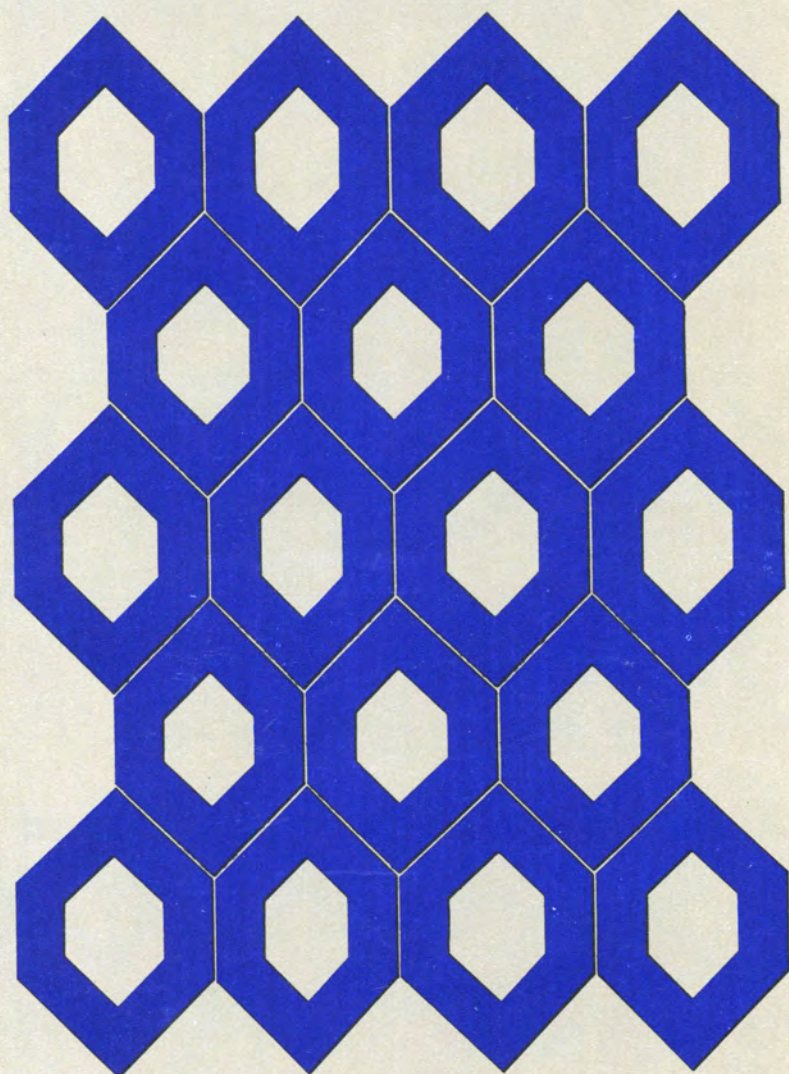


# **UCLA** General Catalog

1968-1969 issue



**UNIVERSITY OF CALIFORNIA  
LOS ANGELES**

# UCLA

PUBLISHED AT LOS ANGELES, CALIFORNIA

Volume 8 · May 8, 1968 · Number 11

A series of administrative publications of the  
University of California, 405 Hilgard Avenue, Los Angeles, California 90024.  
Second-class postage paid at Los Angeles, California.  
Sixteen a year—two issues in February, March, April,  
July and October; three issues in January and May.

All announcements herein are subject to revision.  
Changes in the list of Officers of Administration and  
Instruction may be made subsequent to  
the date of publication.

## GENERAL INFORMATION

Letters of inquiry concerning the University of California, Los Angeles, should be  
addressed to the Office of Admissions, University of California, 405 Hilgard Avenue,  
Los Angeles, California 90024.

Letters of inquiry concerning the University in general should be addressed to the  
Registrar, University of California, Berkeley, California 94720.

For the list of bulletins of information concerning the several colleges and departments,  
see page 3 of the cover of this bulletin.

In writing for information please mention the college, department, or study in which  
you are chiefly interested.

The registered cable address of the University of California, Los Angeles, is UCLA.



A Tribute to the People of California

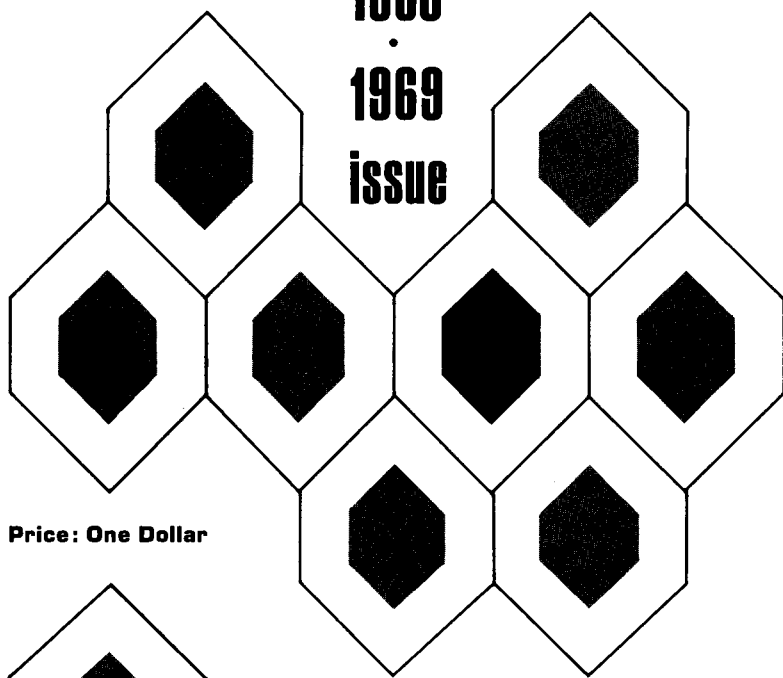
# **UCLA**

## **General Catalog**

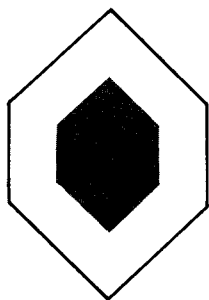
**1968**

**1969**

**issue**



**Price: One Dollar**



**May 8, 1968**

**UNIVERSITY OF CALIFORNIA  
LOS ANGELES**

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# Calendar

	Summer '66	Fall '68	Winter '69	Spring '69
Application for admission to undergraduate standing, with complete credentials and the application fee, must be filed with the Admissions Officer on or before this date.	May 1 Wednesday	Mar. 1 Friday	Nov. 1 Friday	Feb. 1 Saturday
*[Application for admission to graduate standing, with complete credentials and the application fee, must be filed with the Admissions Section of the Graduate Division on or before this date.	Apr. 15 Monday	May 15 Wednesday	Oct. 15 Tuesday	Jan. 15 Wednesday
Last day to file applications with the Registrar for readmission in undergraduate standing or with the Graduate Division for readmission in graduate standing.	May 15 Wednesday	Aug. 15 Thursday	Nov. 22 Friday	Feb. 15 Saturday
Counseling of students by appointment.	June 13– June 19 Thursday– Wednesday	Sept. 18– Sept. 25 Wednesday– Wednesday	Dec. 26– Dec. 30 Thursday– Monday	Mar. 24– Mar. 28 Monday– Friday
Entrance Examination in English as a Second Language	June 17 Monday	Sept. 18 Wednesday	Jan. 2 Thursday	Mar. 24 Monday
Examination in Subject A.	June 17 Monday	Sept. 18 Wednesday	Jan. 2 Thursday	Mar. 24 Monday
{Quarter begins.	June 19 Wednesday	Sept. 23 Monday	Jan. 2 Thursday	Mar. 31 Monday
{Late Registration begins. Fee \$10.	June 20 Thursday	Sept. 23 Monday	Jan. 2 Thursday	Mar. 31 Monday
Special examination in Subject A.	June 21 Friday	Sept. 27 Friday	—	Mar. 31 Monday
{Instruction begins.	June 24 Monday	Sept. 30 Monday	Jan. 6 Monday	Apr. 3 Thursday
Last day to file applications for advancement to candidacy for the master's degree to be conferred 1968–1969.	July 1 Monday	Oct. 7 Monday	Jan. 13 Monday	Apr. 10 Thursday
{Last day to file registration packets or to change study lists <i>without fee</i> .	July 8 Monday	Oct. 11 Friday	Jan. 17 Friday	Apr. 16 Wednesday
Last day to add courses to study lists. Normally, no registration packet will be accepted after this date. Before 3:50 p.m.	July 11 Thursday	Oct. 16 Wednesday	Jan. 22 Wednesday	Apr. 21 Monday
Last day for undergraduate students to drop courses from study lists without penalty of grade F (failure). Before 3:50 p.m.	July 25 Thursday	Oct. 29 Tuesday	Feb. 4 Tuesday	May 1 Thursday

\* Also last date for renewal of applications to be submitted by graduate students who have applied but who did not previously register for a regular quarter.

{ Not all of the professional schools follow this calendar. See the respective bulletins.

{ For details, see Registration Circular and official bulletin boards.

{ Last day for late registrations. Before 2:00 p.m.

	Summer '68	Fall '68	Winter '69	Spring '69
§Last day to file notice of candidacy for the bachelor's degree to be conferred 1968-1969.	July 26 Friday	Oct. 31 Thursday	Feb. 6 Thursday	May 6 Tuesday
Last day to submit final drafts of dissertations to doctoral committees for degrees to be conferred 1968-1969.	Aug. 1 Thursday	Nov. 6 Wednesday	Feb. 13 Thursday	May 8 Thursday
Last day for graduate students to drop courses from study lists without penalty of grade F (failure). Before 3:50 p.m.	Aug. 6 Tuesday	Nov. 11 Monday	Feb. 17 Monday	May 13 Tuesday
Last day to submit final drafts of theses to master's committees for degrees to be conferred 1968-1969.	Aug. 20 Tuesday	Nov. 25 Monday	Mar. 3 Monday	May 27 Tuesday
Last day to file with the Dean of the Graduate Division completed copies of theses for the master's degree and dissertation for the doctor's degree to be conferred 1968-1969.	Aug. 29 Thursday	Dec. 6 Friday	Mar. 14 Friday	June 5 Thursday
¶Instruction ends.	Aug. 27 Tuesday	Dec. 7 Saturday	Mar. 15 Saturday	June 7 Saturday
Final examinations.	Aug. 30- Sept. 6 Friday- Friday	Dec. 9-14 Monday- Saturday	Mar. 17-22 Monday- Saturday	June 9-14 Monday- Saturday
Quarter ends.	Sept. 7 Saturday	Dec. 14 Saturday	Mar. 22 Saturday	June 14 Saturday
Last day for continuing students to file applications for undergraduate scholarships for 1969-1970.		Jan. 15 Wednesday		
Last day to file applications for fellowships and graduate scholarships tenable at Los Angeles for 1969-1970.		Jan. 31 Friday		
Academic and Administrative Holidays	July 4 Thursday	Nov. 28-29 Thursday- Friday	Feb. 12 Wednesday	March 28 Friday
	Sept. 2 Monday	Dec. 23-25 Monday- Wednesday		May 30 Friday
		Jan. 1 Wednesday		

§ Notice of candidacy will be taken after this date only if degree check can be completed on an emergency basis. If accepted, there is a fee of \$3.00.

¶ Not all of the professional schools follow this calendar. See the respective bulletins.

# The University

## AN INTRODUCTION

The University of California was established in 1868. Initially located in Oakland, it moved to its first campus, Berkeley, in 1873. Today, along with the Berkeley campus, the University has campuses at Los Angeles, Davis, San Francisco, Santa Barbara, Riverside, San Diego, Irvine (in Orange County) and Santa Cruz.

Instruction on these campuses covers all of the broad and essential areas of human knowledge, including the arts, sciences and literature. Each of the campuses has its own organization, objectives, and style of academic life. Each offers a unique set of programs and facilities; yet each cooperates to insure a maximum of opportunity for the student and a maximum of flexibility in fulfilling his plans.

The University is keeping pace with the growth of the State. Recent state-wide enrollment approached 100,000. Adult education programs are conducted by University of California Extension through classes in approximately 230 communities in the State, and through films, television courses and correspondence. The University maintains an Agricultural Extension Service. And its Education Abroad Program offers opportunities to its undergraduate students to study in universities in other countries.

The University is governed by a Board of Regents. The Regents appoint the President of the University, who is the executive head of the University, and with his advice appoint the Chancellors, directors and deans who administer the affairs of the individual campuses and divisions of the University. The Academic Senate, subject to the approval of the Regents, determines conditions for admission of students, and for the granting of certificates and degrees. It also authorizes and supervises all courses of instruction in the academic and professional colleges and schools, except in professional schools offering courses at graduate level.

## UCLA

### History and Development

UCLA—The University of California, Los Angeles—is located in the Westwood Hills in western Los Angeles. Academically ranked among the leading universities in the United States, it has attracted distinguished scholars and research men from all over the world.

UCLA was created on May 24, 1919, when Governor William D. Stephens signed legislation transferring buildings, grounds and records of the State Normal School on North Vermont Avenue to the University of California.

The newly created institution opened its doors to 250 students in September, 1919, as the "Southern Branch" of the University of California. The curriculum included courses in the freshman and sophomore years in letters and science and in teacher-training. In 1922 the teacher-training courses were organized

as a Teachers College, and 1923 and 1924, respectively, the third and fourth years of Letters and Science were added.

It soon became evident that a new home would be needed. On March 21, 1925, the present Westwood site—then consisting of 383 acres—was chosen by the Regents. In the spring of 1929, UCLA was moved to its permanent home.

In the 1930's UCLA expanded its educational facilities to include a College of Agriculture (no longer operational), a College of Business Administration (which, renamed in 1950, operated as the School of Business Administration until 1966), a College of Applied Arts (later replaced by a College of Fine Arts), a School of Education (later renamed the Graduate School of Education), and a Graduate Division. Graduate work was authorized in 1933 and the first Ph.D. awarded in 1938. Since 1940 a College of Engineering and the schools of Architecture and Urban Planning, Dentistry, Law, Library Service, Medicine, Nursing, Public Health, Social Welfare, and a Graduate School of Business Administration have been added.

Recognizing the value of an interdisciplinary approach to the search for knowledge, the University of California organized research units outside the usual departmental structure. Today, along with libraries, UCLA's research facilities include institutes, centers, projects, bureaus, nondepartmental laboratories, stations, and museums.

Under way is a long-range development program that will prepare UCLA for an expected enrollment of approximately 27,500 full-time students by 1967.

## Survey of Curricula

The scope of the undergraduate and graduate programs of instruction offered in the three colleges and ten schools of the University on the Los Angeles campus is briefly indicated below. For more details see pages 64 through 142 of this bulletin.

The College of Letters and Science offers curricula leading to the degrees of Bachelor of Arts and Bachelor of Science, and the following preprofessional curricula: precriminology, pre dental, pre dental hygiene, premedical, prenursing, prenutritional science, prepharmacy, prepublic health, prephysical therapy, and presocial welfare.

The College of Engineering, School of Nursing, and School of Public Health offer curricula leading to the degree of Bachelor of Science.

The College of Fine Arts offers curricula leading to the degree of Bachelor of Arts.

The School of Dentistry offers a curriculum leading to the degree of Doctor of Dental Surgery.

The School of Law offers a curriculum leading to the degree of Juris Doctor.

The School of Medicine offers a curriculum leading to the degree of Doctor of Medicine.

The Graduate School of Education supervises curricula leading to the Certificate of Completion of the various elementary and secondary credentials, and for the administrative credential.

The Graduate Division, in cooperation with the colleges and schools of the University, supervises advanced study leading to the academic degrees of Master of Arts, Master of Arts in Teaching, Master of Science, and Doctor of

Philosophy; and the professional degrees of Master of Architecture (Urban Design), Master of Business Administration, Master of Education, Master of Engineering, Master of Fine Arts, Master of Library Science, Master of Journalism, Master of Nursing, Master of Public Administration, Master of Public Health, Master of Social Psychiatry, Master of Social Welfare, Doctor of Education, and Doctor of Public Health.

## **Study and Research Facilities**

### **THE UNIVERSITY LIBRARY**

The University Library on the Los Angeles campus consists of the University Research Library, the College Library, and a number of specialized libraries. Its collections contain more than 2,500,000 volumes, and extensive holdings of government publications, pamphlets, manuscripts, maps, microtext editions, music scores, recordings, and slides. The Library regularly receives about 35,000 serial publications.

The principal collection of the University Library is in the University Research Library. The card catalog here lists all cataloged books in the Research Library, the College Library, and other campus libraries and in the William Andrews Clark Memorial Library.

The University Research Library provides special study and research facilities for graduate students, including facilities for reading microtext materials and for the use of typewriters. Students enrolled in graduate courses have access to the main book stacks in the Library.

An open-shelf collection of books of interest primarily to undergraduate students is maintained in the College Library, in the Powell Library Building.

The Department of Special Collections, in the Powell Library Building, contains rare books and pamphlets, manuscripts, the University Archives, certain subject collections of books, early maps, and files of early California newspapers.

The Government Publications Services, in the Powell Library Building, is a depository for the official publications of the United States Government, the State of California, the United Nations and some of its specialized agencies, and a number of other international organizations. It receives selected publications of the other states and possessions of the United States and publications of foreign governments.

The Government and Public Affairs Reading Room, in the Powell Library Building, has books, documents, pamphlets, and periodicals on local government, and is a depository for the official publications of California counties and cities. The John Randolph Haynes and Dora Haynes Foundation Library is housed there.

The Oriental Library, housed in the Powell Library Building, contains books, journals, newspapers, and other materials in Chinese, Japanese, and Korean languages.

The Education and Psychology Library, in the Powell Library Building, has collections and services for the programs of the departments of Education, Psychology, and Physical Education.

Libraries for Art, Biomedical Sciences, Business Administration, Chemistry, Engineering and Mathematical Sciences, English, Geology-Geophysics, Law,

Maps, Music, Physics, Theater Arts, and the University Elementary School are housed in the departments which they primarily serve.

Special provision is made in the University Research Library for the library needs of the School of Architecture and Urban Planning and the School of Social Welfare.

The resources of these libraries are available to all students and members of the faculty of the University.

A service for the rapid photocopying of periodical articles and portions of books is available in the University Research Library, the College Library, the Biomedical Library, the Engineering and Mathematical Sciences Library, the Chemistry Library, the Physics Library, and the Business Administration Library.

A Library handbook, describing the organization and services of the University libraries and listing their schedules of hours, may be obtained in any of the campus libraries.

Supplementing the University Library is the William Andrews Clark Memorial Library of about 75,000 books, pamphlets, and manuscripts, featuring English culture of the seventeenth, eighteenth, and nineteenth centuries, and the history of Montana. Materials in the library do not circulate. This library is not on the University campus, but is situated at 2520 Cimarron Street, at West Adams Boulevard.

Bus service is provided Monday through Friday, upon request, from the UCLA campus to the Clark Library. Reservations for bus service must be made with the Administrative Office before noon of the preceding day, and before noon on Friday for Monday transportation to Clark Library. The Library is open Monday through Saturday from 8 a.m. to 5 p.m. Leaflets describing the Clark Library are available upon application to the University Librarian.

## **SPECIAL RESEARCH FACILITIES**

Recognizing the value of an interdisciplinary approach to the search for knowledge, the University maintains organized research units outside the usual departmental structure. Organized research units aid research and may enhance the teaching of participating members of the faculty, but they do not offer regular academic curricula or confer degrees. They may provide research training to graduate students employed in research programs with faculty supervision. Organized research units are designated as institutes, centers, projects, bureaus, nondepartmental laboratories, stations and museums. While the objectives and fields of study vary widely, an institute is organized around a broad subject area which cuts across department, school, college or even campus boundaries. A center may be an agency established within an institute covering a major area, or it may be separate and provide specialized facilities. A bureau is an academic agency engaged primarily in public service activities and in facilitating research in one or more academic departments related to these activities. The more specialized activities in focal fields are described as programs, laboratories, and projects.

### **Institutes**

The Institute of Geophysics and Planetary Physics was established to encourage research in geophysics and space physics and to provide advanced training

for qualified personnel. Members of the Institute staff on several campuses and members of associated departments are prepared to supervise graduate work in a variety of fields.

Graduate students interested in atmospheric research and enrolled in the astronomy, chemistry, geology, meteorology, or physics M.A., M.S., and Ph.D. programs may engage in research and advanced studies on the characteristics of the interplanetary medium, the structure of the moon and the planets, radiation belt physics, atmospheric structure and dynamics, geomagnetism and solar physics, and many other areas.

The Space Science Center, a part of the Institute, was established to develop facilities for space-related research by faculty and graduate students, to promote interdepartmental programs of education and research in the space sciences, and to administer funds for space-related research in the physical and biological sciences and engineering.

**W. F. Libby, Director**

The Institute of Transportation and Traffic Engineering is engaged in a broad range of research related to transportation, ordinarily in areas that cross departmental lines. These areas include: human factors in transportation; accident and injury prevention; safety glass research; driving simulation; advancement of human simulation, for trauma research and research in other fields, by evolving improved anthropometric dummies; accident data analysis; psychological and physiological factors in traffic safety; transportation theory, systems analysis, and operations research; transportation economics and administration and systems planning, including related land use.

The Institute trains specialists in accident research methodology and in driving simulation, and offers financial support and guidance for graduate students in these areas.

**Harry W. Case, Associate Director**

The Brain Research Institute provides facilities for research in the neurological and behavioral sciences for investigators from the behavioral health and life sciences fields. Three principal goals of the Institute are: (1) to undertake research which contributes to an understanding of brain mechanisms and behavior; (2) to contribute to the training of predoctoral and postdoctoral students for professional careers in brain science; (3) to develop and disseminate information about brain function in the interest of the social and scientific communities. Located in the Center for the Health Sciences, the Institute conducts programs which are largely interdisciplinary. General activities include attention to such broad fields of interest as neurophysiology, neurochemistry, neuroanatomy, neuropharmacology, neuroendocrinology, neuropsychiatry, biophysics and communications, neuroimmunology, behavior and neuropathology.

