forgery, and counterfeiting.

J147 Law and Social Change (4). An examination of the role of law in the creation and reform of public policy. The emphasis is on the gradual or incremental nature of change inherent in the American legal process.

J148 Criminological Theory (4) S. 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.

J181 Contemporary Legal Issues (4). 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.

J182 Legal Sanctions and Social Control (4). Examination of criminal sanctions as mechanisms of social control. Study to include the development, aim, and effectiveness of laws; the identification of behavior to be controlled; the role of interest groups in defining criminality; issues of decriminalization.

J190 Psychology and the Law (4). Focuses upon the psychological assumptions of the American legal system and mental health aspects of the provision of criminal justice services. Topics include civil commitment, the insanity defense, competence to stand trial, jury selection, eye-witness identification, and the use of the police, courts, and correctional institutions in the prevention of behavior disorder. Prerequisite: course in psychology or mental health.

J197 Criminal Justice Field Study (2 to 8 per quarter) F, W, S. Prerequisite: Social Ecology J4.

J198 Directed Studies—Criminal Justice (2 to 4 per quarter) F, W, S

J199 Individual Studies—Criminal Justice (4 per quarter) F, W, S

Social Behavior

S9 Introduction to Human Behavior (4) F. An introduction to models of human development and mental health, and the application of the scientific method to the study of social behavior. The differences among individual, group, and societal levels of analysis and intervention are emphasized.

S11 Human Development Over the Life Cycle (4) W. Emphasis on patterns of growth and change in the development of self-identity, mastery and competence, and interpersonal relations during each of five life-cycle periods: infancy, childhood, adolescence, adulthood, and old age. Special attention to social, institutional, and environmental influences on the course of development. **(III)**

S14 Introduction to Personality Development (4) W. Study of personality development, focusing on theoretical issues and research literature. The approaches of social learning and psychodynamic theorists emphasized in a survey of processes of personality development from infancy through adulthood and old age. Lecture-discussion.

S20 Abnormal Behavior (4) S. A survey of the characteristics of various types of behavioral and thought disorders and the methods used to alleviate or treat or deal with them. Emphasis upon the interaction among the social, cultural, and biochemical components of disordered behavior and society's reactions to its manifestations. Prerequisite: Social Ecology S9 or introductory course in psychology. **(III)**

S21 Methods of Behavior Modification (4) W. A series of presentations of ongoing programs using behavior modification. Techniques derived from psychological theories of learning and emphasizing reinforcement and modeling. The use of such techniques in schools, clinics, homes, and hospitals to modify minor and major behavioral problems (e.g., alcoholism, sexual deviations, phobic reactions).

S71 Social Conflict (4). A social ecological analysis of social conflict. Focuses on social conflict at both the microscopic level (individual and group conflicts) and the macroscopic level (national and international conflicts). Multiple perspectives from psychology, sociology, and anthropology are used to explain the causes, dynamics, and resolution of conflicts.

S72 Sociological Perspectives on Inequality (4) W. Introduction to the theoretical perspectives of structural-functionalism and Marxism. Studies, through these perspectives, inequality in the American family, sex structure, labor force, educational system, racial and political systems, and institutions. Also examines the world system and inequality among nations. **(III)**

S74A-B-C Moral Development and Just Communities (4-4-4) F, W, S. A three-quarter sequence for freshmen exploring interpersonal, personal, and social issues based on principles of fairness and justice. Kohlberg's theory of moral development will provide a basis for establishing principles for resolving conflict. Both the living environment of a University residence hall and selected institutions of society are analyzed in terms of moral development theory. Prerequisite: consent of instructor.

S74L Moral Development and Just Communities Laboratory (2) W. Involves freshmen students in the study of community problems in a variety of contexts as an auxiliary source of educational enrichment. Small group discussions and written assignments foster critical analysis of the laboratory experience and its relationship to the rest of the freshman year. Examples of placements are Fairview Hospital, UCI Medical Center, preschools in the area, and a veterinarian's office. Prerequisites: S74A and consent of instructor. Corequisite: S74B.

S74M Moral Development and Just Communities Laboratory (2) S. Second of a two-quarter sequence. Prerequisites: S74A-B, S74L, and consent of instructor. Corequisite: S74C.

S84 Community Psychology (4) W. Deals with the community orientation to the delivery of mental health care. The development of community mental health is described, and various models for its practice are delineated. Techniques of evaluating the efficacy of community programs are explored. **(III)**

S86 Introductory Social Psychology (4) F, S. Surveys experimental design and studies of conformity, obedience, communication and persuasion, self-justification, causal attribution, aggression, prejudice, and interpersonal attraction. Emphasis on empirical research (particularly laboratory experiments) conducted to test social psychological theories and hypotheses. **(III)**

S101A-B Counseling Theory I, II (4-4) F, W. 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.

S104 Behavioral Assessment (4) S. Laboratory-seminar exploration of various methods of observing and recording the behavior of young children. Focuses on the development of observational skills and the application of assessment techniques in intervention and research programs. Prerequisites: Social Ecology 10 and consent of instructor.

S105 Developmental Disabilities (4) F of odd years. Examines current knowledge about severe and persistent behavioral deficits, particularly mental retardation and childhood autism. Topics include intellectual assessment, malnutrition, chromosomal anomalies and inborn errors of metabolism, cultural-familial retardation, institutionalization and deinstitutionalization, and current trends in prevention and amelioration.

S106 Atypical Child Development (4) F of even years. Examines research and theory concerning childhood psychopathology. Topics include diagnosis and assessment, early identification of high risk children, fears and phobias, antisocial behavior, childhood psychoses, depression, hyperactivity, child abuse, and child advocacy.

S107 Child Therapies (4) W. 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.

S109 Cognitive Behavior Modification (4) S. Presentation of principles and procedures of therapeutic interventions based on cognitive-behavior methods. Cognitive factors in learning, emotional arousal, psychological disorder, and psychotherapy are reviewed. Introduces the application of cognitive behavioral methods to problems of depression, anxiety, anger, pain, and impulsivity.

S110 Human Stress (4) S. Stress is presented as a multidisciplinary topic. Biological, psychological, and sociological approaches to the study of adaptation-related disorders are reviewed. The environmental demands of contemporary urban life, such as noise, crowding, work pressure, and traffic congestion, are examined for their impact on personal health and behavior. Methods of stress reduction are also presented.

S111 Survey of Clinical Psychology (4) F. An overview of the field of clinical psychology including a historical view of the role of the clinician; study of controversial issues in the field (e.g., standards for training, acceptance or rejection of the medical model and diagnosis, the nature of clinical prediction, appropriate use of tests); a survey of diagnostic and therapeutic theory and procedures; evaluation of major clinical practices; discussion of ethics and current trends.

S112A-B Introductory Counseling Practicum (4-4) W, S. Develops counseling skills through simulated and actual counseling experience under supervision. Weekly individual supervision of the counseling practicum will supplement regular class sessions. Prerequisites: Social Ecology S101A-B or consent of instructor.

S114 Aggression: Theories and Research Methods (4) F. Explores divergent theoretical conceptions of aggression, various techniques of assessment used in experimental investigations of aggression, and the research paradigms in which such investigations are conducted. Emphasis is placed on the student's understanding of theoretical and methodological issues—e.g., instinctual vs. learning views; operational analysis vs. intentional action concepts; formulations of aggressive drive; the catharsis controversy; the impact of TV violence; the effects of punishment; etc.

S116 Peer Counseling (4) S. Introduction to paraprofessional counseling with adults. Reviews assumptions, goals, and verbal strategies of three relevant therapy models—analytic, humanistic, and behavior modification. Selected topics: crisis intervention, suicide prevention, drug abuse, sex-role behavior, intimacy problems, and referral sources. Prerequisite: Social Ecology S9 or 10 or equivalent.

S118 Interviewing and Assessment (4) F. Topics covered include strengths and limitations of the interview as a method for gathering information; interview strategies and skills; unintended interviewer effects on the data gathered; content analysis and coding of interview data; and comparison of interview with questionnaire methods of assessment. Students gain substantial experience in interviewing and some experience in questionnaire design. Prerequisite: Social Ecology S9 or S11 or an introductory course in psychology.

S119 Extreme Environments and Human Functioning (4) F. Explores effects of extreme environments upon human functioning. Environments exerting "unusual" stress upon individuals are the main focus (e.g., concentration camp, prison, spaceflight, mental hospital, etc.). Task is to draw analogies with more "normal" settings (school, factory, family) in order to better understand their effects upon human functioning.

S120 Anger and Violence in Society (4). An overview of current theory and research on aggression followed by a focus on anger and violence as problems in individual and social functioning. The process and functions of anger are examined with regard to normal behavior and psychopathology. The determinants, prevalence, and implications of violence in society are analyzed.

S121 Seminar in Behavior Change Techniques (4) W. Presents various behavior change techniques derived from learning theory. The need for behavioral assessment and the match of appropriate assessment to the intervention employed are stressed. Individual presentations and the design of one behavioral change project are required of all students. Prerequisite: Social Ecology S21 or consent of instructor.

S122 Human Sexuality (4) F, S. A broad survey of human sexuality encompassing genetic factors, physiological and anatomical development, customary and atypical forms of behavior, reproductive processes, and cultural determinants.

S123 Adolescent Development (4) S. An investigation of the biological, psychological, and cultural aspects of human development between the ages of 12 and 18 years. Historical and cross-cultural perspectives will supplement views of contemporary adolescent problems. Prerequisite: Social Ecology S9 or S11, or Social Sciences 7, or a course in human development.

S124 Human Groups (4) S. The impact of the group on its individual members and the systemic properties of social units. These issues are examined from both sociological perspectives (Durkheim, Weber, Marx, Merton) and social psychological orientations, particularly as reflected in the group dynamics literature.

S125 Special Topics in Adult Development (4). Examines the role of culture, social roles, and age norms on selected aspects of social and cognitive behavior. Different periods of adult development (early adulthood, old age) may be the focus of attention in different years. Emphasis is on developmental theory and on the research it has generated. Prerequisite: Social Ecology S11.

S126 Social Policy and Human Development (4) W. Explores the major assumptions underlying social policies designed to affect the course of human development. Examines in detail a selected number of policy issues in this area (e.g., Head Start, mandatory school busing, youth employment programs, forced retirement). Prerequisite: Social Ecology S11.

S127 Practicum in Early Child Development (4). Students assist in teaching children at the UCI Children's Center or Verano Place Preschool and in developing materials for use there. The children range in age from two to five. Students are chosen through interviews from those who attend the first class meeting. Prerequisite: Social Ecology S9.

S128 Perspectives on the Development of the Child (4) S. Lectures and discussion provide a forum for investigatir developmental issues in detail. Requires commitment to critical analysis of theoretical issues and to analysis of implications of selected theoretical perspectives. Prerequisite: Social Ecology S9.

S129 Human Development and Race, Culture, and Class (4) F. Observed variations in human development related to differences in culture, race, and social class. Focuses on the following aspects of human development: cognitive, social and personality, socialization and family interaction, educational systems. Prerequisite: course in human development or child development or consent of instructor.

S131A-B Special Topics in Social Psychology (4). Advanced undergraduate seminar which explores specific theoretical and empirical issues within three main areas of social psychology: (a) attitude change, (b) interpersonal processes and group dynamics, and (c) the impact of the physical environment on social behavior. Students should have an introductory background in social psychology before taking the course. Prerequisite: Social Ecology S86 or consent of instructor.

S132 Gerontology (4) F. Focuses on human aging from a multidisciplinary perspective. The physiology of aging and its psychological ramifications are discussed, as is the sociology of the elderly in contemporary society.

S133 Transitional Issues from Late Adolescence to Adulthood (4) F. Examination of the developmental issues involved in the transition from late adolescence to early adulthood. Focus on the theoretical constructs of life-span developmental psychology as well as practical applications. Lectures, class presentations, and discussion groups.

S134 Human Development and Cross-Cultural Perspectives (4) S. Examines cultural variations in cognitive and personality dimensions, family structure and kinship patterns, and socialization practices. Special attention is devoted to consideration of developmental theory in light of individual and cultural adaptation to different environments. Prerequisite: Social Ecology 11, or Social Sciences 2 or 7, or a course in human development.

S135 Assessment Techniques in Human Development (4). Provides a broadened acquaintance with the variety of techniques and methods used in the ecological study of human development over the life cycle. Reading of illustrative studies and the design of a series of research efforts to investigate a developmental problem of interest to the student. Prerequisite: Social Ecology S9 or S11. Social Ecology 10 recommended but not required.

S136 Man-Woman Relations (4) F. Differing conceptions of the sources of enrichment in relations between men and women are studied. Issues affecting partnerships in contemporary society are examined as they relate to the process of choosing a partner. Partnership and relationship skills in a communication framework are developed in a laboratory section.

S137 Social Psychology of Sex Roles (4) S. Takes a social psychological perspective on the development of sex-role stereotyping and the implications of such stereotyping for attitudes and behavior toward men and women in this culture.

S138 Attitude Organization and Change (4) F. Definitions and measures of beliefs and attitudes and implications of attitude theory and research for social action programs. Covers source, message, and audience effects in communication and persuasion; psychological functions of beliefs and attitudes; and cognitive consistency theories.

S139 Urban Life and Community (4) S. Focuses on ways of living in cities and their expression in geographic and social groupings. Attention is paid to the individual experience of urban life and to emergent collectivities. Covers such topics as urbanism, neighborhood, residential mobility, social networks, and selected urban problems.

S143 Attitudes and Behavior (4). Relationships between attitudes and actions, and implications of attitude theory and research for social action programs. Examines dissonance theory and self-attribution theories; fatalism and passivity; and expectancy value explanations of behavior.

S145 Child Development (4). The impact of different child rearing practices on the development of personality and character. Examination of the effects on development of variations in the structure and dynamics of the family and school, and of the consequences of group care, working mothers, and the one-parent family. Prerequisite: Social Ecology S9 or an introductory course in psychology, sociology, or anthropology. Not offered 1981-82.

S146 Corporations and Their Role in Society (4). Analysis of history of corporations in the U.S., the functions they perform in our economy and effect they have upon society as a whole. Special focus on legal powers of corporations and legal constraints placed on them. A number of situations are examined in which major corporations have had significant effects on political, social, and economic conditions in the U.S.

S155A-B Women's Studies Core Course (4). Basic component of Women's Studies Concentration. In-depth study of women in society and culture, through literature, psychology, sociology, and philosophy. Same as Humanities 155A-B and Social Sciences 174A-B.

S159 The Family (4) W. Examines the family in historical perspective and relates changes in family structure to broader societal, cultural, and economic changes. Focuses on such issues as inequality and conflict in the family and the changing role of women in society and family.

S161 Family Law (4) W. The practical and theoretical problems of family law, centering around the subject areas of marriage, divorce, parent-child law, property division, and spousal and child support. Course uses the law school technique of case study.

S162 Minorities and the Law (4). Focuses on legal issues of concern to America's minorities, including Afro-Americans, Chicanos, and Native Americans, among others. Issues may include discrimination in employment, the problem of "reverse discrimination," school integration, and immigration.

S163 Women and the Law (4) S. Investigation of various problems concerning legal rights of women in areas of economics, politics, medicine, marriage, and social life. Students required to conduct individual or team research projects on special legal problems and present findings to class.

S164 Sociology of Health and Medicine (4) F. Focuses on the role of social factors in defining and assessing health; social class and ethnic variations in illness behavior; organization and structure of the health care delivery system; and current policy issues surrounding the provision of health services (e.g., National Health Insurance).

S168 Psychological Education (4). Investigation of theoretical foundations of a number of educational programs designed to stimulate greater social, affective, and moral maturity in adolescents. Several theoretical perspectives are considered, including neo-psychoanalytic (Gestalt), cognitive-developmental (Piaget and Kohlberg), and behavioral (Skinner) orientations.

S172A-B Philosophic Issues in Psychology (4-4) W, S. Lecture-discussion class inspects the historical, epistemological, and ethical roots of modern psychology with specific emphases on the developmental and clinical areas. Examples of topics: the influence of Plato's thought on the developmental theories of Kohlberg and Piaget, the influence of Hume on modern scientific psychology, the mind-body problem of Descartes, and the psychology of Rogers.

S176 Images of Society (4) S. A critical search for an appropriate social metaphor for man in light of the conceptual goals of the Social Ecology Program. Works of Marx, Durkheim, Weber, Freud, Mills, Merton, Mead, and the Chicago School are considered.

S197 Social Behavior Field Study (2 to 8 per quarter) F, W, S. Prerequisite: Social Ecology S9 (or the previously offered 2U or 3W).

S198 Directed Studies—Social Behavior (2 to 4 per quarter) F, W, S

S199 Individual Studies—Social Behavior (4 per quarter) F, W, S

Graduate Courses

200 Seminar in Social Ecology (4) F. 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) W. 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.

202 Issues in Environmental Sociology (4). Seminar providing in-depth treatment of theoretical and empirical work relevant to selected topics in environmental sociology. Among the topics considered are housing quality and human behavior, the designs of learning environments, human development and the environmental design, and the impact of the urban environment on human groups.

203 Social Ecology of Sex Differences (4). Recent research on sex differences in physical development, intelligence, social patterns, adult-child interaction, and behavioral deviance are reviewed. Current psychological and biological theories of sex differences are evaluated in terms of data from a variety of scientific disciplines, and implications for contemporary social problems are explored.

204 Research Seminar on Adolescence (4). Students formulate and carry out a research investigation in the general area of social influences on adolescent development. Use of available, extensive survey data is encouraged. Discussion of selected topics in the study of adolescence and of methods and problems of data analysis as they emerge from students' research.

205 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.

Pupil Personnel Services. Courses 206, 207, 208, and 209A-B-C are offered as a service for those Master's degree students who are interested in obtaining the Pupil Personnel Services Credential (see p. 232).

206 Guidance Services for Facilitating Human Development (4) Summer. Consideration of techniques of applying knowledge of human behavior to assist students in their growth and development; how to apply theories of learning and development of curricular tasks; and present available remedial and developmental techniques and special programs available to students. Preventive counseling techniques such as deliberate psychological education are considered, as well as ethical principles of the profession. Same as Teacher Education 394.

207 Counseling Skills for Facilitating Human Development (4) Summer. Focuses on promoting understanding and respect for individual differences, the development of individual potential and competencies through knowledge of and ability to apply acceptable individual and group counseling techniques to promote positive attitudes toward self and others. Skill development in basic human helping techniques are taught. Prerequisite: consent of instructor. Same as Teacher Education 395.

208 Assessment Techniques (4) Summer. Development of competencies in the ability to give and interpret standardized group and individual assessment techniques with special emphasis on those in use in the public schools. Theories and techniques to understand affective, cognitive, and behavioral characteristics of both typical and atypical children are presented, along with knowledge and understanding of different types of test biases, including cultural and statistical test biases. Same as Teacher Education 396.

209A-B-C Supervised Counseling Experience (4-4-4) F, W, S. Focuses on the development of the ability to apply counseling techniques, both individual and group, through supervised practice under observation. Weekly individual and group supervision is supplemented with lectures on counseling from a developmental framework and its application to different age groups. Prerequisite: consent of instructor.

210 Seminar in Community Psychology (4) F. The historical development of community psychology and various models for its practice are described. 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.

212 Seminar in Behavioral Assessment (4). After reviewing the theoretical and empirical literature on assessment strategies, students design and implement behavioral assessment programs tailored to specific problem areas in schools, hospitals, and community settings. Measurement problems, ethical dilemmas, and potentials for community applications are reviewed. Prerequisite: course in developmental biology.

213 Issues in Social Intervention (4). Issues in assessment and design of social interventions are covered. 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.

214 Introduction to Survey Research (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.

217 Nonprofessional Change Agents Seminar (4). Examines two types of nonprofessional social intervention: naturally occurring social support and intentional paraprofessional programs including self-groups. Operational definitions and the stress-moderating impact of social support are considered. Techniques in selecting and training paraprofessionals are reviewed.

219 Learning and the Control of Behavior (1) S. Principles and theories of classical and operant conditioning from laboratory experiments and demonstrations of the extensions of such studies into more clinical settings. Review of criticisms of learning theory applications. Repeated review of whether there is a learning theoretical basis to behavior control.

220 Human Development (4) F. Examines major models of life-span development and selected research areas in the field. Emphasis is on themes of development which have significance over the life span; ecological perspectives on human development; and social policy implications of human development research. Prerequisite: graduate standing.

221 Seminar in Atypical Child Development (4). An atypical syndrome such as minimal brain dysfunction or early childhood autism is selected for intensive analysis. Studies of biological functions, psychological processes, family variables, intervention strategies, legislation, and community programming are explored and integrated. Methodology and evaluation are emphasized.

223A-B Intervention Strategies for Moral and Psychological Development (4-4) F, W. 223A Emphasizes theory development and research methodology from several perspectives including Kohlberg, self theory, Piaget, and ego psychology. Four levels of intervention are studied: 1) individual, 2) two-person, 3) classroom, and 4) institutional. Students are expected to analyze ongoing interventions, and develop and implement their own interventions. **223B** A continuation of 223A with an emphasis on implementing projects and curricula derived in 223A. Prerequisite: consent of instructor.

224 Behavioral Epidemiology (4) F. Surveys research issues in the social epidemiology of behavioral disorders. Topics include measurement of stressful life events and psychosomatic symptoms, problems in different survey methods (in-person, phone, and mail), and analytic approaches to aggregate (e.g., time series) and individual level (e.g., cross lag panel) data.

225 Seminar in Social Gerontology (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.

226 Youth in Society (4). Examines the role of youth in society and the role of society in the psychosocial development of youth. Considers the historical emergence of youth as a subculture, the nature of youth cultures, the structure and function of adolescent social arrangements, and the participation of youth in the family, school, economy, and political arena.

227 Seminar in Social Behavior (4) Summer. Focuses on a single problem area, investigated from a developmental perspective. Intensive discussion of developmental processes is accompanied by individual or small group projects addressing specific research problems. The problem area is announced each year. Prerequisite: course in developmental psychology.

230 Social Problems and Public Policy (4). An examination of the processes of policy making, policy analysis, and policy evaluation, with particular attention to the role of experts. The emphasis of the course is on the uses and abuses of scientific information in policy making rather than on methods of policy development and analysis.

232 Seminar in Juvenile Delinquency (4) F. Examines the major theories of juvenile delinquency, prevention and control programs, and the administration of juvenile justice.

234 Urban Society and Crime (4). Explores possible explanations for the pervasive racial, economic, and cultural bias prevalent in substantive criminal law and its administration. A limited number of areas are explored in depth in order to understand the bias behind the rhetoric of civil liberties and equal justice. Prerequisites: courses in criminal justice and consent of instructor.

235 Theories of Crime (4). Explanations for the cause of crime often tell as much about the structure and ideology of a social system as they do about violations of the criminal law. The course examines the positions of thinkers such as Bentham, Freud, Marx, Lombroso, and Sutherland, as well as those of the current labeling theorists, who believe that crime is primarily a function of the distribution of power and of tactics of the strong denigrating acts of the weak. Prerequisite: consent of instructor.

237 Violence and Its Social Impact (4). Review of 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.

238 Seminar in White-Collar Crime (4). Examines the illegal behavior of individuals who commit crimes in the course of their employment. Special attention is paid to ways in which power and organizational structure affect the behavior of the white-collar offender. Prerequisite: consent of instructor.

242 Urban Ecosystems (4). Lecture, discussion, and composition. Evolution of human settlement patterns and their environmental interactions. Development and fundamental behavior bases of education, communication, transportation, recreation, and other systems. Prerequisite: consent of instructor.

243 Spatial and Temporal Dimensions of Community (4). A systematic theoretical and methodological examination of local community organization and environment, focusing on potential for people to pursue everyday needs and activities. Application of theory and findings to work hours, childcare, commerce, recreation, medical care, and other aspects of physical and social planning.

245 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.

246 Economics and Administration of Computing (4) W. Approaches to providing computing services in the context of large organizations. Determination of goals, selection of equipment, management of programming staff, coping with change, marketing services, keeping up with technology, pricing and other techniques for allocation of services, financing, vertical versus horizontal organizations. Same as Information and Computer Science 246.

247 Changing Patterns of Social Control (4). Emphasis on the methodology for analyzing the effectiveness of modes of social control, and on the general societal costs of that control. Field research data are available for analysis.

250 Metropolitan Analysis Seminar (4). Students are introduced to sources of data which they will collect to test hypotheses concerning urban systems.

253 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.

254 Seminar on the Regulatory Process (4) S. Involves 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, among others.

256 Politics of Plan Implementation (4). Survey and discussion of the literature concerned with the politics of plan implementation. Students conduct and present analyses of political settings relevant to planners.

257 Social Indicators (4) S. A survey of the social indicators literature and presentation of individual projects attempting to devise indicators of social phenomena.

258 Seminar in Health Psychology (4). Interdisciplinary exploration of emerging fields of health psychology and behavioral medicine. Topics examined are: (a) role of stress in the development and treatment of medical problems; (b) sociocognitive determinants of health and illness; (c) interpersonal health transactions, e.g., physician-patient communication processes and role relationships; (d) behavioral approaches to medical problems such as diabetes, obesity, and hypertension. Focus on recent research findings, methodological strategies, and directions for future research.

260 Seminar on Teaching (4). Examination of the teaching process; research and theory of teaching as a discipline. Considerable attention given to the teaching process utilizing experiential techniques including analysis of video tapes of class members working as Teaching Assistants.

261 Strategies of Theory Development (4) F. The goals of this course 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 The Spatial Structure of Urban Social Problems (4). Begins with an examination of theoretical approaches for the analysis of spatial dimensions of urban social problems. Normative issues arising in spatial systems are discussed. This foundation is then used to examine the spatial dimensions of selected urban social problems. Problem selection reflects student interest; possibilities include housing, transportation, education, poverty, health care, and the provision of public services.

264A-B Data Analysis (4) W, S. Course provides an appreciation and understanding of statistics necessary to conduct applied research. Topics include approaches to and presentation of data, robust statistics, standardization techniques, multivariable regression, and analysis of variance.

265 Seminar on Spatial Behavior (4). Phylogenetic aspects of spatial behavior among diverse species are explored. At the human level, four basic spatial behavioral constructs are discussed: territoriality, privacy, personal space, and crowding.

267 Human Stress and the Environment as Stressor (4). Sources of stress from the biological, psychological, social, and physical environments are examined with respect to their impact on personal health, behavior, and the functions of social systems. Stress is presented as a multidimensional concept that can profitably be studied by an ecological analysis of determinants and outcomes.

268 Seminar in 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.

269A-B Research Seminar in Environmental Psychology (4-4). Two-quarter sequence focusing on critical discussion and analysis of ongoing research in environmental psychology being conducted by faculty, graduate students, and postdoctoral fellows. Off-campus researchers make some presentations. Prerequisite: consent of instructor.

279 Democratic Organizations (4). Involves an interdisciplinary approach to the study of problems and issues in the creation and maintenance of democratic organizations. Integrates the knowledge and methodologies of different approaches and acquaints students with the theory and practical experiments with which social scientists are involved.

281 Wastewater Treatment (4). Current concepts in wastewater treatment. Some lectures are given by officials in the State Department of Public Health and the regional water quality control boards, as well as by individuals from local water districts. The goal of the course is to integrate wastewater technology with water pollution policy. Prerequisite: consent of instructor.

283 Seminar in Environmental Health and Quality (4). Concepts and principles of environmental health. Focuses on industrial hygiene, water and air quality, noise pollution, and environmental carcinogens. Past and present theory and implementation practices are discussed through review of legislative measures and enforcement procedures. The social and biological interactions surrounding each topic are examined.

285 Topics in Environmental Health (4). Topic varies each quarter. Included are environmental chemistry, geochemistry, soil science, environmental microbiology, and air or water chemistry.

290A Applied Multivariate Statistics (4) W. 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), BMDP, and SPSS. Prerequisite: graduate standing or consent of instructor. Same as Social Sciences 201A.

290B Applied Multivariate Statistics (4) S. Lecture, four hours; laboratory, two hours. Conceptual overview of multivariate statistical methods. Criteria for appropriate use. Meaning of key measurements within methods. Statistical computing via MDS(x), BMDP, and SPSS. Prerequisite: Social Ecology 290A or Social Sciences 201A. Same as Social Sciences 201B.

291 Program Evaluation (4) F. 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.

292 Seminar in Evaluation Research (4) S. Intensive analysis of several issues in the field of evaluation research. Topics are drawn from current research issues involved in assessing the effectiveness of social reform projects (e.g., theory and models of evaluation research, role of evaluation researcher). Prerequisites: Social Ecology 201 and two quarters of graduate-level statistics, or consent of instructor.

295 Master's Thesis Research and Writing (1 to 8 per quarter). Prerequisite: advancement to candidacy.

296 Doctoral Dissertation Research and Writing (1 to 8 per quarter). Prerequisite: advancement to candidacy.

297 Field Studies (2 to 4 per quarter) F, W, S

298 Directed Studies (2 to 4 per quarter) F, W, S

299 Individual Study (4 per quarter) F, W, S

399 University Teaching (4-4-4) F, W, S. Limited to Teaching Assistants.

SCHOOL OF ENGINEERING

A.R. Stubberud **Dean**

Paul D. Arthur, Ph.D. California Institute of Technology, *Professor of Mechanical Engineering* (orbital mechanics, fluid mechanics, product design), Registered Professional Engineer

Casper W. Barnes, Jr., Ph.D. Stanford University, *Professor of Electrical Engineering* (signal processing, digital filtering)

Neil J. Bershad, Ph.D. Rensselaer Polytechnic Institute, *Professor of Electrical Engineering* (communication and information theory, signal processing)

Peter S. Dixon, Ph.D., D.Sc. University of Manchester, *Professor of Biological Sciences and Environmental Engineering* (water pollution control)

Said E. Elghobashi, Ph.D. Imperial College, University of London, *Assistant Professor of Mechanical Engineering* (combustion, heat transfer, turbulence modeling)

Hideya Gamo, D.Sc. University of Tokyo, *Professor of Electrical Engineering* (quantum electronics and modern optics)

Gary L. Guymon, Ph.D. University of California, Davis, *Associate Professor of Civil and Environmental Engineering* (water resources, heat and mass transport in soils), Registered Professional Engineer

John C. LaRue, Ph.D. University of California, San Diego, *Assistant Professor of Mechanical Engineering* (fluid mechanics and turbulence modeling)

Farghalli A. Mohamed, Ph.D. University of California, Berkeley, *Assistant Professor of Mechanical Engineering* (mechanical behavior of materials)

James H. Mulligan, Jr., Ph.D. Columbia University, *Professor of Electrical Engineering* (solid state circuits, active networks, system theory), Registered Professional Engineer

Gerard C. Pardoen, Ph.D. Stanford University, *Assistant Professor of Civil Engineering* (structural analysis, experimental structural dynamics), Registered Professional Engineer

Wilfred W. Recker, Ph.D. Carnegie-Mellon University, *Professor of Civil Engineering* (transportation modeling and urban systems)

Gary S. Samuelsen, Ph.D. University of California, Berkeley, *Associate Professor of Mechanical and Environmental Engineering* (combustion processes and air resources), Registered Professional Engineer

Robert M. Saunders, Dr. Eng. Tokyo Institute of Technology, *Professor of Electrical Engineering* (energy conversion and electromechanical devices, control systems), Registered Professional Engineer

Jan Scherfig, Ph.D. University of California, Berkeley, *Professor of Civil and Environmental Engineering* (water resources, treatment processes, toxicity), Registered Professional Engineer

Roland Schinzinger, Ph.D. University of California, Berkeley, *Associate Professor of Electrical Engineering and Associate Dean of the School of Engineering* (electric power systems, operations research, optimal design), Registered Professional Engineer

Robin Shepherd, Ph.D. University of Canterbury, D.Sc. University of Leeds, *Professor of Civil Engineering* (structural dynamics, earthquake-resistant design), Registered Professional Engineer

Jack Sklansky, D.Sc. Columbia University, *Professor of Electrical Engineering, Information and Computer Science, and Radiological Sciences* (pattern recognition, image processing, computer engineering), Registered Professional Engineer

Allen R. Stubberud, Ph.D. University of California, Los Angeles, *Professor of Electrical Engineering and Dean of the School of Engineering* (control systems, estimation and optimization, digital filtering), Registered Professional Engineer

Harry H. Tan, Ph.D. University of California, Los Angeles, *Associate Professor of Electrical Engineering* (communication and information theory, stochastic processes)

Roger F. Teal, Ph.D. Tufts University, *Assistant Professor of Civil Engineering* (transportation policy, urban interactions)

Chen S. Tsai, Ph.D. Stanford University, *Professor of Electrical Engineering* (integrated optics and acoustic microscopy)

Marvin F. Young, Ph.D. University of California, Davis, *Assistant Professor of Mechanical Engineering* (heat transfer and solar engineering), Registered Professional Engineer

Lecturers

Irwin Alber, Ph.D. California Institute of Technology, *Visiting Lecturer in Mechanical Engineering* (fluid mechanics and mathematical modeling of turbulence)

Samir A. Arafeh, Ph.D. Southern Methodist University, *Visiting Lecturer in Electrical Engineering* (control and power systems)

Wayne J. Bartley, Ph.D. University of California, Irvine, *Visiting Lecturer in Electrical Engineering* (control systems and circuits)

Alan V. Cameron, Ph.D. Monash University, *Visiting Lecturer in Electrical Engineering* (estimation theory and operations research)

John M. Coil, M.S. University of California, Berkeley, *Visiting Lecturer in Civil Engineering* (structural design and analysis)

Ravi Deo, Ph.D. Georgia Institute of Technology, *Visiting Lecturer in Mechanical Engineering* (structural dynamics and composites)

Lawrence DiFrancesco, B.S.E.E. California Polytechnic University, San Luis Obispo, *Visiting Lecturer in Electrical Engineering* (digital electronics)

L. James Ewing, Jr., M.S. University of California, Irvine, *Visiting Lecturer in Civil Engineering* (water and wastewater systems, reclamation and reuse), Registered Professional Engineer

Benjamin Fisher, Ph.D. University of California, Irvine, *Visiting Lecturer in Electrical Engineering* (communication theory)

J. Richard Greenwood, Ph.D. University of California, Los Angeles, *Visiting Lecturer in Civil Engineering* (environmental engineering)

Howard Handler, Ph.D. University of Arizona, *Visiting Lecturer in Electrical Engineering* (electronics and electronic control of machines)

Gene H. Hostetter, Ph.D. University of California, Irvine, *Visiting Lecturer in Electrical Engineering* (computers and digital systems)
John P. Hou, M.S. University of Idaho, *Visiting Lecturer in Civil Engineering* (soil mechanics), Registered Professional Engineer
Lee Hummel, M.S. University of Illinois, *Visiting Lecturer in Electrical Engineering* (digital electronics)
David Isaacs, Ph.D. University of California, Los Angeles, *Visiting Lecturer in Electrical Engineering* (system theory)
Robert Liebeck, Ph.D. University of Illinois, *Visiting Lecturer in Mechanical Engineering* (aerodynamic design)
William A. Litle, Sc.D. Massachusetts Institute of Technology, *Visiting Lecturer in Civil Engineering* (structures, facilities planning), Registered Professional Engineer
Wesley K. Masenten, Ph.D. University of California, Irvine, *Visiting Lecturer in Electrical Engineering* (control systems)
Richard Muskat, Ph.D. Cornell University, *Visiting Lecturer in Civil Engineering* (structural design and analysis)
Lawrence Muzio, Ph.D. University of California, Berkeley, *Visiting Lecturer in Mechanical Engineering* (combustion)
Richard O. Nielsen, Ph.D. University of California, Los Angeles, *Visiting Lecturer in Electrical Engineering* (digital filters)
Donald R. Noble, B.A. California State University, Long Beach, *Visiting Lecturer in Civil Engineering* (industrial art and design)
Robert Phalen, Ph.D. University of Rochester, *Visiting Lecturer in Mechanical Engineering* (environmental medicine and air pollution)
John G. Rau, M.A. University of Washington, *Visiting Lecturer in Electrical and Environmental Engineering* (environmental systems and operations research)
Anthony Simpson, Ph.D. University of Colorado, *Visiting Lecturer in Civil Engineering* (transportation systems), Registered Professional Engineer
Jack Soo Hoo, Ph.D. Stanford University, *Visiting Lecturer in Electrical Engineering* (electromagnetics)
Edward L. Stanton, Ph.D. Case Western Reserve, *Visiting Lecturer in Civil Engineering* (structural stability), Registered Professional Engineer
Kenneth Tiernan, Ph.D. Tufts University, *Visiting Lecturer in Electrical Engineering* (control systems and circuits)
Edward N. Virzi, B.S.M.E. Polytechnic Institute of New York, *Visiting Lecturer in Mechanical Engineering* (nuclear power)
David Wooten, Ph.D. California Institute of Technology, *Visiting Lecturer in Mechanical Engineering* (vibration and noise control), Registered Professional Engineer
Rainer Zuleeg, D.Sc. Tohoku University, *Visiting Lecturer in Electrical Engineering* (solid state electronics)

The School of Engineering offers undergraduate and graduate programs of study for men and women who will engage in the professional practice of engineering as it relates to design, development, research, other engineering functions, and teaching in industry, government, or a university. Programs at all levels emphasize the fundamentals underlying engineering, thus enabling the graduates to continue professional development through formal or informal study. Thus, programs of study in the School of Engineering endeavor to provide UCI graduates with adequate intellectual tools for entrance into the profession and for continued renewal of their technical knowledge.

At the undergraduate level a single program in Engineering is offered with options in Civil, Electrical, and Mechanical Engineering, all of which are accredited by the Accreditation Board for Engineering and Technology (formerly the Engineers' Council for Professional Development). In addition, an undergraduate double option of Environmental Engineering in conjunction with either the Civil Engineering or the Mechanical Engineering option is available.

Courses in computer engineering and digital systems are offered in the Electrical Engineering option. Courses in computer science are offered by the Department of Information and Computer Science (ICS). Students can declare a double major in Engineering and ICS. Early consultation with the School on this and other double-major programs, including the 3-2 Program with the Graduate School of Management, is advisable.

The Engineering program provides a firm background in the basic sciences through courses in physics, mathematics, and chemistry; a fundamental understanding of the engineering sciences through the required engineering core courses; and specialization via technical electives. The breadth requirement must be taken in the areas of Humanistic Inquiry, Social and Behavioral Sciences, and Writing.

At the graduate level, programs of study become less structured and specialization becomes more intense. The M.S. program requires 36 units to be completed, but the exact choice of the courses will be formulated through consultation between the student and the faculty advisor. Thesis and nonthesis programs are available. At the Ph.D. level the program is still less structured but more specialized than at the M.S. level. There is no set course requirement; rather, students must demonstrate various competencies as they progress toward the completion of their doctoral programs.

Engineering students may join any of a number of student organizations. Most of these organizations are professionally oriented and have relationships to national engineering societies. A primary function of these groups is to provide regular technical and social meetings for students with common interests. Most of them also participate in the annual Engineering Week activities held each year in February and in other School functions.

Engineering student organizations are the Engineering Society of UCI (ESUCI), student groups associated with the American Institute of Aeronautics and Astronautics (AIAA), the American Society of Civil Engineers (ASCE), the American Society of Mechanical Engineers (ASME), the Institute of Electrical and Electronic Engineers (IEEE), the Mexican-American Engineering Society (MAES), the National Society of Black Engineers (NSBE), the Society of Women Engineers (SWE), the honorary engineering societies Eta Kappa Nu and Chi Epsilon Mu (Tau Beta Phi), and the Dean's Cabinet. Composed of the various organizations, the Cabinet provides a direct communication link between the students and the Dean.

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 is made each quarter.

Degrees

Engineering ..... B.S., M.S., Ph.D.

Honors

Undergraduate honors at graduation in the School of Engineering are awarded on the basis of a minimum upper-division grade

point average of 3.5 for work completed at UCI and service to the School, service to the University, service to the community, or achievement in research projects. 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.

Undergraduate Program

The undergraduate program leads to a B.S. degree in Engineering, with an option in Civil Engineering, Electrical Engineering, or Mechanical Engineering. A double option of Environmental Engineering in conjunction with either the Civil Engineering or Mechanical Engineering option may be obtained by satisfying the appropriate double option requirements.

Admissions

Students should plan to enter the Engineering program at UCI as freshmen or as juniors. The sequential nature of the Engineering program and the fact that many courses are offered only once a year also make it imperative that students begin their studies in a fall quarter.

High school students wishing to enter the UCI Engineering program are advised to have completed four years of mathematics and one year each of physics and chemistry. That preparation is fundamental to success in the Engineering program, and is vital to receiving first consideration for admittance to the Engineering major during periods of restricted enrollments. Applicants should designate Engineering (and possibly an option such as Civil, Electrical, or Mechanical) as their intended major.

If enrollment limitations make it necessary, some freshman applications may be redirected to another UC campus which can still accommodate freshman Engineering applicants. Optionally, freshman applicants subject to redirections can ask for admission to a special two-year program offered by the Physics Department at UC Riverside. Completing this program with at least a 2.40 grade point average guarantees transfer to the UCI School of Engineering as a junior.

Transfer students can be admitted to the School of Engineering upon completion of a lower-division program elsewhere at UCI or at another college, including community colleges. Students seeking admission to the School of Engineering from colleges and schools other than UCI must satisfy the University requirements for admission to advanced standing and must have completed appropriate prerequisites for the junior-level courses to be undertaken in the School. These include courses equivalent to Mathematics 2A-B-C and 3A-B-D; Engineering 10; and six science courses with laboratories selected from Physics 5A-B-C-D-E, Chemistry 61A-B (or Chemistry 1A-B-C), but covering Physics 5A-B-C as a minimum. (The typical equivalent at most colleges is a three- or four-semester physics sequence plus a two-semester chemistry sequence, each for majors in those fields. Students planning to study electrical engineering at UCI need a course in modern physics that is equivalent to UCI Physics 5D. If the student's physics preparation did not include such a course, Physics 5D can, subsequently, be taken at UCI.)

Completion of these minimum requirements does not guarantee admission to the UCI Engineering program, because enrollment limitations in various categories of Engineering may dictate selection based on ranking by academic proficiency.

Transfer students satisfying the Statewide Articulations Agreement on Lower-Division Engineering Requirements (California Community Colleges-California State Universities and Colleges-University of California) may complete the remaining requirements for the B.S. degree in six quarters at UCI, assuming normal progress is maintained. Students coming from community colleges which do not offer engineering courses approved under this agreement should arrange for early consultation with the School's Undergraduate Student Affairs Office so that a smooth transition can be planned, including perhaps some summer courses.

Advising

Academic advising is available from the academic counselors and the peer advisors in the Undergraduate Student Affairs Office of the School. Freshmen and sophomores will find that most of their questions can be answered by the counselors, who also approve their programs of study. Juniors and seniors must have their programs of study approved by their faculty advisors.

Requirements for the Bachelor's Degree

University Requirements: See page 14.

School Requirements

Credit for at least 180 quarter units including the following:

Engineering Core: Twenty-four units—Engineering 10, 80A-B-C, and 101A-B.

Courses in Engineering and Technical Subjects other than the Core: Sixty units, of which no more than eight may be at the lower-division level (i.e., numbered below 100). The number of courses and units which are specified vary between options. Courses which are not specified are labeled "Technical Electives" in the table of required subjects. Technical Electives are defined as courses in engineering, computer science, mathematics, physics, chemistry, or biological sciences, acceptable toward those majors. Where there is a choice, the course selection must be made in consultation with the student's faculty advisor. If none of the accredited options is followed, the entire segment of 60 units must be approved by the Undergraduate Studies Committee.

Mathematics: Twenty-four units—Mathematics 2A-B-C and 3A-B-D.

Basic Sciences: Twenty-four units plus laboratory units—no less than six courses, with laboratory where appropriate, from Physics 5A-B-C-D-E, Chemistry 61A-B (or 1A-B-C), and Biological Sciences 101E. Excess units acquired through laboratory work may be assigned to Electives (see below). It is recommended that Engineering students take more than this minimum and complete both the Physics 5 and Chemistry 61 sequences.

Breadth: Thirty-six units—approved three-course clusters in (a) Humanistic Inquiry, (b) Social and Behavioral Sciences, and (c) Writing. At least one Writing course must be taken at the

Programs for Accredited Options

Programs showing required subjects and typical sequences for accredited options are listed below. These programs are based on a *rigid set of prerequisites*, beginning with adequate preparation in high school mathematics, physics, and chemistry. Students who are not properly prepared or who wish to make changes for other reasons must have their programs approved by their advisors.

	CIVIL ENGINEERING	ELECTRICAL ENGINEERING	MECHANICAL ENGINEERING
Freshman			
FALL	Math 2A	Math 2A	Math 2A
	Egr. 50	Tech. Elective (Egr. 50)[1]	Tech. Elective (Egr. 50)[1]
	Egr. 1[2]	Egr. 1[2]	Egr. 1[2]
	Breadth	Breadth	Breadth
WINTER	Math 2B	Math 2B	Math 2B
	Egr. 10	Egr. 10	Egr. 10
	Phys. 5A	Phys. 5A	Phys. 5A
	Breadth (Writing)[1]	Breadth (Writing)[1]	Breadth (Writing)[1]
SPRING	Math 2C	Math 2C	Math 2C
	Egr. 30	Tech. Elective (Egr. 30)[1]	Egr. 30
	Phys. 5B	Phys. 5B	Phys. 5B
	Breadth (Writing)[1]	Breadth (Writing)[1]	Breadth (Writing)[1]
Sophomore			
FALL	Math 3A	Math 3A	Math 3A
	Egr. 80A	Egr. 80A	Egr. 80A
	Phys. 5C	Phys. 5C	Phys. 5C
	Elective	Elective	Elective
WINTER	Math 3B	Math 3B	Math 3B
	Egr. 80B	Egr. 80B	Egr. 80B
	Chem. 61A	Chem. 61A	Chem. 61A
	Science (Phys. 5D)[1]	Phys. 5D	Phys. 5D
SPRING	Math 3D	Math 3D	Math 3D
	Egr. 80C	Egr. 80C	Egr. 80C
	Chem. 61B	Chem. 61B[2]	Chem. 61B
	Bio. Sci. 1C[2] or Phys. 5E[2]	Phys. 5E	Phys. 5E[2]
Junior			
FALL	Egr. 101A	Egr. 101A	Egr. 101A
	Egr. 150A	Tech. Elective	Egr. 150A
	CE 105	EE180	ME105
	Breadth	Breadth	Breadth
WINTER	Egr. 101B	Egr. 101B	Egr. 101B
	CE Elective[5]	EE110A	Egr. 150B
	CE Elective[5]	EE120	ME115
	Breadth	Breadth	Breadth
SPRING	CE Elective[5]	Egr. 101D	ME130
	CE Elective[5]	EE110B	ME120
	Tech. Elective	EE186	ME154
	Breadth	Breadth	Breadth
Senior			
FALL	CE Elective[5]	EE140A	ME151A
	CE Elective[5]	EE131	ME170
	Elective	Tech. Elective[4]	Elective
	Breadth	Breadth	Breadth
WINTER	Tech. Elective	Tech. Elective[3]	Tech. Elective[3]
	CE Elective[5]	Tech. Elective	ME151B
	Elective	Elective	Elective
	Breadth	Breadth	Breadth
SPRING	Tech. Elective	Tech. Elective[3]	ME151C
	Tech. Elective	Elective	ME147
	Breadth	Breadth	Breadth
	Elective[2]	Elective[2]	Elective[2]

[1]Recommended selection is shown in parentheses.
[2]Only 45 courses are required for graduation, but 48 courses easily fit the standard program. It is suggested that students avail themselves of the opportunity to take these additional courses.
[3]Design-oriented engineering course.
[4]Laboratory-oriented engineering course.
[5]Selected from approved CE clusters.

upper-division level. See pages 15-16 for the list of approved courses. Note that the remaining breadth requirements stated there are satisfied by the courses in Mathematics and Basic Sciences specified above.

Electives: Any 12 units with the following exceptions—(a) physical education and (b) courses taken in preparation for the first required course in mathematics, chemistry, physics, or writing (as a breadth course).

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 option must be completed successfully at the University of California.

Variations: Variations from the 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.

Programs of Study

A student who wishes to graduate from one of the accredited options—Civil, Electrical, or Mechanical Engineering—should select the engineering and basic science courses listed in the respective program of study. Additional information on opportunities within each option is available from faculty advisors and academic counselors. Students will work out suitable programs of study with their faculty advisors. Students must realize that they alone are responsible for the planning of their own programs and for satisfactory completion of the graduation requirements.

Students may substitute courses of their choosing for those required if they can substantiate the merits of the program of study and obtain the approval of the faculty of the School.

Students are cautioned about the structure of prerequisites which underlies most engineering courses. The sample programs shown here constitute preferred sequences which take into account all prerequisites.

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 the breadth courses, except for courses taken in fulfillment of the UCI Writing Requirement; any nontechnical electives; and any courses not submitted as fulfilling the graduation requirement (including technical electives beyond the number required).

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 as to take a written examination.

Double Options for Environmental Engineering

A significant feature of these double options is the provision for the broad interdisciplinary education necessary to deal with contemporary environmental engineering problems. The student may obtain the Environmental Engineering option from one of two possible paths—from either the Civil Engineering or Mechanical Engineering option—by satisfying additional course work from the Environmental Engineering core. By suitable choice of the courses taken as electives in either the Civil or Mechanical Engineering option, a student may complete most of the requirements for the second option in Environmental Engineering as part of the process of meeting the basic requirements for the B.S. degree in Engineering. Specifically, the double option requirement can be satisfied by either of the following:

Civil and Environmental Engineering

In addition to the requirements in the Civil Engineering option, the student must successfully complete 24 units from the following Engineering group: **ME118** (Energy: Resources and Utilization); **CE162** (Environmental Economics); **CE161** (Environmental Impact Assessment and Reporting); **ME164** (Air Pollution and Control); **CE166** (Public Health Aspects of Environmental Quality); **ME169** (Vibration and Noise Control); **ME110** (Combustion); **ME120** (Heat and Mass Transfer); **ME115** (Applied Engineering Thermodynamics); **ME119** (Nuclear Power Generation); **ME124** (Solar Engineering).

Mechanical and Environmental Engineering

In addition to the requirements in the Mechanical Engineering option, the student must successfully complete 24 units from the following Engineering group: **CE172** (Water Supply and Hydraulic Systems); **CE120** (Transportation and Traffic Engineering); **ME118** (Energy: Resources and Utilization); **CE162** (Environmental Economics); **CE161** (Environmental Impact Assessment and Reporting); **CE173** (Water Resources and Water Quality); **ME164** (Air Pollution and Control); **CE166** (Public Health Aspects of Environmental Quality); **ME169** (Vibration and Noise Control); **ME110** (Combustion); **ME119** (Nuclear Power Generation); **ME124** (Solar Engineering).

The 3-2 Program with the Graduate School of Management

Outstanding UCI undergraduate engineering students may enter a cooperative 3-2 Program with the Graduate School of Management. Students in this Program will complete their first three years in the School of Engineering and the final two years jointly in the School of Engineering and the Graduate School of Management. Successful completion of the requirements leads to a B.S. degree in Engineering and a Master's degree in Administration. Students wishing to enter the 3-2 Program should consult with both the School of Engineering and the Graduate School of Management prior to, or early in, the junior year.

Undergraduate Acceleration toward the M.S. Degree in Engineering

Exceptionally promising seniors may, with permission of the Undergraduate Study Committee, take graduate-level Engineer-

ing courses in addition to the undergraduate degree requirements. After attaining the B.S. degree and upon acceptance to the M.S. program in Engineering, the student may petition for application of up to eight units of excess credit toward the M.S. degree. If the petition is approved by the School and the Dean of Graduate Studies and Research, the student could complete the M.S. degree in three quarters of residence as a graduate student even while serving as a teaching or research assistant.

Graduate Program

Graduate study is offered leading to the M.S. and Ph.D. degrees in Engineering. The graduate program has concentrations in civil, electrical, mechanical, and environmental engineering. Civil engineering focuses upon structural mechanics; transportation, planning, and urban systems; and water resources. The concentration in electrical engineering includes electronics, electro-acoustics and electro-optics, digital systems, telecommunications, control systems, and electric energy systems. Mechanical engineering specialties include heat transfer, fluid dynamics, materials, combustion, and solar energy. Environmental engineering is an interdisciplinary concentration with a focus on water quality, air resources, environmental impact, and occupational health and safety. Studies in operations research can be carried out through interdisciplinary courses offered by several academic units.

Admissions

For information on requirements for admission to graduate study at UCI, see page 22. 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 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 Aptitude Test is required of all applicants.

Master of Science in Engineering

The M.S. degree is normally attained by one of two routes: Plan I, a thesis, or Plan II, a comprehensive examination. For the M.S. degree with thesis, a minimum of 36 approved units are required, of which at least 20 must be nonresearch graduate units (courses numbered 200-289). A maximum of eight M.S. thesis research units (296) may be submitted. The M.S. thesis must demonstrate the student's capability of undertaking an original study and carrying it through to a conclusion satisfactory to at least three members of the faculty. For the M.S. degree with comprehensive examination, a minimum of 36 approved units are required, of which at least 24 must be nonresearch graduate units (numbered 200-289). The detailed program of study for each M.S. student is formulated in consultation with an advisor who takes into consideration the objectives and preparation of the candidate and the specific requirements of the School. Students should acquaint themselves with core course requirements in the various concentrations of the M.S. program. The program of study must be approved by the faculty of the School. Full-time students should be able to complete the requirements for the M.S. degree in three to four quarters.

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 prior approval of part-time programs is required and 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, the part-time student should seek the advice of the graduate student counselor in the School of Engineering. Full student fees are required of graduate students in residence regardless of the number of units taken. 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, transfer credit will not be applied to the minimum required units in 200-series courses. For further information, see page 27.

Doctor of Philosophy in Engineering

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: admission to the Ph.D. program by the faculty of the School; passage of the preliminary examination assessing the student's background and potential for success in the doctoral program; satisfaction of the teaching requirements required of all doctoral students; research preparation; formal advancement to candidacy; completion of a significant research investigation; and preparation and defense of an acceptable dissertation. The degree is granted upon the recommendation of the Doctoral Committee and the Dean of Graduate Studies and Research. 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. Financial aid, such as research and teaching assistantships, is available.

Undergraduate Courses

NOTE: Students who entered UCI before fall quarter, 1979 should refer to the 1978-79 UCI General Catalogue and previous editions for information on the course numbering system prior to fall 1979.

Engineering

1 Introduction to Engineering (1). Nature of engineering; preparation for profession; nature of civil, electrical, and mechanical engineering; employed engineer; ethical and legal aspects of profession; case studies in project design, implementation, and operation. P/NP only.

10 Computational Methods in Engineering (4) W, Summer. Procedures, procedure followers, and the communication interface between the user and the computer. Computer elements and organization. Computational methods. Must qualify in *both* BASIC and FORTRAN by end of course. Prerequisite: Mathematics 2A.

30 Vector Mechanics (4) S, Summer. Forces, equilibrium, structures, distributed forces, friction, virtual work, moments of inertia. Prerequisites: Physics 5A, Mathematics 2A.

50 Engineering Design and Economy (4) F, Summer. Introduction to philosophy of engineering design and its interrelationship with economy, needs analysis, feasibility study, preliminary design, optimization, value analysis, interest and money-time relationships.

80A Engineering System Analysis (4) F, Summer. Introduction to analytical methods for the study of engineering systems. Modeling and mathematical representation of engineering systems, system response characteristics. Laplace transform techniques, frequency domain methods. Prerequisites: Engineering 10, Physics 5B, Mathematics 2C.

80B Network Analysis (4) F, W, Summer. Modeling and analysis of electrical networks. Frequency and transient response of circuits. Prerequisites: Physics 5C, Engineering 80A, Mathematics 3A.

80C Engineering Mechanics (4) S. Rigid body dynamics, momentum and energy principles; modeling and analysis of mechanical systems. Prerequisite: Engineering 80A.

99 Individual Study (2 to 4 per quarter) F, W, S. Supervised but independent reading, research, or design. For first- and second-year students.

101A Introduction to Thermodynamics (4) F, Summer. Thermodynamic principles; open and closed systems representative of engineering problems. Prerequisites: Physics 5B, Mathematics 3D.

101B Introduction to Fluid Mechanics (4) W, Summer. Hydrostatics; control volume analysis; basic flow equations of conservation of mass, momentum, and energy; dimensional analysis; effects of viscosity; mathematical analysis of ideal fluid flow. Prerequisites: Physics 5A, Mathematics 3B.

101D Engineering Electromagnetics (4) S. With laboratory. Electromagnetic fields and solutions of problems in engineering applications; dielectric constant and magnetic susceptibility, impedance, reflection and refraction of plane waves, transmission line and guided waves, resonance cavity and radiation. Prerequisites: Physics 5C, Mathematics 3D.

150A Strength of Materials (4) F. With laboratory. Stress and strain. Analysis of gross internal forces (axial and shearing forces, bending and twisting moments) and stress and deformations which they induce in structural members. Prerequisite: E30.

150B Structural Analysis (4) W. Buckling of columns. Displacement calculations using energy principles (virtual work). Analysis of indeterminate truss and frame structures using the force (superposition) method. Relative behavior of cables, arches, beams, frames, plates, and shells. Approximate analysis of indeterminate structures. Prerequisite: E150A.

Civil Engineering

CE1 Engineering Design Drawing (2) F, W, S. Descriptive geometry and mechanical drawing for Civil Engineering majors. Drafting techniques; design procedures as related to providing finished engineering design drawings.

CE5 Introduction to Land Measurement (4) S. General principles of land mapping. Techniques, equipment, and theory of land measurement; with field exercises.

CE105 Civil Engineering Methods: Analysis of Uncertainty (4) F. Introduction to probability, statistics, and decision analysis for civil engineers. Consideration of uncertainties involved in engineering problems. Prerequisite: Mathematics 3A.

CE115 Civil Engineering Systems Analysis and Design (4) S. Procedures for planning, designing, and managing large-scale civil engineering systems. Emphasis is on the development of computer-based optimizing methods and on the economic and social forces and constraints of the environment in which large systems occur. Prerequisites: Engineering 10, 50.

CE120 Introduction to Transportation Analysis (4) F. Fundamental concepts in planning, design, and management of transportation and urban systems. Topics: transportation planning process, travel demand analysis, system performance and policy evaluation. Prerequisites: Engineering 50 and junior standing.

CE122 Transportation Systems Analysis (4) W. Applications-oriented treatment of transportation systems analysis. Emphasis on modeling of transportation systems and traveler behavior. Transportation and land use interaction, forecasting travel demand, modeling system performance, network equilibrium and spatial distribution. Prerequisite: Engineering CE120.

CE127 Introduction to Traffic Engineering (4) S. Planning, design, and operation of roadways and their networks and their relationship with other modes of transportation for safe and efficient movement of people and goods. Traffic flow theory, highway capacity, traffic control, and highway economy. Prerequisite: Engineering CE120.

CE131 Soil Mechanics (4) S. With laboratory. Mechanics of soils, composition and classification of soils, compaction, compressibility and consolidation, shear strength, shear tests, seepage, bearing capacity, lateral earth pressure, footing design, retaining walls, piles. Prerequisites: Engineering 101B, 150A.

CE152 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: Engineering 150B.

CE153 Structural Design (4) W. Fundamentals of reinforced concrete, steel, timber design. Fundamentals of dead and live load factors. Design project which includes site planning, footing, framing, roof design of two-story tilt-up wall building. Prerequisites: Engineering 150B, CE154.

CE154 Reinforced Concrete Design (4) F. Design of reinforced concrete members. Topics include materials, design theory, strength of bending, shear strength and web reinforcement, band stress and development, one-way slab, tee-sections, joist construction, deflections, columns, length effects, footings, combined footings. Prerequisite: Engineering 150B.

CE161 Environmental Impact Assessment and Reporting (4) F. Mandatory and proposed environmental impact reports. Pertinent legislation and local requirements for environmental impact assessment, factors required in conducting environmental studies, selected case studies, techniques and applicable methodologies for performing impact assessment.

CE162 Environmental Economics (4) W. Socioeconomic aspects of environmental impact. Population growth, density, aesthetics, standards of living, traffic congestion, recreational requirements, and conflict in life styles. Cost/benefit analysis and requirements for public services. Case studies are emphasized.

CE166 Public Health Aspects of Environmental Quality (4) W. With laboratory. Introduction to principles of public health protection and design of environmental protection systems. The systems include water, air, noise, industrial hygiene. Prerequisite: junior standing.

CE168 Sociopolitical Aspects of Environmental Quality (4) S. Political and social constraints in the area of environmental quality.

CE170 Fluid Mechanics (4) S. With laboratory. Emphasis on incompressible fluids. Stresses in fluids, similitude, potential flows, turbulence, boundary layers, creeping motion, separation, wakes. Applications to pipe flow, open channel flow, and hydraulic modes. Prerequisite: Engineering 101B.

CE172 Water Supply and Hydraulic Systems (4) F. Hydrology, water supply, and hydraulic systems; groundwater, wells, flood hydrology, seepage, pumps, surface hydraulic structures. Prerequisite: Engineering CE170.

CE173 Water Resources and Water Quality (4) W. With laboratory. Chemical and biological aspects of water, water supply, wastewater treatment, and solid waste management. Prerequisites: Chemistry 1B or 61A, Engineering 101A, 101B.

CE175 Water and Wastewater Treatment Design (4) S. With laboratory. Chemical and biological treatment processes; emphasis on process dynamics reactor engineering. Mass transport and kinetics, coagulation and flocculation, adsorption, ion exchange. Contractual law and contract document requirements. Prerequisite: Engineering CE173.

CE185 Numerical Methods in Engineering (4) W. Computer-aided numerical solution of problems occurring in practice of engineering. Data analysis, linear equations, optimization are included.

CE198 Group Study (4-4-4) F, W, S. Group study of selected topics in engineering.

CE199 Individual Study (2 to 4 per quarter). For undergraduate engineering majors in supervised but independent reading, research, or design.

Electrical Engineering

EE110A Electronics I (4) W. With laboratory. Circuit analysis. Large and small signal modeling of semiconductor diodes and transistors. Design of semiconductor digital circuits and multistage amplifiers. Discrete and integrated circuit designs. Prerequisite: Engineering 80B.

EE110B Electronics II (4) S. With laboratory. Junction and field-effect transistors, and field-effect transistor linear and digital circuits. Linear and nonlinear applications of operational amplifier feedback systems with emphasis on frequency and thermal stability constraints. Prerequisite: Engineering EE110A.

EE111A Analysis and Design of Electrical Circuits (4) F. Active and passive electrical circuits. Topology, network theorems, sensitivity considerations. Classical synthesis and computer-aided techniques for two-, three-, and four-terminal networks. Corequisite: Engineering EE120; Prerequisite: Engineering 80B.

EE112 Semiconductor Technology (4) F. Crystal growth, liquid, gaseous epitaxy; doping by gaseous diffusion, alloying and ion implant; oxide growth; photoresist technique; contact, junction preparations; measurements of conductivity, Hall effect, minority carrier lifetime, surface state density, application to device design. Not offered every year. Prerequisites: Physics 5E, and Chemistry 1C or 61B.

EE113 Fundamentals of Semiconductor Electronics (4) F. Electronic processes in semiconducting materials: electronic energy levels in solids, electron distribution in thermal equilibrium, electronic transport and recombination processes, theory of PN-junction diode. Not offered every year. Prerequisite: Engineering EE112.

EE114A Field-Effect Semiconductor Devices (4) F. Analog transistor, Schottky barrier and PN-junction capacitors, junction field-effect transistors, insulated gate and thin-film transistors, charge coupled devices, semiconducting memories. Prerequisite: Engineering EE110A.

EE114B Bipolar Semiconductor Devices (4) W. Semiconductor devices based on minority carrier flow: PN-junction diodes, tunnel, backward and punch-through diodes; bipolar transistors (diffusion, drift); four-layer devices; opto-electronic devices. Prerequisite: Engineering EE114A.

EE120 Signal Theory (4) W. Representation of signals: Fourier series, Fourier and Laplace transforms, orthogonal representations. Convolution integral, sampling theory, introductory communication theory, amplitude and phase modulation and demodulation, signal correlation. Prerequisites: Engineering 80B and EE180.

EE128A Communication Systems (4) 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: Engineering EE120 and EE186.

EE131 Logic and Switching Circuits (4) F. Introduction to digital computers. Numbers and codes, Boolean algebra, switching circuits, sequential networks, hardware forms, analysis and design problems. Prerequisite: Engineering EE110B.

EE132 Logic and Organization of Digital Computers (4) W. Building blocks and organization of digital computers, the arithmetic, control, and memory units, and input/out devices and interfaces. Microprogramming and microprocessors. Prerequisite: Engineering EE131.

EE133 Microprocessor Laboratory (4) S. Lecture/laboratory course. Microprocessor architectures and peripheral devices. Experience with a microprocessor system. Functional requirements realized through software and I/O hardware design. Prerequisites: Engineering EE132 and 134.

EE134 Digital Applications Laboratory (4) W. Standard digital building blocks and how they may be assembled to realize a variety of digital processes. Experiments from NAND gates through combinatorial MSI devices to counters and sequence generators. Prerequisite or corequisite: Engineering EE131.

EE135 Digital Signal Processing (4) F. Nature of sampled data, sampling theorem, difference equations, data holds, z-transform, fast Fourier transform, w-transform, digital filters, Butterworth and Chebychev filters, quantization effects. Prerequisite: Engineering EE120.

EE140A Introduction to Control Systems (4) F. With laboratory. Feedback control systems. Modeling, stability, and system specifications. Root locus, Bode, Nichols, and state-space methods of analysis and design. Prerequisite: Engineering EE120.

EE140B Sampled-Data and Digital Control Systems (4) 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. Prerequisite: Engineering EE140A.

EE160A Energy Conversion (4) F, W of odd years. With laboratory. Rotating and stationary energy converters. Magnetic circuits and transformers. Alternating current and direct current machines. Prerequisite: Engineering 101D.

EE160B Electric Energy Systems (4) F, W of even years. Generation, transmission, and use of electrical energy. Fault calculation, protection. Stability, reliability, and optimal load flow. With laboratory as appropriate. Prerequisite: Engineering 80B.

EE176 Engineering Optics (4) W. 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. Prerequisites: Engineering 80B and Physics 5C.

EE177 Engineering Electrodynamics (4) F. With laboratory. Time-varying electromagnetic fields including waveguides, resonant cavities, radiating systems. Motion of charged particles in electromagnetic fields, radiation by moving charges. Scattering and dispersion. Prerequisite: Engineering 101D.

EE178 Optical Electronics (4) S. Lasers and related optical devices and systems: spontaneous and simulated emission, optical spectra, optical resonators, laser oscillation, specific laser systems, dispersion and nonlinear processes in laser medium, crystal optics, modulation, isolator, optical harmonic generation, optical detection and related noise problems. Prerequisites: Engineering EE176 and Engineering 101D.

EE180 Electrical Engineering Analysis (4) F. Analytical methods of complex numbers and their application to electrical engineering problems; Laplace, Fourier, z-, and discrete Fourier transforms. Applications to lumped and continuous parameter engineering systems. Prerequisite: Mathematics 3D.

EE181A-B-C Mathematical Methods in Operations Research. Operations research forms the basis for rational decision making in the design and operation of complex (engineering) systems. Prerequisite: consent of instructor. Same as Mathematics 171A-B-C.

EE181A Linear Programming (4) F. Simplex algorithm, duality, optimization in networks.

EE181B Nonlinear Programming (4) W. Conditions for optimality; quadratic and convex programming, geometric programming, search methods.

EE181C Integer and Dynamic Programming (4) S. Multistage decision models. Applications.

EE186 Engineering Probability (4) F. 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. Prerequisite: Engineering EE120.

EE198 Group Study (4-4-4) F, W, S. Group study of selected topics in engineering.

EE199 Individual Study (2 to 4 per quarter). For undergraduate engineering majors in supervised but independent reading, research, or design.

Mechanical Engineering

ME105 Experimental Engineering Methods (4) F. With laboratory. Experimental methods, with emphasis on calibration, sources of error and uncertainty analysis, static and dynamic response of sensors, signal processing electronics, and writing of engineering reports and memoranda. Prerequisite: Engineering 80B.

ME110 Fundamentals of Combustion (4) F. Combustion phenomena. Topics include stoichiometry, adiabatic flame temperature, flame types, equilibrium chemistry, reaction rates, chemical kinetics, flame stabilization, types of fuels and their combustion, applications of combustion in practical devices. Prerequisites: Engineering 101A and ME115.

ME115 Applied Engineering Thermodynamics (4) W. With laboratory. 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. Prerequisite: Engineering 101A.

ME116 Statistical Thermodynamics (4) 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: Engineering 101A.

ME118 Energy: Resources and Utilization (4) S. Present and projected status of energy demands and production with special attention to energy sources and conversion. Prerequisite: Engineering 101A.

ME119 Nuclear Power Generation (4) W. Fundamentals of nuclear power generation and environmental effects. Prerequisites: Engineering 101A-B.

ME120 Heat and Mass Transfer (4) S. With laboratory. Fundamentals of heat and mass transfer with application to practical problems. Conduction, convection, and radiation heat transfer, mass transfer in laminar and turbulent flow, combined heat and mass transfer. Application to insulation requirements, heat exchangers, reacting flows. Prerequisites: Engineering 101A-B.

ME124 Solar Engineering (4) S. Characteristics of solar radiation and climatology. Heat balances and performance characteristics of solar collectors, heat exchangers, and storage systems. Application to domestic hot water, heating, and cooling. Photovoltaics. Prerequisites: Engineering 101A and ME120 (may be taken concurrently).

ME130 Introduction to Viscous and Compressible Flows (4) S. Differential analysis of fluid motion. Dynamics of incompressible inviscid flow. Incompressible viscous flow. One-dimensional compressible flow. Prerequisite: Engineering E101B.

ME135 Compressible Flow (4) S. Compressible effects in fluid mechanics. Isentropic inviscid flow. Channel, Fanno, Rayleigh flows. Acoustics, shock waves, linearized supersonic flow, nozzles and diffusers. Prerequisite: Engineering 101B. Not offered every year.

ME146 Orbital Mechanics (4) F. Celestial mechanics as applied to space vehicle orbits. Atmospheric entry. Prerequisite: Engineering 80C. Not offered every year.

ME147 Mechanical Vibrations (4) S. Mechanics of machinery, vibrations, rigid body dynamics, Lagrange equations. Prerequisite: Engineering 80C.

ME151A-B-C Mechanical Engineering Design (4-4-4) F, W, S. With laboratory. Kinematic analysis of mechanisms and linkage synthesis. Design of machine elements such as shafts, gears, bearings, springs. Major design project conducted, utilizing all phases of mechanical design methodology: conceptional design, synthesis, analysis, and review. Prerequisites: Engineering 101A-B and ME154.

ME154 Principles of Materials Science (4) S. With laboratory. Structure and fundamental atomic mechanisms that affect bulk properties of metals, semiconductors, ceramics, and polymers. Topics include crystalline structure and imperfections, phase transformation, diffusion, deformation and fracture, corrosion and electronic properties. Course provides sound foundation for application of specific materials in technology and science. Prerequisite: Engineering 80C.

ME155 Principles of Composite Materials Design (4) W. Mechanical behavior and processing of high-strength fiber-reinforced materials. Emphasis on design techniques using design charts based on laminated plate theory. Principal areas include joint design, effect of cut-outs, hybridization, material substitution techniques. Prerequisites: Engineering E150A-B and ME154.

ME157 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.

ME158 Aeronautical Design (4) F. Concepts of mechanical design applied to aircraft. Sizing, configuration, performance verification, and design analyses as related to wing thickness and sweep, wing loading, thrust loading, payload, and takeoff field length. Each student designs a complete airplane. Prerequisites: Engineering E150A-B and ME154.