**J. D. French, Director**

The Cancer Research Institute is located in the School of Medicine to provide research facilities in this field for all departments of the School.

**J. J. Stein, Director**

The Dental Research Institute, located within the new facility of the School of Dentistry, has been established to provide multidisciplinary studies in basic, clinical, and public health sciences which offer promise of benefits in oral health.

**Director To Be Appointed**

The Jules Stein Eye Institute is a comprehensive facility located within the

Center for the Health Sciences, devoted to research in the sciences related to vision, the care of patients with eye disease and the dissemination of knowledge in the broad field of ophthalmology. Incorporated in this structure are outpatient, inpatient and operating room facilities for the care of patients with ophthalmic disorders; areas for research in the sciences related to vision; and facilities for scientific reading, lectures and seminars. The Institute affords a unique opportunity for the training of students in the School of Medicine, residents and graduate physicians. A close relationship with graduate and undergraduate research and teaching facilities at UCLA is maintained.

**B. R. Straatsma, Director**

The Molecular Biology Institute was established to serve interested departments of the biological, medical, and physical sciences in the coordination, support and enhancement of research and training in molecular biology. Interests and activities of the Institute encompass all approaches which aim to explain biology at a molecular level, with particular emphasis on correlation of structure and function. These include study of molecular genetics; protein and nucleic acid synthesis, properties, and function; biological ultrastructure; metabolic control; contractility; and other phenomena. Staff members from departments in biological, physical, and medical sciences participate in Institute programs, and the Institute aids departments in graduate training and postdoctoral programs in the general area of molecular biology.

**P. D. Boyer, Director**

The Neuropsychiatric Institute is a research and teaching unit in the Center for the Health Sciences, supported by the State Department of Mental Hygiene. It houses the Department of Psychiatry, the divisions of Neurology, Neurosurgery, and Neuropathology, together with laboratories for clinical neurophysiology and clinics. The research program involves a multidisciplinary approach to the problems of functional and organic disorders of the nervous system.

**George Tarjan, Acting Medical Director**

The Institute of Industrial Relations, authorized by the Legislature of the State of California in 1945, is concerned with two principal types of activity. The first is an interdisciplinary research and publishing program directed primarily toward the study of labor-management relations, wages and related problems, economic security programs, the labor market, the impact of technological change, the problems of poverty and minority groups, human relations, labor law, labor history and comparative studies. Research staff members of the Institute are usually drawn from the regular faculties of the Graduate School of Business Administration, the Departments of Economics, Political Science and Sociology, and the School of Law. This program affords opportunities to graduate students specializing in personnel management and industrial relations to engage in investigative work under expert guidance. The second main activity consists of community and labor relations programs serving management, unions, public and other groups interested in industrial relations activities. The programs consist of public lectures, conferences, symposia and institutes of varying duration, and include a series of courses through University Extension leading to a Certificate in Industrial Relations.

**B. Aaron, Director**

The Western Management Science Institute, established in 1959 to foster research and advanced education in the management sciences, has two divisions:

an Operations Research Division, which emphasizes mathematical investigations of decision making, information economics, organization theory, production systems, and mathematical programming; and a Socio-Technical Systems Division, which stresses research in interactions among technological, social, personal, and ecological variables in organizations.

In addition to its research programs, the Institute is engaged in developing faculty resources and graduate curricula in the management sciences, and sponsors workshops and seminars including the Interdisciplinary Colloquium on Mathematics in the Behavioral Sciences.

Although composed largely of faculty members of the Department of Business Administration, the Institute staff is interdisciplinary. Overall policy guidance is provided by an Advisory Committee representing the departments of Business Administration, Economics, Engineering, Law, Mathematics, Political Science, Psychology, and Sociology.

**J. Marschak, Director**

The Institute of Library Research was established in September 1963 as a result of the University's recognition of the need for organized research for the satisfactory solution of library and information systems problems. The Institute is a Universitywide agency with offices and research activities on the Los Angeles and Berkeley campuses. The office of the Director is at UCLA; the office of the Associate Director is at UCB. Areas of concern to the research program of the Institute are: integration into the library of new methods for recording and disseminating knowledge; mechanization of processes in libraries and information centers; improvement of control over the increasing volume and variety of information produced; continuing examination of the role and functions of the research library; integration of individual research libraries into larger systems; development of methodologies for the solution of specific information problems; and the education of appropriate research and professional personnel. The Institute invites the participation of students, faculty members, and research personnel of all departments of the University, since information and the university library system are of almost universal interest.

**Robert M. Hayes, Director**

The main objectives of the Institute of Government and Public Affairs are to add to the understanding of major public issues and to develop intellectual talent equipped to meet the challenges of a highly scientific urban society. The Institute is an interdisciplinary research unit involving the cooperative efforts of such disciplines as sociology, economics, law, medicine, political science, engineering, social welfare, and psychology. Current studies include: Los Angeles Riot Study, Design of a Regional Information System, Survey of Hallucinogenic Drug Use, Decision Making in Los Angeles, Impact of Federal Programs on Intergovernmental Reorganization, Program Budgeting for State and Local Governments, and Educational Innovations.

The Institute provides fellowship and traineeship support to a limited number of graduate and postdoctoral students who participate in Institute research projects as fellows or serve in associated departments as research or teaching assistants.

**W. Z. Hirsch, Director**

The Institute of Ethnomusicology was established to encourage interdisciplinary collaboration among musicologists and other specialists and to facilitate

an interdisciplinary approach to major research problems. The overall research objectives are concerned with techniques for defining and describing, on an international and comparative basis, the norms of style relative both to music itself and to music within its social context. Studies are directed toward fundamental concepts as well as toward new laboratory methods and techniques. Specific projects, in which there is balanced emphasis on performance, theory, and research, include the following major geographic areas: the Americas, including Alaska; Oceania; the Far East; South and Southeast Asia; the Balkans and the Near East; Africa; and Western Europe. A large archive of unique materials and complete laboratory facilities are available to graduate students and faculty. Special symposia, lectures, and presentations of non-Western music and dance are offered as a public service. **M. Hood, Director**

### **Centers**

The **Water Resources Center** is a Universitywide organization charged with coordinating water resources research on the several campuses. Through University research funds and funds from the Office of Water Resources Research, U.S. Department of the Interior, it supports selected research proposals in such departments as Agricultural Sciences, Botany, Engineering, Meteorology, and Political Science. Most of these projects provide research assistantships for the training of graduate students. No research is conducted in the Center itself.

Research interests include water resources systems engineering, desalting of water, political strategy in water resources development, soil mechanics problems in water resources development, the history of water resources development, improvement in methods of forecasting precipitation and runoff, and management of water quality. Graduate students may contact the Center, Room 2066, Engineering I, for information on current research projects, which may vary from year to year, and on the departments and faculty concerned.

**Arthur F. Pillsbury, Acting Director**

The **Survey Research Center** is an independent unit designed to serve in three capacities: (1) as a service bureau for carrying out surveys for research workers and others; (2) as a specially equipped laboratory where students and faculty can experiment with, or develop skills in, the technical aspects of surveys; and (3) as a research unit which undertakes or underwrites social studies involving use of large scale or complex surveys for their basic data. The service bureau provides such services as study design, questionnaire construction, interviewing, coding, and data processing. The laboratory is available to faculty for their research or as an adjunct to their courses. A research program involving a wide spectrum of content interests is under development. A limited number of traineeships and research assistantships are available. **R. J. Jessen, Director**

The **Center for African Studies** provides a framework for furthering study and research on Africa involving social sciences, education, linguistics and the humanities. The Center participates in graduate and undergraduate degree programs of African studies taken in conjunction with degrees in social sciences or African languages. Through its Research Committee, the Center makes grants for research on Africa on all campuses of the University of California. Its Fellowship Committee each year awards full stipends or supplementary grants-in-aid to students concentrating upon Africa in graduate degree programs. The

Center provides information to faculty and students on extramural sources of research support. Other Center activities include public education programs in Africa, training programs for specialist personnel such as Peace Corps Volunteers, the bringing of Africanist scholars and leading African personalities to the University as short-term lecturers or as research associates, the sponsorship of an interdisciplinary colloquium each quarter focused on an integrating theme, and a publications program.

**P. O. Proehl, Director**

The Center for Latin American Studies serves individual and cooperative research of faculty and graduate students in the social sciences, education, humanities, art, law, engineering, and the health sciences. In addition to cooperating with seven colleges and professional schools of the University, the Center conducts systematic multidisciplinary research, implemented by the faculty and graduate students involved in the interdisciplinary seminar, on the UCLA campus as well as in the Center's regional research and training centers in Brazil, Venezuela, and Mexico. The Center facilitates the exchange of personnel between UCLA and Latin America, and awards stipends and grants-in-aid to students in the graduate degree program. Through the Deans' Advisory Committees for Latin American Studies which function in colleges and schools throughout the campus, the Center provides channels for academic intercommunication among the University's Latin Americanists. The Latin American Center publishes a series of documentary publications, e.g., *STATISTICAL ABSTRACT OF LATIN AMERICA*, *COMMUNISM IN LATIN AMERICA*, *PERIODICALS FOR LATIN AMERICAN ECONOMIC DEVELOPMENT TRADE AND FINANCE*, *MASTER DIRECTORY FOR LATIN AMERICA*, and *GUIDE TO LATIN AMERICAN STUDIES*, and also sponsors a monograph series, "Latin American Studies."

**J. Wilbert, Director**

The Center for Medieval and Renaissance Studies is concerned with understanding the nature, causes, and processes by which, between about A.D. 300 and 1650, European culture in all its aspects built up such a store of energy and competence that it overran the rest of the world. Since during that time the West was an "emerging" society, far less distinct from the Near East and more open to external influences than it has since become, the Center includes within its concept of the Middle Ages and Renaissance not only the Occident but also Byzantium, the Slavic world, Islam, the scattered Jewish communities, and the minor Eastern Christian groups. It fosters research on the interplay between these related societies as well as on problems internal to each.

The Center assists individual and group investigation by conferences, symposia, lectures, and its two published series, the *CONTRIBUTIONS AND THE PUBLICATIONS*. It annually awards several research assistantships to doctoral candidates; three of these are designated for Byzantine studies. **Lynn White, Jr., Director**

The Center for Near Eastern Studies was established to promote individual and collaborative research and training in this area. The Center encourages the research of individual faculty members and collaborates in the solution of basic research problems which require institutional backing. The Center also sponsors lectures, seminars and conferences on various topics falling within the scope of Near Eastern studies, and actively promotes an extensive publication program.

**G. E. von Grunebaum, Director**

The Center for Russian and East European Studies was established to promote, assist and coordinate research and training on the countries of Eastern

Europe. It furthers the research of individual faculty members and graduate students, sponsors colloquia, seminars and lectures, organizes conferences, and participates, with other universities, in academic exchange programs with the countries of Eastern Europe.

**Henrik Birnbaum** Director

The Center for Mythology and Folklore Studies is the research arm of the Folklore and Mythology Group, which was organized to stimulate interest in folklore along interdisciplinary lines. In addition to mythology, primitive myth and ritual are a concern of the Center. The Center attempts on the one hand to relate modern folklore to ancient mythology and on the other to show in terms of folklore and mythology the impact of higher cultures upon lower. In mythology particular emphasis is laid on the ancient Indo-European, Finno-Ugric and Semitic traditions of Europe, Western Asia, and the Near East. Collecting projects are under way in Latin America and the Philippines. Within the United States research projects involve the compilation of a dictionary of American popular beliefs and superstitions, with supporting work in American legendry, custom and usage. The collecting of ethnic folklore, as well as genres of Anglo-American material, is also an important part of the program.

**W. D. Hand**, Director

### **Bureau**

The Bureau of Business and Economic Research was established to facilitate research in business and economic problems, particularly those of California and the Pacific Coast but not excluding problems of wider import. The Bureau acts as a service organization for faculty members by providing research assistants, statistical and other technical aid, and travel funds. The main results of its research are published in three forms: (1) the Monograph Series, (2) the Occasional Papers, and (3) the Reprint Series. The Bureau responds to requests from the public regarding sources of data on business and economic problems of the State of California, specifically Southern California.

**R. Cassady, Jr.**, Director

### **Museums and Special Collections**

The University Art Galleries were established with the support of Edward A. Dickson, for whom the Dickson Art Center was named. The permanent holdings originated with the Willitts J. Hole Collection of the Italian, Spanish, Dutch, and English schools. To this was added the James Kennedy Collection of English paintings of the 18th, 19th, and 20th centuries. In addition, many paintings, chiefly of the present century, have been donated.

The new Art Galleries include a print room and study room, the home of the Grunwald Graphic Arts Foundation, which includes primarily modern German, French, and Italian prints and drawings with excellent examples of earlier works: Durer, Mantegna, Rembrandt, Schongauer. Most of these are the gift of Fred Grunwald, with substantial augmentations from other collectors.

The large sculptures in the court of the Dickson Art Center and on the North Campus are in charge of the Art Galleries. They include works by Andrews, Archipenko, Arp, Calder, Casanova, Consagra, Etrog, Laurens, Lipschitz, Anna Mahler, Matisse, Moore, Muller, Noguchi, Rosenthal, David Smith, Zajac, and Zorach. They are gifts of the David E. Bright Estate, Mrs. Anna Bing Arnold, and the UCLA Art Council.

The Art Galleries present annually five major exhibitions related to the educational program of the Department of Art. One of these exhibitions is regularly sponsored by a supporting organization, the UCLA Art Council.

**F. S. Wight, Director**

The Museum and Laboratories of Ethnic Arts and Technology comprise a growing collection of objects which exemplify the range of the material culture, and specifically of the arts, of people who lived until recently at or beyond the margins of the major Oriental and Occidental civilizations. Collections represent the arts and archaeology of the Ancient Near East, the circum-Mediterranean cultures prior to the florescence of Classic Greece, the Indo-European neolithic and bronze ages, Latin American folk arts from the Conquest to the present, and selected facets of European and Oriental folk arts such as puppetry. The Museum and Laboratories promote the study of arts and artifacts as one of the most promising avenues toward an understanding of man. As a resource for UCLA faculty, students, visiting scholars of international repute, and the general public, they offer assistance with instruction, research, field work, exhibitions, and seminars, and sponsor exhibitions, lecture programs, symposia, and publications.

**Jay D. Frierman, Acting Curator**

The Botanical Garden provides an outstanding collection of specimen plants of the world. The experimental field, lathhouse and pollinating house are also in the Garden. Adjoining is the Plant Physiology Building, with glasshouses and controlled-growth rooms for instructional and research materials. The University maintains a teaching herbarium of specimens representative of the flora of the world. The collection includes the Bonati Herbarium, noteworthy for the specimens of old world Scrophulariaceae, an extensive and comprehensive collection of American Labiatae, and research collections of certain California genera. Special emphasis is placed on subtropical ornamental plants.

**Mildred E. Mathias, Director**

Zoological collections of the Department of Zoology include a research collection of marine fishes, primarily from the eastern Pacific and the Gulf of California, and the Dickey Collection of birds and mammals, primarily from the southwestern United States, western Mexico, and central and middle America. The department also maintains a more limited collection of fossil vertebrates. Through a cooperative arrangement, the large zoological collections of the Los Angeles County Museum, containing both fossil and recent specimens, are available for research by qualified students.

### **Laboratories**

The Materials Processing Laboratory provides research equipment for the use of graduate students and faculty in the College of Engineering. The Laboratory is equipped with heating units including a high frequency induction heating unit with attachments for melting, crystal pulling, and zone melting; a rolling mill; a wire-drawing machine; equipment for electrochemical machining research; and other facilities for teaching and research.

**Reno R. Cole, Director**

The Laboratory of Nuclear Medicine and Radiation Biology conducts research in the fields of biophysics, nuclear medicine, biochemistry, radiation biology, and ecology. It is funded through a contract with the Atomic Energy Commission. Most of the program is conducted in Warren Hall, located on the West

Medical Campus. The laboratory is administratively related to the Department of Biophysics.

Warren Hall is well equipped with modern research tools including a cobalt radiation source with an activity of 10,000 curies at the time of installation. The laboratory staff consists of over 200 scientists, technicians and supporting personnel representing many disciplines: biophysicists, biochemists, physicians, physicists, physical chemists, electron-microscopists, biologists, soil scientists, plant physiologists, ecologists, and spectroscopists. O. R. Lunt, Acting Director

The Cardiovascular Research Laboratory, sponsored by the Los Angeles County Heart Association, does research and offers research training in the fundamental physiology of the heart. Among the main fields of study are the biophysical definition of the contractile state and the nature of excitation-contraction coupling in the heart, the ionic fluxes associated with this activity and the cellular compartments within which they are contained, and the biochemical, energetic and ultrastructural aspect of the contraction process.

Wilfried F. H. M. Mommaerts, Director

### Other Research Activities

Air Pollution Research Program  
Archaeological Survey Program  
Business Administration Research Division  
California Institute for Cancer Research  
Committee on International and  
Comparative Studies

Exceptional Child Research Program  
Numerical Analysis Research Program  
Oral History Program  
Real Estate Research Program  
Security Studies Project  
Zoology Fisheries Research Program

### Public Lectures, Concerts, Dance, Theater, Films and Art Exhibits

As opportunity offers, the University presents free public lectures of general and scholarly interest by qualified persons. These lectures are intended to supplement and stimulate the work of all departments of the University, and to offer students and community an opportunity to hear world-renowned authorities in every area of the arts and sciences.

The music program of the University includes many special events. The Concert Series Section of the Committee on Fine Arts Productions offers a broad variety of performances by soloists, chamber musicians, orchestral, choral, and other groups of nationally known artists.

During each quarter the Department of Music sponsors evening concerts by the A Cappella Choir, Symphony Orchestra, Opera Workshop, Chamber Music Ensemble, Collegium Musicum, Chorus, Symphonic Band, Madrigal Singers, and the various ethnic study groups of the University. Individual artists, both students and faculty, present weekly Tuesday noon recitals that are free to the public, and the Institute of Ethnomusicology offers ethnic concerts each Thursday noon.

Dance concerts are presented regularly under the auspices of the Dance Department. Well-known dance artists and companies are brought from all parts of the world by the Concert Series Section of the Committee on Fine Arts Productions. Performances range from ballet and folk to ethnic and modern.

Students of dance present their original works in evening concert. Members of the dance faculty also perform their own choreography. Free noon lecture-demonstrations are presented regularly.

The Galleries, in the Dickson Art Center, contain a permanent collection of older masters, and present a series of significant temporary exhibitions many of which are circulated nationally. All aspects of art are covered in this program—painting, drawing, print making, sculpture, architecture, ceramics, and industrial, environmental, and graphic design. In addition, the Grunwald Graphic Arts Foundation maintains a print room in the Dickson Art Center and mounts a series of exhibitions related to the Galleries' program. The Galleries are open from noon to 5 p.m. Mondays through Fridays and 1:30 to 5 p.m. Sundays.

In addition to its intramural, experimental production program, the Department of Theater Arts produces a varied selection of significant new and old plays from Aristophanes to Bernard Shaw, Shakespeare to Eugene O'Neill, as well as plays never produced before. These are presented in an annual season of six or more plays for the campus and community.

A number of art, documentary, educational, and foreign films, including film series, are presented each quarter. Twice a year in November and April, the Motion Picture Division of the Theater Arts Department presents several evenings of films written, directed and produced by students. From time to time, these films are included in the general series. All the events listed are open to the public.

## Education Abroad Program

The Education Abroad Program offers opportunities to undergraduate students of the University of California to study in universities overseas. It is administered for the entire University by the Santa Barbara campus.

In 1968–1969 the University will continue the operation of its study centers in France, Germany, Hong Kong, Italy, Japan, Spain, Sweden, and the United Kingdom and will open new centers in Ireland, Israel, Lebanon and Mexico. The Study Centers' primary purpose is to provide a sound academic experience in a different educational system. They also enable the University of California students to become deeply involved in the language and culture of the host country.

Eligibility requirements are: upper division standing in the University at the time of participation, two years of university-level work in the language of the country with a B average (or equivalent thereof), an overall B average, seriousness of purpose, and an indication of ability to adapt to a new environment. Transfer students are eligible if they meet the language requirement and have completed at least one language course in the University of California. (The language requirement is not applicable to the centers in Hong Kong, Japan, Ireland, Israel, Lebanon, and the United Kingdom.) Special arrangements can be made for the participation of graduate students.

The participants will spend from nine to eleven months abroad, including a special orientation program, six or seven weeks of intensive language preparation (in all centers except those in Israel, Japan, Lebanon, and the United Kingdom), a full academic year in the university of their choice, and some vacation travel.

The program in Mexico City is for the summer and fall quarters or the winter and spring quarters only.

Each student will be concurrently enrolled on his home campus and in the host university and will receive full academic credit for courses satisfactorily completed.

The Regents endeavor to bring this year abroad within the reach of all students, regardless of their financial resources.

Applications for 1969-1970 will be accepted from September 30, 1968, through January 10, 1969. (Applications for Greece, Ireland, and the United Kingdom must be filed no later than November 15, 1968.)

Note: For further information visit or write to the Education Abroad Program, 1205 South Hall, University of California, Santa Barbara 93018 or contact the Education Abroad Program, 2221-B Social Sciences Building, UCLA.

### **Summer Session**

The University conducts at Los Angeles one six-week summer session. In 1968 the Summer Session will begin on Monday, July 1. The Summer Session bulletin is obtainable after March 15 from the Office of the Summer Sessions, Administration Building, University of California, Los Angeles, California 90024.

Admission to a Summer Session does not constitute admission to a regular session. Students planning to attend the University in regular session are referred to pages 22-31 of this bulletin.