ME164 Air Pollution and Control (4) F. With laboratory. 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. Prerequisite: Engineering 101A.

ME169 Vibration and Noise Control (4) W. With laboratory. Fundamentals of mechanical vibrations and application to sound generation and propagation. Source, measurement, effect, as well as legal and economic aspects of noise and vibration control. Prerequisite: Engineering 80C.

ME170 Introduction to Control Systems (4) F. With laboratory. Feedback control systems. Modeling, stability, and systems specifications. Root locus, Bode and Nichols methods of analysis and design. Prerequisite: Engineering 80C.

ME198 Group Study (4-4-4) F, W, S. Group study of selected topics in engineering.

ME199 Individual Study (2 to 4 per quarter). For undergraduate engineering majors in supervised but independent reading, research, or design.

Graduate Courses

NOTE: Students who entered UCI before fall quarter, 1979 should refer to the 1978-79 UCI General Catalogue and previous editions for information on the course numbering system prior to fall 1979.

Qualified undergraduate students who have high academic standing, the necessary prerequisites, and the Undergraduate Study Committee's permission may take certain graduate courses. The graduate student counselor should be consulted for further details.

Civil Engineering

CE220 Implementation of New Public Transportation Technology (3) W. Perspective on transit. Recent technical innovations. Political, economic, organizational, regulatory impediments to innovation. Case study of innovation (Dial-A-Ride). Manual and computer simulation of its operation. Integration of transit elements into total system. Generalization of case study and prognosis for current technologies. Prerequisite: Engineering CE122 or consent of instructor.

CE221A Advanced Travel Demand Analysis (3) F. In-depth introduction to travel demand modeling techniques. Methods of multivariate data analysis examined in context of application in development of travel choice models including mode, route, destination choice. Prerequisite: knowledge of elementary probability and statistics.

CE221B Transportation Supply Analysis (3) W. Review of basic performance characteristics of different modes of transportation, such as cost, capacity, speed, volume, safety, and control. Analysis and modeling of transportation performance, and cost of passenger and freight modes as a function of planning and engineering options.

CE221C Transportation Economics (3) S. An introduction to the fundamental economic concepts of transportation analyses of demand, supply, and their interaction for the various transportation modes. Costing and pricing techniques. Benefit-cost evaluation and its limitations. Comparison of economic aspects of various modes. Institutional and regulatory structure for the various modes and consequences for behavior.

CE223 Transportation Policy Analysis (3) F. Transportation policy process and outputs at national, state, local levels. Major government institutions and interest groups, nature of decision-making system, transportation system development as function of policy evolution. Key policy issues in urban transportation. Prerequisite: Engineering CE122 or consent of instructor.

CE225 Transportation and Urban Systems Analysis (3) W. Systems analysis techniques in development of models for description, analysis, optimization of urban areas. Development of skills for analyzing population, land use, transportation networks, public facility siting in congested urban environments. Prerequisite: knowledge of elementary systems analysis.

CE226 Traffic Engineering (3) S. Highway capacity and design. Capacity analysis of freeways, expressways, urban streets, arterials, signalized intersections, ramp, weaving sections, ramp metering, coordination, signal systems.

CE228 Advanced Traffic Flow Theory (3) F. In-depth introduction to traffic flow theory. Theory of flow-density relationships, macroscopic models, microscopic models, queueing approaches, simulation models, noninterrupted flow. Emphasis on theoretical development and interrelationships. Prerequisite: knowledge of elementary probability and statistics.

CE229A-B-C Current Topics in Transportation Research (3-3-3) F, W, S. Seminar focuses on current research efforts in analyzing, evaluating the complex interrelationship of urban activity patterns and transportation network. Prerequisite: consent of instructor.

CE231 Foundation Engineering (3) S. 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: Engineering CE131.

CE241 Wave Propagation (3) F. Small-amplitude transverse waves and longitudinal waves in bars. Torsional waves. Waves in dispersive media. Flexural waves, waves in unbounded medium, wave reflection. Reflection, Rayleigh surface waves.

CE242 Continuum Mechanics (3) F. Deformation, displacement, vector, strain tensor. Compatibility. Velocity accelerations; strain-rate tensor. Stress tensor. Conservation of mass and energy, virtual work. Linear elasticity, fluid flow. Applications.

CE247 Structural Dynamics (3) F. Structural dynamics with applications to mechanical and structural systems. Topics include free and forced vibration, and single, multi, and infinite degree of freedom systems. Computer programs for time and frequency response analyses. Prerequisite: Engineering 80C.

CE248 Probabilistic Methods in Structural Dynamics (3) S. Stochastic response of linear, single, and multi degree of freedom systems. Probabilistic approach to dynamic response of structures to random loading such as earthquake and wind gusting. Prerequisite: Engineering CE247 or consent of instructor.

CE249 Earthquake Engineering (3) F. Seismicity, earth waves and ground motions, soil behavior, structural analysis, applications relevant to California. Prerequisites: Engineering CE257, CE247, CE281.

CE250 Finite Element Methods in Structural Mechanics (3) W. Use of computer methods in structural mechanics. Topics include static (1-D, 2-D, and 3-D) problems, plasticity analysis, and stability analysis. Topics developed from a unified approach by considering elasticity, constitutive relations, and energy methods. Finite element computer practice. Prerequisites: Engineering CE152, E150A-B, or consent of instructor.

CE251 Plasticity and Viscoelasticity (3) F. Assumptions of plasticity theory. Yield criteria. Constitutive theories. Perfectly plastic materials. Extreme principles and limit analysis. Viscoelasticity. Stress-strain relation for linear elasticity. Applications.

CE252 Analysis of Offshore Structures (3) W. Essential hydrodynamics of water waves, wave forecasting and sea states described together with wave forces. Fundamentals of deterministic and probabilistic analysis of multi degree of freedom structures studied, together with fatigue and soil structure interaction problems. Prerequisite: Engineering CE281.

CE253 Plates and Shells (3) S of even years. 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. Prerequisites: Engineering E150A-B or consent of instructor.

CE254 Design of Prestressed Concrete Structures (3) F. Principles of prestressed concrete in structural engineering. Pre- and post-tensioning of flexural members such as beams, continuous beams, and slabs. Design examples and criteria; codes and specifications. Prerequisite: Engineering CE154.

CE255 Advanced Structural Design (3) S. Principles of structural design with emphasis on structural steel and composite steel concrete construction. Design of tension, compression, torsion, and flexural members. Design of plate girders, braced and unbraced frames, and rigid frames. Prerequisites: Engineering E150A-B, CE153, CE154, or consent of instructor.

CE256 Pressure Vessel Analysis and Design (3) W. Stress analyses of pressure vessels and pressure vessel components. Basic principles of shells of revolution, shallow spherical and cylindrical shells. Stress distribution for pressure vessel branches and ends, flanges, and smooth and mitred pipe ends. Applicable codes. Prerequisite: Engineering CE253 or equivalent.

CE257 Advanced Structural Analysis (3) W. Flexibility method of structural analysis; applications to all framework; stiffness method of structural analysis; computer programming.

CE258 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 multistorey, multibay rigid-jointed plane frame. Prerequisite: consent of instructor.

CE259 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.

CE266 Advanced Techniques in Environmental Health Management (3) S. Bureaucratic structure and operations at all levels related to public health. Organizational structure and psychology; politics of the budgetary process; advocacy, PPBS, grantsmanship, and public health law with emphasis on mitigation of environmental health impact. Prerequisite: Engineering CE166.

CE268 Environmental Resources Systems—Planning and Evaluation (3) W. With laboratory. Planning civil engineering systems. Optimization of water and transportation systems. Design criteria for public works. Economic evaluation of alternative systems. Prerequisites: Engineering CE173 and CE273.

CE272 Fluid Flow in Porous Media (3) W of odd years. Dynamics of flow in porous media. Groundwater resources, evaluation, and management. Well design and analysis. Dispersion of pollutants. Mathematical models. Prerequisite: Engineering CE170 or consent of instructor.

CE273 Water and Waste Treatment Technology (3) S. With laboratory. Water and waste pollution control. Physical, chemical, and biological treatment. Reuse of wastes and disposal of nonreusable wastes. Prerequisites: Engineering CE166 and CE173.

CE278 Flow in Open Channels (3) W of even years. Mechanics of fluid motion in open channels, uniform and nonuniform flow, unsteady flow, flood routing, flow over movable beds, and sediment and mass transport. Numerical methods. Prerequisite: Engineering CE170 or consent of instructor.

CE281 Finite Element Method in Continuum Mechanics (3) F. Application of finite elements to continuum mechanics problems. Adaptation of finite element methods to the computer. Coded algorithms provided. Variational principle and Galerkin-based schemes. Element properties and matrix manipulations. Prerequisite: FORTRAN IV programming experience.

CE282 Finite Difference Methods (3) W. Theory and application of finite-difference methods to linear and nonlinear, steady and dynamic systems. Explicit and implicit techniques. Alternate implicit and mesh integration techniques. Prerequisites: Engineering CE185A and FORTRAN IV programming experience.

CE283 Mathematical Methods in Engineering Analysis (3) F. Solutions of linear systems of equations. Calculations of variation and its applications. Rayleigh-Ritz and Galerkin techniques. Integral equations and applications.

CE284 Current Topics in Structural Mechanics (2) W. Seminar focuses on current research efforts in analyzing and designing civil engineering structures. Prerequisite: consent of instructor.

CE285 Introduction to the Boundary Element Method (3) W. Potential problems, simple computer program, two-dimensional elasticity, finite elements and boundary elements, critical comparison. Prerequisite: consent of instructor.

CE295 Seminars in Engineering (varies) F, W, S. Seminars scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor.

CE296 Master of Science Thesis Research (varies). Individual research or investigation conducted in preparation of the thesis required for the M.S. degree in Engineering. Prerequisite: consent of instructor.

CE297 Doctor of Philosophy Dissertation Research (varies). Individual research or investigation conducted in preparation of the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor.

CE299 Individual Research (varies). Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

Electrical Engineering

Students working toward the M.S. degree in Electrical Engineering may satisfy the comprehensive exercise requirement for the M.S. by completing a set of six specific Electrical Engineering courses with a grade of B or better in each course. The six courses are Engineering EE210A, EE235, EE240A, EE279, EE287A, and EE289.

EE210A Active Networks I (3) F. Behavior of active networks subjected to analog and digital signals. Application to the analysis and optimum design of common electronic circuits used for processing analog and digital signals. Prerequisites: Engineering EE110A-B or equivalent.

EE210B Active Networks II (3) W. Analysis and optimum design of integrated electronic circuits and systems to process analog and digital signals. Performance limitations of bipolar and field effect integrated circuits, charge coupled devices, and optoelectric devices; development of design methods for their effective utilization in analog, digital, and hybrid systems. Prerequisite: Engineering EE210A or consent of instructor.

EE217A Advanced Semiconductor Devices (3) F. Microwave and subnanosecond GaAs junction and Schottky barrier field effect transistor design and physical limitations. Operation of unipolar transistors in the hot electron range and its implication on device characteristics. Prerequisites: Engineering EE114A-B.

EE217B Advanced Semiconductor Devices (3) W. Extended theory of bipolar transistor operation, including high-level injection, Early and Kirk effects. High-frequency limitations due to material parameters and design. Lateral bipolar transistor and integrated circuit implementations. Prerequisite: Engineering EE217A.

EE217C Advanced Semiconductor Devices (3) S. Special semiconductor devices, their design, theory of operation, and electrical performance characteristics: semiconductor laser, Gunn device, IMPATT diode, BARITT diode, acoustical surface wave device, and Avalanche photo diode.

EE227A-B Detection, Estimation, and Demodulation Theory (3-3) W, S of even years. Application of statistical design theory, state variables, random processes, and the Ito Calculus to deriving optimum receiver structures for signal detection, parameter estimation, and analog demodulation. Prerequisite: Engineering EE287A.

EE228A-B Communication and Information Theory (3-3) W, S of odd years. 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: Engineering EE287A or consent of instructor.

EE230A Digital Signal Processing (3) W. 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: Engineering EE135, EE240A, and EE287.

EE230B Digital Signal Processing (3) S. Applications of digital signal processing, short-time spectral analysis, spectral estimation, optimal filtering, autoregressive modeling, waveform quantization and coding, block processing, distributed arithmetic. Prerequisite: Engineering EE230A.

EE231 Software Engineering: Theory and Practice (3) W. Study of existing computer-program test methodologies including reliable path testing, program test data selection and generation, data flow analysis, and symbolic execution. Analysis of programming errors, software reliability prediction and estimation, and various software reliability models. Prerequisites: ICS 90 (or working knowledge of FORTRAN IV) and Mathematics 130A, B, or Engineering EE186.

EE232 Automatic Pattern Classification (3) S. Design of machines to sort observed data into classes in areas such as speech, images, electrical signals, and symptoms of disease. Topics include geometry of decisions in feature space, training procedures, feature extraction, feature selection, cluster analysis, stochastic classifiers, and nonlinear classifiers. Prerequisite: Engineering EE186.

EE233 Computer Architecture and Microprogramming (3) S. 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 currrent technology. Prerequisite: Engineering EE132.

EE235 Digital Systems Theory (3) W. Discrete-state information systems. Basic mathematical tools such as groups, graphs, regular expressions, and phrase-structural languages. Discussion of applications of these tools to design of digital systems such as encoders and decoders, digital computers, and digital image analyzers. Prerequisite: Engineering EE135.

EE236 Digital Electronics I (3) S. Band theory of solid-state electronics; semiconductor devices, fabrication technology; nonlinear circuit analysis, analog-digital and digital-analog converters, magnetic memories. Prerequisite: Engineering EE110A.

EE240A Linear Systems (3) F. Methods of linear systems analysis. Linear spaces and linear operators. Spectral analysis of linear operators. State-space representation of continuous-time and discrete-time linear systems. Response of linear systems—impulse response, and state transition operators. Controllability and observability. Realization of rational transfer functions. Stability. Prerequisite: Engineering EE140A and its prerequisites.

EE240B Optimization and Control (3) W. Optimization theory and its applications to problems i ontrol and sequential decision making. Linear and nonlinear programming, calculus of variations, maximum principle, and dynamic programming. Prerequisite: Engineering EE240A or equivalent.

EE240C Multivariable Control Systems (3) S. Controllers for deterministic and stochastic systems with multiple inputs and/or outputs; problems of regulation, tracking disturbance rejection, and terminal control; optimal linear state feedback; observers, optimal linear output feedback; continuous-time and discrete-time systems. Prerequisites: Engineering EE287A and EE240B.

EE241A System Identification (3) S. Latest techniques in system identification. Techniques in both frequency and time domain, linear and nonlinear dynamic processes, correlation, regression, stochastic approximation, etc. Prerequisite: Engineering EE240A.

EE242 Topics in Systems and Control (3) S. Large-scale, multilevel, and hierarchical systems; algebraic and geometric system theory; adaptive systems; game and team-decision theory; system identification; numerical methods; stability theory. Prerequisite: consent of instructor.

EE260A-B Electromechanical Energy Conversion (3-3) W, S of even years. Generalized theory of electrical machines. Performance characteristics of specific machines. Design criteria and methodology. With laboratory where appropriate. Prerequisite: Engineering EE160A or consent of instructor.

EE261A-B Power Electronics (3-3) F of even years, S of odd years. Electronic relays and control of network switching. Converters for high power dc transmission systems. Electronic control of electrical machines. With laboratory where appropriate. Prerequisite: Engineering EE160A (concurrent) or consent of instructor.

EE262 The Planning and Operation of Electrical Power Systems (3) F of odd years. Factors of economy, environment, and technological change in operation and expansion of electric power systems. Forecasting and planning techniques. Vulnerability of large systems. With field trips where appropriate. Prerequisite: consent of instructor. Engineering EE181 highly desirable.

EE263A-B Power Flow Analysis and Control (3-3) W, S of odd years. Methods of power flow analysis. Fault conditions and protection. Optimal dispatch. Transient and dynamic stability. Estimation and control of power system functions. With laboratory and field trips where appropriate. Prerequisites: Engineering EE160A-B (concurrent) or consent of instructor.

EE264 Electric Power Transmission Lines (3) S of even years. Transmission line characteristics. Surge propagation in ideal and lossy lines. Effect of line length and interconnections. Overvoltage conditions and insulation coordination. Electromagnetic interference. With laboratory where appropriate. Prerequisites: Engineering EE160A-B or consent of instructor.

EE270 Imaging Optics (3) W of odd years. Optical imaging instruments from geometrical and wave optic standpoints. Indirect optical imaging methods such as holography, interferometry, and intensity correlation interferometry.

EE271 Statistical Optics (3) S of odd years. Temporal and spatial coherence of electromagnetic radiation. Statistics of photoelectrons generated by thermal radiation and laser beams. Wave propagation through fluctuating medium. Signal-to-noise ratio in photodetection.

EE272 Engineering Quantum Mechanics (3) F of odd years. Basic quantum electronics for optical electronic devices.

EE273 Quantum Electronics (3) W of even years. Semiclassical treatment of lasers and related optical electronic devices.

EE274 Quantum Optics (3) S of even years. Quantum theory of electromagnetic field and its application to laser and related optical devices. Noise, photoelectron counting statistics, and intensity correlation interferometry.

EE279 Advanced Engineering Electromagnetics (3) F. Basic theorems in electromagnetic theory and their application to electromagnetic waves: plane waves, guided waves, and antenna radiation. Prerequisite: Engineering 101D or equivalent.

EE281A Operations Research in Engineering (3) F of even years. Concepts in operations research, problem formulation, and mathematical modeling. Case studies in systems planning and operation, involving scheduling, optimal allocation, network flow. Methods of solution, simulation, and testing. Prerequisite: consent of instructor.

EE281B Probability Applications to Engineering Design (3) W of odd years. Reliability theory and modeling. Queueing analysis of complex systems. Prediction of system behavior. Elements of stochastic programming in design problems. Prerequisite: consent of instructor.

EE281C Economic Modeling of Engineering Systems (3) S of odd years. Discrete and continuous techniques of cost analysis. Risk analysis and comparision of investment strategies. Methods of evaluating financial alternatives. Effects of depreciation and taxation. Prerequisite: consent of instructor.

EE281D Design Optimization (3) F of odd years. Advanced topics in optimization theory with application to design problems. Use of linear programming, dynamic programming, geometric programming, and calculus of variations. Case studies and analyses. Prerequisites: Engineering EE181A, Mathematics 171, or consent of instructor.

EE281E Analysis of Flow in Networks (3) W of even years. Concept of cuts, paths, and connectivity. Flow analysis and special-solution algorithms. Application to transportation problems, commodity shipments, and utility networks. Prerequisite: consent of instructor.

EE281F Advanced Optimization Techniques (3) S of even years. Special tools and techniques in mathematical programming with application to engineering problems. 0-1 programming, branch-and-bound, and nonlinear programming. Decomposition methods and concept of duality. Prerequisites: Engineering E181A, Mathematics 171A, or consent of instructor.

EE287A Random Signals and Systems (3) F. Application of random process theory to the modeling of systems and signals. Models include Markov processes, Markov chains, Brownian motion, and queueing processes. Analysis techniques for random systems and signals using second-order theory and the Fokker-Planck equation. Prerequisite: Engineering EE186.

EE287B Theoretical Foundations of Stochastic Processes (3) S of odd years. Mathematical treatment of several advanced topics in stochastic process theory with application to modeling and analyzing communication and control systems. Enough mathematical machinery developed so that the impact and limitations of the theory can be stated precisely and understood for applications. Prerequisite: Engineering EE287A. Some familiarity with real analysis and measure theory recommended.

EE289 Analytical Engineering (3) S. Coherent integration of course material taken by candidate for the Master's degree in Engineering. Requires students to bring to bear all the tools mastered in previous courses toward the solution of a number of real-world electrical engineering problems. Prerequisite: completion of at least 30 units toward the Master's degree in Engineering.

EE295 Seminars in Engineering (varies) F, W, S. Scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor.

EE296 Master of Science Thesis Research (varies). 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.

EE297 Doctor of Philosophy Dissertation Research (varies). Individual research or investigation conducted in preparing and completing the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor.

EE299 Individual Research (varies). Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

Mechanical Engineering

ME200A-B-C Engineering Analysis. Mathematical tools to solve advanced engineering problems. For first-year graduate students in Mechanical Engineering. Prerequisite for each part: Mathematics 3D.

ME200A (3) F. Differential equations (ordinary and partial), Fourier and Laplace transforms, boundary and eigenvalue problems, special functions.

ME200B (3) W. Infinite series, vector analysis, complex variables, conformal transformations.

ME200C (3) S. Tensor analysis, matrices, numerical methods, probability and statistics.

ME210 Advanced Fundamentals of Combustion (3) W. Premixed, nonpremixed, 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: Engineering ME110.

ME215 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: Engineering ME110.

ME220 Conduction Heat Transfer (3) F. Equations which govern heat conduction in solids in steady and unsteady states with and without internal heat generation and heat loss to the surroundings. Heat conduction with periodic and nonperiodic temperature changes. Exact and approximate solutions of the conduction equations. Numerical solution methods. Prerequisite: Engineering ME120.

ME221 Convection Heat Transfer (3) W. Equations of mass, momentum, and heat transport in laminar and turbulent flows. Internal and external flows. Approximate solutions. Introduction to finite-difference solutions. Prerequisite: Engineering ME120.

ME222 Radiative Heat Transfer (3) S. Black body radiation. Radiative transport equations for surfaces separated by nonparticipating media. Radiant energy transfer through absorbing, emitting, and scattering media. Radiation-conducted interaction. Radiation-convection interaction. Introduction to finite-difference solutions. Prerequisite: Engineering ME120.

ME223 Numerical Methods in Heat, Mass, and Momentum Transport (3) S. With laboratory. Discretization of the different types of partial differential equations (parabolic, elliptic, hyperbolic). Finite difference equations for one-, two-, and three-dimensional flows. Two-dimensional parabolic procedure (GENMIX). Two-dimensional elliptic procedure (TEACH). Prerequisites: Engineering ME120, ME130, ME230A, and ME221.

ME230A Advanced Incompressible Fluid Dynamics—Part I (3) F. Navier-Stokes equations. Elements of potential flow theory. Laminar viscous flow. Laminar boundary layers. Integral methods of solution. Nonsteady laminar boundary layers. Finite-difference solutions. Prerequisite: Engineering ME130.

ME230B Advanced Incompressible Fluid Dynamics—Part II (3) W. Transition from laminar to turbulent flow, turbulent boundary layers, turbulent jets and wakes. Prerequisite: Engineering ME230A or consent of instructor.

ME231 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: Engineering ME120 (may be taken concurrently).

ME235 Advanced Compressible Fluid Dynamics (3) F. Current and advanced concepts in engineering applications of fluid mechanics. Generalized channel flow applied to Fanno, Rayleigh, and normal shocks. Laminar and turbulent boundary layers in compressible flow. Numerical methods. Separated and recirculating flow, unsteady flow, hypersonic parameters. Prerequisites: Engineering ME120 and ME130.

ME247 Advanced Dynamics (3) F. Kinematics and dynamics of three-dimensional complex motions. Lagrangian dynamics, Hamilton's principles. Dynamics of gyros and platforms. Satellite dynamics (spinning, gravity gradient, etc.). Prerequisite: Engineering ME147 or equivalent.

ME251A 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: Engineering ME154 or consent of instructor.

ME251B Phase Transformations (3) S. Kinetics of nucleation, nucleation theory, isothermal transformation, martensitic transformation. Prerequisite: Engineering ME251A.

ME252 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: Engineering ME154 or consent of instructor.

ME254 Mechanical Behavior of Engineering Materials (3) W. 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: Engineering ME154.

ME256 Plasticity and Metal Forming (3) S. Stress and strain analysis, plasticity equations, yielding, integration of plasticity equations, plastic instability, application of plasticity theory to some forming processes. Prerequisite: Engineering E30, ME154, or consent of instructor.

ME257 Engineering Design (3) F, W, S. With laboratory. Engineering design for M.S. candidates in the comprehensive examination option in which they undertake a design project. Interaction with professional community encouraged. Interaction among student projects in environmental engineering and civil engineering encouraged. Tools of design, project management, presentation, and reporting are developed.

ME264 Fundamentals of Air Pollution Aerosol Technology (3) S. Behavior of airborne 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: Engineering 101B-C or equivalent.

ME269 Advanced Noise Pollution and Control (3) S. Noise sources; technology of noise control; noise measurement in the environment; community and individual response to noise; noise as a factor in environmental impact. Current noise problems and noise abatement efforts. Prerequisite: Engineering ME169.

ME270A Linear Systems (3) F. Methods of linear systems analysis. Linear spaces and linear operators. Spectral analysis of linear operators. State-space representations of continuous-time and discrete-time linear systems. Response of linear systems—impulse response and state transition operators. Controllability and observability. Realization of rational transfer functions. Stability. Prerequisites Engineering ME170A or EE140A.

ME270B Optimization and Control (3) W. Optimization theory and its applications to problems in control and sequential decision making. Linear and nonlinear programming, calculus of variations, maximum principle and dynamic programming. Prerequisite: Engineering ME270A or equivalent.

ME271 System Identification (3) S. Course 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: Engineering ME270A.

ME272 Topics in Systems and Control (3) S. Advanced topics in systems and control theory. Large-scale, multilevel, and hierarchical systems; algebraic and geometric system theory; adaptive systems; game and team-decision theory; system identification; numerical methods; stability theory. Prerequisite: consent of instructor.

ME295 Seminars in Engineering (varies) F, W, S. Seminars scheduled each year by individual faculty in major field of interest. Prerequisite: consent of instructor.

ME296 Master of Science Thesis Research (varies). 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.

ME297 Doctor of Philosophy Dissertation Research (varies). Individual research or investigation conducted in the pursuit of preparing and completing the dissertation required for the Ph.D. degree in Engineering. Prerequisite: consent of instructor.

ME299 Individual Research (varies). Individual research or investigation under the direction of an individual faculty member. Prerequisite: consent of instructor.

GRADUATE SCHOOL OF MANAGEMENT

Lyman W. Porter **Dean**

Robert W. Allen, Ph.D. University of California, Irvine, *Visiting Lecturer in Administration* (organizational behavior, management, power, influence processes)

Jerome B. Baesel, Ph.D. University of California, Los Angeles, *Assistant Professor of Administration* (finance, corporate finance, risk allocation, financial markets) (on leave F)

Marta L. Borsanyi, M.S. University of California, Irvine, *Visiting Lecturer in Administration* (gaming, simulation, decision making)

George W. Brown, Ph.D. Princeton University, *Professor of Administration* (decision sciences, business policy)

Michael Feuers, M.A. Columbia University, *Assistant Dean of the Graduate School of Management* (management, business policy)

Craig Galbraith, M.S. Purdue University, *Acting Assistant Professor of Administration* (analysis of strategic decisions, business policy, organizational management)

Dennis Galligani, Ph.D. University of California, Los Angeles, *Adjunct Lecturer in Administration* (higher education administration)

William Gonzales, M.B.A. Sloan Institute of Hospital Administration, M.P.A. New York University, *Adjunct Lecturer in Administration* (health care management)

Stepan Karamardian, Ph.D. University of California, Berkeley, *Associate Dean, Professor of Administration and Mathematics* (decision sciences) (on leave F, W)

John King, Ph.D. University of California, Irvine, *Assistant Professor of Administration and Information and Computer Sciences* (computer technology, public policy management, management information systems)

Kenneth L. Kraemer, Ph.D. University of Southern California, *Professor of Administration and Director of the Public Policy Research Organization* (urban and regional information systems, public administration, public policy development)

Newton Margulies, Ph.D. University of California, Los Angeles, *Professor of Administration* (organizational behavior and organizational development)

Joseph W. McGuire, Ph.D. Columbia University, *Professor of Administration* (organizational theory, business policy, business environment, managerial economics)

Jone Pearce, Ph.D. Yale University, *Assistant Professor of Administration* (organizational behavior, organizational authority, nonprofit organizations)

James L. Perry, Ph.D. Syracuse University, *Associate Professor of Administration* (public policy management, urban policy, public sector collective bargaining)

Lyman W. Porter, Ph.D. Yale University, *Dean of the Graduate School of Management and Professor of Administration and Psychology* (organizational behavior, personnel administration, higher education administration)

Judy B. Rosener, Ph.D. Claremont Graduate School, *Visiting Lecturer in Administration* (public policy management, community decision making)

Bruce A. Samuelson, D.B.A. University of Southern California, *Assistant Professor of Administration* (accounting and financial reporting, financial planning and controls, organizational environment) (on leave F)

Edward O. Thorp, Ph.D. University of California, Los Angeles, *Professor of Administration* (mathematical finance, functional analysis, game theory)

William B. Stevenson, M.A. University of California, Riverside, *Acting Assistant Professor of Administration* (formal organizations, quantitative methodology)

Alladi Venkatesh, Ph.D. Syracuse University, *Assistant Professor of Administration* (marketing, marketing research)

Nicholas P. Vitalare, Ph.D. University of Minnesota, *Assistant Professor of Administration* (management information systems)

The Graduate School of Management (GSM) offers graduate education leading to Master's and Ph.D. degrees in Administration. The Master's degree program is professional in nature. It is anticipated that, effective fall 1981, GSM will offer the M.B.A. (Master of Business Administration) and the M.P.A. (Master of Public Administration), in addition to the Master of Science in Administration for those who seek a career in management in the business or public/not-for-profit sector. The Ph.D. in Administration is for those who wish to pursue a career in scholarly research.

The GSM existing and anticipated Master's degree programs are intended to increase the likelihood that future leaders will be able to communicate effectively and more easily from one kind of organizational unit to another, thereby providing society with versatile managers and administrators.

The Master's programs are intended to provide future managers with a firm foundation in the basic disciplines and in management tools and techniques. Each student in the Master's program focuses upon an institutional area and may develop expertise in one or more functional specializations. The Ph.D. program for the field of administration has academic and research objectives.

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, statements of purpose, and letters of recommendation). There are no arbitrary cut-off points on any of the criteria for admission—rather, admission is on the basis of the total configuration of qualifications.

Requests for application material should be addressed to the Division of Graduate Studies and Research, University of California, Irvine; Irvine, California 92717.

Master's Degree

GSM admits students for study leading to the Master's degree in the fall and winter quarters. The deadlines for completion of all phases of the application procedure are July 1 for the fall quarter and October 15 for the winter quarter. In addition to the general University rules governing admission to graduate study, GSM normally requires the following:

1. The Graduate Management Admission Test.
2. College-level mathematics including calculus and a course in probability theory. Applicants without adequate mathematical preparation may be admitted with the condition that they complete preliminary courses with a grade of B or better. These courses must be completed by the end of the second quarter in residence. Undergraduate courses in both the social sciences (e.g., economics, political science, psychology, sociology) and information and computer sciences are *strongly* recommended.

The Ph.D.

GSM admits students for the Ph.D. in the fall quarter only; deadline for application is April 15. The Ph.D. program requires a commitment to full-time study. In addition to the other requirements, Ph.D. applicants are required 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.

Educational Objectives

Three basic premises underlie the School's philosophy of generic 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 century (significant trends, conditions, and problems); history of science, scientific inquiry, and the philosophy of science; economic, political, and social analysis.

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; personnel policies; techniques for measuring and affecting attitudes and behavior; research design and strategies.

Management Information Systems. Computer technology, information sciences, and basic computer applications.

General Skills. Political skills, effective management of interpersonal relations, leadership strategies and tactics, and competence in oral, graphic, and written expression.

Professional Orientations. 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.

Undergraduate Course Offerings

The GSM faculty offers a limited number of courses for undergraduates each year, although there is no undergraduate degree program in administration available at UCI at this time.

Examples of these courses include Introduction to Administration, Introduction to Managerial Accounting, and Basic Quantitative Methods for Administration. Students should refer to the listings under the Graduate School of Management in the Schedule of Classes, available each quarter from the Registrar's Office.

In establishing the GSM undergraduate course offerings, the faculty anticipated three types of students drawn to courses in administration: (1) students who wish to learn about the administration of organizations as a way of gaining appreciation for a significant aspect of the culture, (2) students preparing for careers in other fields that require some knowledge of administration but not a high concentration in the field, and (3) students who expect to go on to graduate work in administration and who wish early guidance and undergraduate work appropriate to this career objective.

The 3-2 Program for Undergraduates

In addition to the two-year Master's program for students who have already received a bachelor's degree from this University or another institution, outstanding UCI undergraduate students may enter a cooperative 3-2 Program with GSM and other campus units such as the School of Social Sciences, the School of Engineering, the School of Biological Sciences, the Program in Social Ecology, or the Department of Information and Computer Science. Acceptance into the 3-2 Program constitutes advance admission to the graduate program. Such students complete their undergraduate major requirements by the end of the 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 degrees. Successful completion of the requirements in the program normally leads to the bachelor's degree in the cooperating discipline after the fourth year, and a Master's degree after the fifth year. Students contemplating entering such a program should contact the Graduate School of Management prior to, or early in, the start of the 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.

Master's Degree Programs in GSM

In addition to the Master of Science in Administration, GSM anticipates approval of two new degrees for the Masters level, effective fall 1981. These will be the M.B.A. (Master of Business Administration), and the M.P.A. (Master of Public Administration). All three will require a minimum of 23 quarter courses (92 units) with a minimum overall grade point average of 3.0 in Core, Tier II, and elective courses.

The Master's degree programs normally take two full academic years or their equivalent in part-time registration. Students with substantial personal or professional commitments normally take two courses per quarter and are required to complete the Master's degree in no more than four years. To accommodate the needs of these students, GSM offers a number of courses each quarter during the late afternoon and evening hours. Students who cannot take courses in the late afternoon (after 4:00 p.m.) may not be able to complete the program successfully. There is no thesis required. The courses in the Master's degree programs are divided into three groups, each group designed to achieve

specific educational objectives. The courses are divided as follows: Tier I, Common Core Courses, which are required of all Master's degree students; Tier II B courses, which will be required for the M.B.A. degree; and Tier II P courses, which will be required for the M.P.A. degree. For the M.S. degree, the student is required to take all of Tier II B and II P courses. The balance of the minimum required 23 courses will consist of electives.

Tier I Common Core Courses

The first group consists of 10 Core courses (Tier I) taken by all Master's degree students. The Core has two fundamental aims:

(1) to develop skills needed to select and use effectively the appropriate means, methods, and techniques for diagnosing and solving organizational problems; (2) to identify the significant concepts and phenomena associated with the study of complex organizations, and to bring to bear the relevant contributions of the core disciplines on the analysis of organizations and the administrative processes.

Tier I Common Core Courses, each of which is four units, are: Management of Complex Organizations, Quantitative Methods for Management, *either* Quantitative Methods for Management *or* Statistics for Management, Organizational Analysis for Management, Accounting Information for Management, Microeconomics for Management, Macroeconomics for Management, Political Analysis for Management, Computer and Information Systems for Management, Public/Private Interactions.

Specialization in Business Management, Public Management, or Business/Public Management

Students pursuing the M.B.A. will be required to take all four Tier II B courses: Business Strategy, Marketing for Management, Corporate Finance, and Production Management. Students pursuing the M.P.A. will be required to take all four Tier II P courses: Public Policy Making, Public Policy Analysis, Public Financial Analysis, and Public Productivity Management. Students pursuing the M.S. are required to take *all eight* of the Tier II courses. Tier II courses are designed to increase the students' skills in the particular arena they wish to enter, as well as to present them with the problems and options common to high-level managers. The separation of the M.B.A. and M.P.A. degrees allows for a certain amount of specialization; the M.S. degree is structured to present the widest view of the interface between public and private management.

Elective Courses

The remaining coursework for the Master's degrees will consist of either nine additional electives for the M.B.A. or M.P.A. degrees, or five electives for the M.S. degree. The major emphasis in the elective courses will be 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. The student will select the electives in light of the student's educational and career goals and interests.

Management Internship Program

To complement the academic curriculum of GSM, a Management Internship Program provides practical application and work experience to selected GSM Master's students. Student interns are employed in administrative positions by local cooperating organizations. Course credit is available for participants in the Internship Program through the course "Management Internship Seminar." GSM faculty and organizational representatives as well as student interns participate in this seminar which deals with specific topics and projects encountered by the interns in their positions.

Special Opportunities

Opportunities for students to take part in on-going research exist through two University-wide research units based on the Irvine campus. Through the Public Policy Research Organization (PPRO) a student may participate in research on significant public policy issues. Current projects include a nationwide study of local government information systems. The Institute of Transportation Studies (ITS) conducts research in the areas of urban transportation policy and planning, transit management and labor relations, and transportation system evaluation. Students interested in these areas may have an opportunity to work on an ITS project.

Doctor of Philosophy in Administration

Students who have completed the GSM Master's degree (or who have obtained a Master's degree elsewhere in an area of administration) are eligible to apply for the GSM doctoral program. Requirements of the Ph.D. program include a broad knowledge of core disciplines as represented by the 14 core courses of the Master's degree program. In addition, the Ph.D. student must qualify as a skilled researcher and must complete a significant exercise demonstrating these skills.

Although there is considerable variation in the length of time beyond a Master's degree needed to complete the Ph.D., a realistic range is three to four years. The Ph.D. program is divided into three phases: preliminary, qualification, and dissertation.

The preliminary phase (which must be completed within four quarters) is designed to ensure that all Ph.D. students have (1) a thorough knowledge of core materials; (2) knowledge of how to conduct research; and (3) a depth of knowledge in a basic discipline or tool relevant to administration (e.g., decision sciences, behavioral science models for administration).

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. There are no foreign language requirements in the GSM Ph.D. program.

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. The dissertation attests to the scholarly objectives of the degree program.

Undergraduate Courses

1 Introduction to Administration (4) F, S. Seminar, three hours. Field of administration/management. Fundamental concepts and realms of application considered together to acquaint students with the organization and administration of private and public enterprise. Both cognitive and experiential techniques are used to develop understanding of management as a field of study and of life.

10 Basic Quantitative Methods for Administration (4) Summer. Preprofessional quantitative course. Emphasis on basic concepts, manipulations, and applications to economics and managerial problems. Topics include graphs, differentiation, integration, elements of probability, and statistics.

160 Introduction to Public Administration (4) W. This course is designed to introduce undergraduate students to the study of public administration. For those expecting to take further courses in the field or considering a public service career.

185 Introduction to Managerial Accounting (4) W, Summer. Lecture, three hours. 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.

186 Introduction to Managerial Finance (4) Summer. Lecture, three hours. 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. Prerequisite: Administration 185 or consent of instructor.

Graduate Courses

200 Management of Complex Organizations (4) F, W. 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.

201A Quantitative Methods for Management (4) F, W. The tools of mathematical modeling as a basis for managerial decision making: statistical decision theory, mathematical programming, and network analysis.

201B Quantitative Methods for Management (4) W, S. A continuation of 201A. Multistage decision models, inventory theory, queueing models, and simulation. Prerequisite: 201A.

201C Statistics for Management (4) W. Methods of statistical inference, emphasizing application to administrative and management decision problems. Topics include classical estimation and hypothesis testing, regression, correlation, analysis of variance and nonparametric methods. Prerequisite: 201A.

202 Organizational Analysis for Management (4) W, S. 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.

203 Accounting Information for Management (4) F, W, Summer. Nature and purpose of accounting, principal accounting instruments, and valuation problems.

204 Microeconomics for Management (4) W, S. 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. A knowledge of algebra and elementary calculus is assumed.

205 Macroeconomics for Management (4) F, S. Principal determinants of national income and employment, with emphasis on concepts, tools, and data. Construction of national income and product accounts, application of classical Keynesian model and other models to fiscal and monetary policy instruments.

206 Political Analysis for Management (4) F, W. Political analysis related to management of organizations. Topics include political environment of management; concepts and processes central to political analysis; bureaucratic politics; politics and the manager.

207 Information and Computer Systems for Management (4) F, W, S. Introduction to computer systems and technology; introduction to management-oriented applications of computing; opportunity for hands-on experience for management-related tasks. No prior computer experience required.

208 Issues in Public/Private Sector Interactions (4) F, S. Types of markets and politics represented in government and business facilitation joint ventures; private production of public services; government protection of business; knowledge transfer from business and vice versa; personnel transfer between business and government.

211 Public Policy Making (4) W. Overview of public policy-making activities in the U.S. Examination of conceptual frameworks for the study of policy making and systematic exploration of key steps in the policy process—development implementation, evaluation, and termination.

212 Public Policy Analysis Implementation/Evaluation (4) F. Application of analysis to design and evaluation policies and programs. Public decision agenda; role of analysis in policy making; analysis techniques for policy development, implementation, evaluation, and termination; politics, values, and ethics as policy-making inputs; design of plans, programs, and controls.

213 Public Financial Management (4) S. Intergovernmental fiscal relations. Concepts and practices of public finance and governmental budgeting in the United States. Public finance theory including theory of taxation; tools and techniques of public financial management.

214 Public Productivity Management (4) W. Introduction to the major concepts and theoretical issues in public productivity analysis. Application of these theories through specific techniques and methods to problems and cases.

215 Business Strategy (4) W, S. 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, etc. Prerequisites: Administration 216, 217, and 218.

216 Marketing for Management (4) F, S. Introduction to the field of marketing. Objectives include: developing familiarity with terms, techniques, and institutions in marketing environment; acquainting students with the type of decisions made by marketing managers, and the factors influencing these decisions.

217 Corporate Finance (4) F, S. Finance function in the short and long run, including cost of capital and capital structure.

218 Operations Management (4) F, W. Introduction to philosophy and techniques of operations and production management. Emphasis on operations planning, and control concepts; inventory control systems; MRP; quality control. Stress on integration of current topics in operations management.

Electives

220 Cost Accounting and Control Systems (4) S. 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.

221 Financial Reporting Standards (4) W. 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.

222 Federal Taxation (4) S. Methods of researching federal laws governing income taxation of individuals and corporations, and provisions for a tax-exempt status.

223 Organizational Auditing (4) W. 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.

230 Advanced Managerial Finance (4). Seminar, three hours. Topics include working capital policy, capital budgeting, sources of long-term capital, and growth by merger and acquisition. Centers around a collection of cases. Prerequisites: Administration 203A-B or consent of instructor.

231 Money, Banking, and Capital Markets (4) S. Seminar, three hours. 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. Discussion of markets for specific instruments, such as federal funds, commercial paper, mortgages, and corporate bonds.

241 Consumer Behavior (4) W. 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.

242 Public Sector Marketing (4) W. Examines the role and application of marketing in nonprofit settings. Gives the student a conceptual understanding of marketing discipline and marketing processes, and shows how basic concepts, methods, and application of marketing principles are applicable to nonprofit organizations. The role of marketing in solving contemporary social problems. Case studies.

243 Marketing Research (4) S. 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. Use and evaluation of research as an input to the marketing management process are emphasized.

251 Administration of Urban Service Systems (4) F. Seminar, three hours. General systems theory applied to understanding and administering governmental and other public urban service systems for housing, education, health, welfare, safety, recreation, development, etc.

252 Information Systems in Government (4) S. Seminar, three hours. Design, development, management, and evaluation of urban information systems, with special emphasis on trade-offs among efficiency, effectiveness, privacy, and other key values affected by alternative financing, operating, and control policies.

253 Community Power (4). Seminar, three hours. Structure, processes, and exercise of power in the community relevant to the practice of administration. Evaluation of various normative and descriptive theories, testing alternative hypotheses in selected cases within Orange County.

255 Seminar in City Management (4) S. Seminar, three hours. Government structure operating in California cities with emphasis on the Council-Manager form. Organization of decision making and necessary implementation relating to administration of day-to-day operations of a city.

256 Governmental Systems (4) W. Seminar, three hours. Structures, processes, interactions, and functions of evolving systems of federal, state, and local government in the U.S. viewed through multidisciplinary perspectives. Current controversies over theories and their underlying social and ideological bases.

260 Advanced Organizational Behavior (4) S. Seminar, three hours. Topics in organizational behavior including motivation, leadership, group influences, adaptation and socialization, organizational structure, and communication. Prerequisites: Administration 202A-B or consent of instructor.

261 Organizational Change (4). Seminar, three hours. Processes and technologies for bringing about change in organizations. Emphasis on rapidly growing body of theory, concepts, and techniques dealing with ways in which organizations can become more adaptive and meet challenges of modern society. Prerequisites: Administration 202A-B or consent of instructor.

262 Methods of Organizational Research (4) W. Seminar, three hours. Development of critical-analytical skills criticizing published research and theory. Necessary skills to design research effectively. Prerequisites: Administration 202A-B or consent of instructor.

263 The Consultative Process (4) F. Process and dimensions of the consultant's role. Topics include identification and definition of the client system, establishing contracts, ethics in consulting, tools and techniques in consultation, terminating the relationship.

265 Advanced Operations Research (4) F. Seminar, three hours. Mathematical models appropriate for administrative decision making. Topics include linear, nonlinear, and dynamic programming, and queueing and other stochastic operations research models. Prerequisite: consent of instructor.

266 Statistical Decision Theory (4). Seminar, three hours. Relates Bayesian models to classical models of hypothesis testing and provides unified structure for treating sequential analysis, Markovian decision problems, and dynamic programming.

270 Information Systems for Management (4) W. Seminar, three hours. Issues in managing design, construction, and operation of computer-based systems—nature of information systems for operations control and planning; responsibility and authority for information systems; selection among proposed applications; control of system development activities. Assumes introductory level familiarity with computers and programming.

275 Legal Theory for Administrators (4) F. Nature, historical background, and practical operation of American legal system and its impact upon policy making and administration in large organizations. Constitutional and political relationships which define and limit operation of systems.

276 Selected Legal Problems for Business Organizations (4) W. 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.

290 Special Topic Seminars (4-4-4) 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, Selected Topics in Personnel, International Management, Health Care Administration.

291 Advanced Seminar in Business Administration (4). Seminar, three hours. Further exploration of selected topics from Administration 212A-B. Prerequisites: Administration 212A-B.

298A-B-C Administrative Intern Seminar (4-4-4). Seminar, three hours. The Administrative Intern Program provides students with an opportunity to put into practice concepts, skills, and tools acquired in other parts of the GSM program. Weekly seminar sessions augment internship experiences with analyses of relevant administrative issues. Intended primarily for second-year M.S. students.

299 Individual Directed Study (4). Individual study under the direction of a selected faculty member. Prerequisite: determined by instructor.

TEACHER EDUCATION

Kenneth P. Bailey **Director**

T. Jean Adenika, Ph.D. Florida State University, *Supervisor of Teacher Education* (health and science education)
Kenneth P. Bailey, Ph.D. University of California, Los Angeles, *Senior Lecturer Emeritus in History and Education*
Carolyn L. Bouldin, M.A. Pepperdine University, *Supervisor of Teacher Education* (intern teachers; elementary social science)
Virginia V. Boyle, Ph.D. University of Pittsburgh, *Acting Assistant Director* (staff development; curriculum)
Kimberly Burge, B.A. University of California, Irvine, *Supervisor of Teacher Education* (interactive TV and applied technology)
Richard A. Denholm, Ed.D. Western Reserve University, *Supervisor of Teacher Education* (mathematics)
Kenneth W. Dumars, M.D. University of Colorado School of Medicine, *Adjunct Lecturer, Professor of Pediatrics* (special education)
John A. Dunn, M.A. California State College, Los Angeles, *Supervisor of Teacher Education* (art, drama, dance)
Jeffrey R. Heller, Ph.D. University of Iowa, *Visiting Lecturer* (special education)
Virginia C. Kelly, M.S. California State University, Fullerton, *Supervisor of Teacher Education* (special education)
Frances Craig Kenney, M.S. University of Southern California, *Supervisor of Teacher Education* (intern teachers; social science)
Robert E. Letro, M.A. California State College, Long Beach, *Supervisor of Teacher Education* (history and social science; media)
Geneva Lopez, M.A. California State University, Long Beach, *Supervisor of Teacher Education* (foreign languages and bilingualism)
Billie N. Masters, M.A. San Jose State College, *Supervisor of Teacher Education* (secondary reading; learning disabilities)
Nick V. Messina, M.E. Pennsylvania State College, *Supervisor of Teacher Education* (reading)
Rachael C. Mitchell, M.S. Pepperdine University, *Supervisor of Teacher Education* (reading specialist)
Robert L. Newcomb, Ph.D. University of California, Santa Barbara, *Lecturer in Education and Social Sciences*
Charles R. Phillips, M.D. Northwestern Medical School, *Adjunct Lecturer, Director of Student Health* (health education)
Paul H. Reed, M.A. University of California, Irvine, *Visiting Lecturer* (special education)
Patricia L. Romero, M.S. University of New Mexico, *Adjunct Lecturer* (sign language)
Mary W. Roosevelt, National Froebel Foundation Teaching Degree, University of London, *Supervisor of Teacher Education* (elementary education)
Willas Sayre, Ph.D. Tulsa University, *Adjunct Lecturer* (reading)
Myron Simon, Ed.D. University of Michigan, *Professor of Education and English* (methods and philosophy of education)
Russell M. Steinberg, Ph.D. University of California, Los Angeles, M.D. Medical College of Toledo, *Visiting Lecturer* (special education)
Owen Thomas, Ph.D. University of California, Los Angeles, *Professor of Education, English, and Linguistics* (language arts)
Milton E. Turner, Ph.D. Stanford University, *Adjunct Lecturer*
Donald R. Wheeler, Ed.D. University of Southern California, *Supervisor of Teacher Education* (administrative services credential; pupil personnel credential)
Eleanor P. Wynne, M.A. University of Washington, *Supervisor of Teacher Education* (early childhood and special education)

Teacher Education programs lead to California teaching credentials as established by the Teacher Preparation and Licensing Law of 1970, known generally as the Ryan Act. It is possible for a graduate student concurrently to complete the requirements for a teaching credential and to earn an advanced academic degree. This requires admission to the Teacher Education program and the graduate program in which the degree will be sought.

Early in their college career students should consult with counselors in the Office of Teacher Education to work out a long-range program that will lead to the teaching credentials. There are regular staff counselors on duty daily, and there is a peer counselor who is particularly prepared to advise undergraduates. Individual counselors are not assigned. Each quarter it is essential that graduate students check their progress in a counseling session with Ada L. Nix, Credentials Counselor.

The Credential Program

There are two types of basic teaching credentials:

Single Subject Instruction Credential. "Single subject instruction" means the practice of assignment of teachers to specified subject matter courses, as is commonly practiced in

California high schools and junior high schools. Teachers who are authorized for single subject instruction may be assigned, with their consent, to teach any subject in the authorized fields, at any grade level, but normally in a departmentalized secondary school. UCI is approved for this credential.

Single Subject Instruction Credentials are authorized by the State of California in art, business, English/drama, English, history, homemaking, industrial arts, languages, mathematics, music, physical education, social science, biological science, physical science, and agriculture.

Multiple Subject Instruction Credential. "Multiple subject instruction" means the practice of assignment of teachers to multiple subject matter instruction, as is commonly practiced in California elementary schools. Teachers who are authorized for multiple subject instruction may be assigned, with their consent, to teach in any self-contained classroom: preschool, kindergarten, and grades 1-12 inclusive, but normally the assignment is in the elementary school. UCI is approved for this credential.

In addition, there are three other types of credentials. These are the Specialist Credential, the Services Credential, and the Designated Subjects Credential:

Specialist Credential. The Specialist Credential is a credential on top of a credential. It authorizes teaching in the specific specialization area at any grade level from preschool through grade 12. In order to qualify for this credential, the applicant must have a valid basic teaching credential and complete a specialized program of professional preparation in an approved program. In the State of California there are seven specialist credential categories: early childhood, bilingual/cross-cultural, mathematics, reading, agriculture, health science, and special education. For the Special Education Specialist Credential a person must complete one of five advanced specialization areas: learning handicapped, physically handicapped, severely handicapped, communication, or gifted. UCI offers preparation for Specialist Credentials in early childhood education and in the special education areas of the learning handicapped, the physically handicapped, and the severely handicapped.

Services Credential. The Ryan Act provides for five categories of nonteaching credentials which authorize their holders to provide specific nonclassroom services to public schools. Services Credentials are issued by the State in pupil personnel services, administrative services, health services, library services, and clinical-rehabilitative services. UCI is authorized to recommend for the Administrative Services and the Pupil Personnel Services Credentials.

Designated Subjects. "Designated subjects" means the practice of assignment of teachers to designated technical, trade, or vocational courses. UCI is not approved in this credential area.

Credential Authorization

The credentials authorized by the 1970 credential law are not determined by grade level (i.e., elementary and secondary) but by the type of instructional situation (multiple or single subject). Each credential carries K-12 authorization. These credentials are awarded by the Commission for Teacher Preparation and Licensing upon recommendation of the UCI Office of Teacher Education and are required in order to teach or serve in a professional capacity in any public school in California.

Minimum Requirements for the Teaching Credential

The minimum requirements for the teaching credential are:

1. A baccalaureate or higher degree, in an area other than professional education, from an approved institution.

2. An approved program of professional preparation. This means a sequence of education courses, including an all-day (full-time) assignment of a semester's duration in student teaching.

3. Passage of a subject matter examination or its waiver via an approved academic preparation. UCI academic programs are approved for most examination waivers.

4. Under certain conditions the passage of the College Level Examination Program is required. See a counselor in the Office of Teacher Education for advice.

5. Demonstration of a knowledge of the various methods of teaching reading as validated by successful completion of a program of study.

6. A course or an examination dealing with the U.S. Constitution.

7. A fifth year of study is still required, even though a student may elect to start or complete the approved program of professional preparation as an undergraduate.

Completion of the approved program as an undergraduate at UCI with a grade point average of 3.0 will support admission to graduate study (in UCI Teacher Education) for completion of the fifth-year requirement. The UCI Teacher Education program defines the fifth year as 45 quarter units of upper-division or graduate-level work taken after the bachelor's degree is granted. In each instance the fifth year will consist of a controlled program individually determined, based upon the assessed needs of the student as determined by the student, the Office of Teacher Education, and where applicable, the hiring school district.

Passage of a Subject Matter Examination

Single Subject Examinations. California requires all students to pass the National Teachers Examination (NTE) in the area of their teaching major except as a particular institution has developed an approved major which waives the NTE. All UCI academic majors which are commonly taught in the public schools have been waived in lieu of the National Teachers Examination. However, in some majors there are certain requirements that a student must complete while fulfilling the major in order to receive this waiver. Students should consult a counselor in the Office of Teacher Education for detailed information.

Supplementary Authorization. Teaching minors by that name no longer exist, but it is possible to add further teaching authorizations beyond the single subject major. Students deciding to be credentialed in more than one subject area may qualify to do so in either of two ways:

1. Students may complete 30 quarter units (15 quarter units if they are upper-division) in collegiate-level course work to be used to develop a supplementary authorization to teach in areas differing from the single subject major. Consult a counselor in the Office of Teacher Education for specifics.

2. Students may pass the National Teachers Examination in any area of their choice and thus qualify for the supplementary authorization in that subject.

Multiple Subject Examinations. A general subject matter examination authorizing teaching multiple subjects includes an examination of the candidate's knowledge of the following areas: English, social science, fine arts, science, and mathematics. The UCI program for the Multiple Subject Teaching Credential is approved for waiver of the examination if the student completes the required diversified program. See a counselor in the Office of Teacher Education.

Multiple and Single Subject Credentials

Multiple and Single Subject Credentials are of three types:

The Preliminary Credential. The Preliminary Credential is awarded by the State upon completion of the approved program. This can be done in the undergraduate program and is contingent upon possession of the baccalaureate degree. Before the recommendation for the Preliminary Credential can be made, the student must have completed (or demonstrate equivalent credit) for the Multiple Subject Instruction Credential: Education 105A, 105LA, 110A-B, 173-174; for the Single Subject Instruction Credential: Education 101, 102, 105B, 105LB, 173-174.

The Clear Credential. The Clear Credential cannot be awarded by the State until the completion of (a) a baccalaureate degree, (b) an approved program, and (c) a fifth year.

The Life Credential. The Life Credential cannot be awarded by the State until the completion of all requirements for the Clear Credential plus a certain number of years teaching in California public schools.

The Approved Program of Professional Preparation

This program refers to education courses required for the State teaching credential. UCI defines the approved program as consisting of 19 quarter units, plus student teaching. Six quarter units of this instruction are required to be in the teaching of reading.

The professional preparation will contribute effectively to the experience, performance, and excellence of the candidates. The understandings and competencies in each of the required courses are attained through the provision of a wide variety of experiences designed to be most effective in providing the competency.

Multiple Subject Instruction Credential Program (Elementary)

Education 105A; Education 105LA; Education 110A-B; Education 173; Education 174; Education 300A-B-C-D-E.

Single Subject Instruction Credential Program

Education 101; Education 102—the students enroll in the section of their major; Education 105B; Education 105LB; Education 173; Education 174; Education 320A-B-C-D-E.

One of the above patterns will prevail for all candidates. The primary option will be the status of the candidate (undergraduate or graduate) at entry. The programs are planned for inclusion in the undergraduate degree program, but can all be completed in the fifth year.

Field experience, including student teaching, is offered in the regular four-year undergraduate program. UC Irvine is committed to the concept that the student should have a broad range of experiences in the schools and community as a part of any kind of college education. This is true not only in the area of Teacher Education but is a concept shared by most other academic units on the campus. Thus, the field experience is relatively easy to achieve for the student preparing to be a teacher. It should be started in the freshman or sophomore year.

The Irvine Teacher Education Program suggests *two field experiences* prior to entering into student teaching. One such program might be becoming a tutor during the freshman or sophomore year and a teacher's aide in the junior year. There are numerous options for this field experience.

Each field experience program is a cooperative arrangement between the University and the public school districts to help provide UCI students with experience that will prepare them for their future work as teachers. The field experience can come from any one of several academic areas in which students work in public schools under supervision of an experienced teacher in the school and with a University supervisor. As a tutor, the college student will usually work with the public school student on a one-to-one basis. As a teacher's aide, the student will work for a block of time per week for a quarter with a teacher in the classroom. During this time students will be given a variety of opportunities to help the experienced teacher enrich the course of study and to participate within the classroom. Ultimately it is in the classroom where the problems of teaching are either solved or ignored; hence here is where teacher preparation begins. This experience will assist the UCI student in making a more realistic vocational choice. It will also involve the public school in the selection of future student teachers.

Early in the junior year, when it is not too late for the UCI student to change a vocational choice without undue hardship, the University and the student should be in a position to make certain decisions as to whether to continue in the educational sequence.

An additional field experience of one unit value will be required of all students in Education 174, and this involvement must be in multicultural areas.

Fifth-Year Requirement

Regardless of courses completed prior to the bachelor's degree, students must complete a fifth year to obtain a *clear* teaching credential. In addition to the approved program listed above for the Multiple or Single Subject Instruction Credentials, the fifth year must include the following:

1. Completion of 45 quarter units
2. Completion of the following courses:
   a. Education 162, Psychology and Education of the Exceptional Child
   b. Education 360, Synthesis of the Professional Commitment
   c. Education 380, Health Education for Teachers

Provision for a Student Teaching Experience

Multiple Subject Instruction candidates will be assigned in grades K-8. The assignment will be split to include two levels within this range.

Single Subject Instruction candidates will be assigned in grades 7-12. The assignment will be split to include two levels within this range.

The student teaching situation requires the student to be in the school the full day the same as the regular teacher, including faculty meetings, parent conferences, and sponsorship of events for a full semester's duration.

It is a joint responsibility of UCI and the school districts to guarantee that each student will have student teaching experience in a multicultural or cross-cultural situation.

There is no concurrent course work required of student teachers in addition to the student teaching. A weekly seminar is held as a part of the total student teaching program.

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. To hold an Intern Teaching Credential in a school district, the student must be enrolled in the graduate program. Teacher candidates are selected by participating schools and the University based on the background and experience of the teacher candidate, the needs of the particular school, and the candidate's eligibility for the University's graduate program. The stipend is paid by the school district. The number of internships varies from year to year. For further information see the intern secretary in the Office of Teacher Education.

Basic Information

1. Requirements for the candidate's admission to the program of teacher preparation are based on a broad index:

Academic Achievement. A 3.0 overall grade point average is required for admission. Education on this campus is primarily a fifth-year program although the student teaching program by law is open to undergraduate students who can properly arrange their course of study. In any event, a fifth-year program is still required, and admission to the Division of Graduate Studies and Research is required for the completion of the fifth year.

Absence of Criminal Conviction that Would Preclude the Issuance of a Credential. At the time of admission to the program, a statement is issued concerning criminal conviction and obtaining a teaching credential. The document is clear and concise. There is a difference between being charged and being convicted. A fingerprint checking system is required by the State.

Interview. An interview committee has been set up that is available to meet with prospective students. All admitted to the program will have gone through a personal interview with a member or members of the committee.

Written Recommendations. Three letters of recommendation for admission are required. These recommendations are concerned with the student's ability to do graduate-level work and are not necessarily character references. These are the same kinds of letters that are required for entrance to any other campus graduate program.

Admission. Both the UCI academic department corresponding to the student's academic major and the Office of Teacher Education must recommend the admission of applicants for the Single Subject Instruction Credential. The applicant's record is reviewed first by the academic department and then by the Admissions Committee of the Office of Teacher Education.

Prior Experience with Children and Youth Groups. Prior to acceptance of a student into student teaching, the student will be required to have had two quarters of experience elsewhere.

2. The approved program should be completed in its entirety at UCI, although equivalent course work taken elsewhere may be considered. Education courses taken at UCI prior to fall 1974 *are not acceptable* in the new program. Students who have previously completed such courses should consult a credential counselor. Any deviation must be cleared with a counselor.

3. For the Multiple Subject Instruction Credential, Education 105A, 105LA, 110A-B, 173, and 174 must be finished prior to student teaching.

4. For the Single Subject Instruction Credential, Education 101, 102, 105B, 105LB, 173, and 174 must be finished prior to student teaching.

5. Twenty quarter units of student teaching are defined as a full day, five days per week, for 18 weeks in the appropriate classroom training environment. Evaluation will be based on performance, excellence in instruction, and professional maturity. These factors will be assessed through a rigorous evaluation by the resident teacher, the supervising teacher, and the candidate.

If competence cannot be reached by the conclusion of the student teaching program, the student will have failed to qualify for recommendation for credential certification by UCI.

6. Candidates desiring both Single and Multiple Subject Credentials may apply the basic professional courses of Education 105A, 105LA, 173, 174, 360, and 380 toward both credentials, but must complete Education 101, 102, 110A-B, do student teaching in both areas, and demonstrate competence by passing appropriate State-mandated subject field examinations where needed.

7. Student Teaching Clearances: A student must apply for a student teaching assignment the quarter before student teaching. Students are to consult the Office of Teacher Education for appropriate information.

Effective immediately all students are required by law to obtain a certificate of clearance from the Commission for Teacher Preparation and Licensing (located in Sacramento) prior to

beginning student teaching. This process is primarily a fingerprint check to determine that the student is clear of a criminal conviction. See a counselor in the Office of Teacher Education for advice on how to handle this complicated, time-consuming process.

Clearances for student teaching are processed by the Office of Teacher Education and are contingent upon the certificate of clearance, a current health clearance, and academic preparation clearances.

8. Under the present program a student can be authorized to teach in California prior to the completion of the fifth year. A student can be granted a preliminary credential upon completion of the B.A., the professional education sequence, a course in the teaching of reading, student teaching, and where necessary, by passing the National Teacher Examination as required by the Ryan Act. Contact the Office of Teacher Education for information on the National Teacher Examinations.

9. The "fifth year" must be completed within five years after the preliminary credential is issued.

10. Commission-administered examinations for subject matter credential approval exist in most areas.

The examination for the Multiple Subject Credential is the General Education Section of the Common Examinations of the National Teacher Examinations. The examination can be taken as often as necessary but should not be taken prior to the junior year. The General Education Section of the Common Examinations will cover the areas of Written Composition/English; Social Science/Fine Arts; and Mathematics/Science.

Multiple Subject Instruction Credential Requirements in Academic Areas for Waiver of Examination

1. Of the student's total undergraduate program, 128 quarter hours are required to be divided as follows:

Nine courses (36 quarter units) in two of the following areas and seven courses (28 quarter units) in the other two:

a. English (including grammar, literature, composition, and speech)

b. Social science and history (must have courses in each)

c. Mathematics and science (must have courses in each with a minimum of three in mathematics)

d. Fine arts, foreign language, and philosophy

2. Since on the UCI campus the academic major will normally fulfill one of the four areas above and the UCI breadth requirement applies to the others, meeting the four requirements is not particularly difficult if planned early in the student's career.

Bilingual/Cross Cultural Emphasis

The Bilingual/Cross-Cultural Emphasis is a specialization in addition to a regular teaching credential. This means that a candidate must fulfill all the necessary requirements for a regular State teaching credential whether this be with a single subject orientation for high school or a multiple subject orientation for elementary school. The Irvine program is limited to the development of a bilingual capacity in Spanish only, as the second language.

At UCI the Department of Spanish and Portuguese offers a B.A. with a Bilingualism and English as a Second Language Emphasis. By acquiring this undergraduate major, the student will complete a significant part of the specific requirements for a Bilingual/Cross-Cultural Emphasis. This is the best kind of preparation for going into the program leading to a Bilingual/Cross-Cultural Emphasis.

Specialist Credentials

Early Childhood Education Specialist Credential. The Early Childhood Education Specialist Credential is a specialization on top of a regular Multiple Subject Instruction Credential. If the student can complete all the work, the student can obtain a preliminary teaching credential and an Early Childhood Specialist Credential with the B.A., but it is not likely. In nearly every instance it will be obtained as a result of the fifth-year program.

Special Education Specialist Credentials. UCI is approved for three areas of the Special Education Specialist Credential: Learning Handicapped; Physically Handicapped; and Severely Handicapped. Much of the work for the learning handicapped credential can be completed in the undergraduate years, thus allowing concurrent work between the basic teaching credential and the specialist credential.

Services Credentials

The Pupil Personnel Services Credential and the Administrative Services Credential are approved programs at UCI. Both credentials are effective for grades K-12. At UCI the Pupil Personnel Services Credential requires a basic teaching credential or a Master's degree in Social Ecology. A master's degree is a prerequisite to securing the Administrative Services Credential.

Courses

100A Educational Strategies for Tutoring and Teacher Aiding (4) F. On-the-job training as a public school tutor or teacher assistant. Cognitive learning with the bilingual and bicultural child, including teaching strategies.

100B Field Work with Bilingual and Bicultural Children (4) W. Ethnic characteristics, social values, instructional procedures, and practice in teaching the bilingual child as part of a tutorial program.

100C Cross-Age Helping Techniques (4) S. Instructional strategies and resources which can be used in cross-age and cross-cultural tutoring.

101 Secondary School Curriculum and Organization (4) F, Summer. Historical and current practices in curriculum concepts and procedures.

102 Methods of Teaching in the Secondary School (4) Summer. All sections of 102 are normally completed in the fifth year. Scope and sequence in the instructional program in general and in the student's major. Observing and participating in the secondary classroom required. Includes extensive study in educational media: films, filmstrips, overhead presentations, television, the computer, and other educational technology. Course is to be taken immediately prior to supervised teaching.

102A Methods of Teaching Foreign Languages in the Secondary Schools (4) F, W. Prerequisites: senior standing as a foreign language major and some training in linguistics, or consent of instructor.

102B Methods of Teaching History and the Social Sciences in the Secondary Schools (4) F, W, S. Methods and teaching strategies used in developing instructional programs in social science.

102C Methods of Teaching English in the Secondary Schools (4) F, W. Scope, sequence, and methods in teaching English and related areas in secondary schools of California. Includes articulation problems in English programs; methods and strategies for teaching writing, literature, and speech.

102D Methods of Teaching Music in the Secondary Schools (4) F. Basic concepts of music education. Teaching strategies for performance-oriented curriculum and humanities approaches.

102E Methods of Teaching Art in the Secondary Schools (4) F, W. Teaching strategies in the high school arts and crafts programs. Skills appropriate to the high school student.

102F Methods of Teaching Mathematics in the Secondary Schools (4) F, W. Teaching strategies in high school mathematics programs. Emphasis on new mathematics.

102G Methods of Teaching Science (4) F. W. Teaching strategies in high school physical and biological science programs. Emphasis on the inquiry approaches to science.

102H Methods of Teaching the Bilingual Child (4) Summer. Individual development of potentialities of the bilingual child. Appropriate teaching strategies; examination of resources and materials, particularly from content areas, applicable to the teaching of the bilingual child.

103A-B-C Mathematics for Elementary Education (4-4-4) Summer. These courses meet certification requirements for the Fisher teaching credential in the State of California. See Mathematics 4A-B-C for description of courses.

104A-B Elementary School Curriculum, Organization, and Methods (4-4) Summer. Scope and sequence in elementary education, current curriculum and methods in mandated areas, multimedia materials and techniques, classroom organization, management, control, and evaluation. Two hours per week required in elementary school observation. **104A** Language, literature, and social science methods. **104B** Detailed laboratory study of methods of teaching arithmetic and science.

104C Curriculum and Methods in the Elementary School: Foreign Language (4) F, W. Audio-lingual method of teaching foreign languages at the elementary level. Examination and development of materials; evaluation; articulation with secondary schools.

104D Curriculum and Methods in Elementary School Music (4) F, Summer

104E Curriculum and Methods in Elementary School Art Education (4) F, S, Summer

104H Methods of Teaching English as a Second Language (4) Summer. Understanding of the building blocks of English and Spanish, including psychological phenomena brought into play when the second language is encountered.

105A Curriculum and Methods in the Elementary School: Reading (4) F, W, S, Summer. Instructional programs in reading; participation in schools. Includes the study of phonics, as well as the various methods of teaching reading.

105LA Curriculum and Methods in Reading Laboratory, Elementary (2) F, W, S, Summer. Laboratory program in the public schools taken concurrently with Education 105A. Working in reading laboratories and classroom situations, putting into immediate practice the processes learned in Education 105A. Laboratory work includes a bicultural experience.

105B Reading in the Secondary Schools (4) F, W, S, Summer. Reading in the content areas. Attention to remediation in areas of word attack skills, comprehension, content clues, and decoding.

105LB Curriculum and Methods in Reading Laboratory, Secondary (2) F, W, S, Summer. Laboratory program in the public schools taken concurrently with Education 105B. Working in reading laboratories and classroom situations, putting into immediate practice the processes learned in Education 105B. Laboratory work includes a bicultural experience.

106A Education of the Preschool Child (4) F. Theoretical and practical analyses of schooling the preschool child. Curriculum development, teaching strategies, review of principal concepts and research concerning processes of learning; critical, productive, and creative thinking.

106B Administration and Supervision of ECE Programs (4) W. Designing and directing Early Childhood Education programs. Methods and techniques of management within differing ECE programs. Proposals, curriculum development, policies and procedures, budget planning, and legal responsibilities.

106C Curriculum and Methods in Elementary Education: Early Childhood Education (4) S. Diagnostic and prescriptive teaching, competency-based learning, continuous flow curriculum, continuous progress, inquiry teaching, parent and aide implementation, individualization assessment and evaluation, and multicultural planning.

106D Methods of Fine Arts in Early Childhood Education (4) Summer. Team taught, including creative movement, music, and art, with emphasis on Early Childhood Education.

106E Child Development I: Infancy and Early Childhood (4) F. Research, theory, current controversies, trends, and techniques for study of the child and the family unit within the community setting.

106F Child Development II: Middle and Late Childhood; Preadolescent Development (4) W. Emphasis on the family and community setting. Theory, current research, and techniques for working with this age group.

106G Child Development III: Adolescence and Early Adulthood (4) S. Selected topics in individual and social behavior of the adolescent and early adult. Research, current studies, and theories applicable.