### **Foreign Language Training**

Research and field work overseas may be facilitated by oral proficiency training in any of twenty-eight languages taught at the Defense Language Institute at the Presidio of Monterey. This unique program is available on a limited basis to University graduate students and faculty. For additional information, the campus Language Training Adviser, John E. Englekirk, may be consulted. Application forms may be obtained from the Secretary, University of California Language Training Advisory Committee, University of California, Santa Cruz, California 95060.

### **University Extension**

It is the mission of University Extension to provide the intellectual bridge between the University and the people of the State of California, individually and in organizations. University Extension programs are designed to provide educational opportunity to adults for professional upgrading, personal growth through cultural programs, and more effective participation in civic affairs. In the broader social view, it is the assigned task of University Extension to provide the mechanism by which the resources of the University can be applied to the more rapid solution of statewide and urban problems.

A variety of methods are used to implement these aims: classes, discussion groups, correspondence courses, conferences, institutes, short courses, lectures, motion picture production, radio broadcasts, educational television, and vocational counseling and testing.

Veterans may use the educational benefits available to them under Federal and State laws to enroll in University of California Extension classes, provided the classes are part of their prescribed and recognized objectives approved by the Veterans Administration.

For detailed information, write or telephone the University Extension office on any campus of the University.



# Admission to the University

## IN UNDERGRADUATE STATUS

The admission requirements of the University are based on two principles: first, that the best assurance of success in the University is shown by high quality of scholarship in previous work, and second, that the study of certain specified subjects will give the student both good preparation for the work of the University and reasonable freedom in choosing his field of specialization.

### Application for Admission

An application form may be obtained at the Office of Admissions, 1147 Administration Building, University of California, Los Angeles 90024. Application filing periods for the year 1968-1969 are: Fall Quarter, 1968—October 1, 1967 through March 1, 1968. Winter Quarter, 1969—May 1, 1968 through November 1, 1968. Spring Quarter, 1969—August 1, 1968 through February 1, 1969. Summer Quarter, 1969—December 1, 1968 through May 1, 1969.

A fee of \$10 must accompany each application.

Each applicant is responsible for requesting the graduating high school, and each college attended if he applies in advanced standing, to send official *transcripts* of his record directly to the Office of Admissions.

Those who are admitted will be required to return a *statement of intention to register*, together with a nonrefundable fee of \$50, which will be credited to the incidental fee if the student registers in the quarter for which he applied.

### Subject A: English Composition

Every undergraduate entrant must demonstrate an acceptable ability in English composition. There are several ways in which this requirement may be met before the first quarter in residence (see page 38). But students who have not already fulfilled the requirement must, during their first quarter, enroll in the course in Subject A, a noncredit course for which a fee is charged.

### Vaccination Certificate

Every new student and every student returning to the University after an absence of two or more quarters must present at the time of medical examination, or review of medical examination, by the University medical examiners a certificate establishing the fact that he has been successfully vaccinated against small-pox within the preceding three years. A form for this purpose will be furnished by the Admissions Office. A similar certificate from some other source such as the Armed Services, or a recent passport, is equally acceptable. It is preferable to have vaccination performed well in advance of registration, especially if there has been no recent vaccination and a full reaction is possible. However, for the convenience of those students who come here without having fulfilled the requirement, vaccination may be performed by the Student Health Service at the time of taking the physical examination. No one in the Student Health Service has authority to waive or postpone the vaccination requirement for any reason other than ill health.

## Requirements for Admission to Freshman Standing

An applicant for admission to freshman standing is one who has not registered in any college-level institution since graduation from high school.

The requirements listed below apply to California residents; for special requirements for nonresident applicants, see page 26.

### Graduation from High School

#### Subject Requirements

Courses offered in satisfaction of the following subject requirements must be included on a list submitted to the Director of Admissions of the University by the high school principal if the school is located in California. This list must have been certified by the principal to the effect that the courses meet the requirements for admission to the University, and the list must have been approved by the Director of Admissions. If the high school is not located in California but is regionally accredited, appropriate courses will be considered acceptable.

#### A. HISTORY—1 UNIT

This must consist of a year course in United States history, or one-half year of United States history and one-half year of civics or American government.

#### B. ENGLISH—3 UNITS

These must consist of university preparatory courses in English composition and literature.

#### C. MATHEMATICS—2 UNITS

These must consist of university preparatory courses in such subjects as algebra, geometry, trigonometry, calculus, elementary functions, matrix algebra, probability, statistics, or courses combining these topics.

#### D. LABORATORY SCIENCE—1 UNIT

This must consist of an eleventh- or twelfth-grade year course in one laboratory science.

#### E. FOREIGN LANGUAGE—2 UNITS

These must be in one language. Any foreign language with a literature is acceptable.

#### F. ADVANCED COURSE—1 OR 2 UNITS

This must be chosen from one of the following:

*Mathematics.* A total of 1 unit of mathematics beyond the 2 units offered toward the mathematics requirement.

*Foreign language.* Either 1 additional unit in the same language offered toward the foreign language requirement or 2 units of another foreign language.

*Science.* 1 unit of either chemistry or physics in addition to the science offered toward the laboratory science requirement.

Electives to complete the minimum of 15 standard entrance units are also required.

The subject requirements listed above may be satisfied only by courses completed with a grade of C or higher.

### Scholarship Requirements

At least a B average is required in courses taken after the ninth year which are used to meet the subject requirements listed above.

In determining the required average, a grade of A in one course will be used to balance a C in another; but an A grade may not be used to compensate for any grade below C. Grades, including those earned in accelerated and advanced courses, are accepted as they appear on the transcript.

Courses taken in the ninth year or earlier in which a grade below C is received may be repeated to establish subject credit.

Courses taken after the ninth year in which a grade of D or F is received may be repeated to establish subject credit and to improve scholarship. Courses may be repeated in an amount not to exceed a total of one unit of the required subjects. Grades earned in such repetitions will not be counted higher than a C in determining the scholarship average.

### Examination Requirement

As a requirement for admission, all freshman applicants (and advanced standing applicants who have earned less than twelve units of college credit subsequent to high school graduation) must submit scores from the following examinations of the College Entrance Examination Board:

1. The Scholastic Aptitude Test
2. Three Achievement Tests, which must include:
  - a. English composition
  - b. social studies or foreign language
  - c. mathematics or science

Applicants whose scholarship average in the required high school subjects is 3.00 to 3.09 inclusive must achieve a minimum total score of 2500 on the examinations. The test results of all applicants will be used for purposes of counseling, placement, and, when possible, satisfaction of the Subject A requirement.

The tests should be taken *after* completion of the first half of the eleventh grade. The verbal and mathematics scores on the Scholastic Aptitude Test must be from the same sitting.

For arrangements to take the tests, see below.

### ADMISSION BY EXAMINATION ALONE

An applicant who is ineligible on the requirements listed above and who has not registered in any college-level institution (except for a summer session immediately following high school graduation) may qualify for admission by examination alone. For admission of nonresident applicants by this method, see page 26.

To qualify, the applicant must achieve high scores in the examinations required of all eligible applicants. The total score on the Scholastic Aptitude Test must be at least 1100; the scores on the three Achievement Tests must total at least 1650, and the score on each must be at least 500.

To obtain information about the tests or to make arrangements for taking them, apply to Educational Testing Service, P. O. Box 1025, Berkeley, California

94701, or P. O. Box 592, Princeton, New Jersey 08540. Scores will be regarded as official only if they are received by the Admissions Office directly from Educational Testing Service.

### **Admission to Advanced Standing**

An applicant who has registered in a junior college, a four-year college, a university, extension classes of college level, or any comparable institution since graduation from high school is subject to regulations governing admission to advanced standing. He may not disregard his college record and apply for admission to freshman standing.

An advanced standing applicant who has earned less than twelve units of college credit subsequent to high school graduation must satisfy the examination requirement for freshman applicants as described on page 24.

Applicants for admission to advanced standing must meet the requirements listed below. These requirements apply to California residents; for special requirements for nonresident applicants, see page 26.

### **HIGH SCHOOL SUBJECT REQUIREMENTS**

Students are expected to have satisfied, either through high school or college courses, the subjects required for admission of high school graduates to freshman standing (see page 23). Courses taken in an approved college, of appropriate content and completed with satisfactory grades, may be used to clear high school subject deficiencies.

Deficiencies in subject requirements will be waived in an amount not exceeding 2 high school units if the applicant presents a college record of at least 84 quarter units or 56 semester units acceptable for advanced standing credit, with a grade-point average of 2.4 or higher in all such units attempted.

### **MINIMUM SCHOLARSHIP REQUIREMENTS**

In college courses acceptable for transfer to the University, certain grade-point averages are required. Grade points are assigned as follows: for each unit of A, 4 points; B, 3 points; C, 2 points; D, 1 point; incomplete and failure, no points. 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. Courses completed with a grade lower than C may be repeated, but the units and grade points count each time the course is taken.

The minimum grade-point average required for transfer from another institution depends on whether or not the applicant was eligible to enter the University at the time of graduation from high school. If he was eligible to enter in freshman standing, the required overall average in courses acceptable for advanced standing credit is C (2.0) or higher. But if the applicant was ineligible at the time of high school graduation because of low scholarship or a combination of low scholarship and incomplete subject preparation, then he must have altogether at least 84 quarter units or 56 semester units with a grade-point average of 2.4 or higher.

In addition, every applicant must present from the last accredited college or university attended a statement of good standing and an academic record with an average of at least 2.0. If the record at any institution previously attended

shows an average below 2.0, further requirements may be imposed to insure that the subsequent program offsets the deficit.

### **Credit for Work Taken in Other Colleges**

The University grants unit credit for courses appropriate to its curriculum which have been completed in other regionally accredited colleges and universities. This credit is subject to the restrictions of the senior residence requirement of the University.

As an integral part of the system of public education in California, the University accepts, usually at full unit value, approved transfer courses completed with satisfactory grades in the public junior colleges of the State. After a student has earned 70 semester units or 105 quarter units acceptable toward a degree no further unit credit will be granted for courses completed at a junior college.

Extension courses taken at an institution other than the University may not be acceptable. The decision regarding their acceptability rests with the Office of Admissions.

### **Special Requirements for Nonresident Applicants**

It has been necessary to place some limitation on enrollment of applicants who are not residents of California; consequently, only those of exceptional promise will be eligible for admission. The regulations below are designed to admit out-of-state applicants whose standing, as measured by scholastic records, is in the upper half of those who would be eligible under the rules for California residents.

## **ADMISSION TO FRESHMAN STANDING**

### **Graduation from High School**

The acceptability of records from high schools outside California will be determined by the Office of Admissions.

### **Subject Requirements**

The same subject pattern as for California residents is required (see page 23).

### **Scholarship Requirements**

The applicant must have maintained a grade-point average of 3.4 or higher on the required high school subjects (grade points are assigned as follows: for each unit of A, 4 points; B, 3 points; C, 2 points; D, 1 point; incomplete and failure, no points).

### **Examination Requirement**

A nonresident applicant must take the same College Entrance Examination Board tests as those required of a resident applicant (see page 24).

## **ADMISSION BY EXAMINATION ALONE**

A nonresident applicant who is not thus eligible for admission and who has not registered in any college-level institution (except for a summer session immediately following high school graduation) may qualify for admission by

examination alone. The requirements for a nonresident applicant are the same as those for a resident except that the scores on the three Achievement Tests must total at least 1725 (see page 24).

### **ADMISSION TO ADVANCED STANDING**

In addition to the regular admission requirements (see page 25), a nonresident applicant for admission to advanced standing must have earned a grade-point average of 2.8 or higher in college subjects attempted and acceptable for transfer credit.

If the applicant did not have at the time of high school graduation an average of 3.4 or higher in courses satisfying the required subject pattern, he must present a minimum of 84 acceptable quarter units or 56 acceptable semester units with a grade-point average of 2.8 or higher.

### **Admission to Limited Status**

Students in limited status are those with a bachelor's degree who are not candidates for an advanced degree, or those without a bachelor's degree who have completed a substantial amount of college work and who by reason of special attainments may be prepared to undertake certain courses toward a limited and definite objective. An applicant will not be admitted to limited status for the purpose of raising a low scholarship average for either undergraduate or graduate admission.

Transcripts must be submitted from each institution attended since the eighth grade. A personal interview is usually required.

Conditions for admission are assigned by the Admissions Officer and are subject to the approval of the dean of the college in which the applicant plans to study. A departmental recommendation is usually required. Admission is approved for a specified time only and a prescribed scholarship average must be maintained.

### **Applicants with Bachelor's Degrees**

Ordinarily, an applicant with a bachelor's degree substantially equivalent to the bachelor's degree granted by the University of California should apply for admission to graduate status. An applicant with a superior record may occasionally qualify as a student in limited status or, after a complete change of objective, as an undergraduate seeking a second baccalaureate. In either case, the previous scholarship record must be such as to indicate very strong probability of academic success. Admission is subject to the approval of the Admissions Officer and the dean of the school or college in which the applicant plans to enroll.

### **Applicants From Other Countries**

The credentials of an applicant for admission from another country are evaluated in accordance with the general regulations governing admission. An application, official certificates, and detailed transcripts of record should be submitted to the Office of Admissions early in the appropriate filing period (see page 22). Doing so will allow time for exchange of necessary correspondence and, if the applicant is admitted, will help him in obtaining the necessary passport visa.

**Compulsory Health Insurance**

The acquiring of health insurance is a condition of registering at the University for all foreign students except those in the United States on permanent immigration visas.

**Proficiency in English**

An applicant from another country whose native language is not English may be admitted only after demonstrating that his command of English is sufficient to permit him to profit by instruction in the University. His knowledge of English will be tested by an examination upon his arrival at the University or by the scores he has attained on the Test of English as a Foreign Language (TOEFL). Admission of an applicant who fails to pass one of these examinations will be deferred until he has acquired the necessary proficiency in the use of English. Each applicant from a non-English speaking country is urged to take the Test of English as a Foreign Language approximately six months in advance of the term for which he is applying. Arrangements to take the test may be made by writing directly to TOEFL, Educational Testing Service, P. O. Box 592, Princeton, New Jersey 08540, U.S.A. Results of the test should be forwarded to the University.

**Language Credit**

A student from a country where the language is not English, will be given college credit in his own language and its literature only for courses satisfactorily completed. Such credit will be allowed only for courses taken in his country at institutions of college level, or for upper division or graduate courses taken in this University or in another English-speaking institution of approved standing.

**College of Engineering**

An applicant for admission to the lower division of the College of Engineering who is outside the United States must pass, with satisfactory scores, the College Entrance Examination Board Scholastic Aptitude Test (verbal and mathematics sections) and achievement examinations in English composition, physics, and advanced mathematics, before a letter of admission to the College of Engineering can be issued. Arrangements to take the tests in another country should be made directly with the Educational Testing Service, P. O. Box 592, Princeton, New Jersey 08540, U.S.A. The applicant should request that his scores for the tests be forwarded to the University.

Each advanced undergraduate student applying for admission to the College of Engineering who is outside the United States, must pass a special qualifying examination. Arrangements to take this test may be made by writing directly to the Universitywide Director of Admissions, Room 570 University Hall, Berkeley, California 94720, U.S.A.

**IN GRADUATE STATUS**

A student seeking admission to graduate status at UCLA should hold a bachelor's degree from an institution of fully recognized standing. His academic work should be substantially equivalent, in distribution of subject matter and in scholarship achievement, to the requirements for a comparable degree at the University of California. The student should present a strong academic record in his junior and senior years and specifically in the formal preparation in his

major field. Special academic prizes, honors, or awards in activities related to the applicant's graduate objectives are also considered in evaluating eligibility for graduate study. Applicants who have completed postbaccalaureate work at other universities are expected to have demonstrated their capabilities at the graduate level with at least a B scholarship average in their postgraduate work.

### **Application for Admission**

An application for admission to graduate status may be obtained from the Admissions Section of the Graduate Division, Administration Building, University of California, Los Angeles, California 90024. An application fee of \$10 by check or money order, payable to The Regents of the University of California, is required of all applicants and is not refundable. The foreign student applying from abroad may submit his application without this fee, but he is required to pay the fee upon his arrival at the University. This applies also to a student from the United States, temporarily living abroad who for reasons of location or differences in the foreign exchange is not able to submit this fee with his application.

Applications and supporting papers should be submitted to the Admissions Section of the Graduate Division,\* on or before the following dates:

April 15th for the Summer Quarter  
 May 15th for the Fall Quarter  
 October 15th for the Winter Quarter  
 January 15th for the Spring Quarter

If a student is requesting a fellowship or other financial assistance, the application, together with the application for admission, should be submitted to the Admissions Section according to the published deadlines for competition for these awards.

Official transcripts of record, *in duplicate*, covering all collegiate and university work completed, together with official evidence of the degree(s) conferred, should accompany, or at least immediately follow, the application. If the applicant has attended several schools (junior colleges, colleges, universities), he should submit two official transcripts from each institution previously attended. One set of the transcripts will be retained as part of the student's permanent file at the University, the second set will be sent to the student's major department for advisory purposes. Students graduating or graduated from UCLA or any other campus of the University of California need submit two copies only of the transcript of record from that campus if the last two years were completed there.

### **Additional Information for Foreign Students**

Foreign students seeking admission to graduate status are expected to maintain the same standards required of U. S. students. Students with credentials from institutions in other countries, however, are advised to submit their papers at least four to six months before the beginning date of the quarter in which they hope to register. In any event, applications and supporting papers should

\* Engineering applicants address these materials directly to the Assistant Dean, Graduate Studies, in Engineering, 6730 Boelter Hall, College of Engineering.

be submitted to the Admissions Section of the Graduate Division\* no later than:

April 15th for the Summer Quarter  
 May 15th for the Fall Quarter  
 October 15th for the Winter Quarter  
 January 15th for the Spring Quarter

Foreign students should make certain that they submit an official certificate or diploma showing completion of secondary school and official records in duplicate of all college and university work. These records must show the subjects undertaken and examination marks achieved, along with the award of the degree(s). If photostatic copies are submitted in lieu of original documents, they must bear the seal of the issuing institution and the actual—not photographed—signature of the student's collegiate or university registrar. All foreign students are notified by airmail of their admission or rejection as soon as a decision has been reached. It is inadvisable, therefore, for any foreign student to come to UCLA before he has received a formal notice of admission to the University from the Graduate Division.

Since English is the language of instruction used at UCLA and since success in graduate study here depends largely upon facility in English, foreign students whose first language is other than English are strongly urged to take the Test of English as a Foreign Language (TOEFL), administered throughout the world in more than ninety testing centers by the Educational Testing Service, Princeton, New Jersey 08540, U.S.A. Should students from overseas be unable to sit for the TOEFL examination, they will be required to take a proficiency examination in English at UCLA on a date later to be specified, but immediately preceding the term in which they are to register. Passing of the TOEFL or UCLA examination at a satisfactory level determines whether the student is permitted to register for a full graduate program, to carry a modified program, or first devote his time to further study of English. Students from other countries are encouraged to report to the Admissions Section of the Graduate Division, Administration Building, as soon as possible after their arrival, so that they may be assisted in completing admission procedures.

### **Admission in Summer Session Courses for Graduate Credit**

Students are advised that admission to Summer Sessions for graduate courses, as distinguished from the regular Summer Quarter, does not, of itself, constitute admission to the Graduate Division. Students who wish to apply Summer Session courses to advanced degrees may do so, but must first establish eligibility for graduate admission. This application should be submitted with supporting papers in accordance with the instructions on page 29. Separate applications for courses in Summer Session may be obtained from the Office of Summer Sessions, Administration Building, UCLA, Los Angeles, California 90024.

### **Application Review**

In order to evaluate the applicant's qualifications and promise for success in graduate study, the Graduate Division and the department to which the appli-

\* Engineering applicants address these materials directly to the Assistant Dean, Graduate Studies in Engineering, 6730 Boelter Hall, College of Engineering.

cant is applying will review each application and its supporting papers. In addition to the minimal university standards of the Graduate Division, individual departments may stipulate extra admission requirements.

Certain departments require the Graduate Record Examination, the Miller Analogies Test, or other special examinations. Where such a test is part of the departmental requirements, the applicants will be so informed by the Graduate Adviser.

## Notice of Admission

Formal notice of admission is sent to the applicant by the Graduate Division and will contain instructions concerning registration procedures including a notice of intention to register which should be returned to Graduate Admissions by the student. It will also include information about the required physical examination and about other facilities of the University.

## Renewal of Application

All students who did not register in the quarter for which they were accepted for admission to graduate status, and who wish to register in a subsequent term, should file Renewal of Application forms with the Admissions Section of the Graduate Division,\* where their original applications were filed. The deadlines for filing are the same as those required for original applications. No additional fee is required for a renewal of application, but approval for admission for any given term does not necessarily guarantee approval for admission at some later date. If the student has undertaken additional academic work in the interim, at some other educational institution or in University Extension, he must provide supplementary official transcripts, in duplicate.

The student seeking to reapply for admission more than three years after his original application was filed, applies as a new student and follows the procedures outlined on page 29.

\* Engineering applicants address these materials directly to the Assistant Dean, Graduate Studies in Engineering, 6730 Boelter Hall, College of Engineering.

# General Regulations

## READMISSION

A student who wishes to return to the University after an absence of more than one quarter must file an Application for Readmission. For the academic year 1968-1969, the schedule for application is:

For Summer Quarter 1968: All students returning in the same status (graduate or undergraduate) who neither completed the Winter Quarter, 1968, nor were registered for the Spring Quarter, 1968.

For Fall Quarter 1968: All students returning in the same status (graduate or undergraduate) who neither completed the Spring Quarter, 1968, nor were registered in the Summer Quarter, 1968.

For Winter Quarter 1969: All students returning in the same status (graduate or undergraduate) who neither completed the Summer Quarter, 1968, nor were registered in the Fall Quarter, 1968.

For Spring Quarter 1969: All students returning in the same status (graduate or undergraduate) who neither completed the Fall Quarter, 1968, nor were registered for the Winter Quarter, 1969.