106H-I-J Practicum in Early Childhood Education (4-4-4) F, W, S, Summer. Supervised school laboratory experience in schools serving young children. Directed teaching in child development laboratories, nursery schools, day care schools, and similar approved facilities.

107 Children's Literature (4) W, Summer. History of all types of children's literature, major authors, and illustrators. Includes methods for promoting children's interest in literature and the effect of differential sociocultural backgrounds on children's motivation.

110A-B Strategies for the Development of Communication and Thinking Skills for the Elementary Child (4-4) 110A (F, W, S, Summer), 110B (F, W, S, Summer). 110A Models of teaching of inquiry (social science), spelling, creative writing, language arts, music, art, and drama. **110B** Methods and demonstrations in the teaching of science, mathematics, health, and physical education. Emphasis in each part on entry skills for the beginning teacher. Students will be able to demonstrate operational success in five teaching areas.

111 Art and Crafts for Teachers (4) W, Summer. Objectives and procedures for teaching visual arts in elementary and secondary schools; includes experiences with art projects appropriate for child development, with emphasis on two- and three-dimensional products.

112A Approaches to Teaching Drawing in the Secondary Schools: A Workshop (4) F. Emphasis on drawing techniques, drawing tools and materials, interrelationships of subject matter, techniques, and content; includes teaching strategies.

112B Nontraditional Approaches to Art in the Secondary Schools: A Workshop (4) W. Secondary school art workshop. Plans for nontraditional art experiences for high school students, implementing those plans in a high school, and evaluating the outcome.

112C Approaches to Teaching Design in Secondary Schools: A Workshop (4) S. Design elements, principles, and their relationships to tools, materials, and techniques. Includes teaching strategies.

115A-B Reading in the Curriculum: Advanced (4-4) Summer. Tutorial and laboratory-oriented program aimed to prepare teachers for the Miller-Unruh Reading Specialist examinations and for advanced work for other students.

116A-B Applied Reading Theory (2-2) F, W, S, Summer. Introduction to and analysis of major theories of reading and research on reading rate and comprehension as they relate to the process of mature reading. Requires application of theories to university academic reading.

117 Applied Learning Theory (2) F, W, S, Summer. Introduction to and analysis of theories and research in those areas of learning, memory, communication, and critical thinking which contribute to effective learning at the university level.

140A Bilingual/Cross-Cultural—Multiple Subject (4) F. Methods and materials for elementary bilingual classrooms; selection and use of children's literature, games, songs, and folklore; cross-cultural techniques in subject matter presentation; field experience required. Taught bilingually. Same as Spanish 100A.

140B Bilingual/Cross-Cultural—Single Subject (4) W. Oral and written interferences between Spanish and English; various methods of presentation, e.g., the cognitive, audio-lingual, and traditional approaches. Field experience required. Taught bilingually. Same as Spanish 100B.

140C ESL for Teachers of Spanish-Speakers (4) S. Methods and materials for teaching English to speakers of Spanish. Techniques for teaching English to different age groups from varied backgrounds; field experience required. Same as Spanish 100C.

155 Developmental and Learning Disabilities: Genetic, Ethical, and Legal Issues (4) S, Summer. This course covers patterns of inheritance and genetic issues. It will include the ethics of working with persons with disabilities, the normalization of the disabled, developmental assessment, and ages 0-6 parent/child relationships.

156A American Sign Language (4) F, W, S. Basic study of the structure of American sign language as used by deaf persons. Designed to develop the student's receptive and expressive skills in interpreting for deaf individuals.

156B American Sign Language: Advanced (4) F, W, S. An advanced course in the study of the structure of American sign language as used by deaf persons. The course is designed to develop the student's receptive and expressive skills in interpreting for deaf individuals. Prerequisite: Education 156A.

157 Survey of Physical Defects (4) F, Summer. Physically pathological conditions in pupils and their educational implications. Physical, intellectual, social, and emotional characteristics of exceptional pupils; learning disabilities in relation to genetic, physiological, psychological, and social conditions.

158 Educational Implications and Methods for the Physically Handicapped (4) W, Summer. Educational methods and materials to meet the needs of pupils with limitations resulting from physical handicaps. Competency in assessment of physical, intellectual, social, and emotional characteristics of exceptional pupils; utilization of systematic observation, academic assessment, clinical teaching.

159 Communication Sciences with the Physically Handicapped (4) S, Summer. Language acquisition and development for the physically handicapped, fundamentals of braille, signing, and communication boards.

160 Learning Disabilities: Medical and Biological Dimensions (4) F, Summer. Analysis of research regarding the exceptional child, including commonalities and differences: physical and psychiatric aspects of mental retardation; instructional modifications based on the factors.

161 Learning Disabilities in the Schools (4) F, W, S, Summer. Definition and nature of learning disabilities, means of recognition, diagnosis, and remediation of learning disabilities.

162 Psychology and Education of the Exceptional Child (4) F, W, S, Summer. Competencies required for clearance of all teaching credentials. Nature, degree, and incidence of conditions which differentiate children deviating from normal physical, neurological, mental, and psychological patterns. Emphasis on State laws in relation to identification and education of exceptional children.

163 Educational Planning for the Exceptional Child (4) W, Summer. Organization of classes for exceptional children including resources and mainstreaming. Emphasis on dynamics of pupil-teacher, teacher-parent, and pupil-pupil relationships. Ethical practices in communication to others about individual pupils.

164A Diagnosis and Prescription for the Learning Handicapped (4) W, Summer. Diagnosis of learning problems and remedial procedures; individualized prescriptive learning activities; analysis and evaluation of all program elements. Current issues and trends, and use of research findings in program implementation.

164B Advanced Assessment and Diagnostic Techniques (4) F. Assessment and diagnostic techniques used to implement California's Master Plan. Includes diagnostic/prescriptive practices, observation, record keeping, text evaluation, ability to assess teacher behavior on the learner, and interaction with a variety of classroom management systems. Includes 10 hours of field experience.

165 Educational and Vocational Implications of the Learning Handicapped (4) S, Summer. Educational, social, economic, and vocational implications of mental retardation and physical handicaps; current programs, services, and legal aspects; counseling exceptional pupils and their parents.

166 Educational Implications of Behavior Disorders (4) Summer. Remediation with behavior disorders of pupils. Emphasis on individual and classroom strategies including behavior modification. Motivational and attitudinal differences including but not limited to self-control, anxiety, and general attitudes toward learning.

167 Education of the Trainable Mentally Retarded and the Severely Multiple Handicapped (4). Application of developmental and learning characteristics of the trainable mentally retarded and the multiple handicapped to educational curriculum, total communication skills, planning, and materials.

168 Severely Emotionally Disturbed and Autistic Pupils in the Schools (4). Programming for severely emotionally disturbed and autistic pupils including diagnosing individual needs, prescribing learning activities, preparing and organizing materials, and evaluating outcomes. Systematic observation, assessment, and clinical teaching.

169 Educational and Vocational Implications of Being Severely Handicapped (4) Summer. Educational, social, economic, and vocational problems of the severely handicapped; current programs, services, and legal aspects; counseling of severely handicapped students and their parents.

170 History of Education (4) Summer. Educational experiences in this country with special reference to educational issues and problems.

171 Psychological Foundations of Education (4) Summer. Learning process and application of psychological principles to the problem of learning and development with emphasis on the minority child. Topics are interaction, theories of instruction, educational measurement and evaluation, and personality development.

172 Sociological Foundations of Education (4) Summer. Influence of social structure in schools, school systems; American cultural values and their influence on education; emphasis on problems of ethnically and culturally different students in schools.

173 Learning Theory and Classroom Practices (4) F, W, S, Summer. Includes learning theories, motivation, alternate management systems for learning environments, teaching behaviors, diagnosis, prescriptions, instruction treatment, evaluation, interpersonal relations, motivational skills.

174 Learning Theory and Classroom Practices Laboratory (1) F, W, S, Summer. Laboratory course concurrent with Education 173. Takes place in a community setting of a biocultural nature.

175 Foundations of Education (4) W, Summer. Historical, sociological, philosophical, and psychological aspects of education, including learning theories.

179 Advanced Composition for Teachers (4) Summer. Principles of formal composition and problems of teaching it. Selecting handbooks and ancillary reading, marking papers, making assignments, and conducting workshops and tutorials. Same as English WR 179.

180 Special Topics: Curriculum and Methods (4) F, W, S, Summer. Advanced course tutorial in nature. Assumes the student has already completed some phase of curriculum work, either elementary or secondary.

181 Advanced Curriculm Design and Management in Public Schools (4) F, W, S, Summer. Advanced course. Basis for making public school curriculum decisions; theories, principles, and backgrounds of operational techniques for public school curriculum planning; strategies and development of educational programs in general.

182 Seminar in Health Education Counseling (4) F. Intern type program in health education peer counseling. Developing first aid skills included. Under direction of medical staff, train to operate as paraprofessional health counselors utilizing dorm facilities, office sites, and self-help clinics.

182J Practicum in Health Counseling (3) W. Laboratory and seminar class developed as part of peer health advisor program. Text and laboratory assignments, weekly class sessions on health subject, drug education, and various other student-oriented health problems.

182K Practicum in Health Education Counseling: Advanced (3) S. Prerequisite: Education 182J. Continuation of Education 182J.

182L Health Science Experience for Teachers, Laboratory (3) F, W, S. Laboratory program developed in cooperation with the UCI Student Health Center. Students work in health education, including uses of video, audio, and written material. Requires seminars on related health subjects; production of in-depth health education module.

183 Elementary Curriculm K-8 (4) F, W, S, Summer. Content, articulation, and expected competencies in the elementary school. The State frameworks. Public school curriculum, theories, principles, and background for operational techniques for public school curriculum planning and development.

184A Directed Field Experiences (4) S, Summer. 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.

184B Directed Field Experience with Exceptional Children (4) F, W, S, Summer. Observation and participation plus laboratory activities in on-site school situations, encompassing a variety of experiences with varied types of exceptional students and students with differing racial and ethnic backgrounds.

185 The Sociology of Urban Education (4) Summer. Emerging issues including diversification, racial balance, equity education, White flight, community control, the city-suburban connection, involvement of the disadvantaged in decision making, biological differences, and race-related behavior.

186A Staff Development and Inservice Practices (4) Summer. Addresses process as well as content for planning staff development programs. Training in specific communication and instructional skills. Opportunities to design, implement, and evaluate inservice programs. Includes 10 hours of field experience.

186B Administrative, Legal, and Systems Change Analysis and the Resource Specialist (4) Summer. Develops dynamics of relationship between the Resource Specialist and changes in educational systems. Macro view of the Resource Specialist in group process, administrative decision making, community relations, leadership skills, organizational theory, interpersonal communication skills, all in the framework of legal mandates. Includes 10 hours of field experience.

187 The Psychology of Individualized Instruction (4) S. Effectiveness of tutors/teachers in their interaction with undergraduate students in the one-to-one and group/class setting. Emphasis on techniques for the facilitation of independent learning by students. Various techniques of diagnosis and delivery.

189 Counseling Theory and Procedure: Organization and Services (4) Summer. Function of counseling; role of the counselor; operation of pupil personnel services; testing, measurement, and use of test data; parent conferences and career counseling.

191 Experimentation in Media of Communication and Instruction (4) F, W, S, Summer. Media resources, techniques, and new teaching strategies in students' respective fields. Includes printed materials, audio and visual materials, programmed materials, educational technology, and organized systems of learning.

191L Applied Technology in Education (1.5) F, W, S. Theory, current problems, trends in instrumentation and system development for instructional applications and research; computer-aided instruction communication satellites, and other advanced systems; laboratory practice with interactive TV and video.

192 Secondary and Elementary School Administration: Legal and Financial Aspects (4) Summer. Laws regarding children, school procedures, teacher rights and responsibilities, curriculum, and finance. Financial aspect includes budgeting, purchasing, and many other functions associated with business management.

193 Governance of Public Schools (4) Summer. Political, social, and economic forces affecting public school systems. Includes federal policies and funding, state mandates, court decisions, and other influences, plus structure, organization, and administration of the various programs and systems.

194 Organization and Administration of Public Education Systems: Elementary and Secondary (4) Summer. School management including organization and administration of elementary and secondary schools. Emphasis on administrative-supervisory aspects of curriculum design and planning.

195 Techniques of Personnel Administration (4) Summer. Theories, policies, and practices relative to educational personnel, including current research. School professional negotiations, recruitment, selection, assignment, inservice training, and classified personnel programs.

196 School Management in Community Settings (4) Summer. Introduction to school management; problem-solving strategies and decision making; alternate approaches to assessing needs; management support systems; multiple plans for effective communications; program evaluations and performance appraisal.

197 Individually Arranged Field Study (4 per quarter) F, W, S, Summer. Planned program for students with sufficient background to undertake the field study under direction of a faculty member who has competence in the area.

198 Directed Course Study on Special Topics (4 per quarter) F, W, S, Summer. Program of laboratory experiences in the public schools set up and conducted for persons in advanced levels of teacher preparation.

199 Individual Study (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 has competence in the area.

300A-B-C-D-E-F Supervised Teaching in the Elementary School: Multiple Subject Instruction Credential (4-4-4-4-4-4) F, W, S, Summer. Full-time student teaching assignment for a semester's duration. Graded "IP." Prerequisite: Professional Program in Education.

301 Secondary School Curriculum and Organization (4) S. Historical and current practices in curriculum concepts and procedures. Attention to curriculum procedures and developments in the student's major and minor.

310A-B-C-D-E-F Intern Teaching in the Elementary School: Multiple Subject Instruction Credential (4-4-4-4-4-4) F, W, S. Must be a contract intern with a school district and enrolled in graduate status at the University. Graded "IP." Prerequisite: Professional Program in Education.

320A-B-C-D-E-F Supervised Teaching in the Secondary School: Single Subject Instruction Credential (4-4-4-4-4-4) F, W, S, Summer. Full-time student teaching assignment for a semester's duration. Graded "IP." Prerequisite: Professional Program in Education.

330A-B-C-D-E-F Intern Teaching in the Secondary School: Single Subject Instruction Credential (4-4-4-4-4-4) F, W, S. Must be a contract teacher with a school district and enrolled in graduate status at the University. Graded "IP." Prerequisite: Professional Program in Education.

340A-B-C Intern Administrative Field Work (4-4-4) F, W, S. Must be a contract administrator in a public school and be enrolled in graduate status at the University.

341A-B-C Supervised Counseling Experience (4-4-4) F, W, S, Summer. Application of counseling techniques, both individual and group, through supervised field experience under observation. Supervision and weekly seminar. 180 clock hours required.

342A-B-C Supervised Field Experience: Learning Handicapped (4-4-4) F, W, S, Summer. Full-time student teaching assignment for a quarter's duration in appropriate special education setting. Includes weekly seminar.

343A-B-C Supervised Field Experience: Physically Handicapped (4-4-4) F, W, S, Summer. Full-time student teaching assignment for a quarter's duration in appropriate program with physically handicapped students. Includes weekly seminar.

344A-B-C Supervised Field Experience: Severely Handicapped (4-4-4) F, W, S, Summer. Full-time student teaching assignment for a quarter's duration in appropriate program with severely handicapped students. Includes weekly seminar.

350 Supervision of Classroom Teaching (4) Summer. Lecture-laboratory. Role of the supervisor in advancing teacher skills in guidance of the classroom learning process; skills in supervision. Prerequisite: admission to Administrative Services Credential Program.

351 Consultation, Coordination, and Collaboration Skills for the Resource Specialist (4) S. Development of consultative strategies and services, assessment techniques, problem-solving skills; correlation of curriculum, materials, and schedules; activities of special education and the regular classroom, develop ability to work with school assessment team processes. Includes 10 hours of field experience.

360 Synthesis of the Professional Commitment (3) W, Summer. Responsibilities, rights, processes, professional ethics, and commitments of the teaching profession. Includes professional associations, legal rights and responsibilities of teachers, and laws and court cases relative to teaching.

370A-B-C Supervised Teaching in Bilingual Education, Elementary (4-4-4) F, W, S. Full-time student teaching assignment for a quarter's duration (or equivalent). Prerequisites: Education 300A-B-C; graduate students only.

370D-E-F Supervised Teaching in Bilingual Education, Secondary (4-4-4) F, W, S. Full-time student teaching assignment for a quarter's duration (or equivalent). Prerequisites: Education 320A-B-C; graduate students only.

380 Health Education for Teachers (3) W, S, Summer. State requirements for teachers in area of health education, including drug use and misuse.

391 Interpersonal Dynamics for Leadership in Public Education (4) Summer. Behavioral requirements for success as a leader in managing, developing, and evaluating educational programs; role of the leader in group contexts. Prerequisite: admission to Administrative Services Credential Program.

392 Accountability and Finance in Public Education (4) Summer. Sources of revenue available to public education; expenditure programs in current use; legal requirements. Includes budgeting, purchasing, and other functions associated with business management.

393 Research Design and Analysis in Public Education (4) Summer. Basic methodologies, processes, and techniques applicable to the research and study of public education. Analysis of current applications and research.

394 Guidance Services for Facilitating Human Development (4) Summer. Applying knowledge of human behavior; theories of learning and development; current available remedial and developmental techniques; special programs; counseling techniques; ethical principles of the profession. Same as Social Ecology 206.

395 Counseling Skills for Facilitating Human Development (4), Summer. Develop understanding of individual differences; development of individual potential and competencies through knowledge of and ability to apply acceptable individual and group counseling techniques to promote positive attitudes toward self and others. Same as Social Ecology 207.

396 Assessment Techniques (4) Summer. Develops ability to give and interpret standardized group and individual assessment techniques. Theories and techniques to understand affective, cognitive, and behavioral characteristics of both typical and atypical children. Same as Social Ecology 208.

397A-B-C Supervised and Administrative Field Work (4-4-4) F, W, S. 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. Prerequisite: two years of teaching experience. 180 clock hours required.

398 Career Development (4) Summer. Occupational and career education trends, information, and theories. Approaches of theories to definition of the client's problem, techniques, and desired outcomes. Measurement instruments and computer-based approaches.

COLLEGE OF MEDICINE

Stanley van den Noort, M.D. **Dean**

Bruce M. Achauer, M.D. Baylor College of Medicine, *Assistant Professor of Surgery (Plastic)*

Alan H. Adams, M.D. Northwestern University School of Medicine, *Assistant Adjunct Professor of Neurology*

Carl M. Agliozzo, M.D. California College of Medicine, *Associate Clinical Professor of Pathology*

Phyllis F. Agran, Ph.D. University of California, Irvine, and M.P.H. Harvard University, *Assistant Professor of Pediatrics in Residence*

Mahfuz Ahmed, M.D. University of Miami School of Medicine, Ph.D. University of California, Santa Barbara, *Assistant Professor of Radiological Sciences in Residence*

Ralph E. Allan, J.D. LaVerne College, *Lecturer in Community & Environmental Medicine*

Raymond A. Allen, M.D. University of Louisville School of Medicine, *Adjunct Professor of Pathology and Ophthalmology*

Carol E. Anderson, M.D. Boston University School of Medicine, *Assistant Professor of Pediatrics in Residence*

Janet A. Anderson, Ph.D. Case Western Reserve University School of Medicine, *Associate Adjunct Professor of Ophthalmology*

Raymond C. Anderson, M.D. University of Rochester School of Medicine, *Associate Professor of Family Medicine*

Brian S. Andrews, M.B., B.S. University of Sidney (Australia), *Associate Professor of Medicine (Rheumatology)*

James E. Anhalt, M.D. University of Tennessee College of Medicine, *Assistant Clinical Professor of Family Medicine*

Barbara J. Ansell, Ph.D. University of Washington, *Assistant Clinical Professor of Physical Medicine & Rehabilitation*

Stuart M. Arfin, Ph.D. Albert Einstein College of Medicine, *Associate Professor of Biological Chemistry and Biological Sciences*

Steven A. Armentrout, M.D. University of Chicago, *Professor of Medicine (Hematology) and Chief of Hematology/Oncology*

Wilbert S. Aronow, M.D. Harvard Medical School, *Professor of Medicine (Cardiology) and Community & Environmental Medicine in Residence*

Edward R. Arquilla, M.D., Ph.D. Case Western Reserve University School of Medicine, *Department Chair and Professor of Pathology*

Michael S. Ascher, M.D. Harvard Medical School, *Assistant Professor of Medicine (Infectious Disease) in Residence*

Rajkumari V. Asrani, M.B., B.S. Madras Medical College, (India) *Assistant Clinical Professor of Anesthesiology*

Robert A. Baird, M.D. State University of New York (Downstate), *Assistant Professor of Surgery (Orthopedic) in Residence*

Kenneth M. Baldwin, Ph.D. University of Iowa, *Associate Professor of Physiology & Biophysics and Biological Sciences*

Ronald J. Barr, M.D. The Johns Hopkins University, *Assistant Professor of Dermatology and Pathology*

Cyril H. Barton, M.D. University of Colorado Medical School, *Assistant Professor of Medicine (Nephrology)*

Gerard M. Bassell, M.B., B.S. University of Sydney (Australia), *Assistant Professor of Anesthesiology and Obstetrics & Gynecology*

Henry L. Batsel, Ph.D. Vanderbilt University, *Associate Adjunct Professor of Anesthesiology*

James D. Belluzzi, Ph.D. University of Chicago, *Associate Adjunct Professor of Medical Pharmacology & Therapeutics*

Anthony V. Beran, B.A. University of Yugoslavia, *Adjunct Professor of Pediatrics*

J. Edward Berk, M.D. Jefferson Medical College, D.Sc. University of Pennsylvania, *Professor Emeritus of Medicine (Gastroenterology) and Assistant Dean, College of Medicine*

Michael W. Berns, Ph.D. Cornell University, *Professor of Biological Sciences and Pediatrics*
Kevin P. Bertrand, Ph.D. Stanford University, *Assistant Professor of Microbiology and Biological Sciences*
Narender N. Bhatia, M.B.B.S. Punjab University (India), *Clinical Instructor of Obstetrics & Gynecology*
Kiran Bhatt, M.B., B.S. Christian Medical College (India), *Assistant Clinical Professor of Physical Medicine & Rehabilitation*
Arnold Binder, Ph.D. Stanford University, *Professor of Social Ecology and Psychiatry & Human Behavior*
Isabel M. Birnbaum, Ph.D. University of California, Berkeley, *Professor of Social Science and Psychiatry & Human Behavior*
Robert H. Blanks, Ph.D. University of California, Los Angeles, *Assistant Professor of Anatomy, Surgery, and Biological Sciences*
Richard A. Block, M.D. University of Maryland, *Clinical Instructor of Obstetrics & Gynecology*
J. Richard Bobb, M.D. Temple University School of Medicine, *Clinical Professor of Anesthesiology*
Maureen E. Bocian, M.D. University of Illinois College of Medicine, *Assistant Professor of Pediatrics in Residence*
Ralph E. Bodfish, M.D. Emory University School of Medicine, *Assistant Dean, Veterans Administration Medical Center, Long Beach, and Clinical Professor of Radiological Sciences*
W. Benton Boone, M.D. Meharry Medical College School of Medicine, *Assistant Adjunct Professor of Ophthalmology*
Warren L. Bostick, M.D. University of California, San Francisco, *Professor of Pathology*
William E. Bradley, M.D. University of Minnesota, *Professor of Neurology in Residence*
Herman E. Branson, M.D. Howard University, *Assistant Professor of Pathology*
Philip Braunstein, M.B., B.S. King's College (England), *Professor of Radiological Sciences*
Lillian Brown, M.P.A. University of Southern California, *Lecturer in Psychiatry & Human Behavior*
Bruce A. Buckingham, M.D. University of California, San Diego, *Assistant Adjunct Professor of Pediatrics*
Alan R. Buckpitt, Ph.D. Indiana University, *Assistant Adjunct Professor of Community & Environmental Medicine and Medical Pharmacology & Therapeutics*
John W. Budd, M.D. University of Iowa, *Clinical Professor of Pathology*
Michael J. Burns, M.D. University of California, Irvine, *Clinical Instructor of Medicine*
Michael D. Cahalan, Ph.D. University of Washington, *Assistant Professor of Physiology & Biophysics and Biological Sciences*
Justin D. Call, M.D. University of Utah College of Medicine, *Professor of Psychiatry & Human Behavior*
Berry Campbell, Ph.D. The Johns Hopkins University, *Professor Emeritus of Physiology & Biophysics*
Barbara E. Carey, M.N. University of California, Los Angeles, *Assistant Clinical Professor of Pediatrics*
Jean E. Carlin, M.D., Ph.D. University of Minnesota, *Associate Clinical Professor of Psychiatry & Human Behavior*
Thomas C. Cesario, M.D. University of Wisconsin Medical School, *Associate Professor of Medicine (Infectious Disease)*
Premindra A. N. Chandraratna, M.D. University of Ceylon, *Associate Professor of Medicine in Residence*
M. Arthur Charles, M.D. University of California, Irvine, Ph.D. University of California, San Francisco, *Associate Professor of Medicine (Endocrinology) and Physiology & Biophysics*
Kota Chetty, M.B., B.S. Guntur Medical College (India), *Assistant Adjunct Professor of Medicine*
Nai-Shin Chu, M.D. National Taiwan University, Ph.D. University of Michigan, *Assistant Professor of Neurology*
Sally E. Close, M.D. Medical College of Pennsylvania, *Assistant Clinical Professor of Anesthesiology*
Allen J. Cohen, M.D. University of Miami School of Medicine, Ph.D. Massachusetts Institute of Technology, *Assistant Adjunct Professor of Radiological Sciences*
Harry B. Cohen, Ph.D. McGill University (Canada), *Assistant Adjunct Professor of Psychiatry & Human Behavior*
Manley Cohen, M.B., B.Ch. University of Witwatersrand (South Africa), *Associate Adjunct Professor of Medicine (Gastroenterology)*
Gary W. Cole, M.D. University of California, Los Angeles, *Assistant Professor of Dermatology in Residence*
Martin Colman, M.B., B.Ch., M. Med. (Rad. T.), D.M.R.T. University of Witwatersrand (South Africa), *Assistant Professor of Radiological Sciences and Obstetrics & Gynecology*
Robert C. Combs, M.D. University of California, San Francisco, *Associate Dean, College of Medicine, and Clinical Professor of Surgery*
John E. Connolly, M.D. Harvard Medical School, *Professor of Surgery (General/Thoracic) and Chief of Thoracic Surgery*
Eugene Coodley, M.D. University of California, San Francisco, *Professor of Medicine in Residence*
Robert Conroy, M.D. McGill University (Canada), *Associate Adjunct Professor of Radiological Sciences*
T. Timothy Crocker, M.D. University of California, San Francisco, *Department Chair and Professor of Community & Environmental Medicine and Social Ecology*
Bruce F. Cullen, M.D. University of California, Los Angeles, *Department Chair and Professor of Anesthesiology*
B. Dwight Culver, M.D. Stanford University School of Medicine, *Clinical Professor of Community & Environmental Medicine (Occupational Medicine)*
Dennis D. Cunningham, Ph.D. University of Chicago, *Professor of Microbiology and Biological Sciences, and Vice Chair, Department of Microbiology*
Ralph W. Cygan, M.D. State University of New York, Downstate Medical Center, *Clinical Instructor of Medicine*
Dvora Cyrlak, M.D. Yale University, *Assistant Clinical Professor of Radiological Sciences*
Edward R. Dana, M.D. The Johns Hopkins University School of Medicine, *Adjunct Professor of Radiological Sciences and Medicine*
Alvin Davis, M.D. Yale University School of Medicine, *Adjunct Professor of Medicine (Infectious Disease)*
Earle A. Davis, Jr., Ph.D. University of Illinois, *Lecturer in Anatomy*
Lyle C. Dearden, Ph.D. University of Utah, *Professor of Anatomy and Radiological Sciences and Biological Sciences, and Vice Chair, Department of Anatomy*
David J. DeBernardi, M.D. University of California, Irvine, College of Medicine, *Clinical Instructor of Neurology*
Luis M. de la Maza, M.D. Facultad de Medicina (Spain), Ph.D. University of Minnesota, *Associate Professor of Pathology*
Theodore J. DiBuono, M.D. Albert Einstein College of Medicine, *Associate Adjunct Professor of Pediatrics*
Philip J. DiSaia, M.D. Tufts University School of Medicine, *Department Chair and Professor of Obstetrics & Gynecology and Radiological Sciences*
Gerald H. Dixon, M.D. University of California, San Francisco, *Assistant Clinical Professor of Radiological Sciences*
Joannes I. Drayer, M.D. University of Nymegen (Netherlands), *Associate Professor of Medicine in Residence*
Christopher K. Druzgalski, Ph.D. Ohio State University, *Assistant Adjunct Professor of Medicine*
Kenneth W. Dumars, M.D. University of Colorado School of Medicine, Professor of Pediatrics, Physical Medicine & Rehabilitation, and Social Ecology
Claibourne I. Dungy, M.D. University of Illinois, *Assistant Professor of Pediatrics and Social Ecology*
Robert W. Earle, Ph.D. University of Southern California, *Senior Lecturer Emeritus in Medical Pharmacology & Therapeutics*

Jules B. Edlow, M.D. College of Physicians and Surgeons, School of Medicine, University of Maryland, *Associate Adjunct Professor of Pathology*

Martin E. Eisner, M.D. George Washington University School of Medicine, *Assistant Professor of Surgery in Residence*

Alan N. Elias, M.B., B.S. University of Calcutta (India), *Assistant Professor of Medicine (Endocrinology) in Residence*

Uri Elkayam, M.D. Sackler Medical School (Israel), *Assistant Professor of Medicine in Residence*

Everrett L. Evans, M.D. California College of Medicine, *Lecturer in Physical Medicine & Rehabilitation*

Steven W. Eyler, M.D. Harvard University Medical School, *Assistant Professor of Anesthesiology in Residence*

Alan S. Fairhurst, Ph.D. University of Liverpool (England), *Associate Professor of Medical Pharmacology & Therapeutics*

Ronald D. Fairshter, M.D. University of Missouri, *Associate Professor of Medicine (Pulmonary)*

James H. Fallon, Ph.D. University of Illinois College of Medicine, *Assistant Professor of Anatomy and Biological Sciences*

David L. Farber, M.D. Universidad Autonoma de Guadalajara (Mexico), *Assistant Professor of Anesthesiology in Residence*

Bertram F. Felsher, M.D. University of California, San Francisco, *Associate Professor of Medicine (Gastroenterology) in Residence*

Jean S. Felton, M.D. Stanford University, *Clinical Professor of Community & Environmental Medicine*

Jack Ferlinz, M.D. Boston University School of Medicine, *Associate Professor of Medicine (Cardiology) in Residence*

Michael J. Fine, M.D. University of Rochester, *Assistant Clinical Professor of Medicine*

Daniel J. Fink, M.D. University of Rochester, *Assistant Professor of Medicine in Residence*

Peter A. Fleming, M.D. George Washington University, *Assistant Clinical Professor of Radiological Sciences*

Eldon L. Foltz, M.D. University of Michigan Medical School, *Professor of Surgery (Neurosurgery)*

Glenn W. Fowler, M.D. Louisiana State University School of Medicine, *Associate Adjunct Professor of Pediatrics and Neurology*

Richard P. Fox, M.D. University of Cincinnati College of Medicine, *Associate Adjunct Professor of Psychiatry & Human Behavior*

Scott E. Fraser, Ph.D. The Johns Hopkins University, *Assistant Professor of Physiology & Biophysics*

Roger K. Freeman, M.D. University of California, San Francisco, *Professor of Obstetrics & Gynecology in Residence*

Howard A. Friedberg, M.D. University of Florida, *Assistant Adjunct Professor of Pathology*

Richard M. Friedenberg, M.D. State University of New York, *Department Chair and Professor of Radiological Sciences*

Herbert D. Friedlander, M.D. Case Western Reserve University School of Medicine, Ph.D. Tulane University, *Clinical Professor of Psychiatry & Human Behavior*

Claude T. Friedmann, M.D. The Johns Hopkins University School of Medicine, *Assistant Professor of Psychiatry & Human Behavior in Residence*

Robert H. Friis, Ph.D. Columbia University, *Assistant Clinical Professor of Medicine (Rheumatology)*

George J. Friou, M.D. Cornell University Medical College, *Professor of Medicine (Rheumatology) and Chief of Rheumatology*

Philip Frost, M.D. State University of New York (Buffalo), Ph.D. Medical Research Council (London), *Associate Professor of Medicine and Microbiology in Residence*

Alfred C. Fulmor, M.D. California College of Medicine, *Lecturer in Physical Medicine & Rehabilitation*

David W. Furnas, M.D. University of California, San Francisco, *Clinical Professor of Surgery (Plastic) and Chief of Plastic Surgery*

Stanley P. Galant, M.D. University of California, San Francisco, *Associate Professor of Pediatrics in Residence*

Richard A. Gangnes, M.D. Washington University School of Medicine, *Assistant Clinical Professor of Surgery (Otolaryngology)*

Julius M. Gardin, M.D. University of Michigan, *Assistant Professor of Medicine (Cardiology) in Residence*

Thomas J. Garite, M.D. University of California, Irvine, College of Medicine, *Assistant Adjunct Professor of Obstetrics & Gynecology*

Ronald N. Gaster, M.D. University of California, Los Angeles, *Assistant Professor of Ophthalmology*

Alan B. Gazzaniga, M.D. Harvard Medical School, *Professor of Surgery (General)*

Gilbert L. Geis, Ph.D. University of Wisconsin, *Professor of Social Ecology and Psychiatry & Human Behavior*

John C. German, M.D. University of California, Irvine, College of Medicine, *Assistant Professor of Surgery (Pediatric)*

Roland A. Giolli, Ph.D. University of California, Berkeley, *Professor of Anatomy and Biological Sciences*

Irving L. Gislason, M.D. University of British Columbia Faculty of Medicine (Canada), *Assistant Adjunct Professor of Psychiatry & Human Behavior*

Gordon A. Glasgow, M.D. University of Toronto (Canada), *Clinical Instructor of Medicine*

Theodore H. Glatz, M.D. University of Chicago, *Assistant Professor of Pediatrics in Residence*

Michael E. Glick, M.D. University of Chicago, *Assistant Professor of Medicine in Residence*

Gordon G. Globus, M.D. Tufts University School of Medicine, *Professor of Psychiatry & Human Behavior*

Michael P. Golden, M.D. University of California, Los Angeles, *Assistant Adjunct Professor of Family Medicine, Pediatrics, and Social Ecology*

Arthur I. Goldstein, M.D. Albert Einstein College of Medicine, *Associate Adjunct Professor of Obstetrics & Gynecology*

Gilbert Goodman, M.D. Wayne State University, *Assistant Clinical Professor of Medicine*

James E. Goodrick, M.D. Jefferson Medical College, *Assistant Clinical Professor of Anesthesiology*

Charles M. Gorenstein, Ph.D. Albert Einstein College of Medicine, *Assistant Professor of Medical Pharmacology & Therapeutics*

Helen R. Gottschalk, M.D. Washington University School of Medicine, *Associate Adjunct Professor of Dermatology*

Louis A. Gottschalk, M.D. Washington University School of Medicine, *Professor of Psychiatry & Human Behavior, Social Ecology, and Social Sciences*

James H. Graham, M.D. Medical College of Alabama, *Professor Emeritus of Dermatology and Pathology*

Thomas L. Gral, M.D. Komensky University Medical School (Czechoslovakia), *Associate Adjunct Professor of Medicine*

Gale A. Granger, Ph.D. University of Washington, *Professor of Molecular Biology and Biochemistry, and Microbiology*

Scott Grant, M.D. Stanford University, *Assistant Clinical Professor of Ophthalmology*

Roy G. Gravesen, M.D. University of Tennessee, *Associate Clinical Professor of Family Medicine*

Edward I. Greenbaum, M.D. University of California, San Francisco, *Associate Adjunct Professor of Radiological Sciences*

Gerald R. Greene, M.D. University of Southern California, *Associate Adjunct Professor of Pediatrics*

Michael Grossman, M.D. University of California, San Francisco, *Assistant Professor of Radiological Sciences in Residence*