## In Undergraduate Status

Undergraduate students may obtain application forms from the Office of the Registrar. The completed application along with transcripts of record from other institutions, including University Extension, attended during their absence must be filed with the Registrar on or before May 15 for the Summer Quarter; August 15 for the Fall Quarter; November 22 for the Winter Quarter; February 15 for the Spring Quarter.

## In Graduate Status

Graduate students may obtain application forms from the Student and Academic Affairs Section of the Graduate Division. The completed forms must be filed with the same office on or before May 15 for the Summer Quarter; August 15 for the Fall Quarter; November 22 for the Winter Quarter; February 15 for the Spring Quarter. If the applicant has attended any other institution or has done work in University Extension during the time of absence from the University, official transcripts in duplicate must accompany the Application for Readmission.

## INTERCAMPUS TRANSFER

Undergraduate students currently registered on any campus of the University in a regular session (or those previously registered who have not since registered at any other school) may apply for transfer to another campus by filing a form on their present campus. This form must be obtained and filed at the Office of the Registrar, together with an application for transcript of record, also available at the same office. The deadlines are the same as the admissions application deadlines given on page 22.

## REGISTRATION AND ENROLLMENT

Registration is the means by which one becomes a student at the University. It includes the payment of incidental and other fees (described on page 42), and the completion and filing of informational forms for various purposes. All students are required to register by mail. New and re-entering students receive information and instructions for registering by mail with either their notification of admission or readmission or by means of a second mailing. There is a \$10 late registration fee for registration in person on or after the first day of the quarter. No student may register after the second week of classes.

A student's name is not entered on class rolls unless he completes registration according to regulations. These include the filing of the Study List Packet, which process is described on page 34, and on Official Bulletin Boards.

### Registration of Candidates for Higher Degrees

Students enrolled in programs for advanced degrees, certificates, credentials, or other graduate objectives must be registered for a minimum of any three of the four quarters of each year (Summer, Fall, Winter, Spring), until all requirements for their particular objectives are completed. For students entering in other than a Summer or Fall quarter, this provision is adapted appropriately. All students are required to register in the final quarter in which they expect their degrees or graduate certificates to be awarded. Unless granted an official leave of absence, all graduate students, except those on active military duty, who do not register for a minimum of three quarters each year will be considered to have withdrawn from the University. If a student needs to leave the University within a term, he must obtain official approval to withdraw or he will receive nonpassing grades in all courses for which he is enrolled.

In order to reenter the University after withdrawal, students must apply formally and compete with other applicants for readmission.

### Physical Examination

All new students, graduate and undergraduate (including former undergraduates entering graduate status for the first time), and all students returning to the University after an absence of two or more quarters must complete a medical history form to be presented to the Student Health Service for evaluation by the medical staff. A medical examination may be required in cases in which there is some special indication. All entering and re-entering students must also have a chest X ray to ensure the absence of active tuberculosis. This may be performed at the Student Health Service at the time of medical evaluation.

Before coming to the University every student is urged to have his own physician examine him for fitness to carry on university work, and to have all defects capable of being remedied, such as dental cavities, defective hearing, or defective eyesight corrected. Students who wear contact lenses should come equipped also with ordinary eyeglasses to wear in case their eyes become inflamed. Prior to registration in the University prospective students who have had a diagnosis of active tuberculosis will be required to present evidence that their disease has become inactive.

## Conference with Faculty Adviser

A normal procedure for every University student is to confer with a faculty adviser and obtain approval of a tentative program. The adviser will help the student to make a long-range plan for his degree objective and for preparation for graduate or professional study. He will acquaint the student with requirements of the University, his college or school, and his major department. Instructions regarding appointments with advisers are included with Notice of Appointments mailed by the colleges and schools, or with the notice of admission or readmission.

## Enrollment in Classes

In preparation for enrollment in classes a student should purchase from the Student Store the SCHEDULE OF CLASSES which lists courses, final examination groups, and names of instructors. From the schedule and with the aid of his adviser the student may assemble his program. He may not choose two courses in the same examination group. He should try to construct two or three alternate programs in case he is not admitted to the courses of his first choice.

Continuing students (old students who are eligible to register without filing applications for admission or readmission) will have the opportunity to enroll in classes by mail. Materials and instructions for enrolling by mail may be obtained at the Office of the Registrar on dates to be announced on Official Bulletin Boards and in the DAILY BRUIN.

New and re-entering students, as well as continuing students who did not enroll by mail, will enroll in classes during registration week at the times and places announced on Official Bulletin Boards.

## Filing the Registration Packet

The Study List Packet is mailed to the student who registers by mail, or is received from the Cashier when registering in person. The student must complete all the informational cards contained in the packet. The packet (all cards) along with class cards obtained from his instructors must be filed during the first two weeks of instruction as follows: undergraduate students normally file their Study List Packets at the offices of the deans of their respective colleges or schools; graduate students at the offices of their major departments. Variations from these usual practices will be announced on Official Bulletin Boards.

No credit can be earned if the Study List Packet is not filed. When the packet is accepted by the appropriate dean after the announced dates, there will be a late filing fee.

## THE STUDY LIST

In order to receive credit for courses undertaken the student must list them on his Official Study List—the Number 1 card in the Study List Packet—and file with his packet a class card for each course so listed. The study list of an undergraduate student must bear the signature of an adviser or of the appropriate dean, except for students in the College of Letters and Science and the College of Fine Arts. In these colleges, new students will be required, when filing their packets, to present planned programs arranged with an adviser.

The signature of a graduate student's adviser is essential for acceptance of the study list by the Graduate Division.

Unapproved withdrawal from, or neglect of, a course entered on the study list will result in a failing grade. Any change in program after filing the list—whether to add, replace, or drop a course—must be by formal petition approved by the appropriate dean. The approved petition must be filed at the Office of the Registrar.

### **Study-List Limits**

The normal program for an undergraduate student is four courses. However, a student on scholastic probation, except in the College of Engineering, is limited to a program of three courses each quarter, to which may be added a physical education activity.

For students in good academic standing, undergraduate study lists may be presented as follows:

**Business Administration Majors:** three or four courses per quarter without special permission. A student, who has maintained during the preceding two terms at least a B average on a total program of at least three courses each term, may petition to enroll in as many as five courses.

**College of Engineering:** within the limits prescribed in each individual case by the Dean or his representative.

**College of Fine Arts:** three or four courses per quarter without special permission. After his first quarter, a student may petition to carry a program of not more than five courses if in the preceding term he attained at least a B average in a program of at least three courses.

**College of Letters and Science:** three or four courses for students in the first quarter of the freshman year. All other students who have a C average or better and are not on probation may carry three or four courses without petition. After the first quarter, a student may petition to enroll in as many as five courses if in the preceding term he attained at least a B average in a program of at least three courses. First-quarter transfer students from any other campus of the University may carry excess study lists on the same basis as students who have completed one or more terms on the Los Angeles campus. Entering freshmen who are enrolled in Naval R.O.T.C. may not carry more than four courses without petition.

**School of Nursing:** three courses. A student must petition to enroll in more courses.

**School of Public Health:** three or four courses. A student must petition to enroll in more courses.

The course in Subject A, which does not give credit toward a degree nevertheless displaces one course from a student's allowable program.

A physical education activity class may be added to these limits, but other physical education, all military science, and all repeated courses are to be counted in study-list limits.

Regulations concerning study-list limits for graduate students will be found on page 137 of this bulletin.

### Concurrent Enrollment

Concurrent enrollment in resident courses and in courses in University Extension or another institution is permitted only when the entire program of the student has received the approval of the proper dean or study-list officer and has been filed with the Registrar before the work is undertaken.

### GRADES AND SCHOLARSHIP REQUIREMENTS

Grades in courses (graduate or undergraduate) are defined as follows: A, excellent; B, good; C, fair; D, barely passing; F, failure; and I, undetermined (work of passing quality but incomplete). The designations P, passed, and NP, not passed, are used in reporting grades for undergraduate students taking courses on a passed/not passed basis. Likewise S and U respectively are used in reporting satisfactory and unsatisfactory work by graduate students taking courses on this basis.

Grades A, B, C, D, F are final when filed by an instructor in his end-of-quarter course report, except for the correction of a clerical error. No quarter grade except I may be revised by re-examination. Only courses for which grades D or F were received may be repeated for credit and not more than once, unless authorized by the appropriate dean. A student is entitled to replace the grade I with a passing grade and to receive credit provided he completes the work of the course in a way approved by the instructor and the appropriate dean. Grade points will be allowed only upon approval of the dean of the student's college, school, or the Graduate Division. An approved petition for removal of grade I must be filed at the Office of the Registrar.

### Grade Points

A normal undergraduate program for a quarter consists of 4 full courses (or their equivalent in half or multiple courses).

Grade points are assigned as follows: for each A on a full course, 4 points (2 points for an A on half course, 8 points for an A on a double course); B, 3 points; C, 2 points; D, 1 point; I and F, no points. The *Grade-point average* is determined by dividing the total number of grade points earned by the number of courses attempted. Courses taken on a passed/not passed or satisfactory/unsatisfactory basis are not counted in computing the grade-point average. In authorized repetitions of a course, courses attempted and grade points earned are counted. Upon removal of a grade I, the student is entitled to receive grade points only upon approval of the appropriate dean.

(For purposes of machine record keeping, and for the ease of use of such records by other institutions, a unit value of 4 quarter units will be assigned to each full course, 2 to a half course, 8 to a double course, etc. Thus the minimum requirement for graduation of 45 courses can be translated to 180 quarter units. Determination of grade-point average is by the same method as described above.)

### Courses Taken Passed/Not Passed

An undergraduate student may take courses on a passed/not passed basis subject to the following regulations:

(A) Except as provided in (C), (D), and (E) below, a student in good standing

may enroll in one course each quarter on a passed/not passed basis. Courses thus passed shall be counted in satisfaction of degree requirements, but whether passed or not passed, such courses shall be disregarded in determining the student's grade-point average.

(B) A grade of passed shall be awarded only for work which would otherwise receive a grade of "C" or better.

(C) A student who has received two "not passed" grades shall be excluded from electing passed/not passed for one quarter.

(D) A department or school may designate any course or courses as ineligible for election by its majors on a passed/not passed basis, and may at its option require a student who has received a "passed" in such a course before changing his major to repeat the course for a letter grade.

(E) A student who has not elected the passed/not passed option in a preceding quarter may take two courses passed/not passed if one of these courses is of an advanced seminar or individual study nature and if this option is approved by the major department or school.

(F) With the permission of the dean of a student's college or school he may change his enrollment in a particular course from the passed/not passed basis to the regular letter grade basis at any time up to the final date for dropping the course.

## MINIMUM SCHOLARSHIP REQUIREMENTS

Students in all undergraduate colleges and schools are expected to maintain a grade-point average of 2.0 (C average) on all work undertaken in the University—all campuses. Failure to maintain this level normally results in probation. The following provisions apply to all undergraduate students at Los Angeles.

### Probation

A student shall be placed on probation if he fails to maintain at least a grade C average for all courses undertaken in a quarter.

The probationary status of the student can be ended only at the close of a regular quarter and then only if a C average has been attained both on the term's work and on all work taken in the University of California—all campuses.

### Dismissal

A student shall be subject to dismissal from the University (a) if his grade-point average falls below 1.5 for any quarter, or (b) if after two quarters on probation he has not achieved a grade-point average of 2.0 (C average) for all courses undertaken in the University, or (c) if while on probation his grade-point average for work undertaken during any quarter falls below 2.0 (a C average).

Grade-point averages shall be computed on the basis of all courses undertaken in the University (all campuses), including courses graded I (Incomplete), but not including noncredit courses, courses taken in University Extension, or courses taken on a passed/not passed basis.

A student who fails to meet minimum scholarship requirements is subject to such supervision as the faculty of his college or school may determine. The faculty or its designated representative may dismiss a student subject to dis-

missal; may suspend his dismissal, continuing him on probation; or may readmit on probation a dismissed student.

### **In Graduate Status**

Scholarship regulations for graduate students will be found in the **STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA**.

### **Final Examinations**

Final examinations are obligatory in all undergraduate courses except laboratory courses and other courses which, in the opinion of the Committee on Courses, because of resemblance to laboratory courses, require special treatment. In laboratory courses final examinations are held at the option of the department in charge. All examinations will, so far as practicable, be conducted in writing, and a maximum time will be assigned beforehand for each examination, which no student will be allowed to exceed. The time for examination sessions may not be more than three hours.

If a final examination is one of the regular requirements in a course, there can be no individual exemption from examination. Re-examinations are permitted only for the purpose of raising grade I to passing, and then only upon approval of the appropriate dean.

### **Degree Requirements**

In working toward a degree, the student should keep in mind the various levels on which he is to satisfy requirements. College or school and department requirements are discussed fully later in the sections *Colleges and Schools* and *Courses of Instruction*. The following are general University requirements for the bachelor's degree.

### **SCHOLARSHIP**

In order to qualify for a bachelor's degree\* the student must earn at least a C (2.0) average on all courses undertaken in the University of California—all campuses.

### **SUBJECT A: ENGLISH COMPOSITION**

Every undergraduate entrant must demonstrate an acceptable ability in English composition. This requirement may be met by

1. Achieving a grade of 5, 4, or 3 in the College Entrance Examination Board (CEEB) Advanced Placement Examination in English, *or*
2. Achieving a score of 600 or higher in the CEEB Achievement Test in English composition, *or*
3. Achieving a score below 600 but above 470 in the CEEB Achievement Test in English composition and writing an acceptable Subject A writing sample, *or*
4. Entering the University in advanced standing and writing an acceptable Subject A writing sample, *or*
5. Entering the University with credentials showing the completion of an acceptable college-level course in English composition with a grade of C or better.

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\* Candidates for teaching credentials must also maintain a C average in supervised teaching.

The Subject A writing sample, an essay examination prepared by the Committee on Subject A, is administered at centers throughout the state on the last Saturday in April, and is also offered on the University campus at the opening of each quarter.

Any student not meeting the requirement in one of the ways described above must, during his first quarter of residence in the University, enroll in a course of instruction, four hours weekly for one quarter, known as the *Course in Subject A*, without unit credit toward graduation. Should any student fail in the course in Subject A he will be required to repeat the course in the next succeeding quarter of his residency in the University.

A student who maintains in the course in Subject A a grade of A is permitted, on recommendation of the Committee on Subject A, to withdraw from the course at a date determined by that Committee, and is excused from the Subject A requirement.

Every student who is required to take the course in Subject A is charged a fee and the charge will be repeated each time he takes the course. The fee must be paid before the study list is filed.

No student will be granted a bachelor's degree until he has satisfied the requirement of Subject A.

In respect to grading, conditions, and failure, the course in Subject A is governed by the same rules as other University courses.

Students from other countries whose native language is not English should take the Entrance Examination in English as a Second Language rather than the Subject A writing sample. Those who pass this special examination will be credited as having met the Subject A requirement, as will students who satisfactorily complete the advanced course in English for foreign students.

## AMERICAN HISTORY AND INSTITUTIONS

Candidates for a bachelor's degree must satisfy the "Requirement in American History and Institutions" by demonstrating a knowledge of American history and of the principles of American institutions under the federal and state constitutions. This requirement may be met by one of the following methods:

1. By satisfactory completion of one course chosen from the following list: Economics 10; History 7A, 7B, 171A, 171B, 172A, 172B, 173A, 173B, 174A, 174B, 175A, 175B, 177A, 177B, 179A, 179B, 180A, 180B, 188; Political Science 1, 114, 143, 144, 145, 171, 172A, 172B, 180, 186.

Equivalent courses completed in the University Extension may be used to fulfill the requirement. Equivalent courses taken at other collegiate institutions and accepted by the Board of Admissions may also be used to fulfill the requirement.

2. By passing two optional examinations (one in American History and one in American Institutions) which the Committee on American History and Institutions offers for the purpose of satisfying the requirement. (Normally the examinations are offered once each quarter. No course credit is given for the examinations.)

3. By presentation of a certificate of satisfaction of the present California requirement as administered in another collegiate institution within the State.

Candidates for a teaching credential, but not for a degree, need take only

the optional examination in American Institutions or one of the courses listed above under 1.

An alien attending the University on an "F-1 or J-1" student visa may, by showing proof of his temporary residence in the United States, petition for exemption from this State requirement.

Further information regarding the requirement and the optional examinations may be obtained from the Committee on American History and Institutions, Room 6248, Social Sciences Building.

### **SENIOR RESIDENCE**

Of the last\* 45 units which a student offers for a bachelor's degree 35 must be earned in residence in the college or school of the University of California in which the degree is to be taken. When translated to the course structure at UCLA this normally implies that nine of the last 11 courses a student offers for a bachelor's degree must be earned in the college or school in which the degree is to be taken. Not more than 18 of the 35 units may be completed in Summer Session on the campus of residence.

### **CANDIDACY FOR A DEGREE**

A student should announce his candidacy for the bachelor's degree two quarters before he expects to receive the degree by completing the Announcement of Candidacy Card (A-card) in the Study List Packet. The completed A-card must be filed (even though one or more were filed at earlier registrations) during the period for filing the Study List Packet for the quarter in which a student expects to complete the work for the degree. Announcements accepted later in the quarter are subject to a late fee.

### **Change of College or Major**

A change of college (or major) by an undergraduate student requires the approval of the college (or department) to which admission is sought. Applications are made by petition, which may be obtained from the college or school office. No student is permitted to change his major after the opening of the last quarter of his senior year.

A graduate also makes applications for a change in major by petition, which may be obtained at the Office of Student and Academic Affairs Section of the Graduate Division.

### **Withdrawal from the University**

A student withdrawing from the University within the course of a quarter must file with the Registrar's Office an acceptable Notice of Withdrawal. Failure to do so before leaving the campus or, in case of illness or other emergency, as soon as the decision not to continue has been made, will result in nonpassing grades in all courses, jeopardizing his eligibility to re-enter the University of California or his admission by transfer to another institution. Forms containing complete instructions are issued at the office of the dean of the student's college, school or Graduate Division or Window A, Office of the Registrar, and are filed

\* Special provisions governing residence of degree candidates in the College of Engineering are described in the requirements of that college. See under College of Engineering in this bulletin.

at the Registrar's Office Information Window after necessary clearances are obtained. Current Registration Card, Athletic Privilege Card, and tuition and incidental fee receipts must be turned in with the completed Notice of Withdrawal.

A student who withdraws within the course of a quarter must file an Application for Readmission (see page 32) for the quarter in which he proposes to return to the University provided a quarter has intervened since the withdrawal. Such application is necessary in order that the Registrar may be prepared to register the student. The deadlines for filing applications for readmission are not later than six weeks before the beginning of the quarter in which the student wishes to re-enter.

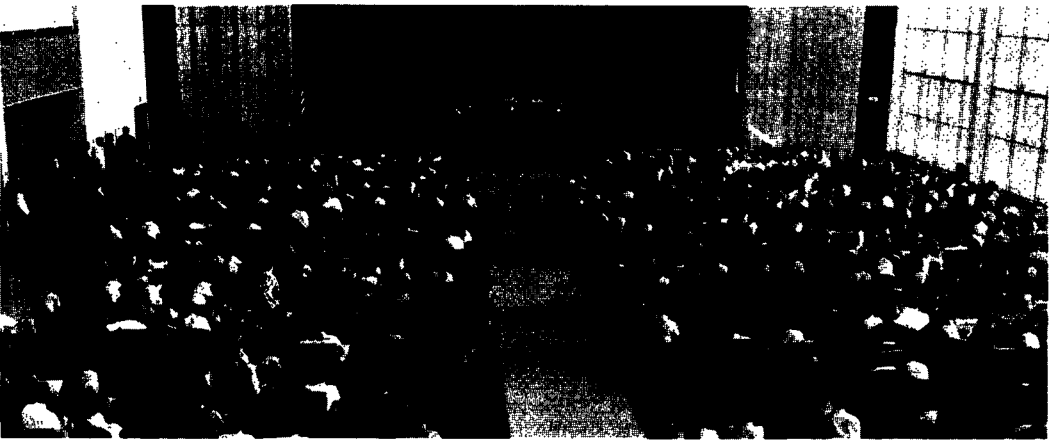
### **Transcript of Record**

Upon formal application to the Registrar a student may have issued on his behalf transcripts of his record on all work taken at UCLA in either regular or summer sessions. A fee of \$1 is charged for each transcript, except for those required for the intercampus transfer of undergraduate students within the University which are provided without charge.

### **STUDENT CONDUCT AND DISCIPLINE**

A student enrolled in the University assumes an obligation to conduct himself in a manner compatible with the University's function as an educational institution. Rules concerning student conduct, student organizations, use of University facilities and related matters are set forth in both University policies and campus regulations, copies of which are available upon request at the Office of Dean of Students, 2224 Administration Building and the Office of Student Activities, 312 Kerckhoff Hall.

Particular attention is called to the booklet **UNIVERSITY OF CALIFORNIA POLICIES RELATING TO STUDENTS AND STUDENT ORGANIZATIONS, USE OF UNIVERSITY FACILITIES, AND NON-DISCRIMINATION** and to the standards of conduct set forth therein.



# Expenses, Financial Aids, Housing

## GENERAL EXPENSES AND FEES\*

The question of expense while attending the University is of importance to every student. It is difficult, however, to give specific information about yearly expenditures. In a student body of some twenty thousand members there are so many different tastes, as well as such a wide range of financial resources, that each student must determine his budget in keeping with his own needs and financial condition. It is possible to live simply, and to participate moderately in the life of the student community, on a modest budget. The best help the University authorities can offer the student in planning his budget is to inform him of certain definite expense items, and acquaint him with others for which he will in all probability have to provide.

An estimated budget for the academic year is given on page 45.

Fees and deposits are payable preferably in cash. If a check is presented the face amount should not exceed all the fees to be paid and must be made payable to The Regents of the University of California.