Forest J. Grunigen, M.D. California College of Medicine, *Clinical Professor of Surgery (Urology) and Physical Medicine & Rehabilitation, and Special Assistant to the Dean, College of Medicine*

Hoda A. Guirgis, Ph.D. St. Andrews University (Scotland), *Associate Professor of Community & Environmental Medicine*

George A. Gutman, Ph.D. Stanford University, *Assistant Professor of Microbiology and Biological Sciences*

Grant Gwinup, M.D. University of Colorado School of Medicine, *Professor of Medicine (Endocrinology) and Acting Chief of Endocrinology*
Harry T. Haigler, Ph.D. Vanderbilt University, *Assistant Professor of Physiology & Biophysics*
Scott Haldeman, M.D. University of British Columbia (Canada), *Assistant Adjunct Professor of Neurology*
James E. Hall, Ph.D. University of California, Riverside, *Associate Professor of Physiology & Biophysics and Biological Sciences*
A. Heather Halperin, M.S.W. Rutgers University, *Assistant Clinical Professor of Pediatrics*
Ann E. Hamilton, M.D. Boston University College of Medicine, *Assistant Clinical Professor of Pathology*
G. Wesley Hatfield, Ph.D. Purdue University, *Professor of Microbiology and Biological Sciences*
David B. Hebert, M.D. Tulane University, *Clinical Instructor of Obstetrics & Gynecology*
Walter L. Henry, M.D. Stanford University School of Medicine, *Professor of Medicine (Cardiology) and Chief of Cardiology*
Richard N. Heyendal, M.D. University of Ottawa (Canada), Assistant Clinical Professor of Anesthesiology
David A. Hicks, M.D. University of California, Irvine, College of Medicine, *Assistant Adjunct Professor of Pediatrics*
Brian A. Hill, M.D. University of California, Irvine, College of Medicine, *Assistant Clinical Professor of Surgery (Otolaryngology)*
Gerald G. Hirschberg, M.D. University of Aix-Marseille (France), *Clinical Professor of Physical Medicine & Rehabilitation*
Kenneth A. Hodel, M.D. University of Illinois College of Medicine, *Clinical Instructor of Obstetrics & Gynecology*
Harold C. Hodge, Ph.D. University of Iowa, *Professor of Community & Environmental Medicine and Medical Pharmacology & Therapeutics in Residence*
John C. Hoefs, M.D. George Washington University, *Assistant Professor of Medicine in Residence*
Daniel Hollander, M.D. Baylor School of Medicine, *Professor of Medicine (Gastroenterology) and Physiology & Biophysics and Chief of Gastroenterology*
Walter W. Hopps, M.D. California College of Medicine, *Lecturer in Physical Medicine & Rehabilitation*
Edward B. Houghtaling, M.D. California College of Medicine, *Lecturer in Physical Medicine & Rehabilitation*
E. Wayne Hull, Ph.D. University of California, Berkeley, *Lecturer in Biological Chemistry*
Robert F. Huxtable, M.D. University of Southern California, *Professor of Pediatrics*
Leroy Hyde, M.D. Cornell University Medical College, *Professor of Medicine (Pulmonary) in Residence*
Kenneth H. Ibsen, Ph.D. University of California, Los Angeles, *Acting Department Chair and Associate Professor of Biological Chemistry and Biological Sciences*
Thomas J. Imray, M.D. Marquette University, *Associate Clinical Professor of Radiological Sciences*
Lloyd T. Iseri, M.D. Wayne State University College of Medicine, *Professor of Medicine (Cardiology)*
Kevin Ivey, M.B., B.S. University of Queensland (Australia), *Professor of Medicine in Residence*
Melody D. Jacobson, M.S. California State University, Long Beach, *Lecturer in Pediatrics*
John A. James, M.B., Ch.B. Edinburgh University, *Adjunct Professor of Pediatrics*
Elmer R. Jennings, M.D. Wayne State University, *Adjunct Professor of Pathology and Assistant Dean Memorial Hospital Medical Center, Long Beach*
James H. Jennison, Ph.D. Fuller Theological Seminary, *Clinical Instructor of Physical Medicine & Rehabilitation*
Dennis C. Jerome, M.D. Wayne State University College of Medicine, *Assistant Adjunct Professor of Medicine (Allergy/Immunology)*
Ronald Jevning, Ph.D. Stanford University School of Medicine, *Assistant Adjunct Professor of Medicine (Pulmonary)*
Joie Pierce Jones, Ph.D. Brown University, *Professor of Radiological Sciences*
George L. Juler, M.D. Loma Linda University School of Medicine, *Associate Adjunct Professor of Surgery (General)*
Ronald P. Karlsberg, M.D. University of California, San Francisco, *Assistant Professor of Medicine (Cardiology) in Residence*
Basil S. Kasimis, M.D. University of Athens (Greece), *Assistant Professor of Medicine in Residence*
David Katz, M.D. Case Western Reserve University School of Medicine, *Associate Clinical Professor of Radiological Sciences*
Jacob Katz, M.B., Ch.B. University of Witwatersrand (South Africa), *Professor of Pediatrics*
Edward Kaufman, M.D. Jefferson Medical College, *Associate Professor of Psychiatry & Human Behavior and Family Medicine in Residence*
Charles J. Kaupke, M.D. University of California, Los Angeles, *Clinical Instructor of Medicine*
Kirk A. Keegan, Jr., M.D. University of Maryland, *Assistant Professor of Obstetrics & Gynecology*
Richard J. Kempert, M.D. Ohio State University, *Assistant Clinical Professor of Family Medicine*
Deryck R. Kent, M.D. Loma Linda University School of Medicine, Ph.D. University of California, Los Angeles, *Associate Adjunct Professor of Obstetrics & Gynecology*
Herbert Kent, M.D. Royal College of Physicians and Surgeons (England), *Associate Clinical Professor of Physical Medicine & Rehabilitation*
Hun Kim, M.D. Seoul National University (Korea), *Associate Adjunct Professor of Pathology*
David T. Kingsbury, Ph.D. University of California, San Diego, *Associate Professor of Microbiology and Biological Sciences*
Leonard M. Kitzes, Ph.D. University of California, Irvine, *Assistant Professor of Anatomy and Biological Sciences*
Ernest W. Klatte, M.D. Indiana University School of Medicine, *Clinical Professor of Psychiatry & Human Behavior*
Frank M. Kline, M.D. University of Maryland School of Medicine, Ph.D. Southern California Psychoanalytic Institute, *Clinical Professor of Psychiatry & Human Behavior*
Halappa N. Konchigeri, M.B., B.S., B.J. Medical College (India), *Associate Professor of Anesthesiology in Residence*
John C. Kramer, M.D. University of California, San Francisco, *Associate Professor of Psychiatry & Human Behavior and Medical Pharmacology & Therapeutics*
Stuart M. Krassner, Sc.D. The Johns Hopkins University School of Public Health, *Professor of Biological Sciences and Microbiology*
John A. Kusske, M.D. University of California, San Francisco, *Associate Professor of Surgery (Neurological) and Chief of Neurological Surgery*
Jack H. M. Kwaan, M.D. University of Hong Kong, *Associate Clinical Professor of Surgery (General)*
David C. Lanier, M.D. University of North Carolina, *Assistant Clinical Professor of Family Medicine*
Janos K. Lanyi, Ph.D. Harvard University, *Professor of Physiology & Biophysics and Microbiology*
Irving H. Leopold, M.D., D.Sc. University of Pennsylvania, *Department Chair and Professor of Ophthalmology*
Jeffrey A. Levine, M.D. Medical College of Wisconsin, *Assistant Clinical Professor of Psychiatry & Human Behavior*
Richard W. Light, M.D. The Johns Hopkins School of Medicine, *Associate Professor of Medicine (Pulmonary) in Residence*
Alexander S. Lin, Ph.D. Stanford University, M.D. University of Miami School of Medicine, *Assistant Adjunct Professor of Radiological Sciences*
E. Michael Linzey, M.D. University of California, Irvine, College of Medicine, *Assistant Clinical Professor of Obstetrics & Gynecology*

Ghanshyam K. Lohiya, B.M., B.Ch. Ajmer Rajasthan University (India), *Assistant Adjunct Professor of Community & Environmental Medicine*

Kenneth J. Longmuir, Ph.D. University of Oregon, *Assistant Professor of Physiology & Biophysics and Biological Sciences in Residence*

Arthur Lober, M.D. Stanford University, *Associate Professor of Medicine (Rheumatology) in Residence*

Frederic C. Ludwig, M.D. Tubingen (Germany), D.Sc. Sorbonne (France), *Professor of Pathology and Radiological Sciences*

Ezequiel N. Lujan, M.S.W. University of California, Los Angeles, *Clinical Instructor of Family Medicine*

Kenneth P. Lyons, M.D. Creighton University School of Medicine, *Assistant Professor of Radiological Sciences in Residence*

James D. MacEwen, Ph.D. Wayne State University, *Adjunct Professor of Community & Environmental Medicine and Medical Pharmacology & Therapeutics*

John D. Madden, M.D. Loyola University of Chicago, Stritch School of Medicine, *Adjunct Professor of Pediatrics*

James H. Mahnke, M.D. University of Washington School of Medicine, *Associate Professor of Surgery (Neurological)*

Cornelis Mahutte, M.D. McMaster University (Canada), Ph.D. University of Waterloo (Canada), *Assistant Professor of Medicine in Residence*

Jerry P. Malefatto, M.D. University of Connecticut, *Clinical Instructor of Medicine*

Matthew M. Malerich, M.D. Loyola University of Chicago, Stritch School of Medicine, *Assistant Professor of Surgery (Orthopedic) in Residence*

William F. Maloney, M.D. University of Minnesota, *Clinical Professor of Medicine*

Mark A. Mandelkern, Ph.D. University of California, Berkeley, M.D. University of Miami, *Associate Professor of Physics and Pathology*

Richard D. Marble, M.D. George Washington University, *Assistant Clinical Professor of Pediatrics*

David A. Martin, M.D. Pennsylvania State University College of Medicine, *Clinical Instructor of Medicine*

Donald C. Martin, M.D. University of British Columbia (Canada), *Professor of Surgery (Urology) and Chief of Urology*

G. Robert Mason, M.D. University of Chicago, Ph.D. Stanford University, *Department Chair and Professor of Surgery and Chief of General Surgery*

Richard K. Mathis, M.D. University of California, Los Angeles, *Assistant Professor of Pediatrics in Residence*

Candace McCombs, Ph.D. University of California, Berkeley, *Assistant Adjunct Professor of Medicine*

Jerry L. McCullough, Ph.D. Yale University, *Associate Professor of Dermatology in Residence*

Robert J. McFerran, M.D. University of Illinois College of Medicine, *Associate Clinical Professor of Family Medicine*

James L. McGaugh, Ph.D. University of California, Berkeley, *Executive Vice Chancellor and Professor of Psychobiology, Psychiatry & Human Behavior, and Social Science*

Ellen McGrath, Ph.D. George Washington University, *Assistant Professor of Psychiatry & Human Behavior*

Frederick L. McGuire, Ph.D. New York University, *Professor of Psychiatry & Human Behavior and Social Science in Residence*

Calvin S. McLaughlin, Ph.D. Massachusetts Institute of Technology, *Professor of Biological Chemistry and Biological Sciences and Vice Chair, Department of Biological Chemistry*

William C. McMaster, M.D. Case Western Reserve University School of Medicine, *Associate Adjunct Professor of Surgery (Orthopedic) and Chief of Orthopedic Surgery*

Louis J. McNabb, M.D. University of Illinois, *Assistant Professor of Medicine in Residence*

David L. McPherson, Ph.D. University of Washington, *Associate Clinical Professor of Pediatrics*

David M. McRae, M.D. University of California, San Francisco, *Assistant Clinical Professor of Pathology*

Hooshang Meshkinpour, M.D. Tehran University School of Medicine (Iran), *Assistant Professor of Medicine (Gastroenterology)*

Joseph P. Michalski, M.D. University of Maryland, *Assistant Professor of Medicine (Rheumatology) in Residence*

Don R. Miller, M.D. University of Kansas Medical School, *Professor of Surgery (General)*

J. Bernard Miller, M.D. Loyola University of Chicago, Stritch School of Medicine, *Associate Clinical Professor of Surgery (Urology)*

R. David Miller, M.D. University of Liverpool (England), *Assistant Adjunct Professor of Family Medicine and Obstetrics & Gynecology*

Eric N. C. Milne, M.B., Ch.B., F.F.R. University of Edinburgh (Scotland), *Professor of Radiological Sciences*

Norah Milne, M.B., Ch.B. University of Edinburgh (Scotland), *Assistant Professor of Radiological Sciences in Residence*

Vu-Dinh Minh, M.D. University of Saigon (Vietnam), *Associate Adjunct Professor of Medicine (Pulmonary)*

Mike K. Mirahmadi, M.D. Tehran University School of Medicine (Iran), *Assistant Professor of Medicine (Nephrology) in Residence*

Horace Mitchell, Ph.D. Washington University, *Assistant Clinical Professor of Psychiatry & Human Behavior and Acting Associate Dean, College of Medicine*

Don S. Miyada, Ph.D. Michigan State University, *Associate Adjunct Professor of Pathology and Biological Chemistry*

Houchang D. Modanlou, M.D. University of Rome (Italy), *Associate Adjunct Professor of Pediatrics*

Kivie Moldave, Ph.D. University of Southern California, *Professor of Biological Chemistry and Biological Sciences*

Richard J. Moldawsky, M.D. Temple University Medical School, *Assistant Clinical Professor of Psychiatry & Human Behavior*

Wan-hee Moon, Ph.D. Purdue University, *Assistant Adjunct Professor of Pediatrics*

Edgar M. Moran, M.D. University of Bucharest (Romania), *Professor of Medicine in Residence*

Beverly C. Morgan, M.D. Duke University, *Department Chair and Professor of Pediatrics*

H. David Mosier, M.D. The Johns Hopkins University School of Medicine, *Professor of Pediatrics and Pathology*

Marjorie A. Mosier, M.D. University of California, Los Angeles, *Assistant Professor of Ophthalmology*

Harris S. Moyed, Ph.D. University of Pennsylvania, *Professor of Microbiology and Biological Sciences*

J. Dennis Mull, M.D. Medical College of Virginia, *Department Chair and Associate Professor of Family Medicine*

Yuji Murata, M.D. Osaka University (Japan), *Associate Professor of Obstetrics & Gynecology*

Christopher G. Murlas, M.D. Stanford University, *Assistant Professor of Medicine in Residence*

Hiroshi Nagaya, M.D. University of Tokyo School of Medicine (Japan), *Associate Adjunct Professor of Medicine (Allergy/Immunology)*

Michael P. Nageotte, M.D. Loyola University of Chicago, Stritch School of Medicine, *Clinical Instructor of Obstetrics & Gynecology*

Touran M. Najafzadeh, M.D. Pahlavi Medical School (Iran), *Assistant Clinical Professor of Pediatrics*

Orhan Nalcioglu, Ph.D. University of Oregon, *Assistant Professor of Radiological Sciences*

Louis E. Narens, Ph.D. University of California, Los Angeles, *Professor of Social Science and Psychiatry & Human Behavior*

Christine A. Nelson, M.D. University of Wisconsin Medical School, *Associate Adjunct Professor of Pediatrics*

Thos. L. Nelson, M.D. University of California, San Francisco, *Associate Dean, College of Medicine and Professor of Pediatrics and Social Ecology*

Samuel T. Nerenberg, M.D. University of Minnesota, *Professor of Pathology in Residence*

Amy E. Newburger, M.D. New York University, *Assistant Professor of Dermatology in Residence*
Ernest P. Noble, M.D. Case Western Reserve University School of Medicine, Ph.D. Oregon State University, *Professor of Psychiatry & Human Behavior and Psychobiology*
Harold S. Novey, M.D. University of Southern California, *Clinical Professor of Medicine (Allergy/Immunology) and Acting Chief of Allergy/Immunology*
Farhad Nowroozi, M.D. University of Tehran (Iran), *Acting Assistant Professor of Physical Medicine & Rehabilitation*
Kenneth L. Nudleman, M.D. Queen's University, *Assistant Professor of Neurology in Residence*
Eliezer Nussbaum, M.D. Sackler Medical School (Israel), *Assistant Adjunct Professor of Pediatrics*
Jose A. Ocariz, M.D. University of Rosario (Argentina), *Assistant Clinical Professor of Pathology*
Harold G. Olson, M.D. University of California, Irvine, College of Medicine, *Assistant Professor of Medicine (Cardiology) in Residence*
Khing S. Ong, M.D. Airlannga University (Indonesia), *Assistant Professor of Pediatrics*
Donald P. Orr, M.D. Case Western Reserve University School of Medicine, *Assistant Professor of Pediatrics and Social Ecology*
Donald R. Ostergard, M.D. University of California, San Francisco, *Adjunct Professor of Obstetrics & Gynecology*
Marilyn J. Pais, M.D. Medical College of Pennsylvania, *Associate Adjunct Professor of Radiological Sciences*
Lawrence N. Parker, M.D. Stanford University School of Medicine, *Assistant Professor of Medicine (Endocrinology) in Residence*
Victor Passy, M.D. California College of Medicine, *Clinical Professor of Surgery (Otolaryngology) and Acting Chief of Otolaryngology*
Leonard G. Paul, M.D. Ohio State University College of Medicine, *Vice Chair and Associate Clinical Professor of Family Medicine*
Mary C. Peduzi, M.S. California State University, Los Angeles, *Associate Clinical Professor of Pediatrics*
Daniel Pelot, M.D. Howard University School of Medicine, *Associate Clinical Professor of Medicine (Gastroenterology)*
Robert I. Pfeffer, M.D. Harvard Medical School, *Associate Professor of Neurology in Residence*
Robert F. Phalen, Ph.D. University of Rochester, *Associate Professor of Community & Environmental Medicine, Medicine, and Medical Pharmacology & Therapeutics in Residence*
Michael B. Pine, M.D. Harvard Medical School, *Assistant Professor of Medicine (Cardiology) in Residence*
Hubert C. Pirkle, M.D. Indiana University, *Associate Professor of Pathology*
Mu-Ming Poo, Ph.D. The Johns Hopkins University, *Associate Professor of Physiology & Biophysics and Biological Sciences*
Robert W. Porter, M.D., Ph.D. Northwestern University Medical School, *Professor of Surgery (Neurological) in Residence*
Mary V. Pratt, M.D. University of Wisconsin Medical School, *Assistant Adjunct Professor of Ophthalmology*
Pamela E. Prete, M.D. Hahnemann Medical College, *Assistant Professor of Medicine in Residence*
Henry W. Pribram, M.B., B.Ch. Cambridge University, *Professor of Radiological Sciences and Neurology*
Carlos A. Prietto, M.D. University of California, Irvine, College of Medicine, *Assistant Adjunct Professor of Surgery (Orthopedic)*
Ralph E. Purdy, Ph.D. University of California, Los Angeles, *Assistant Professor of Medical Pharmacology & Therapeutics*
Edward J. Quilligan, M.D. Ohio State University College of Medicine, *Professor of Obstetrics & Gynecology*
Leslie G. Quinlivan, M.D., F.R.C.S., F.R.C.O.G. University of London (England), *Professor of Obstetrics & Gynecology*
Bouchaib Rabbani, Ph.D. University of California, Irvine, *Assistant Professor of Radiological Sciences in Residence*
Yallapragada S. Rao, M.B., B.S. Guntur Medical School (India), *Assistant Clinical Professor of Radiological Sciences*
Ronald E. Rasmussen, Ph.D. University of California, San Francisco, *Associate Adjunct Professor of Community & Environmental Medicine and Medical Pharmacology & Therapeutics*
Louis Recher, M.D. University of Basel (Switzerland), *Associate Professor of Pathology*
J. Leslie Redpath, Ph.D. University of Newcastle (England), *Associate Professor of Radiological Sciences in Residence*
Frederick Reines, Ph.D. New York University, *Professor of Physics and Radiological Sciences*
Peter Reischl, Ph.D. Iowa State University, *Assistant Adjunct Professor of Community & Environmental Medicine*
Charles E. Ribak, Ph.D. Boston University, *Assistant Professor of Anatomy and Biological Sciences*
William M. Rich, M.D. University of New Mexico, *Assistant Professor of Obstetrics & Gynecology*
Martine J. RoBards, Ph.D. Florida State University, *Assistant Professor of Anatomy and Biological Sciences*
William S. Roberts, M.D. New Jersey College of Medicine, *Clinical Instructor of Obstetrics & Gynecology*
Richard T. Robertson, Ph.D. University of California, Irvine, *Assistant Professor of Anatomy and Biological Sciences*
Jill J. Robinson-Terry, M.D. University of California, San Diego, *Clinical Instructor of Radiological Sciences*
Werner Roeck, University of Cologne State School of Engineering (Germany), *Assistant Clinical Professor of Radiological Sciences*
Stephen G. Romansky, M.D. University of Texas, *Assistant Professor of Pathology and Pediatrics*
David M. Rose, M.D. Ohio State University College of Medicine, *Assistant Professor of Anesthesiology*
Howard D. Rosenberg, M.D. New York Medical College, *Assistant Clinical Professor of Radiological Sciences*
Mary E. Roth, M.D. University of Pennsylvania School of Medicine, *Assistant Adjunct Professor of Family Medicine*
Andrej Rotter, Ph.D. National Institute for Medical Research (England), *Assistant Professor of Medical Pharmacology & Therapeutics*
Lloyd Rucker, M.D. University of Kentucky, *Assistant Clinical Professor of Medicine*
Ralph W. Rucker, M.D. Northwestern University Medical School, *Associate Adjunct Professor of Pediatrics*
Thomas H. Rynalski, M.D. University of Michigan, *Clinical Instructor of Pathology*
James K. Saiki, M.D. University of California, San Francisco, *Assistant Adjunct Professor of Medicine*
Arthur H. Salibian, M.D. American University of Beirut (Lebanon), *Assistant Adjunct Professor of Surgery (Plastic)*
Kym A. Salness, M.D. Temple University School of Medicine, *Clinical Instructor of Medicine*
Lawrence J. Santora, M.D. New York Medical College, *Clinical Instructor of Medicine*
James Sarfeh, M.D. Albany Medical College, *Assistant Professor of Surgery in Residence*
Jon F. Sassin, M.D. St. Louis University School of Medicine, *Professor of Neurology and Psychobiology Biophysics and Acting Assistant Dean, College of Medicine*
Robert J. Sbordone, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of Physical Medicine & Rehabilitation*
Donald W. Schafer, M.D. University of Cincinnati College of Medicine, *Clinical Professor of Psychiatry & Human Behavior*
Patricia L. Schmidt, M.D. University of Pennsylvnia School of Medicine, *Assistant Professor of Obstetrics & Gynecology*
Harley S. Schultz, M.D. New York University School of Medicine, *Assistant Adjunct Professor of Medicine*
Gary P. Segal, M.D. University of Pennsylvania, *Assistant Professor of Medicine in Residence*
Fereydoon M. Shalom, M.D. University of Tehran (Iran), *Clinical Instructor of Medicine*

Ronald C. Shank, Ph.D. Massachusetts Institute of Technology, *Associate Professor of Community & Environmental Medicine and Medical Pharmacology & Therapeutics*

Dean H. Shapiro, Ph.D. Stanford University, *Assistant Clinical Professor of Psychiatry & Human Behavior*

Johanna F. Shapiro, Ph.D. Stanford University, *Assistant Professor of Family Medicine*

Brahma S. Sharma, Ph.D. University of Illinois, *Associate Adjunct Professor of Medicine*

Mohan S. Sidhu, M.B., B.S. Christian Medical College (India), *Assistant Professor of Anesthesiology in Residence*

Gregory E. Simmons, M.D. University of Mississippi, *Clinical Instructor of Pathology*

Henry Simpkins, M.D. University of Miami Medical School, Ph.D. King's College (England), *Associate Professor of Pathology, Biological Chemistry, and Obstetrics & Gynecology*

Jack Sklansky, Eng. Sc.D. Columbia University, *Professor of Engineering, Radiological Sciences, and Information and Computer Science*

Walter R. Skowsky, M.D. Albany Medical College, *Associate Professor of Medicine (Endocrinology) in Residence*

Lewis M. Slater, M.D. University of Vermont Medical School, *Assistant Professor of Medicine (Hematology) and Pathology*

Charles A. Sondhaus, Ph.D. University of California, Berkeley, *Associate Professor of Radiological Sciences*

Gerald S. Spear, M.D. The Johns Hopkins University, *Professor of Pathology*

Donald R. Sperling, M.D. Yale School of Medicine, *Professor of Pediatrics and Radiological Sciences*

Lawrence D. Sporty, M.D. State University of New York, Downstate, *Acting Department Chair and Clinical Professor of Psychiatry & Human Behavior*

Eric J. Stanbridge, Ph.D. Stanford University, *Associate Professor of Microbiology and Biological Sciences*

Wendell M. Stanley, Jr., Ph.D. University of Wisconsin, *Associate Professor of Biological Chemistry and Molecular Biology & Biochemistry*

Tom W. Staple, M.D. University of Illinois, *Adjunct Professor of Radiological Sciences*

Arnold Starr, M.D. New York University School of Medicine, *Department Chair and Professor of Neurology, Psychobiology, and Social Science*

Solomon H. Statman, M.D. University of Cincinnati, *Clinical Professor of Anesthesiology*

Justin J. Stein, M.D. Baylor College of Medicine, *Professor of Radiological Sciences*

Larry Stein, Ph.D. University of Iowa, *Department Chair and Professor of Medical Pharmacology & Therapeutics*

Marsha K. Stein, Ph.D. University of Pennsylvania, *Assistant Adjunct Professor of Psychiatry & Human Behavior*

Ann E. P. Steinman, M.B., B.S. King's College (England), *Assistant Adjunct Professor of Anesthesiology*

Edward A. Stemmer, M.D. University of Chicago, *Professor of Surgery (Thoracic) in Residence*

Melvyn L. Sterling, M.D. University of Chicago, *Assistant Adjunct Professor of Medicine*

James H. Sterner, M.D. Harvard University, *Clinical Professor of Community & Environmental Medicine*

Daniel S. Stokols, Ph.D. University of North Carolina, *Associate Professor of Pediatrics and Social Ecology*

Sergio C. Stone, M.D. University of Chile, *Associate Professor of Obstetrics & Gynecology and Pathology*

Donald B. Summers, M.D. Tulane University, *Assistant Clinical Professor of Psychiatry & Human Behavior*

James M. Swanson, Ph.D. Ohio State University, *Associate Professor of Psychiatry & Human Behavior in Residence*

John E. Swett, Ph.D. University of California, Los Angeles, *Department Chair and Professor of Anatomy and Biological Sciences*

Paul S. Sypherd, Ph.D. Yale University, *Department Chair and Professor of Microbiology and Biological Sciences*

Alfred J. Tabatzky, M.D. University of California, Los Angeles, *Assistant Adjunct Professor of Surgery (Otolaryngology)*

Mary C. Taylor, M.D. Chicago Medical School, *Assistant Adjunct Professor of Neurology*

Stanley A. Terman, Ph.D. Massachusetts Institute of Technology, M.D. University of Iowa, *Assistant Professor of Psychiatry & Human Behavior in Residence*

Sujata Tewari, Ph.D. McGill University (Canada), *Associate Professor of Psychiatry & Human Behavior in Residence*

Robert Thompson, Ph.D. University of Texas, *Professor of Physical Medicine & Rehabilitation in Residence*

William Benbow Thompson, Jr., M.D. University of Southern California, *Associate Professor of Obstetrics & Gynecology*

Lauri D. Thrupp, M.D. University of Washington School of Medicine, *Professor of Medicine (Infectious Disease)*

Jeremiah G. Tilles, M.D. Harvard Medical School, *Department Chair and Professor of Medicine (Infectious Disease) and Microbiology and Chief of Infectious Disease*

Jerome S. Tobis, M.D. Chicago Medical School, *Department Chair and Professor of Physical Medicine & Rehabilitation and Community & Environmental Medicine*

Jonathan M. Tobis, M.D. Albert Einstein College of Medicine, *Assistant Professor of Medicine (Cardiology) in Residence*

Thomas L. Treadwell, M.D. Dartmouth Medical School, *Clinical Instructor of Medicine*

Fong Tsai, M.D. Taipei Medical College (Taiwan), *Associate Professor of Radiological Sciences*

Ivan M. Turpin, M.D. University of Utah, *Assistant Clinical Professor of Surgery*

Peter L. Tuxen, M.D. University of Copenhagen (Denmark), *Assistant Clinical Professor of Anesthesiology*

Naomi Uchiyama, M.D. University of British Columbia (Canada), *Assistant Adjunct Professor of Pediatrics*

John A. Udall, M.D. Temple University School of Medicine, *Associate Professor of Medicine (Cardiology)*

Stanley van den Noort, M.D. Harvard Medical School, *Dean of the College of Medicine and Professor of Neurology*

Lubomir Jan-Vacav Valenta, M.D., Ph.D. Charles University, *Professor of Medicine (Endocrinology)*

Peter G. Van Etten, M.D. California College of Medicine, *Lecturer in Physical Medicine & Rehabilitation*

Nosratolah D. Vaziri, M.D. Tehran University Medical School (Iran), *Associate Professor of Medicine (Nephrology) and Chief of Nephrology*

Halvor Vermund, M.D. University of Oslo (Norway), Ph.D. University of Minnesota, *Professor Emeritus of Radiological Sciences*

Larry E. Vickery, Ph.D. University of California, Santa Barbara, *Assistant Professor of Physiology & Biophysics and Biological Sciences*

Bruno W. Volk, M.D. University of Vienna (Austria), *Professor of Pathology in Residence*

William W. Wadman III, M.A. University of California, Irvine, *Lecturer in Community & Environmental Medicine*

Feizal Waffarn, M.B., B.S. Madras Medical College (India), *Assistant Professor of Pediatrics in Residence*

Akio Wakabayashi, M.D. University of Tokyo Medical School (Japan), *Associate Professor of Surgery (General)*

Ann P. Walker, M.A. University of California, Irvine, *Assistant Adjunct Professor of Pediatrics*

Roger N. Walsh, M.B., B.S., Ph.D. University of Queensland (Australia), *Associate Professor of Psychiatry & Human Behavior and Social Sciences*

Harry Walker, Ph.D. Indiana University, *Professor of Physiology & Biophysics in Residence*

Robert C. Warner, Ph.D. New York University, *Professor Emeritus of Biological Chemistry and Molecular Biology & Biochemistry*

John J. Wasmuth, Ph.D. Purdue University, *Assistant Professor of Biological Chemistry and Biological Sciences*

Michael A. Weber, M.D. Sydney University (Australia), *Associate Professor of Medicine in Residence*
Carl R. Weinert, M.D. University of Pittsburgh School of Medicine, *Assistant Professor of Surgery (Orthopedics) in Residence*
Gerald Weinstein, M.D. University of Pennsylvania School of Medicine, *Department Chair and Professor of Dermatology*
Robert Weinstock, M.D. New York University Medical School, *Associate Clinical Professor of Psychiatry & Human Behavior*
Larry M. Weisenthal, M.D. University of Michigan, *Assistant Professor of Medicine (Hematology/Oncology) in Residence*
William D. Welch, Ph.D. University of California, Los Angeles, *Assistant Adjunct Professor of Anesthesiology*
Susan C. Weller, Ph.D. University of California, Irvine, *Assistant Professor of Pediatrics and Social Sciences in Residence*
Carol K. Whalen, Ph.D. University of California, Los Angeles, *Professor of Social Ecology and Psychiatry & Human Behavior*
Gerald H. Whipple, M.D. University of California, San Francisco, *Professor Emeritus of Medicine (Cardiology)*
Joseph L. White, Ph.D. Michigan State University, *Professor of Social Science and Psychiatry & Human Behavior*
Stephen H. White, Ph.D. University of Washington, *Department Chair and Professor of Physiology & Biophysics and Biological Sciences*
Donald E. Wilbert, M.D. University of Cincinnati College of Medicine, *Assistant Clinical Professor of Psychiatry & Human Behavior*
Alan G. Wile, M.D. University of Michigan, *Assistant Professor of Surgery and Radiological Sciences*
Gary P. Williams, M.D. University of Pennsylvania Medical School, *Assistant Adjunct Professor of Family Medicine*
Archie F. Wilson, M.D. University of California, San Francisco, Ph.D. University of California, Los Angeles, *Professor of Medicine (Pulmonary) and Physiology & Biophysics and Biological Sciences and Vice Chair, Department of Medicine, and Chief of Pulmonary Diseases*
Hal T. Wilson, M.D. University of Michigan, *Adjunct Professor of Family Medicine*
William J. Wilson, M.D. University of Missouri, *Adjunct Professor of Radiological Sciences*
William J. Winchester, D.V.M. Kansas State University, *Director of Animal Resource Facility and Assistant Dean of Continuing Veterinary Medical Education, College of Medicine*
Robert L. Winer, M.D. Case Western Reserve University, *Assistant Professor of Medicine (Nephrology) in Residence*
Rodney M. Wishnow, M.D. Washington University School of Medicine, *Associate Professor of Medicine (Infectious Disease) and Microbiology in Residence*
Edward K. Wong, Jr., M.D. University of Southern California, *Assistant Professor of Ophthalmology*
Betty W. Woodward, M.S.W. Columbia University, *Associate Clinical Professor of Pediatrics*
Clifford A. Woolfolk, Ph.D. University of Washington, *Associate Professor of Biological Sciences and Microbiology*
Carrie C. Worcester, M.D. University of Oregon School of Medicine, *Assistant Adjunct Professor of Pediatrics*
Sing-Yung Wu, M.D. The Johns Hopkins University, Ph.D. University of Washington, *Assistant Professor of Radiological Sciences in Residence*
Raymond B. Wuerker, M.D. The Johns Hopkins University, *Associate Professor of Pathology and Anatomy in Residence*
Frederic A. Wyle, M.D. University of Pennsylvania Medical School, *Assistant Professor of Medicine (Infectious Disease) in Residence and Vice Chair, Department of Medicine*
Jen Yu, M.D. National Taiwan University, Ph.D. University of Pennsylvania, *Professor of Physical Medicine and Rehabilitation*
Mark I. Zetin, M.D. University of California, Irvine, College of Medicine, *Assistant Adjunct Professor of Psychiatry & Human Behavior*

The College of Medicine was founded as a private institution in 1896 and became part of the University of California in 1965. Currently, 96 students are admitted each year. The College is dedicated to the achievement of a high level of scholarship in its medical programs and the education of scholars in a broad array of academic and professional fields. The College views its diversity of academic and professional objectives as complementary and synergistic. These objectives include:

Providing an excellent education for medical students and residents resulting in the attraction and admission of candidates of the highest quality and in the graduation of medical students and graduate physicians who are judged by their peers and professors to be competent and knowledgeable; who pursue careers in areas of need ranging from provision of primary care in urban and rural areas to leadership in academic medicine; and who are representative of the demography of California.

Achieving a high level of scholarly research in the medical sciences and in the disciplines basic to medicine which results in nationally and internationally recognized contributions to fundamental knowledge; to prevention of disease; to diagnosis and therapy; to replacement of ineffective technologies by scientific solution; to correction of health impairing behaviors; and to enhanced efficiency, effectiveness, and equity of health care services.

Providing graduate and postdoctoral programs which complement our scholarly objectives and enterprise, which attract distinguished candidates, and which produce scientists, scholars, and teachers who will assume leadership roles in universities, research institutes, and other areas of public and private service.

Cooperating with other segments of the educational system in rigorous programs for health science education, including programs in nursing, allied health, veterinary, dental, and continuing education.

Strengthening and developing new approaches for continuing medical education by offering courses characterized by depth, comprehensive treatment of subject matter, and evaluation of learning and teaching.

Fulfilling with efficiency and sensitivity our commitment to provide exemplary medical services to all patients.

Achieving a faculty of the quality, size, and diversity necessary to fulfill these objectives, supported by appropriate facilities and operational resources.