### Registration Fee

The registration fee for all undergraduate and graduate students is \$100. This fee, which must be paid each quarter at the time of registration, covers certain expenses of students for counseling service, for library books, for athletic and gymnasium facilities and equipment, for lockers and washroom,† for registration and graduation, for such consultation, medical advice, and hospital care or dispensary treatment as can be furnished on the campus by the Student Health Service, and for all laboratory and course fees. A Student Union fee of \$4 each quarter is required of all undergraduate and graduate students. Membership in the Associated Students (fee \$3.50 for all rights and privileges) is required of all undergraduate students; see page 60. Membership in the Graduate Students Association (fee \$1.50 for all rights and privileges) is required of all graduate students; see page 60. No part of these fees is remitted to those students who may not desire to make use of any or all of these privileges. If a student withdraws from the University within the first five weeks of the quarter, a part of these fees will be refunded.

### Nonresident Tuition Fee

Students who have not been bona fide residents of California for more than one year immediately prior to the opening day of the quarter in which they register are charged, along with other fees, a tuition fee of \$400 for the quarter. (Government Code Section 244 and Education Code Section 23054, 23055 and 23057.) Legal residence is the combination of physical presence and the inten-

\* All fees are subject to change without notice. Payment of registration fee is a part of registration. Other fees are payable at Cashier's Office which is open from 8:30 a.m. to 4 p.m. daily.

† Lockers are issued, as long as they are available, to registered students who have purchased standard locks. Locks are sold at \$1.25 each, and may be used as long as desired, or may be transferred by the purchaser to another student.

tion of making the state one's permanent home. New and returning students are required to fill out a Statement of Legal Residence, a form that is issued at the time of registration. Their status is determined by the Attorney in Residence Matters, 590 University Hall, University of California, Berkeley 94720, or by his deputy in the Registrar's Office. All correspondence concerning residence should be addressed to that official as he has the sole authority to determine residence classification.

The attention of the following students is directed to the fact that presence in California for more than one year does not, in itself, entitle them to resident classification: (1) Those under 22, whose parents are not California residents; (2) Veterans who were not California residents at the time of entry into the Armed Forces; (3) Alien students who first must qualify for permanent residence status according to the applicable laws of the United States. Exemption from payment of the tuition fee may be granted to the unmarried minor whose parent is in the active military service of the United States and is stationed in California on the opening day of the quarter for which the minor registers.

Those classified incorrectly as residents are subject to reclassification as non-residents. If incorrect classification resulted from false or concealed facts, the student is subject to University discipline and is required to pay all back fees he would have been charged as a nonresident. Resident students who become non-residents must immediately notify the Attorney in Residence Matters or his deputy. Application for a change in classification with respect to a previous quarter is not received under any circumstances.

Part of the fees may be refunded to students who withdraw before the end of any quarter. A separate circular, STUDENT FEES AND DEPOSITS, gives information on refunds. This circular is available from the Registrar.

### FOR REDUCED PROGRAMS

For the undergraduate student enrolled in less than three courses, the non-resident tuition fee is \$112 per course or the proportionate part for a fractional course. For graduate students the tuition is \$327 per quarter regardless of the number of courses undertaken. There is no reduction in incidental, Student Union or ASUCLA fees.

### Other Fees

Application fee, \$10. This nonrefundable fee is charged every applicant for admission to the University and is payable at the time application for admission is filed. Applicants for graduate status must pay the fee even though it may have been paid when applying as an undergraduate.

Acceptance of admission fee, \$50. For undergraduates only. The fee is non-refundable, but is applied toward incidental fee at time of registration.

Public Health entrance examination, \$2.25.

Subject A examination fee, \$5.

Returned check collection, \$5.

Physical examination—second or late appointment, \$4. Original appointment, or deferment arranged in advance, no fee.

Late registration, \$10. When permitted.

Late filing of study list, \$10. When accepted.

Duplicate registration and/or other cards in registration packet, \$3 each petition.

Change in study list after filing date, \$3 each petition. When dropping, substituting, or adding a course.

Removal of grade E or I, \$5 each petition.

Reinstatement fee, \$10. Reinstatement after a status lapsed.

Late filing of announcement of candidacy for the bachelor's degree, \$3.

Candidacy for Ph.D., Ed.D., or Dr.P.H., \$25.

Special course Subject A, \$45.

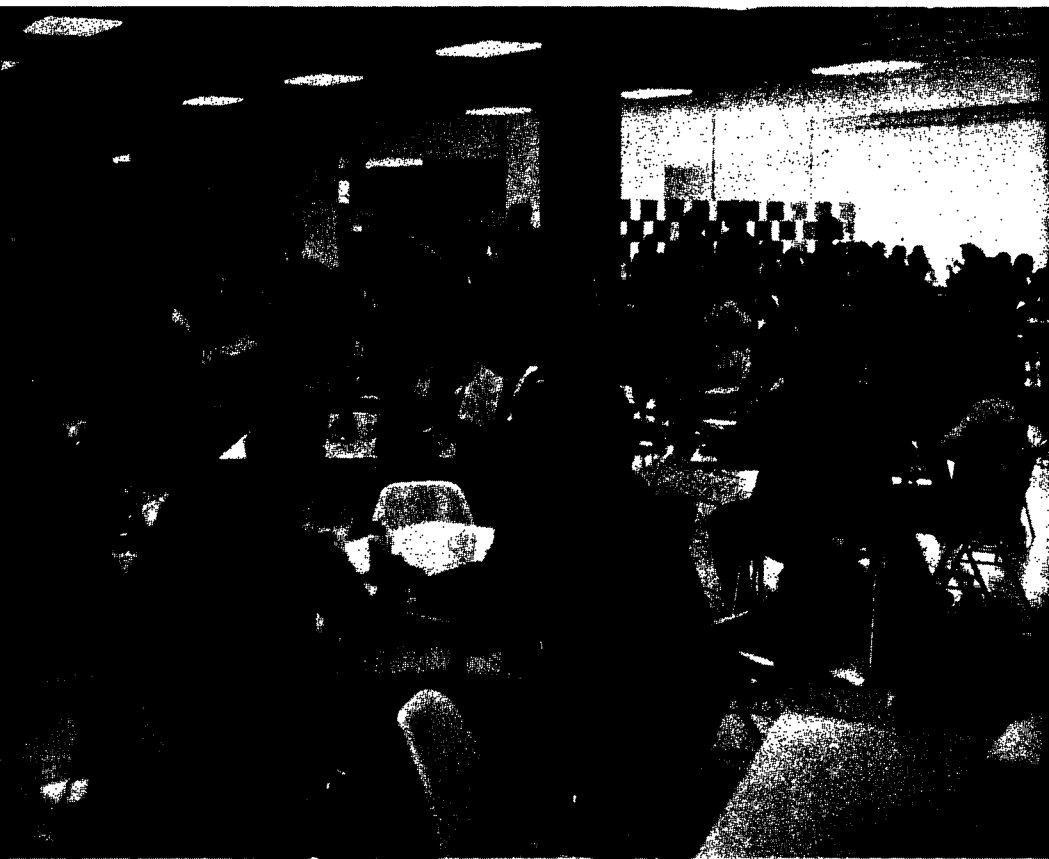
Duplicate diploma, \$15. Replacement cost upon presentation of evidence original is lost or destroyed.

Late application for teaching assignment, \$1.

Late return of athletic supplies, † \$1 for each 24 hours until full purchase price of article is reached.

Failure to empty locker within specified time, \$5.

† Supplies or equipment not returned before the close of the fiscal year must be paid for in full; return after that date is not permitted.



## Principal Items of Expense

Estimated for a college year (three quarters)

EXPENSE ITEM	COST	REMARKS
Registration Fee .....	\$ 300.00	Actual cost.
Student Union Fee.....	12.00	Actual cost.
ASUCLA Membership Fee .....	10.50	Membership required of undergraduates; optional for graduate students; however, \$4.50 Graduate Students Association Membership is required.
Books and Supplies.....	150.00	Approximate cost.
Board and Room.....	1,059.00	Room and Board (20 meals/week) for three quarters in a University residence hall costs, on the average, \$964. In addition there is a \$23 telephone service fee and a \$12 residence hall association membership fee. An additional sum should be budgeted to cover the one meal a week not provided in the University residence halls or in other residence facilities. The cost of remaining on campus during school recesses is not included in the basic residence hall contract. These supplementary board costs may amount to \$60 a year. (A refundable deposit of \$30 for breakage is also required.)
Miscellaneous .....	500.00	An average allowance for variable items such as clothing, transportation and parking, medicine and drugs, laundry and dry cleaning, recreation, and the cost of a round trip from home to campus is suggested.
Total .....	\$2,031.50§	An average budget for a student who is a California resident and who lives in a University residence hall. However, since residence hall space is limited, many students must obtain other accommodations. A reasonable budget for those not housed in a University dormitory will be approximately \$2,000 for three quarters. Students classified as nonresidents of the State must also add to their estimated budgets the tuition fee of \$1,200 to the above budget.

§ Because of rising costs, the above estimate of expenses may be subject to change.

## FINANCIAL AIDS FOR STUDENTS

Financial aids offered by UCLA include scholarships, loans, grants, and Federal Work-Study eligibility certification. Application may be made for one or more types of aid and *one basic application* suffices for all available financial aid. If the student applies for all types of aid, a suitable combination of aids for which he qualifies may be offered. Awards are based on financial need as determined by College Scholarship Service criteria. **ALL APPLICANTS MUST SUBMIT A PARENTS' CONFIDENTIAL STATEMENT.** Entering students may obtain this form from their high school counselor or from the College Scholarship Service, Box 1025, Berkeley, California, 94701. Continuing students should obtain this form from the UCLA Financial Aids Office. If the applicant is married or self-supporting, an Applicant's Confidential Statement (which may be obtained from the Financial Aids Office) must **ALSO** be submitted. Foreign students are to submit a Foreign Student's Confidential Statement in lieu of the aforementioned forms.

### Undergraduate Scholarships

#### REGENTS SCHOLARSHIPS

Students who have achieved an outstanding academic record and show a high degree of promise are eligible for Regents Scholarships. Four-year (12 quarters) awards are made to students entering from high school and two-year (6 quarters) awards to continuing students and those transferring from another university or college who will have completed the sophomore year by the end of the spring quarter. Each Regents Scholar receives an honorarium of \$100 annually and, if he needs financial assistance, a stipend in an amount determined according to criteria established by the College Scholarship Service.

#### PRESIDENT'S AND UNIVERSITY SCHOLARSHIPS

Awards designated as either President's or University Scholarships are available in amounts ranging, in most instances, from \$300 to \$1,000. Awards are based on grade-point average and financial need.

#### ALUMNI SCHOLARSHIPS

The UCLA Alumni Association, in conjunction with the University, provides scholarships for entering California freshmen which range in amount from \$350 to \$1,500. Awards are based on grade-point average, financial need, leadership and promise.

#### SPECIAL SCHOLARSHIPS

A number of special scholarships are offered through the University to students meeting various qualifications. Included are awards for California Seal-bearers, physically handicapped persons, descendants of Civil War veterans, students interested in engineering, and many others.

A limited number of scholarships are available to nonresident students, including foreign students who have completed at least one quarter or semester of study in the United States.

Special Alumni Scholarships are available to high school students in particular geographical areas and school districts.

## MINIMUM REQUIREMENTS FOR APPLICATION

High school graduates entering the University as freshmen must have a grade-point average of 3.2\* or better in the subjects accepted in fulfillment of the admission requirement of the University.

Continuing students at UCLA or students transferring from other campuses of the University must have a grade-point average of 3.0\* or better.

Students entering from a college or another university must have had a high school grade-point average of 3.2\* or better and a college or university grade-point average of 3.0\* or better.

Scholarship stipends are based on the recipient's financial need. All entering students must submit the Parents' Confidential Statement to the College Scholarship Service by February 1. Continuing UCLA students must submit the Parents' Confidential Statement to the College Scholarship Service by January 1.

## SCHOLARSHIP APPLICATION PROCEDURE

Both continuing and entering students may obtain the necessary application forms after December 1 by mail or in person from the Scholarship and Grant Office. Entering students may also obtain forms from high school and junior college counselors.

Continuing students should ask for the continuing student application, and must file this form before January 15.

Entering students should ask for an entering student application. The completed application should be submitted to the Scholarship Office before February 15.

Foreign students must have completed at least one quarter or semester of study in the United States in order to be eligible for a scholarship.

## Graduate Awards and Appointments

For information concerning opportunities for graduate student support, consult the UCLA brochure titled, **GRADUATE FELLOWSHIPS AND ASSISTANTSHIPS**, available from the Student Support Section of the Graduate Division.

## Prizes

The generosity of alumni and friends of the University provides each year for competitive prizes and awards in several fields. Selections will be made by committees in the various academic departments concerned. The names of the recipients of these awards will be included in the Commencement Bulletin issued annually. Further information may be obtained from the Scholarship Office, 2240 Administration Building.

## Loans

Through the generosity of The Regents and a number of individuals and groups, loan funds have been established to help meet students' needs for financial assistance. Three types of loans can be secured through the Student Loan Office by registered UCLA students in good standing who are in need of financial aid for educational purposes. Students who are registered *only* in University Extension are not eligible.

\* However, because the number of qualified applicants far exceeds the funds available, scholarships are awarded on a competitive basis.

## UNIVERSITY LOANS

University loans are available at any time during regular sessions. Those desiring to secure a loan should request an appointment with a Financial Aids Counselor. At least three weeks are required for processing the application.

The amount which may be borrowed is based on school-related needs as determined by College Scholarship Service criteria. Depending upon the size of the loan, the applicant must have either one or two co-makers who meet University requirements.

No interest is charged while the student is in attendance at the University. After the student has left UCLA, the interest rate is 3 per cent per annum on the unpaid balance. Since these funds are needed to assist other students, repayments are normally scheduled to begin as soon as possible. If repayments cannot be made according to schedule, the borrower must have an adjustment approved by a Financial Aids Counselor.

## EMERGENCY LOANS

Emergency loans in small limited amounts may be obtained and are to be repaid within 30 days. Money is granted at the time of application in conformity with the emergency nature of the loan.

## NATIONAL DEFENSE STUDENT LOANS

National Defense Education Act loans are restricted to students who are U. S. citizens or permanent residents. Depending on their need, determined according to College Scholarship Service criteria, undergraduates may be granted up to \$1,000 for the academic year (not to exceed a total of \$5,000). Ceilings on graduate loans are higher, but all students are limited to a percentage of their need because of the heavy demand and limited funds. Applications (in addition to those submitted by Scholarship applicants) should be submitted by April 15 for the following academic year and between October 1 and October 31 for Winter and Spring quarter loans.

Repayments become due nine months after the student leaves UCLA but may be extended over a ten-year period. Deferment of repayment is possible for members of the armed forces and the Peace Corps, Vista volunteers, and students who transfer to other schools. Up to 50% of this loan may be forgiven borrowers who enter the teaching profession and up to 100% may be cancelled for those who teach in schools in specified disadvantaged areas. A notarized Loyalty Oath will be required at the time the loan is awarded.

## GUARANTEED LOAN PROGRAM

Full-time students who are legal residents of California may obtain an application from their local bank, or from the UCLA Student Loan Office. All applicants must be interviewed by a UCLA Financial Aids Counselor in order to be recommended for such a loan. The application must receive final approval from the student's bank and from the Guarantee Agency. Students who are not California residents must apply for these Federal Guaranteed Loans in their own state.

## **Educational Opportunity Grants**

A limited number of these Federal EOG grants will be offered to entering students who have **EXCEPTIONAL** financial need. These awards are governed by Federal regulations and **MUST** be matched by an equal amount of acceptable matching funds (i.e., scholarship or loan).

## **Self-Support and Student Employment**

Many students earn part, and a few earn all, of their expenses while attending the University. The University authorities are eager to offer as much encouragement as possible to students who must maintain themselves, but long experience has brought out the fact that the self-supporting student, early in his college life, may have to face unforeseen problems which affect his welfare.

University work demands the best that a student can give it. The following statements are made, therefore, not to discourage the able student who must do outside work, but to provide him with facts and information so that he may plan carefully and intelligently.

1. Whenever possible, it is wise for a student to use his savings to make the first term of residence in the University one of freedom to give full time to academic work. He may then have an opportunity to adjust himself to new surroundings, to establish sound habits of study, and to maintain a good scholastic standing, and thereby build a foundation for the rest of his University course. By the end of the first quarter the student should know the demands of University life and his own capabilities well enough to make it possible to plan, for subsequent quarters, a combined program of studies and work for self-support.

2. The regular undergraduate four-year course based on an average of four courses per quarter is organized on the supposition that students will give the major part of their time and attention to their studies while attending the University. Therefore, a student who must give considerable time and energy to outside work should consider at the outset the possibility that more than the usual twelve quarters (four years) may be required to complete the program for the degree, if he is to maintain his scholastic standing and his health, and to enjoy the advantages of University life.

With reasonable diligence, a student in good health carrying an average program of study in the undergraduate departments can give as much as fifteen hours a week to outside employment without seriously interfering with his college work; employment in excess of this amount should be accompanied by a reduction of the academic program carried.

## **EMPLOYMENT OPPORTUNITIES**

The University maintains a Student and Alumni Placement Center which offers regularly enrolled students part-time and summer employment, including jobs under the Federal Work-Study Program. Wives of regularly enrolled students are eligible for assistance in seeking part-time or full-time work.

Placement interviewers are available for consultation with any student who may not be seeking immediate employment but is concerned with his future career prospects and wishes vocational information or guidance.

The Federal Work-Study Program is designed to create jobs for students from low-income families and offers a wide range of work opportunities on campus

and with community nonprofit agencies. The eligibility of all applicants must be certified by the Financial Aids Office. Work under this program is restricted to a maximum of 15 hours per week during the academic year and to full time during all vacation periods. If they meet the criteria of need, high school graduates admitted to the University may secure full-time employment in the quarter immediately prior to registration. Work-Study jobs are available to full-time students throughout the year.

## **LIVING ACCOMMODATIONS**

The different types of living accommodations which are available to students are: University residence halls; cooperatives; a private residence hall; privately owned rooms and apartments; sororities or fraternities; or the Married Student Apartments.

Write to the Office of Housing Services, University of California, Los Angeles, 405 Hilgard Avenue, Los Angeles, California 90024; or, call in person at Room 161 Kerckhoff Hall for more detailed information. Office hours are: Monday through Friday, 9 a.m. to 5 p.m.

### **University Residence Halls—(Single Students)**

The residence halls are primarily for undergraduate students; however, a limited number of graduate students can be accommodated.

Rooms (shared by two students) are furnished with studio beds, desks, draperies, bedspreads, bed linen, pillows, and towels. Students must furnish blankets. There is a telephone in each room.

Present rate for room and board (exclusive of recesses) is \$964 for the academic year (Fall, Winter and Spring quarters), plus a \$23 telephone charge and \$12 membership fee in the residence hall student association required to cover social events within the halls. The rate for the Summer Quarter (separate contract) is \$323 (shared room) and board or \$383 (single room) and board, plus telephone and association fees, \$8 and \$4 respectively. Three meals are served daily except Sundays and University holidays when two meals are served. Room and board may be paid in installments as authorized by the University.

### **Undergraduates**

Residence hall applications will be mailed only to students who have applied to UCLA for admission. Attached to the application for admission will be a housing card which must be completed and returned with the application for admission. The Office of Housing Services will mail an application to those indicating a desire to live in a hall. Applications for the Fall Quarter will be mailed between March 15 and April 30; for the Winter Quarter, after September 15; the Spring Quarter, January 10, and the Summer Quarter, February 15.

### **Readmits**

Re-entering students should write directly to Office of Housing Services for an application and furnish date of application for re-entrance to UCLA.

## Graduates

Graduate students will receive a Housing Card with either the application for admission or notification of acceptance, and the card should be returned to the Office of Housing Services.

## ASSIGNMENTS TO RESIDENCE HALLS

Factors considered in making undergraduate assignments are: admittance to UCLA and payment of the Intent to Register Fee, sequence number on admission application, post mark date that residence hall application was mailed, class in the University, and home area. Residence hall assignments are mailed beginning about July 1 for the academic year beginning in the fall; about November 15 for the Winter Quarter and February 15 for the Spring Quarter, and May 15 for the Summer Quarter.

**MIRA HERSHEY HALL**, located on the east side of the campus, is the only all woman residence hall. It accommodates 327 women.

**COED RESIDENCE HALLS** are located on the hill on the west side of campus; Clarence Dykstra Hall, Robert G. and Ida A. Sproul Hall, Charles Reiber Hall, and Earle Hedrick Hall. These halls are seven and ten story buildings which accommodate both men and women in separate portions of the buildings. However, the dining rooms, first floor lounges and recreation areas are shared by both men and women.

## University Married Student Apartments

The University maintains the Park Vista and Sepulveda Park apartment complexes which consist of 643 unfurnished one-, two-, and three-bedroom apartments, and are located on Sawtelle and Sepulveda Boulevards, approximately five miles from campus.

The basic monthly rates range from \$80 to \$135 per month. The utilities are not included in the rates. In a few of the apartments drapes and carpeting have been installed for which there is a small additional charge.

Applications will be mailed to married students who have applied for admission for the Fall, Winter and Spring and Summer Quarters beginning March 15, September 15, January 10, and February 15 respectively, providing the Housing Card has been completed and returned according to instructions. *Undergraduate* students will find the Housing Card attached to the application for admission. *Graduate* students will find a Housing Card with either the application for admission or the notification of acceptance. *Re-entering* students should write directly to Office of Housing Services for an application and furnish date of application for re-entrance to UCLA.

Assignments are made only to the full-time student member of the family and are nontransferable to another member of the family. To remain eligible for housing all assigned students must be enrolled for not less than three of the four quarters, e.g., Fall, Winter and Spring Quarters, with Summer Quarter attendance not required if student is pre-enrolled for the following Fall Quarter.

Only the student and his immediate family may live in the apartment. Extension students are not eligible.