Facilities

The basic medical science instructional programs are located in modern, well-equipped buildings on the Irvine campus. These buildings also house the College of Medicine administration and many of the research laboratories and classrooms. In addition, facilities on the Irvine campus include two amphitheater-style lecture halls, the Medical Sciences Library, and a student lounge/activity center.

The UCI Clinical Services System is comprised of the UCI Medical Center, two community clinics in areas of need within Orange County, and several affiliated hospitals and clinics in

Orange County, in southern Los Angeles County, and in outlying areas. Its goal is to serve the community while also maintaining an environment of quality medical education and research. The UCI Medical Center provides a full range of medical and mental health experiences to medical students and residents, while the community clinics concentrate on the primary care specialties and the affiliated institutions provide clinical training in specific specialities. Plans are being formulated for an on-campus ambulatory care clinic which will provide primary care services to the Irvine area and specialty services to a large geographic area.

UCI Medical Center

The University of California Irvine Medical Center (UCIMC), located in the City of Orange, is a 493-bed comprehensive medical care center and 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 staff, provides the professional care at the Center. The following services are provided at the Center: medicine, surgery, obstetrics and gynecology, pediatrics, psychiatry, family medicine, pathology, radiology, physical medicine and rehabilitation, ophthalmology, neurology, anesthesiology, and dentistry. The Center also has cardiac, pediatric, neonatal, respiratory, burn, and general intensive care units, and more than 90 specialty outpatient clinics are available. The Medical Center is also the designated countywide Level I tertiary trauma referral center.

A six-level addition to the main hospital building was opened last spring, and redevelopment plans call for the renovation of existing buildings and the construction of new facilities, including a medical library building.

UCI Community Clinics

Two University-operated clinics are located in Orange County. The Community Clinic of Orange County (CCOC), located in the City of Santa Ana, is the home of the Department of Family Medicine residency program. The Clinic currently provides comprehensive care for 26,000 outpatients annually. The North Orange County Community Clinic (NOCCC) currently serves 6,500 outpatients annually and is located in the City of Anaheim. The affiliated Clínica Sierra Vista, in Lamont, California, provides an educational experience in rural medicine.

Affiliated Hospitals and Clinics

Additional major teaching and research programs of the College of Medicine are conducted at the Veterans Administration Medical Center, Long Beach, and at Memorial Hospital Medical Center, Long Beach. Other academic programs are conducted in affiliation with Childrens Hospital of Orange County, Fairview State Hospital, Kaiser Foundation Hospitals, La Habra Community Hospital, Metropolitan State Hospital (a psychiatric hospital in Norwalk), St. Joseph Hospital, St. Jude Hospital and Rehabilitation Center, the United States Naval Regional Medical Center in Long Beach, The City of Hope Medical Center, Rancho Los Amigos Hospital, and Capistrano by the Sea Hospital. The Clínica Sierra Vista in Lamont (Kern County) and Clinicas de Salud del Pueblo in Calexico (Imperial County) are also affiliated.

Admission to the M.D. Program

Students are eligible to apply for admission upon completion of the premedical requirements of the College of Medicine described below. Preference is given to applicants who will have completed the bachelor's degree by the time of entrance to the College of Medicine. Because the University of California is a State-subsidized university, preference is given to California residents. Disadvantaged students are encouraged to apply. Inquiries should be addressed to the Office of Admissions and Records, College of Medicine, University of California, Irvine; Irvine, California 92717.

In addition to scholarship, other attributes are deemed desirable in the physician. These include the capacity and desire to provide the highest quality of comprehensive and continuing care, to cope with disease and guide patients through a complex array of services, to remain sensitive to individual needs, to bring a strong sense of scholarship to the provision of health care, and to strengthen individual commitments to the advancement of the art, science, and practice of medicine.

First-year students can enter only in September of each year. Candidates for admission to the first-year class in the College must meet the following requirements:

1. Completion of a four-year high school course, or its equivalent, acceptable for enrollment in the college of letters, arts, and sciences of an accredited university or college.

2. Completion of a minimum of three full years of premedical work with a demonstrated superior scholarship record; this work must total not less than 90 semester units or an equivalent number of quarter units which are acceptable for bachelor's degree credit in an accredited institution of higher learning. The number of units carried is to be the amount necessary to complete the bachelor's degree requirements in no more than four years. Candidates for admission may submit community college credit only to the extent granted on transfer to a four-year college or university. For scholarship evaluation, actual letter or numerical grades in courses are highly desirable and are essential in the areas of required subjects. The following minimum specified subjects of premedical work are required of all candidates:

	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 and/or zoology (physiology, biochemistry, microbiology, and anatomy are not acceptable)	12	18

The following courses are recommended but not required: mathematics (through integral calculus), genetics, vertebrate embryology, physical chemistry, and Spanish.

Premedical students are advised to take advantage of the opportunity for intellectual maturation afforded by a well-rounded liberal arts curriculum. The study of English and the humanities is of particular importance.

3. The candidate must attain satisfactory scores on the New Medical College Admission Test. The officially certified score report for this test must be received by the Admissions Office of the College before the candidate's application can be considered. Inquiries regarding this test should be addressed to the Medical College Admission Test, The American College Testing Program, P.O. Box 414, Iowa City, Iowa 52240.

The latest test that can be accepted is the test given in September of the year preceding anticipated admission.

4. A personal interview with a member of an Interview Committee is granted to some candidates after a thorough review of their application for admission. Letters of recommendation from college professors are invited at this time.

Procedure for Admission

The College is a member of the Association of American Medical Colleges Applications Service (AMCAS). Requests for applications should be submitted directly to the College. Applications may be submitted at any time between June 1 and November 15 of the year preceding that for which admission is requested.

No application for admission will be accepted which does not clearly indicate that all the required subjects will have been completed by the date of anticipated entrance. Tentative acceptance may be given, but final acceptance is contingent upon actual evidence of satisfactory completion of courses. Failure to meet this requirement or falsification of information will be grounds for rejection or dismissal.

The College Admissions Committee will review all AMCAS applications and may then request submission of additional material, including letters of recommendation, supplemental transcripts, a personal information form, two photographs, and a nonrefundable fee of $25. Nothing except the AMCAS application should be submitted until it has been requested by the College of Medicine.

Applicants may expect to receive notification of acceptance or rejection any time from November until the beginning of the fall term. A list of alternates is maintained for possible appointment if a vacancy occurs in the class for a given year. No other notifications regarding the status of an application should be anticipated.

Recommended Acceptance Procedures of the Association of American Medical Colleges

These acceptance procedures have been approved by the Executive Council of the Association of American Medical Colleges upon recommendation of the Committee on Research and Education. Both applicants and schools are responsible for abiding by their spirit.

1. No offer of admission to medical school should be made to an applicant more than one year before entering the course of instruction offered by the medical school.[1]

2. When offers are made to applicants, the students are required to file a statement of intent within two weeks of the receipt of the offer. The statement of intent leaves the student free to withdraw if accepted by a preferred school up until the time of actual registration.

3. Each medical school should prepare and distribute to applicants and college advisors a detailed schedule of its application and acceptance procedures and should adhere to this schedule unless it is publicly amended.

4. No medical school should use any device which implies that acceptance of its offer creates a moral obligation to enroll at that school. Applicants are free to deal with other schools and accept an offer from one of them even if a deposit has been paid and must be forfeited. Under all circumstances every accepted applicant does retain an obligation to notify a school promptly if the decision should be not to accept the offer, and to withdraw at once after accepting an offer from another school.

5. Each school is free to make appropriate rules for dealing with accepted candidates who without adequate explanation hold one or more places in other schools. These rules should recognize the problems of the student who has multiple offers, and also of those applicants who have not yet been accepted.

No candidate for admission will be considered who has been dismissed from any college, university, or other professional school. If the applicant has attended another professional school, complete, official transcripts and a letter of honorable withdrawal from that school must be submitted.

Notice of Acceptance

The Dean of the College will notify the candidate of acceptance or rejection as soon as the application has received final action by the Admissions Committee. 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. The statement of intent to register leaves the student free to withdraw if accepted by a preferred school. This is in keeping with the recommendations of the Association of American Medical Colleges.

Information regarding registration, rules and regulations, grading procedures, requirements for academic advancement, and other facts will be provided to students in the student handbook.

Western Interstate Commission for Higher Education

The College of Medicine participates in the student exchange program of the Western Interstate Commission for Higher Education, under which qualified legal residents of Western states without medical schools are considered along with California residents, and these states of origin reimburse the State of Cali-

[1]Under special circumstances a school may make an offer more than one year before the expected entrance date to encourage the educational development of the student, but all such offers should state explicitly that the student is completely free to apply to other schools at the usual time.

fornia for the costs of their education. These states are Alaska, Montana, and Wyoming. To be eligible for this program, students must apply to the WICHE certifying officers in their own states. For addresses of certifying officers, write to the Western Interstate Commission for Higher Education, P.O. Drawer P, Boulder, Colorado 80302.

Admission to Advanced Standing

The College of Medicine has a few openings for transfer students. Applicants who have completed the equivalent of the first two years of the UCI College of Medicine curriculum will be considered by the Admissions Committee for admission to levels more advanced than the regular entering class level but not beyond the beginning of the third year.

Applicants from U.S. medical schools are required to pass successfully Part I of the National Board Medical Examination. Foreign medical school applicants are required to pass successfully the Medical Science Knowledge Profile Examination, and they may be offered a conditional acceptance which would enable them to take Part I of the National Boards. College of Medicine policy requires passage of Part I of the National Boards for matriculation to the third year. Applicants accepted on a conditional basis who do not pass the National Board Medical Examination will have their conditional acceptance withdrawn on the basis of their not having fulfilled the requirements for admission to advanced standing.

Those interested in applying should contact the College of Medicine Office of Admissions and Records for applications and further information. Applications can be made up to March 15 of the year in which admission is sought.

Requirements for the M.D. Degree

Each medical student must satisfactorily complete the required basic medical sciences, preclinical sciences, and clinical sciences courses of instruction, as well as acceptable electives. Passage of Part I and Part II of the National Boards is required at designated points in the curriculum for promotion to the next academic level.

Upon recommendation of the faculty and with the Dean's concurrence, the student is awarded the M.D. degree.

Medical Curriculum

The M.D. curriculum requires four years to complete. With permission, exceptionally qualified students may shorten their completion time. Conversely, if special needs are identified the time may be extended to five years. This latter option is advantageous to those students who wish to pursue an M.D./Ph.D. program, to those who feel they have educational deficiencies, or to those who have other impelling demands on their time.

The instructional year is divided into quintiles (fifths) of 9-11 weeks each, and the program is composed of 17 instructional quintiles. The instructional quintiles and courses of study are grouped as follows:

Basic Medical Sciences (Quintiles 1-5)

During quintiles 1-5, no more than six hours of instruction are scheduled per day, and of these six hours, no more than four are formal lectures.

Gross Anatomy; Embryology; Histology; Neuroanatomy. The language of medicine is taught by studies of gross human anatomy, human neuroanatomy, embryology, and normal microscopic anatomy. Gross anatomy is taught through a regional approach with heavy emphasis on laboratory dissection augmented by lectures, demonstrations (radiographic films), and teaching aids. Neuroanatomy is functionally oriented and emphasizes both laboratory and lecture material. Microscopic anatomy is designed to provide students with knowledge of cellular morphology and function in preparation for studies in pathology. All courses in anatomy are given a clinical orientation.

Biochemistry. The fundamentals of classical and molecular biochemistry are covered, including the structure, function, and biosynthesis of macromolecules and metabolic interrelations. The molecular mechanisms responsible for regulation at the transcriptional, translational, posttranslational, and enzymatic levels are emphasized.

Behavioral Sciences I and II. The ultimate goal of the curriculum is for the student to learn the behavioral aspects of medicine as they apply to general medical and surgical practice. The areas covered are the basic science of neurobiology, somatopsychic issues, interpersonal (doctor-patient) relationships, and psychopathology. Behavioral Sciences I covers normal human development, the basics of the doctor-patient relationship, basic interviewing techniques, and behavioral neuroanatomy and neurochemistry. Behavioral Sciences II covers human sexuality, psychopathology, alcoholism, and drug abuse. It also covers psychosocial aspects of medical and surgical disease. The courses consist of readings, lectures, and small group discussions. Students also have their first exposure to patients and learn the basics of the interview. In Behavioral Sciences I the emphasis is on interviewing "normal" people; in Behavioral Sciences II the student learns how to assess pathology.

Physiology. The course consists of lecture, tutorial, and audiovisual presentations of the classical concepts of vertebrate physiology, with emphasis on the function of normal tissues in man. Specific topics related to neurological, cardiovascular, respiratory, renal, gastrointestinal, endocrine, exercise, and temperature regulation are presented.

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.

Community and Environmental Medicine. This course consists of five main segments: biostatistics, epidemiology, preventive medicine, legal medicine, and environmental and occupational medicine. The primary segment, epidemiology, is presented in formal lectures and laboratory sessions. Methods are given for evaluating the distribution and possible causation of acute and chronic diseases, including infections and noninfectious diseases, in human populations.

Preclinical Sciences (Quintiles 6-8)

During quintiles 6-8, no more than seven hours of instruction will be scheduled each day, and of these no more than four will be formal lecture.

Pharmacology. The preclinical course in pharmacology deals with drugs of various classifications that are used for specific or symptomatic therapies of disease states. Emphasis is on the mechanisms of action of drugs at the organ or system level and on their use in medical therapy. This course includes lectures and laboratory demonstrations that illustrate pharmacologic principles, supplemented by small group discussion sessions.

Pathology. Theoretical aspects of pathological processes are presented to provide an orientation to disease mechanisms which are correlated with practical laboratory work. Disease is presented as a dynamic process that affects the organism at molecular, cellular, tissue, and organ levels.

Examination of Patient. Basic instruction and experience are offered in the elements of physical diagnosis and patient interviews.

Mechanisms of Disease. An organ system approach is utilized in presenting the basic mechanisms and manifestations of disease.

Introduction to Medicine. This course introduces students to comprehensive work-ups of their own patients, including history, complete physical examination of all organ systems, and differential diagnostic analysis and interpretation.

Introduction to Surgery. In order to attain the maximum benefit from the basic surgical course, students are oriented to the method, approach, and history of surgery and to specific surgical problems.

Clinical Sciences (Quintiles 9-17)

The clinical experience is composed of clerkship rotations, with a specific allotment of time emphasizing primary care and continuity of care. Sequencing of clerkships is determined by the Office of Admissions and Records. One and one-half quintiles are undesignated, and students may take electives that suit their particular interests, needs, and goals. These courses must be approved by the student's advisor and the Office of Admissions and Records and, by petition, a number may be taken at institutions other than UCI.

Anesthesiology. During the anesthesiology clerkship, students receive instruction in the basic principles of general and regional anesthesia, including the pharmacology of anesthetic drugs, basic respiratory and cardiovascular physiology, airway management, preoperative evaluation of patients, surgical anesthesia, fluid balance, hazards of anesthesia, postanesthesia recovery care, resuscitation, and the management of respiratory emergencies and comatose states. A two-week elective is offered in which students gain familiarity with the technical aspects of anesthesia by spending a portion of each day in the operating room and by participating in supervised "hands-on" patient care. Theoretical aspects of the specialty are covered in daily tutorial sessions with the faculty, and students attend departmental clinical conferences which are devoted to presentation and discussion of interesting cases and complications. Special rotations through the Long Beach Veterans Administration Medical Center Surgical Intensive Care Unit are offered but must be arranged through the department chair; the student must have at least one week on clinical anesthesia as a prerequisite for the elective.

Dermatology. The dermatology clerkship provides students the opportunity to learn the common dermatologic diseases. Development of disease recognition, diagnostic skills, and outpatient management of skin problems are emphasized during this rotation. Students attend inpatient teaching rounds, grand rounds, and slide conferences, and visit private physician offices. Outpatient care under the supervision of the chief resident and faculty is assigned at UCIMC and Long Beach Veterans Administration Medical Center clinics. During the weekly basic science and journal club conferences, students learn advances in scientific understanding of dermatologic diseases and their therapy.

Medicine. Students are taught the appropriate diagnostic and therapeutic approach to commonly encountered medical illnesses with the intent that, in addition to scientific aspects of medical diagnosis and therapy, they will develop an appreciation for the importance of psychosocial-economic factors in the care of the patient. Experience is provided with common medical procedures such as lumbar puncture, insertion of catheters, and thoracentesis. The student is expected to assume increasing responsibility for hospitalized patients and to develop an approach to patients' problems which includes references to the appropriate medical literature.

Neurosciences. A combined effort of neurology and neurosurgery, 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.

Obstetrics and Gynecology. During this clerkship students are taught the scientific 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, or human sexuality.

Ophthalmology. Medical students are instructed in basic techniques of ophthalmologic examination, the principles of ophthalmology, and the common sense evaluation of ophthalmic problems.

Pediatrics and Human Development. Pediatrics includes instruction in the management and nutrition of normal and sick infants and children; relationships with parents and other family members; normal development of the infant into childhood and adolescence; diagnosis of developmental defects; general

approaches to treatment and rehabilitation; common infections predominant in infancy and childhood; and peculiarities of the effects of medication in children.

Physical Medicine and Rehabilitation. During the physical medicine and rehabilitation rotation, students are assigned patients who are in an active rehabilitation program. Emphasis is placed on the rehabilitation of the total patient. The medical aspects of the patient's care are discussed in detail. Instruction is provided in the various physical techniques of rehabilitation and in the psychosocial factors which permanently affect this process.

Primary Care. Students attend an assigned primary care clinic one-half day per week for five consecutive quintiles in either family medicine, internal medicine, or pediatrics. Each student becomes the primary care provider for a number of patients in an ambulatory setting and continues as their primary care provider throughout the clerkship. Under the supervision of primary care faculty, students gain specific primary care skills. This experience in continuous care should provide a basis for a student's selection or rejection of a career in a primary care specialty.

Psychiatry. The eight-week clinical clerkship is the culmination of the process of learning human behavior as it relates to general medicine. The student elects two four-week clinical rotations as subinternships, participating fully in patient care, clinical teaching, and conferences. Choices include adult inpatient psychiatry, alcoholism, child psychiatry, consultation psychiatry, and emergency room psychiatry. A wide variety of clinical settings and patient populations is available.

Radiology. The role of radiological sciences (both diagnostic and therapeutic) in relation to medicine and surgery is taught to students through exposure to clinical specialists in subspecialty areas such as nuclear medicine, ultrasound, computerized tomography, chest, bone, gastrointestinal, etc.; daily clinical film conferences with staff and residents; the American College of Radiology film learning laboratory; and daily seminars interrelating general medicine and radiology. Emphasis is given to the use of ionizing radiation for diagnosis and treatment, understanding the risk/benefit ratios involved, and the clinical indications for various radiological procedures.

Surgery. Students study both outpatients (including those in the emergency room) and inpatients. This clerkship emphasizes diagnosis, pathophysiology, and general approaches to the treatment of surgical patients, including the special problems of mass casualties. The student becomes an integral part of the surgical team.

Pathology. This is an elective opportunity for the study of anatomical pathology, surgical pathology, clinical laboratory pathology, the subspecialties of pathology, and research in a clinical setting. Interactions among pathology, tumor immunology, dermatopathology, cytology, neuropathology, medical jurisprudence, and forensic pathology are demonstrated.

Medical Residency Programs

The following residency programs are offered:

Anesthesiology

Dermatology

Family Medicine

Medicine, including Allergy, Cardiology, Endocrinology, Gastroenterology, Hematology/Oncology, Infectious Disease, Internal Medicine, Nephrology, Pulmonary Diseases, and Rheumatology

Neurology

Nuclear Medicine

Obstetrics and Gynecology

Occupational Medicine (Community and Environmental Medicine)

Ophthalmology

Pathology

Pediatrics, including General Pediatrics, Allergy, Genetics and Developmental Disabilities, Ambulatory and Community Pediatrics, Endocrinology, Neonatology, and Hematology/Oncology

Physical Medicine and Rehabilitation

Psychiatry and Human Behavior, including Adult and Child Psychiatry

Radiology, including Diagnostic and Therapeutic Radiology

Surgery, including General Surgery, Neurosurgery, Orthopedic Surgery, Otolaryngology, Plastic Surgery, Thoracic Surgery, Urology, and Vascular Surgery

All programs meet the formal standards of the American Medical Association and the appropriate specialty boards. The University of California, Irvine adheres to the Health Professions Educational Assistance Act of 1976, P.L. 94-484, Section 709, regarding shared-schedule residency training positions.

Graduate Academic Programs

The basic medical science Departments of Anatomy, Biological Chemistry, Microbiology, and Physiology and Biophysics of the College of Medicine participate jointly with the School of Biological Sciences in offering graduate instruction leading to the M.S. and Ph.D. degrees in Biological Sciences. In addition, the Department of Radiological Sciences and the Department of Medical Pharmacology and Therapeutics offer M.S. and Ph.D. programs.

Application materials may be obtained by writing the Division of Graduate Studies and Research, University of California, Irvine; Irvine, California 92717. A detailed description of the graduate academic programs by department follows:

M.D.-Ph.D. Programs

Exceptionally well-qualified students interested in careers in academic medicine may be admitted concurrently to the M.D. program and one of several Ph.D. programs. These students pursue curricula leading to an M.D. degree from the College of Medicine and a Ph.D. degree from the School of Biological

Sciences. (Students presently holding either degree are not eligible for the program.) Applicants for this program must submit separate applications to both the College of Medicine and the Division of Graduate Studies and Research and should note on both applications that they wish to be considered as M.D./Ph.D. candidates. The Division of Graduate Studies and Research application must be for admission to a graduate department with an approved Ph.D. program, and applicants should write the department they wish to join for graduate admission requirements. For additional information, write Dr. James Hall, M.D./Ph.D. Coordinator, Department of Physiology and Biophysics, College of Medicine, University of California, Irvine; Irvine, California 92717.

Anatomy

The Department of Anatomy in the College of Medicine offers a doctoral program leading to the Ph.D. degree in Biological Sciences, with specialized research training in the neurosciences. Research programs in the neurosciences include neurotransmitter immunocytochemistry, the central neural regulation of circadian rhythms, forebrain organization, and organization and development of sensory systems. Research programs also include growth inhibition, cartilage, and pulmonary edema. The Department maintains research facilities so that the student can become experienced with the following techniques: electron microscopy; immunocytochemistry; fluorescence histochemistry; neuroanatomical tracing; single- and multiple-unit neurophysiology; and computer analysis of neuroscientific data. Students are encouraged to become proficient in multiple areas of study using numerous techniques in various species.

Students in the Department of Anatomy have two major goals. The first goal is to attain the technical skills, theoretical background, and experimental knowledge necessary to conduct innovative and fundamentally sound research. The second goal is to become knowledgeable anatomists with the ability to teach graduate, undergraduate, and professional courses in anatomy and neuroscience. These two goals are achieved through a basic and extended academic program that is tailored to the individual needs of the student.

The core curriculum is designed to provide all students with a fundamental knowledge of gross, cellular, and subcellular anatomy; physiology; and biochemistry. In the first year, students will be required to take neuroanatomy, microscopic anatomy, embryology, gross anatomy, biochemistry, and physiology. Over the usual four-year training period the student will be required to complete a practical course in statistics, four departmental seminar courses, four laboratory tutorials, and a total of 50 credit hours of research in anatomy. Elective courses in the Department of Anatomy or other departments on campus may also be taken; examples include pharmacology, psychobiology, cell biology, genetics, computer science, pathology, and physiology. The student typically devotes the majority of the first year to taking core courses and about half of the second year to taking electives. Only a minimum of the third year is spent taking courses. Each year following the first year, the student is expected to act as an assistant in one major anatomy core course.

When a student is accepted into the graduate program, the student and the Graduate Committee decide to which laboratories the student will be assigned the first year. During the first year the student will spend approximately 25 percent of the time doing research. At the beginning of the second year the student and the Graduate Committee select a faculty sponsor who will supervise the dissertation research. An oral Qualifying Examination at the end of the summer of the second year is given to the student by a Candidacy Committee. The examination covers anatomy and focuses on the candidate's field of specialization.

The dissertation research is chosen by the student and faculty advisor under guidance of the Graduate Committee. The majority of the second, third, and fourth year is devoted to completing the research and preparing a written dissertation suitable for publication.

An oral defense of the dissertation research before the student's advisor and Doctoral Committee constitutes the final examination. The Ph.D. degree in Biological Sciences is awarded following completion of all the requirements, a process that normally will take four years to complete.

Biological Chemistry

The Department of Biological Chemistry in the College of Medicine and the Department of Molecular Biology and Biochemistry in the School of Biological Sciences jointly offer graduate study leading to the Ph.D. in Biological Sciences under the administration of the School of Biological Sciences. The program makes extensive use of health sciences facilities, in addition to those of the School of Biological Sciences. The curriculum is designed to produce creative and productive scientists who have an in-depth comprehension of modern biochemistry and molecular biology and who are highly competent in a given subspecialty. The faculty's research interests include structure and synthesis of nucleic acids and proteins, regulation, metabolism, biochemical genetics, gene organization, and immunology. The first-year student is required to take a core of advanced courses (204, 205A-B, and 207), to become associated with the laboratories of at least three different investigators, and to attend the 201A-B-C seminar series. Upon successful completion of the first year, the student is given a comprehensive oral examination to test breadth and depth of knowledge. Although further supplemental work may be recommended, the student normally begins a specific research project with a faculty member in the second year. By passing an oral examination at the beginning of the third year on the proposed thesis work, the student may advance to candidacy for the Ph.D. degree. Students normally complete their degree programs after a total of four years of graduate study. Participation in the seminar series (201A-B-C) and completion of at least one satellite course per year (210-279) are expected of all continuing students. Regular teaching of undergraduates is part of the training of graduate students at all levels. The graduate committee may waive some of the above requirements for candidates for the Master's degree.

Applicants should have adequate undergraduate preparation in calculus, physics, physical chemistry, organic chemistry, and biochemistry. Students who have not had an adequate physical chemistry course are expected to take Chemistry 130A-B-C during their first year.

See page 84 for information on faculty research areas and course descriptions.

Microbiology

Graduate instruction and research in microbiology leading to the Ph.D. in Biological Sciences are offered by the Department of Microbiology, College of Medicine. The curriculum of the Department is designed to provide advanced training to individuals interested in the molecular basis of regulatory systems which operate in viruses, microorganisms, and cultured mammalian cells; and in the structure, genetics, and synthesis of immunoglobulins. The core curriculum is centered about the molecular biology and genetics of viruses and bacteria, the fundamentals of the immune response, the biology of cultured animal cells, and the genetics and physiology of infectious agents.

It is recommended that the student's undergraduate preparation include courses in calculus, physical chemistry, and biochemistry. Before a graduate degree will be awarded, the student must demonstrate competence, by course work and examination, in biochemistry, physical chemistry, genetics, and various aspects of microbiology and immunology. During the first year, all students in the graduate program will be expected to spend approximately six weeks in various faculty members' laboratories with the aim of becoming familiar with the research approaches and the laboratory techniques employed in each specific research area. Incoming students review their programs each quarter with the departmental graduate student advisor. During the second or third year, each student will take an advancement-to-candidacy examination. Graduate students are required to take graduate courses in biochemistry, and Microbiology 210, 212, 213, 214, and 280. Additional course work will reflect the interest of the individual student. The major remaining requirement for the Ph.D. degree will be the satisfactory completion and oral defense of a dissertation consisting of original research carried out under the guidance of a faculty member. Students with adequate preparation should be able to complete the Ph.D. in four years or less.

See page 89 for information on faculty research areas and course descriptions.

Pharmacology and Toxicology

The Department of Medical Pharmacology and Therapeutics offers graduate study leading to the M.S. and Ph.D. in Pharmacology and Toxicology. Applicants are required to have a background in the physical and biological sciences. The following subjects constitute a desirable but not essential basis for preparation: college-level mathematics including calculus; college physics; analytical, organic, and biological chemistry; biology; and physiology. All courses should include laboratory experience. Students may make up deficiencies by taking courses or by examination during the period of graduate study. Each student's curriculum will be tailored to individual needs for prerequisites and ultimate objectives in pharmacology and toxicology. The Graduate Record Examination scores (aptitude and advanced parts) also are required for admission.

All Master's students must fulfill the requirements of Plan I (Thesis Plan) and must participate in the Department seminars. Each candidate for the M.S. degree must prepare a research thesis acceptable to the thesis committee. The formal requirements include completion of 30 academic units and a research thesis. At least 12 of the 30 units must be graduate work in pharmacology including Pharmacology 241A-B. Also, courses in neuroanatomy and in statistics must be completed. The remaining unit requirements may be satisfied by courses approved by the faculty advisor. No examinations other than course examinations are planned for candidates for the M.S. degree.

Medical students can acquire the M.S. degree by applying for admission to the Division of Graduate Studies and Research during their medical education. Such students will be required to spend a minimum of three quarters within the Department during which time they will participate in Department seminars and programs and complete an acceptable research thesis. Vacation and elective quarters may be applied toward the departmental requirements.

Departmental requirements for the Ph.D. include the following: all the course requirements of the M.S. program; Pharmacology 248A-B-C (Advanced Topics in Pharmacology and Toxicology); Pharmacology 298 (Seminar) each quarter; a course in computer science; any additional elective courses assigned by the faculty advisors; Pharmacology 299 (research culminating in an acceptable dissertation). Each candidate for the Ph.D. degree must complete a piece of original research and prepare a dissertation (and journal publication) based on it which is acceptable to the candidate's committee.

Before recommendation for candidacy, each student, upon completion of most course requirements, especially Pharmacology 248A-B, will take a written qualifying examination set by the staff of the Department 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 by the eleventh quarter. The research work upon which the dissertation will be based should begin before the tenth quarter and all requirements for the Ph.D. degree completed within four to five years following the bachelor's degree. Extension of time requirements will be considered by formal petition to the student's doctoral committee. Provisions for other than full-time students may be made on an individual basis. Upon completion of the dissertation, the student will take an oral examination to defend the dissertation which will be open to the public and conducted by the student's doctoral committee. Residency requirements are those established by the University.

Graduate Courses in Pharmacology and Toxicology

241A-B Medical Pharmacology (3-3) F, W. Lecture and laboratory, eight hours. Source, composition, site and mechanism of action, toxicology, and usage of chemical agents in medical practice. Relation of chemical and physical properties to pharmacologic action. Dose-response and time relationships, absorption, metabolism, excretion, and differences in systemic and species response. Poisons, principles of toxic action, and toxicity evaluation. Sources of toxicants in the environment. Prescription writing; legal responsibilities in the use of certain drugs.

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. Prerequisite: Pharmacology 241A-B.

260 Principles of Toxicology (3) W. Lecture, three hours. Toxicity of chemicals demonstrating mechanism of action where known, toxicants in the environment, quantitative methods in measuring acute toxicity, methods in chronic toxicity; principles of toxic tissue injury, primarily liver, kidney, nerve, and lung; chemical metagenesis, teratogenesis, and carcinogenesis.

265 Environmental Toxicology (5) S. Lecture, one hour. Survey of toxicants in air, water, and especially food; industrial toxicology, epidemiology of human toxicoses; effects of toxicants on ecology.

298 Seminar (2) W, S, F. Presentation and discussion of current problems and methods in teaching and research in pharmacology, toxicology, and therapeutics.

299 Research (1 to 8) W, S, F. Research work for M.S. thesis and/or Ph.D. dissertation.

Physiology and Biophysics

Graduate instruction and research in physiology and biophysics leading to the Ph.D. in Biological Sciences is offered by the Department of Physiology and Biophysics, College of Medicine. The Department provides research opportunities in the molecular biophysics of membranes and proteins; endocrinology; cellular physiology; and the physiology of exercise, respiration, and the nervous system. The faculty research is generally oriented toward molecular and cellular physiology, but opportunities for research in organ physiology also exist. The curriculum provides the student with a broad background in physiology and biophysics and the closely related fields of anatomy and biochemistry. Elective courses permit in-depth exploration of particular areas. Interdisciplinary dissertation research involving the research of more than one faculty member is encouraged.

Prerequisites for admission normally include a bachelor's degree in one of the biological sciences, physics, chemistry, mathematics, or engineering, as well as undergraduate courses in calculus, organic and physical chemistry, biochemistry, and advanced biology (e.g., neurophysiology, cell biology, neurobiology, psychobiology). Up to two prerequisites may be fulfilled as first-year electives. GRE Aptitude Test scores are required. Preference will be given to those students who have prior research experience.

The Department admits about three highly qualified students each fall. The program emphasizes original research, and students are expected to become involved in the research of the Department as early as possible. The core program includes graduate courses in physiology, biophysics, biochemistry, morphology, and cell biology. After the first year, training will follow the classical tutorial pattern in which a small number of students are tutored by the faculty in an informal setting. Students also will participate in a program of laboratory rotations and attend the weekly colloquium in physiology. The third and fourth years will be spent primarily in research, with some participation in teaching physiology to medical students. Each student must submit a written dissertation on an original research project and successfully defend this dissertation in an oral examination.

Incoming students will receive academic advising from the Department Graduate Advisor until such time as they choose a thesis advisor. The faculty conducts quarterly reviews of all continuing students to ensure that they are maintaining satisfactory progress within their particular academic program. Students who have completed all necessary prerequisites should be able to complete the Ph.D. within four years.

A comprehensive examination will be administered in June at the end of the second year. The examination is based upon the tutorials in advanced physiology and is designed to test the student's ability to organize a body of knowledge and to think critically. Some time during the third year, the student will present a seminar on a topic assigned by the formal candidacy committee. Following the seminar, the committee will critically examine the student's qualifications for the successful conduct of the doctoral dissertation. Advancement to candidacy for the Ph.D. is recommended to the Dean of Graduate Studies and Research upon the unanimous vote of the committee.

For information on faculty research areas and course descriptions, see page 90.

Some faculty from the Department are members of an interdisciplinary biophysics and biophysical chemistry group; see page 75 for a description of the program.

Radiological Sciences

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.

A broad-based, interdisciplinary curriculum places heavy emphasis on research and is designed to provide the student with a comprehensive knowledge of the field in addition to an exceptionally high level of competence in one or more subspecialties. By utilizing the training received in medical imaging, 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 are cautioned that the program is extremely demanding and requires a broad base of knowledge in a variety of the conventional disciplines.

The Department of Radiological Sciences has well-equipped radiodiagnostic, radiobiological, engineering, and medical physics laboratories located on campus and at the hospitals associated with the University of California, Irvine. Major research areas include the general aspects of medical imaging and basic and applied studies dealing with radiodiagnosis, nuclear medicine, computerized tomography, medical ultrasonics, radiotherapy, and radiobiology.

The core program plus additional courses as may be required by the Graduate Committee normally will require two years to

complete. To receive either the M.S. or Ph.D. degree, the student must successfully complete the core courses or their equivalents.

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 a comprehensive written examination.

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 an average grade of B or above. Second, the student must pass a written and oral qualifying examination given at the end of the second full year of study. A student who fails the preliminary qualifying examination can, with approval from the Graduate Committee, repeat the examination the following year. Third, within a year after passing the preliminary examination, the student must pass the final oral qualifying examination covering the proposed field of research and be advanced to candidacy. Finally, a dissertation representing original research in the student's principal field of study must be prepared and defended. 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 imaginative creativity. During the final quarter of graduate study the student is required to defend the dissertation in an oral examination conducted by the doctoral committee.

Admission to the graduate program is by the Dean of Graduate Studies and Research upon recommendation of the Department and is based upon letters of recommendation, Graduate Record Examination scores, previous scholarship, and other qualifications. Applicants should have a broad undergraduate background in both the physical and the biological sciences. Since most students will need some additional work in one or more disciplines, the graduate program allows for the correction of minor deficiencies during the first year, as determined by departmental review. Although the program is rigorous, it is also sufficiently flexible to allow for a wide range of interests and objectives.

Application deadline for the fall quarter is June 1 of each 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.