## Privately Operated Residences

### COOPERATIVES

There are several privately owned, nonprofit, member controlled, student living groups located adjacent to the UCLA campus. Each student is required to work 3–5 hours per week as part payment of room and board. Each cooperative has a manager, housemother, or head resident responsible for supervision and management. The Cooperative Housing Association is for men; Kories, Twin Pines, and Stevens House are for women. Room and board rates vary from approximately \$200 to \$240 per quarter.

### PRIVATE RESIDENCE HALL

Weyburn Hall accommodates both men and women and is operated in a manner similar to the University residence halls. The rate for room and board for the academic year (Fall, Winter and Spring Quarters) is approximately \$1215. The rate for the Summer Quarter is approximately \$420.

### FRATERNITIES AND SORORITIES

Most of the fraternities and sororities own or lease homes near the campus and provide lodging and meals for their members and pledges. Expenses for residents range from about \$100 to \$110 per month depending upon the number of meals served and the social and recreational privileges included. Students interested in affiliating with a sorority or fraternity should contact either the Panhellenic Office (for sororities), care of the Dean of Women's Office, 2241 Administration Building, 405 Hilgard Avenue, Los Angeles 90024, or the UCLA Interfraternity Council (for fraternities) at P.O. Box 111, 308 Westwood Plaza, Los Angeles, California 90024.

Students who wish to pledge fraternities or sororities but who do not wish to live in the fraternity or sorority house are welcome to contract for space in the University residence halls or with private householders.

### PRIVATE LANDLORDS

#### For Single and Married Students

Room and apartment rental listings are available to any student who desires to call *in person* at the Office of Housing Services. Since the listings change from day to day, arrangements for such accommodations cannot be made by mail. Students planning to live in rooms or apartments are advised to arrive on campus at least a week or ten days prior to the opening of the term.

The University does not inspect accommodations nor make rental or other arrangements on behalf of students. Such transactions must be made individually and directly with landlords. Students are advised to have a clear understanding, preferably in writing, of the terms and conditions of occupancy.

Only a very few places offer room and board at about \$125 per month. Rooms in private homes cost from \$45–\$65 per month. Single and bachelor apartments, usually furnished, rent for \$85 and up. Depending upon whether the apartment is furnished or unfurnished, as well as the location, rental prices for 1-bedroom apartments are approximately \$115 and up; for 2-bedroom apartments, \$125 and up. Rental prices for houses are appreciably higher.

Students who are not boarding by the month can obtain moderately priced meals at the cafeteria in the Ackerman Union, or at one of the many restaurants in Westwood Village adjoining the campus.

### **MOTELS AND TRAILER COURTS**

Good motels are located from one to five miles from campus with varying rates and accommodations. It is sometimes advisable for single or married students to accept these accommodations temporarily until more permanent accommodations can be located. Listings may be secured from the Office of Housing Services.

No trailer parking areas are provided on or adjacent to the campus. A list of trailer parks is available at the Office of Housing Services.

## **TRANSPORTATION TO CAMPUS AND PARKING**

Student parking facilities on campus are subject to a parking fee. Since the full demand may not be met at the present time, the use of public transportation, car pools, bicycles, and motor scooters is encouraged whenever possible. Please contact the Southern California Rapid Transit District or the Santa Monica Municipal Bus Lines for information regarding bus schedules in this area.

### **Automobile**

There may be some limitation on the number of parking permits that will be sold to students. Those students with physical disabilities which preclude walking long distances may apply for permits through the Student Health Service. All other students must file parking petitions with the Campus Parking Service, Room 280, Gayley-Strathmore Structure (Area 8). Petitions will be processed on IBM cards utilizing a point system established on the basis of need. Permits approved for the fall quarter can be renewed for the winter and spring quarters for continuing students and new petitions need not be filed. However, new or re-entering students for each quarter must file parking petitions. Deadlines for filing and for renewing permits will be established for each quarter. Inquire at Campus Parking Service for additional information.

### **Bicycle, Motor Scooter and Motorcycle**

Bicycle racks and scooter parking areas are provided at convenient locations throughout the campus. Registration of motor scooters and motorcycles is not required. Parking regulations, guide maps indicating the location of parking facilities, and additional information may be obtained from Campus Parking Service. Registration of bicycles is not required.

# Student Services and Activities

## STUDENT HEALTH SERVICE

This facility provides complete medical, surgical, and hospital care for short-term illnesses and injuries, diagnosis and emergency treatment for dental conditions, and guidance and limited treatment for chronic diseases. This care is given in the Student Dispensary and Student Hospital Ward, located in the Center for the Health Sciences, and in the Emergency Station in the Pauley Pavilion. Arrangements have been made whereby the resources of other facilities in the Health Sciences Center and the associated Neuropsychiatric Institute can be utilized in the care of student patients, with a minimum of formality and loss of time, and without any additional expense to the student. With these unexcelled resources practically any condition can be treated provided it is not of a kind which will force a student to leave the University.

Any student who has paid the full incidental fee or the special health service fee may use the Student Health Service. Current expenses are met chiefly by allocations from these fees. No additional charges are made for consultations with specialists, X-ray examinations, laboratory tests, hospital care, major or minor surgery, immunizations, dental examinations, and emergency dental treatment, or any other service which is regularly available to all students. A limited amount of routine dentistry is available on a fee basis for students who are unable to visit their regular dentists.

Eligible students are given care from the first until the last day of the quarter; at the discretion of the Director an additional seven days of care may be given after that. Prospective students arriving from a considerable distance are given emergency care for several days prior to the first day of the quarter; if later they fail to register they are charged for this service. A student registered in any quarter, who intends to register again in the quarter immediately following, is eligible for complete service during the interval between quarters. A continuing student who does not register for any quarter is not eligible for any service during that quarter; he may be given minor services as a courtesy when time permits. An exception is made in the case of graduate students who are on campus to work toward a degree, and foreign students who remain on or near the campus. Such students, though not currently registered, may obtain full service during the quarter by paying a special health service fee at the beginning of the period to be covered.

Students enrolled in Summer Session are eligible for care if they pay a health service fee at the start of the session. Students in University Extension are not eligible for any services, the only exception being in the case of foreign students who pay a health service fee at the beginning of the period to be covered.

A student's eligibility for care by the Student Health Service ceases immediately if he withdraws from the University.

The Student Dispensary, located on "A" floor of the Center for the Health Sciences, is open from 8 a.m. until 5 p.m., Monday through Friday, and from 8 a.m. until noon on Saturday. It is closed on Sundays and administrative

holidays. The Student Dispensary houses: (a) A General Clinic where students with all kinds of ailments are seen without appointment. (b) A wide variety of Special Clinics where students are seen chiefly by appointment, after referral from the General Clinic or another Special Clinic. Exceptions are the Dental Clinic and the Psychiatric Clinic, where any student may apply directly without referral. (c) Clinical Laboratory, X-ray, pharmacy, and other ancillary services. (d) An immunization station which operates from 8 a.m. until 4:30 p.m., Monday through Friday; an appointment is not required except in the case of yellow fever vaccination.

**Emergencies** are regularly treated at the Student Dispensary, or at the Emergency Station in the Pauley Pavilion, during the hours they are open. (The Pauley Pavilion Emergency Station is open from 2 p.m. until 7 p.m., Monday through Friday.) When these facilities are closed, students in need of emergency care are treated at Student Health Service expense in the UCLA Hospital Emergency Room; ambulance and other serious cases in need of immediate specialized emergency treatment are treated at any time. The Student Health Service is not responsible for ambulance fees, except when previously authorized in connection with on-campus emergencies.

The **Student Hospital Ward** is a unit of the UCLA Hospital. Upon recommendation of the Director of the Student Health Service an eligible student may be given up to 20 days of hospital care. During regular hours students are admitted to the hospital by referral from the Student Dispensary; at other times they are admitted by way of the hospital Emergency Room. In the case of illness or injury requiring long-continued care (tuberculosis, mental disease, severe spinal injury, etc.) where the condition obviously will prevent the student from returning to classes during the current quarter, he will be released to the care of his family or the community as soon as this is safely possible. A student who is still in the hospital at the end of the quarter will likewise be released to other care as soon as this can be done with safety.

### Limitations

The services provided are limited by the staff, space and facilities available. These limitations are felt especially keenly in the Psychiatric and Dental Clinics, where only a small proportion of students requesting routine services can be accommodated. The General Clinic is subject to recurring periods of overcrowding during which only preliminary service is possible for any but the most urgent conditions. Furthermore, it is against Student Health Service policy to provide the following: (1) Surgical correction of conditions existing at the time of entrance or re-entrance to the University; (2) Eyeglasses, or visual refraction for eyeglasses; (3) Routine dentistry, except under special conditions; (4) Obstetrical care, or the care of dependents; (5) Premarital examinations, other than the giving of general advice and performance of the required blood test; (6) Care, other than first aid, for conditions compensable under the work injury laws (industrial accidents); (7) Care of conditions for which a surgical operation has been performed, a plaster cast applied, or other definitive treatment begun elsewhere, except when it would be impracticable for a student to return to his original doctor; (8) Care of chronic conditions for which a student has been under the care of an outside doctor, unless the latter recommends that the stu-

dent be transferred to our care while attending the University; (9) Ambulance or other transportation; (10) Wheelchairs or special orthopedic apparatus; (11) Filling of prescriptions, or requisitions for x-rays or laboratory tests originating with outside doctors; (12) Drugs such as insulin, thyroid, vitamins, contraceptives, allergens, tranquilizers, etc., which are customarily taken over long periods without frequent supervision by a doctor. (An exception is made in the case of drugs used for tuberculosis and other contagious conditions.)

### **Care Off Campus**

When visiting another University of California campus a UCLA student is eligible for care at the health center under the same conditions that apply to students enrolled on that campus. He must show his registration card to identify himself. While a student is off campus participating in an officially sponsored field trip, sport event, or recreational outing, necessary medical expenses incurred because of injury or sudden illness are covered by insurance carried by the Regents of the University. This policy does not cover any care which the student could reasonably have obtained through the Student Health Service.

### **Supplemental Medical Insurance**

A student can receive care through the Student Health Service only if he is able to come to the health center on a University of California campus for it. Students are not eligible for care during a quarter in which they are not registered or have not paid a health service fee. Eligibility for service ceases immediately if a student withdraws from the University. There is no provision for replacing teeth lost in accidents. Large medical and hospital expenses incurred in these and certain other situations in which a student is not covered by the Student Health Service may be covered in part by purchasing a *Student Accident and Sickness Medical Expense Plan for Members* which is sponsored by the Associated Students of UCLA. This insurance is offered for a very low premium. It is available only at the beginning of each quarter. For an additional premium an insured student may also insure his wife and children. For all foreign students, except those who are in the United States on a permanent immigrant visa, the acquisition of satisfactory health insurance is a condition of registration in the University of California.

## **STUDENT COUNSELING SERVICES**

The Counseling Services are designed primarily for the voluntary use of any regularly enrolled student. These services are not a part of an administrative unit such as an academic college or department. They offer the student the opportunity, on his own initiative, to consider with a counselor any questions, concerns, skill needs, hopes, dilemmas, crises, or choices that may occur during the college years. There is no charge for these services. The staff is composed of counseling and clinical psychologists and professionals familiar with the needs and interests of college students. The Services are found in three locations:

The **Counseling Center** (Administration 3334) offers individual and group counseling to assist students in coping with any concerns or difficulties that may be interfering with their effectiveness at the University or may be involved in

their continued growth. Marriage and premarital counseling is available. Counseling is private and confidential; no records of interviews are kept.

The Reading and Study Service (Social Welfare 271) offers individual and group programs designed to assist students in the development of reading and study skills, and habits, appropriate to the demands of their University studies. Counseling and instructional staff is available. Students may enroll in a program at any time during the quarter.

The Educational and Career Information Service (Administration 3327) maintains an extensive collection of current materials concerning occupations, colleges, universities and professional schools. These materials are for use by students as an aid in better informing themselves when making educational and career decisions. Counseling personnel are available as needed to assist the student in the use of the materials and in the further clarification of his educational and career objectives.

## **RESERVE OFFICERS' TRAINING PROGRAMS**

### **Army Reserve Officers' Training Corps**

In accordance with National Defense Act of 1920, and with the concurrence of the Regents of the University, a unit of the Senior Division Reserve Officers' Training Corps was established on the Los Angeles campus of the University in July, 1920.

The purpose of the Army ROTC is to qualify male students as leaders in their chosen fields, as far as the requirements of the service permit: engineering, communications, administration, logistics, personnel management, intelligence, and many others. The ROTC program qualifies graduates for commissions as officers in the United States Army Reserve and selected graduates for commissions in the Regular Army.

The choice of programs in general military science has been expanded this year to provide Army commissions to successful cadets after completion of both two and four years of Military Science. Scholarships are offered in the four-year program to selected students. See page 351 for details of this program.

### **Naval Reserve Officers' Training Corps**

By action of the Secretary of the Navy and of the Regents of the University of California in June, 1938, provision was made for the establishment of a unit of the Naval Reserve Officers' Training Corps on the Los Angeles campus of the University.

The primary objective of the Naval Reserve Officers' Training Corps is to provide at civil institutions systematic instruction and training which will qualify selected students of such institutions for appointment as officers in the Regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve. Upon successful completion of the four-year program, which includes the receipt of a baccalaureate degree from the University, the student may expect to be commissioned and to be ordered to active duty in ships, submarines or aircraft of the Navy, with field units of the Marine Corps, or with Marine Aviation. See page 364 for details of the program.

## **Air Force Reserve Officers' Training Corps**

The Air Force ROTC program is designed to prepare selected college students to serve as officers in the Regular and Reserve component of the United States Air Force. The purpose of this program is to develop character, personality, leadership potential, and to provide the student with a professional education requisite for appointment as a commissioned officer in the United States Air Force. With the continued increase in importance of air power in overall United States strategic planning, the selection of Air Force ROTC trained college graduates is receiving increased emphasis.

## **ROTC Draft Deferment**

Students who qualify may be deferred from induction into the service under the authority contained in the Universal Military Training and Service Act (65 Stat. 75; 50 U.S.C. app. 451-467) as amended, and as further amended by the Reserve Forces Act of 1955 (P.L. 305, 84th Congress D.A. Bull. 12, 1955).

For military deferment, see the department concerned. Students securing ROTC draft deferments need not request deferment through the Office of Special Services as described below.

## **OFFICE OF SPECIAL SERVICES**

### **Selective Service (Draft)**

Selective Service information and counseling on draft matters are available at the Office of Special Services, Administration Building. Students subject to Selective Service should keep their local boards informed of all situations which might affect their draft classifications.

Verification of enrollment in full-time programs will be submitted to the Selective Service Boards from forms included in the registration packets issued by the Registrar. Students subject to the draft are required to fill in these forms and return them with the registration packet. Special Services will confirm the student's program with his Local Board. Any change of status during the quarter, such as dropping courses or withdrawal, will be reported to the Local Board by the Office of Special Services.

An undergraduate student must be enrolled in a minimum of 12 units per quarter and should complete requirements for the degree in the normal time of 12 quarters. A graduate student must be enrolled in 8 units of courses in the 200 series or above, or the equivalent, which can be certified through a Graduate Evaluation Form signed by his adviser and approved by the Graduate Division.

Students desiring deferment on the basis of enrollment in the University ROTC programs should consult the proper ROTC Department.

## **Veterans Information**

Special Services maintains liaison between certain veterans and veterans' dependents, the Veterans Administration and the State Department of Veterans Affairs to assist students in coordinating University procedures with veterans' educational regulations.

Information regarding educational benefits available for veterans' dependents from the State of California may be obtained from the State Department of Veterans Affairs, P.O. Box 1559, Sacramento, California 95807, or by writing either to 1736 Westwood Blvd., Los Angeles, California 90024, or 350 McAllister Street, San Francisco, California 94102. Veterans' dependents are eligible for fee waivers for the incidental fee upon presentation of authorizations from the Division of Educational Assistance.

Students wishing to enroll under any available federal educational acts must obtain from the United States Veterans Administration a Certificate for Education and Training which should be filed with the Office of Special Services, Room A-253 Administration Building, as soon as possible. These students must be prepared to pay all fees and educational costs at the time of registration, as education and training allowances are paid to the student by the Veterans Administration. The first monthly payments will normally be received 60 days after compliance with the above instructions. All students registered under a veteran's or dependent's subsidy program are required to file an official study list in the Office of Special Services during the first week of classes of each quarter.

### **Social Security Benefits for Students**

The full-time status of Social Security dependents from the ages of 18 to 22 is certified to the Social Security Administration by the Office of Special Services. Students who are dependents of retired, deceased, and disabled workers should check their eligibility with the Social Security office nearest their home which will send the certification form directly to the Office of Special Services for completion, so that payments can be made to the student.

### **Vocational Rehabilitation Service**

Students who have a physical or emotional disability which handicaps them vocationally may be eligible for the services of the State Department of Rehabilitation. These services include vocational counseling and guidance, training (with payment of costs such as books, fees, tuition, etc.), and job placement. Under certain circumstances students may also qualify for help with medical needs, living expenses and transportation.

Appointments may be made with a counselor in the Office of Special Services, or by contacting the Vocational Rehabilitation Service Office at 1494 South Robertson Blvd., Los Angeles 90035; telephone 273-4302.

The Office of Special Services provides assistance to physically handicapped students with registration and enrollment procedures and in other matters of need.

### **Work-Study Program**

The Office of Special Services participates in the Work-Study Program, Part 1C of the Economic Opportunity Act of 1964, as it pertains to employment of eligible students with off-campus non-profit agencies.

## THE ASSOCIATED STUDENTS

Almost all extra-curricular programs or activities for students at UCLA are in some way connected with the Associated Students UCLA. ASUCLA, through its undergraduate and graduate student associations, sponsors dramatic, musical, and cultural programs, social events, community service projects, and student services. The Association operates the Student Union and Kerckhoff Hall, providing students with facilities for meetings, relaxation, a complete student store, and food service areas.

Every UCLA student holds membership in ASUCLA. Undergraduate opinion in the formation of academic, cultural and social policies is represented by the elected members of the Student Legislative Council. The Graduate Students' Association Council is composed of elected representatives from each school or department in the University which has 15 or more graduate students. Both councils sponsor special activities and programs designed to meet the needs and interests of their respective constituencies.

In addition to the Undergraduate Students' Association and the Graduate Students' Association, there are five special governing bodies in ASUCLA: Board of Control, Ackerman Union Board of Governors, Communications Board, the Student Cultural Commission, and the UCLA Film Commission. These boards establish and administer policies regarding ASUCLA finances, facilities, publications, cultural program subsidies, and film programs.

ASUCLA also provides a variety of low-cost services for the convenience of every member of the campus community. These services include a barbershop, cashier, ticket agency, print shop, photographic center, post office, and daily newspaper. All ASUCLA activities and services are offered free or at a nominal fee to any UCLA student.

## UNIVERSITY STUDENT ACTIVITIES OFFICE

The heterogeneity of the student body at UCLA engenders a broad spectrum of student interests. These interests are expressed in a wide variety of student activities all of which are under the jurisdiction of the University Student Activities Office.

This office has the responsibility of administering University regulations relating to activities of students and registered student organizations. It accomplishes this function by working with the individuals or groups during the ideational development stage, resolving conflicts and maximizing the potential of each activity. Under the direction of the Dean of Student Activities and two Associate Deans the staff is always available to help in planning and coordination.

An individual student will generally find an organization to satisfy his interests within the 275 recreation groups, honor societies, religious groups, social clubs, political clubs or fraternal and living groups. He may, however, desire to participate in student government, merely attend programs ranging from speakers to Mardi Gras, or form his own club. Whatever the inclination, the Student Activities Office is the place to start.

New ideas for activities are welcomed by and initiated in the Student Activities Office. A philosophy of co-operative programming—involving stu-

dents, faculty and staff—is prevalent and lends informality to the operation of this office. Students are invited to come in at any time and discuss concepts, plans or problems. Kerckhoff Hall 312.

## **OFFICE OF CULTURAL AND RECREATIONAL AFFAIRS**

The Office of Cultural and Recreational Affairs serves as the administrative center for the coordination of facilities, equipment, programming and supervision of campus recreational activities and services. All students who have paid the full incidental fee are entitled to their services. Four professionally staffed divisions furnish a variety of services to accommodate the total campus community.

### **RECREATION SERVICES AND FACILITIES**

Opportunities for informal participation in swimming, exercise and figure control, body conditioning, basketball, handball, volleyball, badminton, tennis, gymnastics, and field sports are available seven days a week at the two gymnasiums, the Memorial Activities Center, the athletic fields and tennis courts. Further information may be obtained at Pauley Pavilion 164.

### **INTRAMURAL SPORTS**

Organized participation at various skill levels in sixteen sports is available on an individual, dual, and team basis. The total program includes extramural competition for women, coed activities, as well as the wide range of sports for men and women. The Intramural Office is located in Men's Gymnasium 118.

### **THE UNIVERSITY RECREATION ASSOCIATION**

The University Recreation Association is a federation of thirty-two special interest clubs which features clinics, seminars, exhibitions, concerts, lectures, classes, tournaments, and field trips. The clubs serve students with interests ranging from chess to surfing, and karate to skiing. Inquiries should be directed to Kerckhoff Hall 600.

### **Sunset Canyon Recreation Center**

The Recreation Center is a total recreational and cultural facility designed to serve the entire University Community. Located in the hills of the west campus adjacent to the residence halls, it features two swimming pools, a clubhouse with meeting and lounge rooms, picnic areas, multi-purpose playfields and courts, and an outdoor amphitheater. The Center is open all year, seven days a week for formal and informal use, both on an individual and group basis. Facilities are available for concerts, lectures, symposia, meetings and conferences, receptions, luncheons and banquets, fireside programs, arts and crafts, art displays and exhibitions, music listening, parties, dances, picnics, sports activities, and aquatic programs.