Graduate Courses in Radiological Sciences

200A-B Introduction to Radiation Physics and Medical Imaging (4-4) F, W. Lecture, four hours. The physical properties of ionizing and nonionizing radiation; physics of charged particles, x-rays, electromagnetic radiation, and ultrasound; methods of radiation detection and measurement; physical basis of radiation dosimetry; applications of electromagnetic and mechanical radiation to diagnostic medicine; theory of medical imaging.

205 Introduction to Therapy Physics and Radiation Protection (4) S. Lecture, four hours. Principles of radiotherapy and treatment planning; natural and artificial sources of radiation exposure; guides for radiation protection.

210 Survey of Medical Physics and Biomedical Engineering (4) S. Lecture, four hours. A survey of current applications of nonradiological physics and engineering to medicine. Topics include measurement of various physiological parameters; development of medical instrumentation, utilization of biomaterials and prosthetic devices.

221A-B Basic Analytical Techniques for Radiological Sciences (4-4) F, W. Lecture, four hours. Introduction to probability and statistics; selected topics in advanced calculus and differential equations; applications of computer technology and principles of computer programming; design and planning of experiments and the analysis and presentation of data.

225A-B Advanced Mathematical Methods for Radiological Sciences (4-4) F, W. Lecture, four hours. Theory of linear systems; linear and nonlinear operators; integral transform techniques; theory of reconstruction; solutions to the inverse scattering problem; system identification procedures; introduction to Lie groups.

230 Medical Image Processing (2) F. Lecture, two hours. Introduction to the mathematical principles of image processing used in medical imaging. The applications of image processing methods to radionuclide, computerized tomography, digitized radiography, and ultrasound imaging.

240A-B Molecular, Cellular, and Tissue Radiobiology (4-4) W, S. Lecture, four hours. The interaction of ionizing radiation with molecules, cells, tissues and organs, and organisms. Mammalian radiation effects; carcinogenesis, genetics, and radiotherapy.

260A Principles of Medical Imaging: Radiodiagnosis and CT (4) F. Lecture, four hours. The application of radiodiagnostic imaging techniques and principles of physics and engineering to the diagnosis of human disease.

260B Principles of Medical Imaging: Nuclear Medicine (4) W. Lecture, four hours. The application of nuclear medicine and CT imaging techniques and principles of physics and engineering to the diagnosis of human disease.

260C Principles of Medical Imaging: Ultrasound (4) S. Lecture, four hours. The application of ultrasonic imaging techniques and principles of physics and engineering to the diagnosis of human disease.

290 Seminar in Radiological Sciences (2-2-2) 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.

296A Laboratory in Diagnostic Radiology (2) F. Laboratory, six hours. Laboratory and clinical experience in diagnostic radiology.

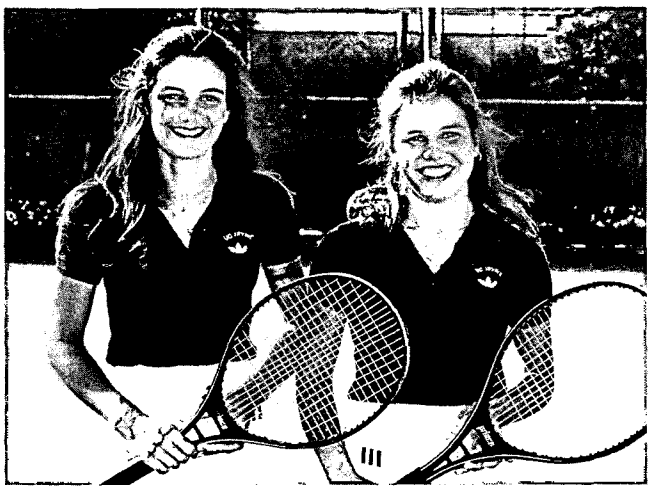
296B Laboratory in Nuclear Medicine and CT (2) W. Laboratory, six hours. Laboratory and clinical experience in nuclear medicine and CT.

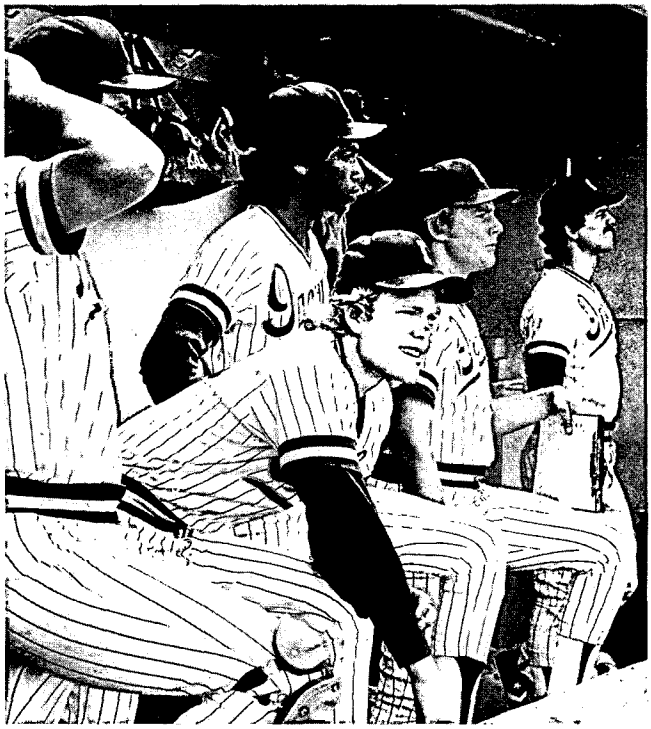
296C Laboratory in Ultrasound (2) S. Laboratory, six hours. Laboratory and clinical experience in medical ultrasonics.

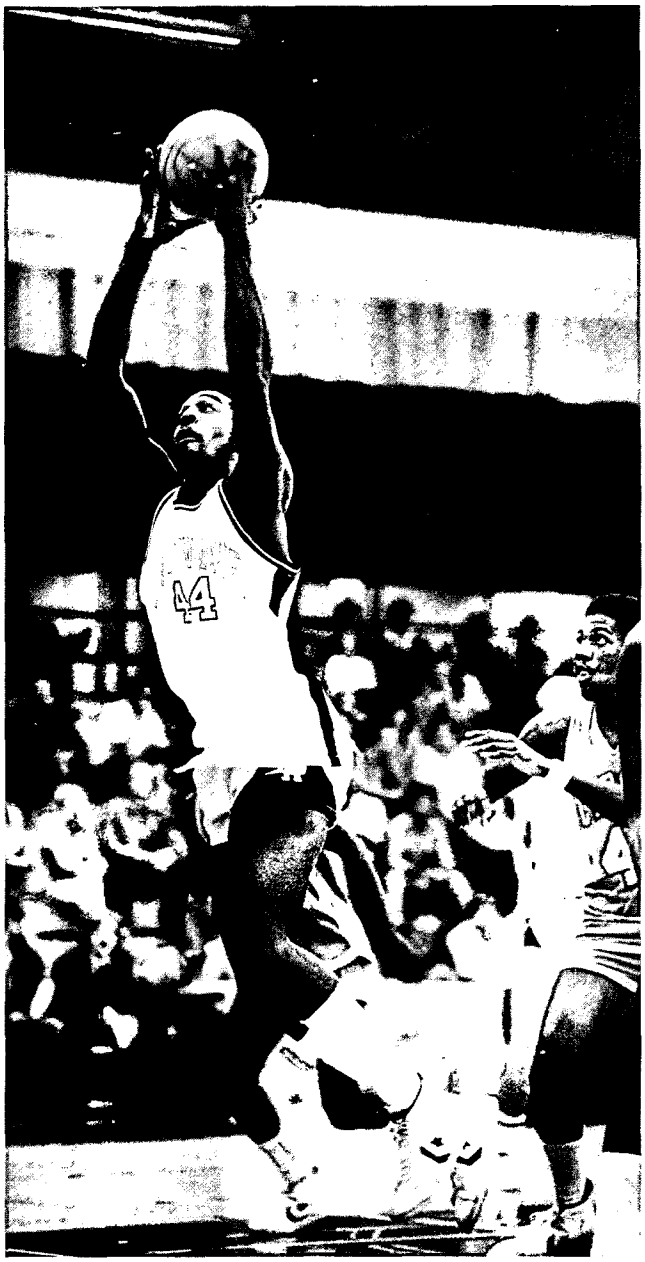
298 Master of Science Thesis Research (variable) F, W, S. Individual research under the supervision of a faculty member directed toward completing the thesis required for the Master of Science degree in Radiological Sciences.

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 Doctor of Philosophy degree in Radiological Sciences.

PHYSICAL EDUCATION AND RECREATION







DEPARTMENT OF PHYSICAL EDUCATION

Linda B. Dempsay **Chair**

Stephen Ainslie, B.A. University of California, Irvine, *Men's Golf Coach*

Dean Andrea, B.A. University of Dayton, *Adjunct Lecturer in Physical Education, Women's Basketball Coach*

Michael Bokosky, B.A. Fort Lewis College, *Adjunct Lecturer in Physical Education, Assistant Men's Basketball Coach*

Linda B. Dempsay, M.A. University of California, Berkeley, *Chair of the Department of Physical Education, Director of Athletics, and Supervisor of Physical Education*

Frank Duarte, *Associate in Physical Education, Women's Cross Country/ Track & Field Coach*

Michael Gerakos, B.S. University of California, Los Angeles, *Adjunct Lecturer in Physical Education, Men's Baseball Coach*

Kaia Hedlund, B.A. University of Southern California, *Adjunct Lecturer in Physical Education, Women's Swim Coach*

Peter H. Hofinga, M.S. Baylor University, *Supervisor of Physical Education*

Doreen Irish, M.A. California State University, Los Angeles, *Adjunct Lecturer in Physical Education, Women's Tennis Coach*

Albert M. Irwin, B.A. University of the Pacific, *Supervisor Emeritus*

John Kasser, B.S. Pepperdine University, *Vice Chair of the Department of Physical Education, Assistant Director of Athletics, and Adjunct Lecturer in Physical Education*

Akemi Kitahara, *Associate in Physical Education, Assistant Women's Volleyball Coach*
Lawrence E. Knuth, M.A. University of Southern California, *Adjunct Lecturer in Physical Education, Men's Cross Country Coach*
Joyce A. Loewy, M.S. University of Southern California, *Adjunct Lecturer in Physical Education, Boating Coordinator, Assistant Sailing Coach*
Kevin McNair, M.A. Stanford University, *Adjunct Lecturer in Physical Education, Director of Track & Field/Cross Country (Men and Women)*
Myron McNamara, B.A. University of Southern California, *Lecturer Emeritus*
William G. Mulligan, M.A. DePaul University, *Adjunct Lecturer in Physical Education, Men's Basketball Coach*
Edward H. Newland, B.A. Occidental College, *Adjunct Lecturer in Physical Education, Men's Water Polo Coach*
Gregory P. Patton, B.A. University of California, Santa Barbara, *Adjunct Lecturer in Physical Education, Men's Tennis Coach*
Michael Puritz, B.A. California State University, Long Beach, *Adjunct Lecturer in Physical Education, Women's Volleyball Coach*
Robert Schermerhorn, M.A. Pepperdine University, *Adjunct Lecturer in Physical Education, Assistant Men's Basketball Coach*
Charles Schober, B.S. Oklahoma University, *Adjunct Lecturer in Physical Education, Men's Swim Coach*
Michael R. Sullivan, B.S. University of California, Irvine, *Adjunct Lecturer in Physical Education, Men's Rowing Coach*
Henry P. Thayer, *Associate in Physical Education, Sailing Coach*
Raymond H. Thornton, Ph.D. University of Southern California, *Supervisor of Physical Education*
Timothy M. Tift, M.A. Pepperdine University, *Lecturer in Physical Education*

The Department of Physical Education's organization of three closely interrelated programs provides a broad spectrum of opportunities for students in Physical Education Activity Classes, Intercollegiate Athletics, and Recreation. The Department's faculty and professional staff are dedicated to providing each student with the opportunity to participate in a broad program of physical activities, sports, and recreation. Students electing physical education activity classes which include course offerings in 16 intercollegiate sports may receive partial credit toward a degree up to a total of 4.2 units of credit. No degree in Physical Education is offered.

Recreation

All officially enrolled students, as well as faculty and staff personnel, are encouraged to participate in the Recreation Program offered by the Physical Education Department.

Intramural activities feature men's, women's, and coed team sports, as well as many individual and dual sports. Team sports include flag football, volleyball, basketball, softball, and such innovative activities as coed innertube water polo, water basketball, and team tennis. A sampling of individual and dual sports includes track and field, cross country, tennis, handball, racquetball, two-person volleyball, over-the-line softball, wrestling, and a pentathlon competition.

Sports clubs provide students, faculty, and staff with specialized instruction and/or competition with other college, university, and amateur clubs in Southern California. Club offerings include aikido, folk dance, fencing, handball, ice hockey, judo, karate, racquetball, rugby, sailing, snow skiing, soccer, and volleyball.

Leisure-time recreation is available on a scheduled basis throughout the year. Students, and faculty and staff personnel who have a Recreation Sports Privilege Card, may utilize the Crawford Hall facilities when they are open and not scheduled for other programs.

Members of the campus community who would like additional activities or clubs offered or desire further information may contact the Recreation Office, 1368 Crawford Hall, (714) 833-5346.

Sports Facilities

Sports facilities on campus include a gymnasium with activity areas for badminton, basketball, combatives, fencing, volleyball, and weight training; baseball and track stadiums; outdoor basketball and volleyball courts (lighted); six indoor four-wall handball/racquetball/squash courts; a swimming pool; 12 tennis courts (six lighted); and expansive playing fields.

Intercollegiate Athletics

The intercollegiate athletic program is an integral part of UCI's Physical Education Department. Teams are fielded in 16 sports, with the men participating in nine and the women six, in addition to a coed sailing team. Information on the current coaching staff may be obtained by contacting the Physical Education Department at (714) 833-6931.

UCI's women compete as a Division I independent member of the National Collegiate Athletic Association (NCAA). The Anteaters field women's teams in basketball, cross country, swimming, tennis, track and field, and volleyball.

The men compete in the National Collegiate Athletic Association (NCAA) Division I as a member of the Pacific Coast Athletic Association (PCAA), and in the Southern California Baseball Association. Irvine's crew and sailing teams compete in the Western Sprint Championships and the Pacific Coast Intercollegiate Yacht Racing Association, respectively.

Men's sports include baseball, basketball, crew, cross country, golf, swimming, tennis, track and field, and water polo.

In its first 15 years of existence, UCI captured a total of 16 NCAA team championships, while more than 60 UCI athletes won NCAA individual titles. In just four years as a member of Division I, the Anteaters have won eight PCAA championships, two each in cross country, water polo, track and field, and tennis. In addition, the sailing team won the 1980 Pacific Coast Intercollegiate Sloop championship.

Courses

The instructional classes emphasize activities and sports that students may continue throughout their adult lives and are of particular interest in Southern California.

1A-B-C Physical Education (.7 per quarter) F, W, S. May be repeated. Activity sections in archery, badminton, basketball, golf, handball, kayaking and canoeing, lifesaving, physical fitness, racquetball, sailing, soccer, softball, swimming, tennis, volleyball, water safety instruction, and weight training. Intercollegiate athletic sections in baseball, basketball, crew, cross country, golf, sailing, swimming, tennis, track and field, volleyball, and water polo are offered in season.

University Officers

The Regents of the University of California

Regent Ex Officio

Governor of California and President of The Regents
Edmund G. Brown, Jr.
Lieutenant Governor of California
Mike Curb
Speaker of the Assembly
Willie L. Brown[1]
State Superintendent of Public Instruction
Wilson Riles
President of the Alumni Association of the University of California[2]
Lois W. Weeth
Vice President of the Alumni Association of the University of California[2]
Stanley Wainer
President of the University
David S. Saxon

Appointed Regents[3]

Edward W. Carter (1982)
DeWitt A. Higgs (1982)
Glenn Campbell (1984)
William French Smith (1986)
Robert O. Reynolds (1986)
Dean A. Watkins (1984)
Joseph A. Moore (1990)
John H. Lawrence, M.D. (1988)
William A. Wilson (1988)
Frank W. Clark, Jr. (1988)
Vilma S. Martinez (1990)
Verne Orr (1988)
John F. Henning (1989)
Stanley K. Sheinbaum (1989)
Yori Wada (1992)
David Alexander Neuman (7/1/81-6/30/82)
David Geffen (1990)
Willie W. Harman (1990)
Willie L. Brown (1992)[4]

Faculty Representatives to The Regents

Benjamin Aaron (9/1/80-8/31/81)
O.A. Johnson, Jr. (9/1/80-8/31/82)

Principal Officers of The Regents

General Counsel
Donald L. Reidhaar
Treasurer
Herbert M. Gordon
Secretary
Marjorie J. Woolman

[1]Willie L. Brown was elected Speaker of the Assembly December 1, 1980.
[2]Shirley B. Conner and Frank S. Phillips are Regents designate.
[3]Except for Regents now completing 16-year terms, and the student Regent and alumni Regents appointed annually by The Regents for a one-year term ending on June 30, Regents now serve a term of 12 years, commencing on March 1. The Governor appoints all Regents except the student Regent. Names are arranged in order of original appointment to the Board.
[4]Willie L. Brown was appointed September 18, 1980. As Speaker of the Assembly, Mr. Brown also is a Regent *ex officio*.

Officers Emeriti

Vice President, Emeritus; and Secretary and Treasurer of The Regents, Emeritus
Robert M. Underhill
Treasurer of The Regents, Emeritus
Owsley B. Hammond
General Counsel of The Regents, Emeritus
Thomas J. Cunningham
Associate Counsel of The Regents, Emeritus
John E. Landon

Systemwide Administration

President of the University
David S. Saxon
Vice President of the University
William B. Fretter
Acting Academic Vice President
James S. Albertson
Vice President—Agriculture and University Services
James B. Kendrick, Jr.
Vice President—Academic and Staff Personnel Relations
Archie Kleingartner
Vice President—Financial and Business Management
Baldwin G. Lamson
Assistant President—Coordination and Review
Dorothy E. Everett
Executive Assistant to the President
David A. Wilson
Special Assistant to the President for Governmental Relations
Lowell J. Paige

Officers Emeriti

President of the University, Emeritus; and Professor of Business Administration, Emeritus
Clark Kerr
President of the University, Emeritus; and Professor of Economics, Emeritus
Charles J. Hitch
Vice President of the University, Emeritus; and Dean of the College of Agriculture, Emeritus
Claude B. Hutchison
Vice President of the University, Emeritus; Professor of Agricultural Economics, Emeritus; and Agricultural Economist, Emeritus
Harry R. Wellman
Vice President—Business and Finance, Emeritus; and Professor of Political Science, Emeritus
John A. Perkins
Vice President—Budget Plans and Relations for the University, Emeritus
Thomas E. Jenkins
University Provost, Emeritus; Chancellor at Santa Cruz, Emeritus; and Professor of Mathematics, Emeritus
Angus E. Taylor

Chancellors

Chancellor at Berkeley
Ira Michael Heyman
Chancellor at Davis
James H. Meyer
Chancellor at Irvine
Daniel G. Aldrich, Jr.
Chancellor at Los Angeles
Charles E. Young
Chancellor at Riverside
Tomás Rivera
Chancellor at San Diego
Richard C. Atkinson
Chancellor at San Francisco
Francis A. Sooy
Chancellor at Santa Barbara
Robert A. Huttenback
Chancellor at Santa Cruz
Robert L. Sinsheimer

UC Irvine Principal Administrative Officers

Chancellor
Daniel G. Aldrich, Jr.
Assistant Chancellor—Administrative Affairs
Ramon Curiel
Assistant Chancellor—University Relations
Michael J. Kearney, Jr.
Executive Vice Chancellor
James L. McGaugh
Vice Chancellor—Academic Affairs
William J. Lillyman
Associate Vice Chancellor—Academic Affairs
Carl F. Hartman
Vice Chancellor—Administrative and Business Services
Leon M. Schwartz
Vice Chancellor—Student Affairs
John M. Whiteley

For a complete list of UC Irvine administrative officers, please refer to the University of California Directory or the UCI Campus Directory. The Information Guide on the inside front cover of this Catalogue may be consulted for telephone numbers of various campus offices.

University Professors

Melvin Calvin, University Professor Emeritus
University of California, Berkeley

Murray Krieger, University Professor
University of California, Irvine

Josephine Miles, University Professor Emeritus
University of California, Berkeley

Glenn Seaborg, University Professor
University of California, Berkeley

Neil Smelser, University Professor
University of California, Berkeley

Edward Teller, University Professor Emeritus
Lawrence Livermore National Laboratory

Charles Townes, University Professor
University of California, Berkeley

Sherwood Washburn, University Professor
University of California, Berkeley

Lynn White, Jr., University Professor Emeritus
University of California, Los Angeles

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.

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.

Student Records

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 School, department, or program	Location of Record Administrative office for particular unit	Responsible Official Dean, Chair, or Director
Admissions—Undergraduate	Administration	Director of Admissions
Admissions—Graduate	Administration	Dean of Graduate Studies and Research
Admissions—College of Medicine	Med. Sci. I	Director of Admissions and Records
Career Planning and Placement	Student Services I	Director of Career Planning and Placement
Cashier's Office	Administration	Cashier
Children's Center	Children's Center	Director, Child Care Services
Collections	Administration	Collections Manager
Counseling	Student Services I	Director of Counseling
Educational Opportunity Program	Administration	Coordinator EOP Admissions
Education Abroad Program	Trailer Complex	Coordinator
Financial Aid	Administration	Financial Aid Officer
Handicapped Student	Administration	Assistant Dean, Handicapped Student Services
Housing	Administration	Director, Housing & Food Service
International Student	Administration	Assistant Dean, International Students
Learning Skills	Trailer Complex	Director, Learning Skills
Parking	Central Plant	Parking Supervisor
Registrar—Graduate/Undergraduate	Administration	Registrar
College of Medicine	Med. Sci. I	Director of Admissions and Records
Relations with Schools and Colleges	Administration	Director, Relations with Schools and Colleges
Special Services	Trailer Complex	Director, Special Services
Student Conduct	Administration	Assistant Vice Chancellor—Student Affairs
Student Health	Student Health Center	Director of Student Health
Summer Session	Irvine Town Center Building	Director of Summer Session
Tutorial Assistance Program	Trailer Complex	Director, Tutorial Assistance Program
University Extension	Irvine Town Center Building	Dean, University Extension
Veterans	Trailer Complex	Associate Dean of Students
Incidental Records (minutes of various committees, copies of correspondence in offices not listed above, and other records not listed)	Administration	Vice Chancellor—Student Affairs, or other Student Affairs official

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, (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, confidential information can be disclosed without prior written consent of the student. There are also other situations in which the University is required to disclose information. See Policies Applying to Campus Activities, Organizations, and Students, Part B, Section 10.721 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, 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 requested 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 Vice Chancellor—Student Affairs or that person's designate, 260 Administration.

A Personal Data Sheet is included in each quarter's registration packet which allows students to examine and update their personal data. Furthermore, during the eighth week of classes, every student is provided with a record of current term enrollment as part of his or her registration materials for the next quarter to ensure the accuracy of official enrollment. Students are urged to report officially to the Registrar's Office all changes in personal data and enrollment data. It is extremely important for each student to keep the Registrar's Office currently informed as 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 the booklet *Policies Applying to Campus Activities, Organizations, and Students—Part B*, copies of which are available in Campus Organization Services.

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.

As required by Section 177.64 of the Federal regulations governing the Guaranteed Student Loan Program, published in the *Federal Register* on February 20, 1975, the following information concerning salary and employment data is provided:

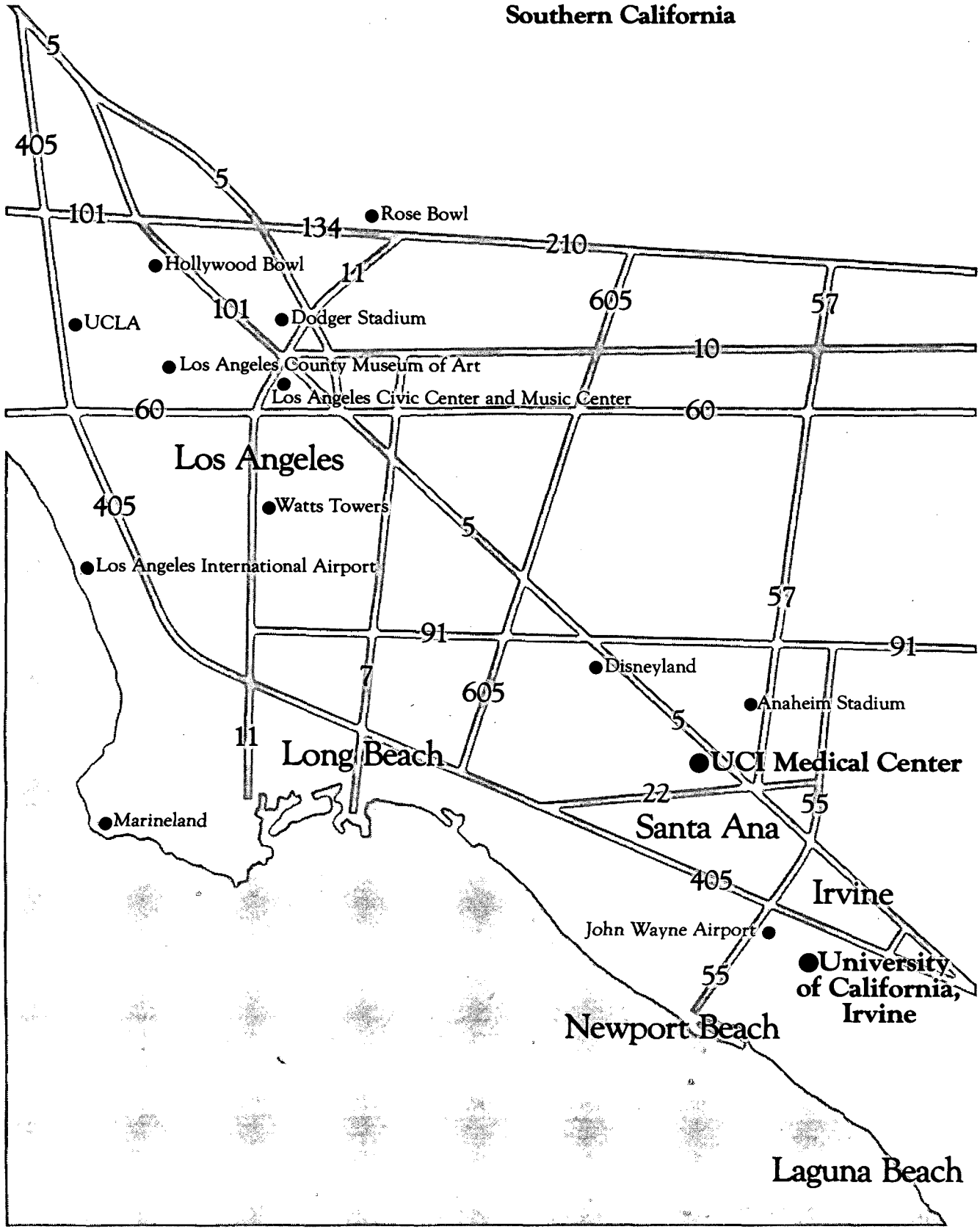
Salary and Employment Information
University of California

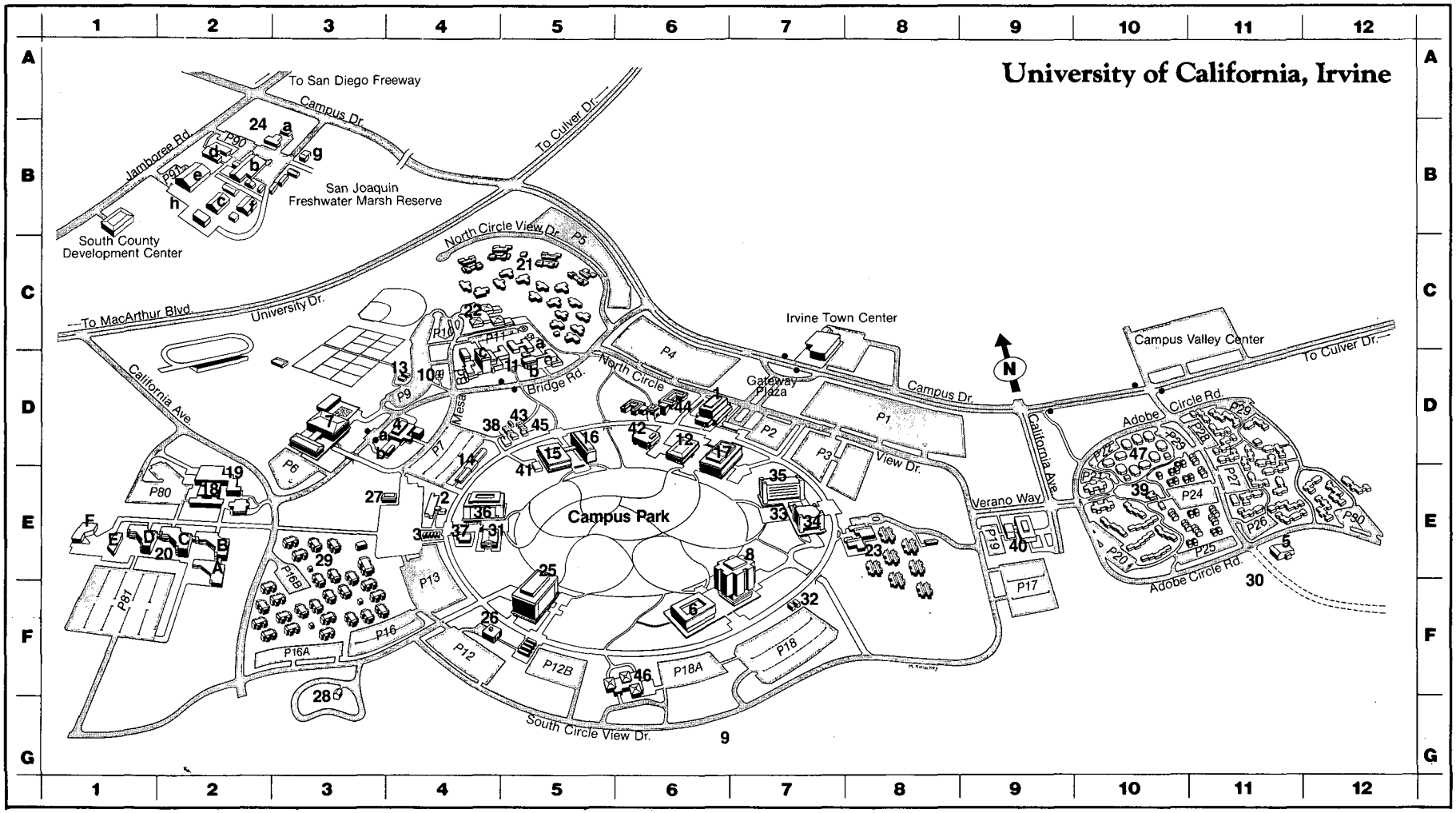
FIELD OF STUDY	DEGREE LEVEL OF GRADUATES			PROBABLE OR DEFINITE JOB COMMITMENT[2]
	BACHELOR'S	MASTER'S	DOCTORATE	
	AVERAGE MONTHLY SALARY[1]			
Engineering	$1,261-1,534	$1,404-1,710	$1,809-2,245	87.5%
Humanities	587-1,155	652-1,364	—	79.6
Life Science	600-1,472	—	—	76.6
Managment	755-1,231	1,224-1,816	—	88.6
Physical Science	952-1,526	—	1,532-2,276	85.2
Social Science	641-1,145	806-1,398	—	79.2
Medical[2]	—	—	1,112	100.0
Dental[2]	—	—	1,677	87.7

[1]Source: (Except for Medical and Dental—see footnote 2.) A national survey of a representative group of colleges conducted by the College Placement Council, representing the 80 percent range of offers for 1977-78 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.

[2]Source: *The Job Market for UCLA's 1977 Graduates.* Percentages are based only upon those students who planned to work immediately after graduation. Medical and dental salaries are shown as means, rather than ranges.

MAPS


Southern California
5
405
5
101
134
Rose Bowl
210
Hollywood Bowl
11
101
605
57
UCLA
Dodger Stadium
10
Los Angeles County Museum of Art
Los Angeles Civic Center and Music Center
60
60
Los Angeles
405
Watts Towers
5
Los Angeles International Airport
57
91
91
Disneyland
7
605
Anaheim Stadium
5
11
Long Beach
UCI Medical Center
22
55
Marineland
Santa Ana
405
Irvine
John Wayne Airport
University of California, Irvine
55
Newport Beach
Laguna Beach



1. Administration Building (D6)
2. Biological Sciences Research Facility; *Fall, 1981** (E4)
3. Biological Sciences Trailers (E4)
4. Central Plant (D4)
   a. Police
   b. Parking
5. Child Care Center (E11)
6. Computer Science (F6)
7. Crawford Hall (physical education) (D3)
8. Engineering (F7)
9. Faculty Apartments *Spring, 1982** (G6, G7)
10. Fine Arts Trailers (D4)
11. Fine Arts Village (D4, D5)
    a. Art Gallery
    b. Concert Hall
    c. Theatre
12. Gateway Commons (D6)
13. Grounds Maintenance (D4)
14. Headhouse—Greenhouse (E4)
15. Humanities Hall (D5)
16. Humanities Office Building (D5)
17. Library (D6, D7)
18. Medical Surge I (E2)
19. Medical Surge II (E2)
20. Medical Sciences I (E1, E2)
21. Mesa Court (residence halls) (C5)
22. Mesa Court Commons (C4)
23. Middle Earth (residence halls) (E8)
24. North Campus (B2)
    a. Air Pollution Health Effects Lab
    b. Faculty Research Building
    c. Garage
    d. Interim Office Building (Printing Department)
    e. Receiving—Storehouse
    f. Shops Building
    g. Wildlife Vivarium
    h. Cooperative Recycling Center
25. Physical Sciences (F5)
26. Physical Sciences Research Facility (F4)
27. Radioactive and Chemical Waste Handling Facility (E3)
28. Recreational Vehicle Park (G3)
29. Residential Apartments (E3, F3)
30. Residential Apartments VI; *Summer, 1982** (F11)
31. Science Lecture Hall (E4)
32. Social Ecology Trailers (F7)
33. Social Science Hall (E7)
34. Social Science Laboratory (E7)
35. Social Science Tower (E7)
36. Steinhaus Hall (biological sciences) (E4)
37. Student Center I (Patogh) (E4)
38. Student Center II (Cross-Cultural Center) (D5)
39. Student Center III (E10)
40. Student Health Center (E9)
41. Student Lounge (Antrap) (E5)
42. Student Services I (D6)
43. Trailer Complex (D5)
44. University Center (D6)
45. University Club (D5)
46. University Club Conference Center; *Fall, 1981** (F6)
47. Verano Place I, II, III, IV (apartments) (D10, D11, E10, E11)

**Scheduled completion date*

● = Bus Stops

P = Parking Lots

Visitors may park in metered spaces in lots *P-1, 2, 5, 6, 7, 8, 9, 11, 12, 13, 18, 19, 80, 90, Lib/Serv, and Res/Hall 4.*

Shaded roads and parking areas are open to public auto travel.

All buildings are accessible to wheelchairs. More information may be obtained from the Office of Handicapped Student Services, (714) 833-6478.

Catalogues

Copies of the 1981-82 UCI General Catalogue are available for $1.50 from several outlets on campus which are open Monday through Friday. Outlets include the University Bookstore, the Cashier's Office, and University Extension.

Catalogues are available for $2.00 by mail. Checks, made payable to UC Regents, should be sent to the Cashier's Office, Administration Building, University of California, Irvine; Irvine, California 92717. Delivery requires from two to three weeks for most destinations in California.

INDEX

A

B

C

D

E

F

G

H

I

J

S

T

U

V

W

University of California, Irvine
Irvine, CA 92717

Second Class
Postage Paid
Santa Ana,
California 92711