### **PHYSICAL EDUCATION**

A limited number of regularly scheduled classes are available on the beginning, intermediate and advanced levels in a variety of individual and dual sports, team sports, conditioning activities and social dance. Students may specialize in one area of interest or choose a different activity each quarter.

Regularly scheduled classes are available on the beginning, intermediate and advanced levels in a great variety of individual and dual sports, team, conditioning activities and social dance. Students may specialize in one area of interest or choose a different activity each quarter. Participation in this program will enable one to: maintain and improve strength and endurance; reduce tensions and relieve pressures of academic competition; learn new skills for recreational purposes in the university, family and business experiences; practice and perfect skills for more successful intramural participation; improve skill performance in a chosen sport activity. (See SCHEDULE OF CLASSES for complete listing.)

## **RELIGIOUS FACILITIES**

In the immediate vicinity of the campus, at the southeast corner of Hilgard and Le Conte Avenues, is the University Religious Conference, where official representatives of the Baptist, United Church of Christ, Disciple, Episcopal, Jewish, Latter Day Saints, Lutheran, Methodist and Presbyterian denominations have headquarters or offices from which various campus ministries are carried out. Other available religious facilities exist for Catholic students at the Newman Center, 840 Hilgard Avenue; for Baptists at 553 Glenrock; and for Lutherans at 10915 Strathmore. The Christian Science Organization reading room and headquarters are located at 560 Hilgard Avenue. The Y.W.C.A. occupies its own building at 574 Hilgard Avenue, near the entrance to the campus.

In these facilities are held religious discussion groups, lectures, Bible classes, social gatherings, luncheons, dinners, social action conferences and other meetings dealing with campus religious life.

## **PLACEMENT SERVICES**

### **Student and Alumni Placement Center**

#### **CAREER EMPLOYMENT**

A staff of professional placement representatives is available for consultation on career planning and placement. This service is available to all regularly enrolled students of the University, their spouses, and alumni of the University.

Included in the service offered is the Campus Interview Visit Program. Representatives from hundreds of organizations visit the campus each year to interview students of all disciplines and degree levels and to discuss a diversity of employment opportunities with interested students. In addition, the Placement Center receives numerous listings of full-time career opportunities from many organizations that do not participate in the Campus Interview Visit Program. In the case of such listings, students and alumni are referred directly to the employers' offices.

To participate in these and other programs, students should contact the Placement Center, preferably a year prior to completion of studies.

#### **STUDENT EMPLOYMENT**

Currently enrolled students, and their spouses, desiring employment during the regular quarters and vacation periods may register with the Student and Alumni Placement Center. Professional placement representatives assist the stu-

dent in finding suitable employment emphasizing, whenever possible, jobs which afford work experience related to the student's major field. These jobs range from temporary, on call, or regular part-time during the school year, to full-time during quarter-length vacations.

The new student who plans to be self-supporting is advised not to begin his University course without sufficient funds to cover the major portion of at least the first quarter, since it is not always possible to secure employment immediately.

Jobs are usually available on an hourly basis in the fields of typing, stenography, bookkeeping, sales, and clerical work, as well as in unskilled or manual labor categories. Also available are positions such as recreation assistants, engineering, lab assistants, tutoring, and other specialized types of work in research, art, foreign languages, accounting, among others, for the properly qualified. Listings of room and board in exchange for work in private homes are also maintained. These are available to men and women and married couples.

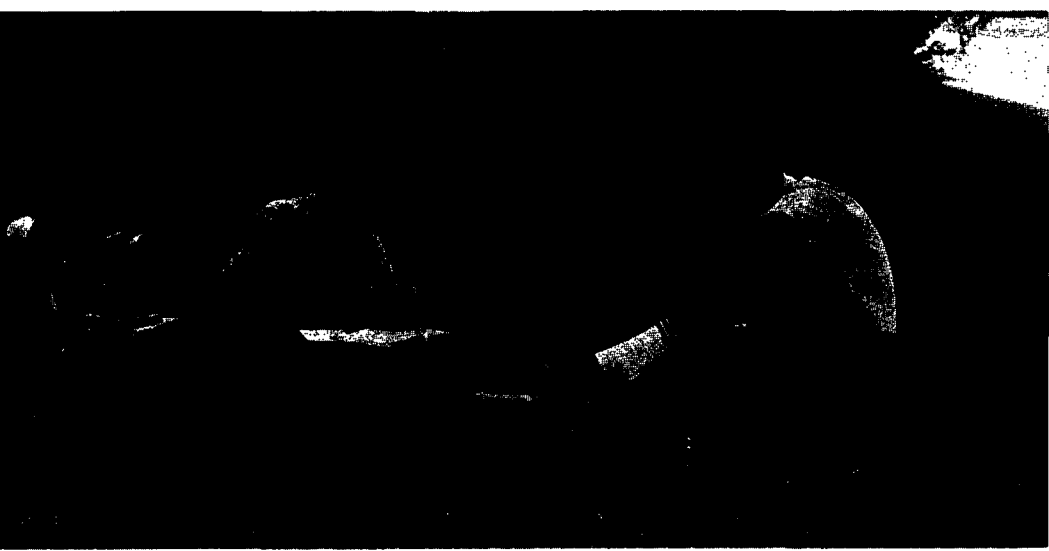
Students who have been certified by the Financial Aids Office as eligible under the federally supported Work-Study Program (Equal Opportunity Act) may review job listings under that program at the Placement Center.

### Office of Educational Placement

The Office of Educational Placement recommends graduates, students, and former students for positions in universities, colleges, junior colleges, high schools, and elementary schools, and for educational research, thereby assisting qualified candidates to obtain permanent employment or promotion in the work for which they have prepared themselves. No fee is charged matriculated students or former students of regular sessions or graduates of the University of California; there is no expense to school officials seeking teachers through this office. Communications should be addressed to the Office of Educational Placement, 220 Moore Hall.

The University reserves the right to refuse its services to candidates who seek positions for which they are not fully qualified. In every recommendation the aim is to keep in mind the best available persons, remembering candidates already employed as well as those who may be out of employment.

Candidates for positions are urged to inform the office of the result of their candidacy, and of their desires for future promotion or change of occupation.



# Colleges, Schools and Graduate Division

## COLLEGE OF LETTERS AND SCIENCE

The curricula of the College of Letters and Science are designed to provide the student with opportunities to broaden his culture and prepare him for specialized professional studies. These curricula lead to the degree of either Bachelor of Arts or Bachelor of Science, normally at the end of the twelfth quarter.

A liberal education presupposes a reasonably wide distribution of courses that contribute to a desirable balance of intellectual interests. To this end the student is required to select courses in the lower division that deal with general fundamentals of human knowledge. In the more diverse offerings of the upper division the student is relatively free to concentrate his attention upon courses in a field of interest best suited to his aptitudes and purposes.

Each student, therefore, chooses a major which may be a program of related upper division courses within a single department (departmental major), or a group of coordinated courses involving a number of departments (interdepartmental major), or, under certain circumstances, an organized group of courses chosen to meet a student's special need (individual major). The pursuit of such definite courses of study necessarily requires a knowledge of antecedent courses known as "prerequisites." With the assistance of his departmental adviser, the student is expected to select those lower division courses which are related to his proposed advanced study. The College of Letters and Science also maintains a staff of counselors to advise and guide students in all academic matters, especially those students who have not selected a major.

## Honors Program

The College of Letters and Science has instituted an Honors Program which accords special privileges to students who, having demonstrated superior academic achievement, are admitted to College Honors Status. These privileges are designed to offer qualified students educational opportunities not regularly available in the College.

## ADMISSION TO COLLEGE HONORS STATUS

A student in the College who has completed four or more courses in one quarter, and whose grade-point average for all work undertaken in the University is not less than 3.25, may apply for admission to this program on forms to be supplied by the Office of the Dean.

## PRIVILEGES ACCORDED STUDENTS ADMITTED TO COLLEGE HONORS STATUS

1. Honors students receive special counselling and guidance designed to meet their individual academic needs and interests.
2. Honors students receive stack passes to the University Research Library.

3. Honors students, with the permission of the Dean of Honors Programs, may take as many as six courses in any quarter.

4. Honors students may, with the approval of the Dean of Honors Programs and of the instructor and department concerned, receive credit and grade for regular courses taken by examination only. Such courses may be undertaken in addition to the maximum study-list limits of the College. Applications to take courses on this basis must be obtained from the Office of the Dean of Honors Programs.

5. Students with College Honors Status are usually eligible for admission to the honors programs offered by a number of the departments in the College. Such programs include honors sections of regular courses, honors courses of a seminar type, honors thesis programs, and supplementary and advanced directed study. The departments are responsible for admitting students to their separate honors programs. For details of these programs, the student may consult the Dean of Honors Programs or the department of his major.

### HONORS WITH THE BACHELOR'S DEGREE

1. Departmental Honors and Departmental Highest Honors may be awarded at graduation upon the recommendation of the student's major department. The recommendation will be based on successful completion of a departmental honors program by the student. For the requirements of the various departments, consult the department concerned.

2. College Honors will be awarded with the bachelor's degree according to the student's over-all grade-point average at the beginning of his last quarter of academic work, or, if he is not then eligible, at graduation. To be eligible for College Honors, a student must have completed at least 20 courses (80 units) in the University of California. The College Committee on Honors is responsible for awarding College Honors. The degrees of honors and the requirements for each degree are: *Cum laude*, an over-all average of 3.25; *Magna cum laude*, 3.6; *Summa cum laude*, 3.8. Marginal cases will be decided by the Committee on Honors.

3. A list of students who have graduated with College Honors, Departmental Honors, or both, shall be published yearly by the College. Each honors student will be awarded a certificate of honors at graduation indicating both the Departmental Honors and the College Honors which he has won.

### Requirements for the Bachelor's Degree

The degree of Bachelor of Arts or Bachelor of Science will be granted upon the following conditions:

1. The minimum number of courses (and units) for the bachelor's degree shall be 45 courses (180 units), of which at least 13 courses (52 units) shall be upper-division courses (courses numbered 100-199). After a student has completed 26 and  $\frac{1}{2}$  courses (105 units) toward the degree, he will be allowed no further unit credit for courses completed at a junior college. Not more than one course (4 units) in Physical Education 1 and 2, and not more than two courses (8 units) in 300 or 400 courses may be counted toward the bachelor's degree. The candidate shall have attained at least a C (2.00) grade-point average in all courses undertaken in this University.

2. The candidate shall have completed the general University and College requirements (A) to (I) inclusive (see pages 66–69 of this bulletin).

3. The candidate shall have met the University requirement in American History and Institutions.

4. The candidate shall have satisfied the requirements of a major in the College of Letters and Science. Before the degree is granted, the department or committee in charge of the student's major must certify that the student has completed the requirements for the major.

5. Nine courses (36 units) of the final 11 courses (44 units) completed for the bachelor's degree must be earned in residence in the College of Letters and Science on this campus. Not more than five of the nine courses may be completed in summer session on the Los Angeles campus. While registered in this College the student must complete at least six upper division courses (24 units), including four courses (16 units) in the major. This regulation applies to all students, including those entering this University from other institutions or from University of California Extension and those transferring from other colleges of this University. Students transferring from a College of Letters and Science on another campus of the University may petition for an exception to this rule.

Concurrent enrollment in courses offered by University Extension (including correspondence courses) or at other institutions is not permitted except in extraordinary circumstances, and no credit will be given for such courses unless the approval of the Dean has been obtained by petition prior to enrollment.

The degree of Bachelor of Arts shall be granted to all candidates who qualify for the bachelor's degree, except that the degree of Bachelor of Science shall instead be granted to candidates who have completed such majors as the Executive Committee of the College may designate as leading to that degree.

## **General University and College Requirements**

It is advisable that each of the requirements be completed as early as possible in the student's progress toward the degree, normally all of them within the first 24 quarter courses (96 units) of college work. In majors requiring unusually heavy lower division preparation, some postponements may be advisable.

### **A. Subject A**

An examination in Subject A (English Composition) is required of all entrants at the time of their first registration in the University. For further regulations concerning Subject A, see page 38 of this bulletin.

**B. American History and Institutions.** See page 39 of this bulletin.

### **C. Foreign Language**

Five quarter courses in one or two languages or their equivalent.

A minimum of two courses is required in any language offered in satisfaction of this requirement.

College credit will not be given for work equivalent to that for which credit was given in high school. The first two University courses in a foreign language will be considered a duplication of two years, the first three University courses a duplication of three years, and the first four University courses a duplication of four years of high-school work. No credit will be allowed for completing a less

advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

Courses given in English by a foreign-language department will not be accepted in fulfillment of this requirement.

College credit for the mother tongue of a foreign student and for its literature is allowed only for courses taken in native institutions of college grade, or for upper division and graduate courses actually taken at the University of California or at another English-speaking institution of approved standing.

#### D. English Composition

One course in English composition (English 1) with a grade of C or better. This requirement may also be satisfied with a score of 3, 4, or 5 on the CEEB Advanced Placement Test in English, or by passing a proficiency examination in English composition set and administered by the Department of English. To be eligible for this proficiency examination an entering student must have a score of 700 on the CEEB English Achievement Test with a verbal score of 650 on the CEEB Scholastic Aptitude Test, or have a score of 2 on the Advanced Placement Test in English. Transfer students who have completed with grade C or better a college composition course that has not satisfied the College of Letters and Science requirement in English composition may be eligible for the proficiency examination after an interview by the department. Eligible students must register for the examination in the English Department office prior to the day of enrollment in each quarter. A bona fide student from abroad, who has learned English as a foreign language and in whose secondary education English was not the medium of instruction, may satisfy this requirement by completing English 33C with a grade of C or better when that course is required.

#### Breadth Requirements (E-I)

The pattern of breadth requirements varies according to the student's major, and may be most easily seen from the following diagram.\* Courses in the student's major department may not be used to satisfy any of the E-I requirements.

Number of Courses Required in:

Student's Major Division	Physical Sciences	Life Sciences	Social Sciences	Humanities	Limited Electives
Physical Sciences		2	3	3	2
Life Sciences	2		3	3	2
Social Sciences	3	3		2	2
Humanities	3	3	2		2

\* To meet a breadth requirement a transfer student may offer a 3-unit semester course which parallels a quarter course at UCLA. 1 and 2-unit semester courses are not acceptable for application to these requirements.

For the purposes of these requirements, departmental and interdepartmental majors are classified in the following divisions:

<b>Humanities</b>	Spanish Speech	Geology Mathematics Meteorology Physical Sciences- Mathematics Physics
Arabic	<b>Life Sciences</b>	
Classics	Bacteriology	
English	Botany	
French	Physical Education	
German	Premedical Studies	<b>Social Sciences</b>
Greek	Psychology	Anthropology
Hebrew	Psychology-Mathematics	Economics
Indo-European Studies	Zoology	Geography
Italian		History
Latin		Latin American Studies
Linguistics		Political Science
Music	<b>Physical Sciences</b>	Presocial Welfare
Near Eastern Studies	Astronomy	Public Service
Oriental Languages	Chemistry	Social Sciences for Elementary Teachers
Philosophy	Earth Physics and Exploration Geo- physics	Sociology
Portuguese		
Scandinavian Languages		
Slavic Languages		

### E. Physical Sciences

Students majoring in the Life Sciences will take two courses; students majoring in the Humanities and Social Sciences will take three courses; students majoring in the Physical Sciences are exempt from the requirement. Students will take two or three courses in the following sequence:

(1) Physical Sciences 1;

(2) Physical Sciences 2;

(3) One of the following: Physical Sciences 3A, Physical Sciences 3C, Physical Sciences 3M.

This requirement may also be satisfied by one course in physics and one course in chemistry (other than Physical Sciences 1 and 2). If a third course is required, it may be chosen from astronomy, geology, mathematics or meteorology.

Transfer students may satisfy this requirement with two semester courses, totaling at least eight semester units. Basic chemistry and physics must constitute an essential part of these courses, although other physical sciences may be included.

### F. Life Sciences

Students majoring in the Physical Sciences will take two courses; students majoring in the Humanities and Social Sciences will take three courses; students majoring in the Life Sciences are exempt from the requirement.

Students in the Physical Sciences\* will take Biology 181A-181B or Biology 2 and one of the courses listed under (2) below.

Students in the Humanities and Social Sciences will take:

(1) Biology 2§;

(2) Two of the following: Anthropology 11, Bacteriology 6, Biology 21, Botany 10, Geography 5, Geology 115, Psychology 12, Psychology 115.

\* Geology majors will take Biology 1A-1B-1C or Biology 181A-181B.

§ Students should note that Physical Sciences 1 and 2 are prerequisites for Biology 2.

This requirement may also be satisfied by Biology 1A–1B–1C, or, for transfer students, by three quarter courses (two semester courses, totaling at least eight semester units) in biology, bacteriology, botany, or zoology.

### G. Social Sciences

Students majoring in the Humanities will take two courses in one social science department; students majoring in the Physical Sciences or Life Sciences will take two courses in one social science department and one course in another social science department; students majoring in the Social Sciences are exempt from the requirement. Students will select the courses to meet this requirement from the following list.

Anthropology 22 and one of the following: 102, 120, 124, 125 (5A, 5B, or 5A, 5C also apply); Economics 1, 2, 10, 100; Geography 1B, 120; History 1A, 1B, 1C, 5A, 5B, 7A, 7B, 8A, 8B, 9A, 9B, 9C, 9D; Political Science 1, 2; Psychology 10; Sociology 1 or 101 and one of the following: 120, 121, 123, 124, 145, 146, 150.

### H. Humanities

Students majoring in the Social Sciences will take two courses in philosophy or two courses in literature; students majoring in the Physical Sciences or in the Life Sciences will take three courses in philosophy or three courses in literature; students majoring in the Humanities are exempt from the requirement.

**Philosophy.** Students may select either of the following sequences:

(1) Philosophy 6, 7 or Philosophy 20, 21;

(2) A third course which is offered by the Department of Philosophy and for which the student is eligible.

**Literature.** Students may select courses from the following list:

Humanities 1A, 1B. (Students completing Humanities 1A–1B may elect one additional course from Humanities 1C–1D–1E–1F–1G.)

English 10A, 10B, 10C, 100, 101, 102, 103, 104, 110, 113, 115.

Any of the courses in foreign literature, either in the original language or in translation offered by the departments of Classics, French, Germanic Languages, Italian, Linguistics (African Languages), Near Eastern Languages, Oriental Languages, Slavic Languages, and Spanish and Portuguese (see page 269 of this bulletin for a list of such courses) apply on this requirement.¶

### I. Limited Electives

Every student will take two other courses (any courses for which he has the prerequisites) in art\*, history, literature, music, or philosophy. These two courses need not both be in the same department.

### Credit For Advanced Placement Tests

Students may fulfill a part of the College requirements with credit allowed at the time of admission for College Entrance Examination Board Advanced

¶ A student may not use a lower division course in a foreign language to satisfy the requirement in literature.

\* Integrated Arts 1A–1B–1C apply on this requirement.

Placement Tests with scores of 5, 4, or 3. Advanced Placement Test credit will fulfill requirements in the College of Letters and Science as follows:

TEST	CREDIT ALLOWED ON COLLEGE REQUIREMENTS
Biology	Biology 2 and one elective on the <i>F</i> requirement.
Chemistry	Physical Sciences 2 on the <i>E</i> requirement.
English	Fulfills the <i>D</i> requirement.
Foreign Language	Fulfills the <i>B</i> requirement.
History—American	History 7A on the <i>G</i> requirement.
History—European	History 1C on the <i>G</i> requirement.
Mathematics	Fulfills third course on the <i>E</i> requirement, if student takes chemistry and physics other than Physical Sciences 1 and 2.
Physics	Physical Sciences 1 on the <i>E</i> requirement.

### Regulations Governing the Major

A major shall consist of not less than nine (36 units), nor more than 15 (60 units) upper division courses, except that a departmental major may be increased by three more upper division courses (12 units) in other departments, with the approval of the Executive Committee of the College.

The majors shall be designated as departmental, interdepartmental, or individual.

A departmental major shall consist of a group of coordinated upper division courses, of which at least six courses are in one department, set up and supervised by a department.

An interdepartmental major shall consist of at least 13 coordinated upper division courses, of which not more than eight are in one department, set up and supervised by a committee appointed by the Executive Committee of the College.

A student who has some unusual but definite academic interest for which no suitable major is offered in the University of California and who has completed at least three quarters of work (a minimum of nine courses) in the University with a grade-point average of B (3.00) or higher may, with the consent of the Dean of the College and with the assistance of a faculty adviser appointed by the Dean, plan his own major. The individual major must be approved by the Executive Committee of the College before it may be accepted in lieu of a departmental or interdepartmental major. The faculty adviser shall supervise the student's work in lieu of a department or committee, and the student's study list must be approved by him before it will be accepted by the Registrar. The Dean must certify that the student has completed the requirements of his major before the degree is granted.

A student who has been away from the University for several terms should consult with his major department concerning the major requirements under which he will graduate.

Each sophomore and upper division student, and each freshman student who has chosen his major, must designate his major on his study-list card; he must register with the department or committee in charge of his major; and he shall

be advised by a representative of the department or committee before filing his registration packet.

A student in good standing may change his major by indicating his intention to the Dean of the College. A student on probation may change his major only with the consent of the Dean of the College. No change of major will be permitted after the opening of the student's last quarter.

Students who fail to attain a grade-point average of at least C (2.00) in work taken in the prerequisites for the major, or in courses in the major, may, at the option of the department or committee in charge, be denied the privilege of entering or of continuing in that major. The student must attain an average grade of C (2.00) in all courses undertaken in the major.

## Organized Majors in the College of Letters and Science

### DEPARTMENTAL MAJORS LEADING TO THE BACHELOR'S DEGREE

The College offers departmental majors in the following fields. These majors lead to the degree of Bachelor of Arts unless otherwise noted.

Anthropology	German	Philosophy
Arabic	Greek	Physical Education*
Astronomy	Hebrew	Physics*
Bacteriology	History	Political Science
Botany	Indo-European Studies	Portuguese
Chemistry*	Italian	Psychology
Classics	Latin	Scandinavian Languages
Economics	Linguistics	Slavic Languages
English	Mathematics	Sociology
French	Meteorology	Spanish
Geography	Music	Speech
Geology*	Oriental Languages	Zoology

### INTERDEPARTMENTAL MAJORS LEADING TO THE BACHELOR'S DEGREE

The College offers interdepartmental majors in the following fields. These majors lead to the degree of Bachelor of Arts unless otherwise noted.

Earth Physics and Exploration Geophysics	Presocial Welfare
Latin American Studies	Psychology-Mathematics
Near Eastern Studies	Public Service
Physical Sciences-Mathematics	Social Sciences for Elementary Teachers
Premedical Studies	

Requirements of these majors are listed in detail on the following pages.

### Special Program in African Studies

*Committee in Charge.* C. S. Whitaker, Jr. (chairman), D. P. Kunene, H. Kuper, P. Schachter, L. M. Thompson.

This program is designed primarily for (1) students who plan to live and work in Africa or who are interested in government and public service careers involving African affairs, and (2) students who plan to pursue graduate work in one of the social sciences or Near Eastern and African languages with primary concentration on the African field.

The underlying philosophy of the program in African Studies is that persons with a firm grounding in one of the established disciplines can make the best

\* Leading to the degree of Bachelor of Science.

contribution to an understanding of Africa and its problems. Thus, the special program in African Studies can be taken only jointly with work toward a bachelor's degree in one of the following fields: anthropology, economics, geography, history, Near Eastern and African languages, political science, or sociology. The student completing this special program will receive a degree with a major in his chosen discipline and specialization in African Studies.

**Preparation.** Introductory courses in any four of the five following departments: Anthropology 5A, 5C; Economics 1, 2 or 100; Geography 1A-1B or 101; History 1A-1B-1C or 5A-5B; Sociology 1 or 101. Training in Arabic, French, Portuguese, or an African language is highly recommended.

**Upper Division.** The student is required to take a major in a social science or in Near Eastern and African languages. The required courses for the program in African Studies which may also be used to fulfill the requirement for the major when relevant are: African Languages 190 or the fulfillment of a language requirement recommended by the Committee in Charge as appropriate for the student's career plans; courses in four disciplines from the following: Anthropology 108A-108B; Geography 188, 189; History 125A-125B; Political Science 130, 166; Sociology 130.

### **Special Program in International Relations**

**Adviser.** Undergraduate international relations adviser in the department of Political Science.

This program is designed primarily for students in the College of Letters and Science whose interests fall in the field of international relations and modern diplomacy. It also partially serves the needs of the following classes of students: (1) students preparing for advanced study in international affairs, or in the international area of one of the social sciences; (2) students planning careers, with an international emphasis, in business, law, journalism or library service; (3) students preparing to teach social science in the secondary schools. Students with these objectives in mind should normally expect to govern their course selections in part by the preparation requirements of the selected UCLA pre-professional curriculum (journalism, library service), teaching credential, or advanced degree program, in consultation with the appropriate advisers. *This curriculum does not constitute a specialized training for the Foreign Service.* The program can be taken only jointly with a major in political science, and the student completing the program will receive a degree with a major in political science and specialization in international relations.

**Preparation.** History 1A-1B-1C, or any three courses selected from History 5A-5B, 8A-8B, 9A-9B-9C-9D; Political Science 1, 2; and three courses from the following: Anthropology 1A-1B, 5A-5B or 22 or 100; Economics 1, 2; Geography 1A-1B-1C, 10A-10B-10C; Sociology 1.

**Upper Division.** The political science major should be completed as follows: Political Science 110, 120, 121, 141, 150, two additional courses selected from courses numbered 123 to 139 (Group II, International Relations), one additional course selected from courses numbered 151 to 169 (Group IV, Comparative Government), one course from 115, 141 or 188. The other courses required for the special program are Anthropology 125; Economics 180, 190; Geography 140; History 141F-141G, 178A-178B; Sociology 140. Recommended: Sociology

120, 126; Economics 110, 111, 112; Anthropology 122, 161, 165. Language requirement: completion of any one of the following courses or its equivalent as prescribed by the language department with a grade of C or better: African Languages 102C, 112C, 142C; Arabic 102C; Armenian 102C; French 6; Germanic Languages 6; Hebrew 102C; Italian 6; Oriental Languages 101C, 109C; Persian 102C; Portuguese 101B; Russian 6; Scandinavian Languages 6, 16; Semitics 102C; Spanish 25; Turkic Languages 102C.

### **Major in Earth Physics and Exploration Geophysics**

*Committee in Charge.* L. Knopoff (chairman), R. L. Shreve, G. W. Wetherill.

This major is designed to provide training in the physical sciences which are basic to geophysics. The requirements of companies concerned with geophysical exploration and the demands of educational and research institutions indicate the desirability of a broad training in the physical sciences for those who intend to enter either the field of applied geophysics or the general field of the physics of the earth. Two options are provided below: the first is designed for students with an interest in exploration geophysics; the second is designed as preparation for students intending to undertake graduate study in geophysics, planetary physics, or space sciences.

#### **OPTION I. EXPLORATION GEOPHYSICS**

*Preparation for the Major.* Chemistry 1A-1B-1C; Geology 4; Mathematics 11A-11B-11C, 12A-12B-12C; Physical Sciences 3G; Physics 1A-1B-1C-1D.

*The Major.* At least 13 courses selected from: (1) required Geology 101A-101B-101C or 111A-111B-111C; Geophysics 136; Physics 105A, 110A, 114A, 131, and (2) at least five courses from: Chemistry 113A-113B-113C; Geology 101A-101B-101C, 111A-111B-111C; Mathematics 130A-130B-130C, 131A-131B, 140A; Physics 105B, 110B, 114B, 115A, 116; Planetary and Space Science 101; and a summer's experience with a geophysical crew.

The student must have his program, including electives, approved by his major adviser each quarter.

#### **OPTION II. EARTH PHYSICS**

*Preparation for the Major.* Chemistry 1A-1B-1C; Mathematics 11A-11B-11C, 12A-12B-12C; Physics 1A-1B-1C-1D.

*The Major.* Physics 105A-105B, 110A-110B, 114A, 115A-115B-115C, 131; Planetary and Space Science 101; and either Mathematics 130A-130B-130C or 131A-131B and 142.

The student must have his program, including electives, approved by his major adviser each quarter.

### **Major in Latin American Studies**

*Committee in Charge.* C. F. Bennett (chairman), E. T. Glauert, E. Gonzalez, C. L. Hulet, J. Wilbert.

This major is designed to serve the needs of the following students: (1) those desiring a general education focused on this particular area; and (2) those planning careers which will necessitate residence in or knowledge of Latin America. Selection of courses should be governed in part by the objective of the student.

It is recommended that students who wish to receive credit for work taken in Latin American schools obtain the prior written approval of the Committee.

*Preparation for the Major.* History 8A-8B, Portuguese 3, and Spanish 25.

*The Major.* A minimum of 5 upper-division courses in Spanish (including Spanish 121A-121B) or the equivalent in Portuguese (including Portuguese 121A-121B); 13 upper division courses, including a minimum of three with Latin American content (indicated by asterisks) in each of two departments other than Spanish and Portuguese selected from: Anthropology 102, 105, 107\*, 109\*, 110, 117\*, 118A\*-118B\*-118C\*, 133A\*-133B\*, 134\*, 199\*; Art 118B\*, 198\*; Dance 171J\*; Economics 108, 110\*, 111\*, 112\*, 190, 191, 192, 199\*; Folklore 101; Geography 110, 120, 181\*, 182\*, 199\*; History 162\*-162B\*, 163A\*-163B\*, 166\*, 168A-168B\*, 169\*, 188, 199 (Sec. 9); Linguistics 100; Music 131\*, 171J\*; Philosophy 156, 193\*; Political Science 120, 121, 131\*, 168A\*-168B\*, 198\*, 199\*; Public Health 161; Portuguese 101A\*, -101B, 120A-120B, 131\*, 133\*, 199\*; Sociology 125, 126, 131\*; Spanish 100, 103\*, 105, 109, 115, 118, 120A-120B, 124, 127, 137\*, 139\*, 143\*, 149\*, 151\*, 160B\*, 170A-170B, 199\*.

### Major in Near Eastern Studies

*Committee in Charge.* A. Tietze (chairman), M. V. Anastos, M. H. Kerr, G. Sabagh.

This major is designed primarily for the following classes of students: (1) those seeking a general education and desiring a special emphasis in this particular area; and (2) those who plan to live and work in the Near East whose careers will be aided by a knowledge of its peoples, languages, and institutions. Selection of courses should be decided partly by the student's own special objectives except that the same Near Eastern language must be maintained in both lower and upper division.

*Preparation for the Major.* Arabic 1A-1B-1C or, in exceptional cases, the beginning course in Hebrew, Persian or Turkish; candidates must also obtain a reading proficiency in French, German or Italian, and give evidence, normally by examination, of their ability to read current literature on Near Eastern studies (this requirement may be satisfied at any time before graduation); History 1A-1B-1C, 9D; four social science courses from: Anthropology 5A, 5C; Economics 1, 2; Geography 1B, 10C; Sociology 1.

*The Major.* Required courses: Arabic 102A-102B-102C, 103A-103B-103C and one sequence chosen from: Arabic 130A-130B-130C or 140A-140B-140C (in exceptional cases the equivalent courses in Hebrew, Persian or Turkish may be substituted); History 134A-134B and two courses selected from 135, 136, 138A-138B, 139A-139B, 200A-200B, 209A-209B or 211A-211B-211C; four courses in at least two disciplines selected from: Anthropology 124, 125, 130A-130B, 147; Geography 187, 188; History 117, 123A-123B-123C, 126, 131A-131B, 133A-133B, 207 or any other history courses listed above; Political Science 132, 164; Sociology 132, 133. Recommended courses: Arabic 150A-150B, Hebrew 150A-150B, Persian 150A-150B, Turkic Languages 150A-150B; Folklore 101; History 111A-111B-111C, 125A-125B; Linguistics 100, 120; Philosophy 101, 102, 175.

Competency in a second Near Eastern language is suggested for students planning graduate work in Islamic Studies. This work should be undertaken in the senior year.

## Major in Physical Sciences-Mathematics

*Committee in Charge.* N. A. Watson (chairman), D. G. Babbitt, M. E. Baur, J. D. McNeil, D. M. Popper.

This major is designed to provide training in sciences and mathematics for those students who are planning to work for the general secondary credential with physical sciences and general science as a major and mathematics as a minor. The major has been designed to provide adequate training for secondary teachers of physics, chemistry, general science or mathematics.

*Preparation for the Major.* Chemistry 1A-1B-1C, 4A-4B, 6A-6B; Mathematics 11A-11B-11C and 12A-12B or 13A-13B; Physical Sciences 3G, 3M; Physics 1A-1B-1C-1D.

*The Major.* Astronomy 101; Chemistry 102; Education 130 and either 100 or 108 or 112; Mathematics, three upper division courses, preferably 103A-103B and 106, or 101A-101B and 102A; Physical Sciences 370 (or Mathematics 370); Physics 105A and 121; and three other upper division courses from the physical sciences, life sciences or History (History of Science).

## Major in Presocial Welfare

*Committee in Charge.* H. H. L. Kitano (chairman), J. Rabow, B. H. Raven, D. E. Smith.

No lower division students will be admitted to this program. Continuing and transfer students must complete the degree requirements for this major by September, 1970. The School of Social Welfare recommends that students consider majors in sociology or psychology as effective preparation for admission to that school.

This major is designed to give the student a suitable background for professional training at the graduate level in the School of Social Welfare. It also provides a broad foundation in the various social sciences. Completion of this major does not guarantee admission to a school of social welfare, and the student is expected to consult his adviser regarding the specific requirements of the school he expects to enter.

*Preparation for the Major.* Sociology 1 or 101; Psychology 10 or 101; Sociology 18 or 19, or Psychology 141, or Mathematics 50. Recommended: Anthropology 5A-5B.

*The Major.* A minimum of four upper division courses in Psychology (excluding 101); a minimum of five upper division courses in Sociology (excluding 101); and a minimum of one upper division course in each of the following: *Anthropology, History, Political Science, and Economics or Philosophy.* Total, 13 upper division courses in the Social Sciences. *Courses which are suggested include* Psychology 122, 125, 127, 128, 130, 132A, 135, 149, 189; Sociology 113, 120, 121, 123, 124, 125, 126, 145, 146, 148, 149, 151, 152, 153, 154, 155; Anthropology 125, 130A-130B, 151A-151B, 165; Economics 100, 107, 111, 132, 150, 152, 180; History 142C, 174A-174B, 180A-180B, 188; Philosophy 150, 151, 155, 156; Political Science 112, 113, 114, 141, 174, 186.

It is strongly recommended that majors see their adviser regularly.

### Major in Psychology-Mathematics

*Committee in Charge.* T. R. Trabasso (chairman), A. L. Comrey, B. O'Neill, M. Seeman, C. J. Stone.

This major is provided as an alternate to the regular psychology major. It is designed for students planning to go on for graduate work in those fields of psychology where mathematical training is more essential, e.g., measurement, experimental psychology, and theoretical psychology. Present-day trends indicate that mathematical skills are becoming more and more important to the research psychologist.

*Preparation for the Major.* Biology 2, or Biology 1A-1B-1C; Psychology 10 (transfer students and students who change their majors at the beginning of the junior year or later may take Psychology 101 in lieu of Psychology 10 but may not count it toward upper division credit on the major); two courses in physics and/or chemistry; Mathematics 11A-11B-11C or the equivalent; Mathematics 12A-12B-12C, or the equivalent.

*The Major.* Psychology 110, 115, 120, 125, 135, either 111 (half course) or 121 (half course), and one of 116, 126, or 136 (all half courses); Mathematics 110A, 130A; 150A-150B-150C or 152A-152B and one elective course in mathematics; two elective courses in mathematics and/or psychology.

The student must have his program approved by his major adviser each quarter.

### Major in Public Service

*Committee in Charge.* J. C. Bollens (chairman), J. F. Barron, F. E. Case.

This major, which combines work of several departments, prepares students for positions in governmental work other than foreign service. The major is of value also for students interested in careers as public relations counselors and personnel managers and in careers in private organizations that have extensive contacts with government. In recent years, employment in national, state, and local governments has offered an attractive field to young men and women who have the proper training and interest. Governmental positions increasingly require specialized training in fields such as budgeting, personnel, planning, and government management. In addition to regular positions with the government and government-related private organizations, there are openings for part-time internship training in various governmental agencies in the Los Angeles area.

*Preparation for the Major.* Business Administration 1A-1B; Economics 1, 2, Political Science 1; Mathematics 50; Speech 1. In the following fields, other courses are prerequisite to upper division courses included in the major: Public Personnel: Psychology 10; Planning: Geography 1A-1B.

*The Major.* The major consists of 13 upper division courses selected from one of five possible fields of concentration: Public Personnel Administration, Public Management, Public Relations, Financial Administration, and Planning. Not more than seven courses in the field are to be taken in one department. The following five political science courses are required for each field of concentration: 145, 181, 182 or 184, 185 and 187. The remaining eight courses must be selected from the list offered under the student's chosen field: (1) **Public Personnel Administration:** Political Science 180, 186, 189; Psychology 125, 412; Business Administration 150, 182; Economics 150, 152; Sociology 110A, 141, 152.

(2) **Public Management:** Political Science 114, 141, 143, 173, 180, 186, 189; Business Administration 150, 182, 190A–190B; Economics 130, 150, 170; Psychology 125; Sociology 110A, 121, 125, 141. (3) **Public Relations:** Political Science 120, 121, 141, 143, 172A–172B, 174, 180, 186, 189; Business Administration 150; Economics 150; Journalism 101; Psychology 122; Sociology 110A, 121, 125, 141; not more than three courses selected from History 171A–171B, 172A–172B, 173A–173B, 174A, 175A–175B. (4) **Financial Administration:** Political Science 143, 172A–172B, 180, 186, 189; Business Administration 120A–120B; Economics 130, 160; Sociology 110A. (5) **Planning:** Business Administration 130, 150, 175, 176, 177; Economics 130, 170, 171, 175, 180; Engineering 187A; Geography 152, 170, 172; Political Science 141, 143, 146, 172A–172B, 173, 180, 186, 189; Sociology 120, 121, 125, 141.

### Major in Social Sciences for Elementary Teachers

*Committee in Charge.* J. E. Phillips (chairman), W. H. Dutton, E. A. Engelbert, B. E. Thomas, R. A. Wilson.

This major has been designed in accordance with the State law governing the elementary teaching credential. The program, which must be completed in its entirety for the bachelor's degree, consists of a social science major, an Allied Field in English, and a professional sequence in education. A fifth year is necessary for the completion of the credential requirements. An alternate program is the departmental major. For further information concerning credential programs see the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

Students entering any elementary teaching program must maintain a grade-point average of C (2.00) in all courses taken at the University; of C (2.00) in all courses in the major; of C (2.00) in all courses in the Allied Field; of C (2.00) in all courses in Education; and at least a grade of C in Education 324A–324B. These are the minimum requirements for the bachelor's degree. At least a 2.25 average is necessary to enter the fifth-year certificate program and at least a B (3.00) average is necessary to enter all master's programs.

All petitions regarding exceptions to any of the requirements in this program must be submitted to the College of Letters and Science office.

*Preparation for the Major.* Required of all students: Mathematics 38 or 2A; Music 1 or 2A; Psychology 10 and 12, or 101; History 1A–1B–1C; Geography 1A–1B or 101; English 1, 2, 10A–10B–10C.

*The Major.* The major consists of 11 upper division courses distributed as follows: (1) three courses from History 121A, 121B, 141A–141B, 141C, 163A–163B, 166, 176, 177A–177B, 178A, 178B, 179A, 179B, 180A–180B, 181, 188; (2) four courses from Geography 110, 120, 122, 124, 130, 132, 134, 140, 150, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 191; (3) two courses in two of the following departments: (a) *Anthropology*: two courses from the following: 100, 102, 105, 106, 107, 110, 124, 125, 127, 130A–130B; (b) *Economics*: two courses from the following: 100, 105, 107, 108, 110, 111, 120, 130, 178, 180, 181, 190; (c) *Political Science*: two courses from the following: 112, 113, 114, 115, 120, 121, 123, 141, 142, 143, 144, 145, 171, 173, 174, 180, 181, 182, 186; (d) *Psychology*: two courses from the following: 110, 122, 125, 130, 132A–132B, 135; (e) *Sociology*: two courses from the following: 101, 120, 121, 122, 123, 124, 125, 130, 132, 133, 141, 142, 145, 146, 150, 151, 152, 153, 154, 155.

*The Allied Field.* The allied field in English consists of 3 upper division English courses, including two chosen from the following: 104, 110, 111, 112, 113, 115, 116, 117, 142A-142B, 157, 164, 165, 170, 171, 172, 173 and 174.

*Education Professional Sequence.* The following courses in Education are required: 100, 112, 124A-124B-124C, 324A and 324B.

Lower division courses required for completion of this program will also meet all of the D, H and I breadth requirements.

*Recommended electives:* Art 1A-1B-1C, 10A; Public Health 44, 131; Physical Education 121.

*Departmental Major Program.* In place of the major in Social Sciences for Elementary Teachers one may elect a departmental major. If a teaching minor is desired, see the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION for information.

## Preparation for Various Professional Curricula

In addition to the majors described in the preceding pages, all of which lead to the bachelor's degree, certain courses given at UCLA may be used as preparation for admission to the professional colleges and schools of the University in Los Angeles, Berkeley and San Francisco.

### Precriminology Curricula: Two Years

The School of Criminology (Berkeley) offers a broad range of studies in the nature, causes, and prevention of crime. The School's program falls into two main areas of emphasis: the first, general criminology, draws upon the concepts and methods of the social and behavioral sciences for an understanding of the economic, political, psychological, and sociological factors behind crime; the second, criminalistics, is concerned with the application of the natural sciences to law enforcement and crime investigation. The first program leads to a Bachelor of Arts degree; the second, to a Bachelor of Science degree. Students in either program are expected to gain an acquaintance with both fields.

Students are admitted in the junior year, after the completion of a 90-unit lower division precriminology curriculum with a grade-point average of 2.0 or better. The curriculum normally consists of the following subjects.

*Basic Program (all students).* English 1, 2; Foreign Language (modern), equivalent of course 3; Sociology 1 and another sociology course.

*Criminology (Social Science Emphasis).* Biology 2; Mathematics 50 or Sociology 18; Political Science 1, 2; Psychology 10, 70.

*Criminalistics (Natural Science Emphasis).* Biology 1A-1B-1C; Chemistry 1A-1B-1C, 4A-4B, 6A-6B; Mathematics 3A or 11A; Physics 2A-2B-2C; Psychology 10. (Statistics 20 will be taken at Berkeley.)

In addition to the requirements listed above the student must complete the breadth requirements of the College of Letters and Science of *Either* UCLA or UCB. In meeting the UCLA breadth requirements, the Criminology major is considered to be in the Social Science division and the Criminalistics major in either Life Sciences or Physical Sciences.

For further information regarding these programs, the student should correspond with the School of Criminology, University of California, Berkeley.

### **Predental Curriculum: Two Years**

*Program Adviser.* M. McCann and Committee, School of Dentistry.

*Adviser for Applicants to Dental Schools.* Lorraine O'Donnell, School of Dentistry.

The College of Letters and Science offers a predental curriculum designed to fulfill the basic educational requirements for admission to several dental schools and the general educational requirements of the College of Letters and Science. It is advised that the student determine and satisfy the specific requirements of the dental schools to which he expects to apply.\*

The student will find himself more adequately prepared for the predental curriculum if he has taken the following subjects in high school: English, history, mathematics (algebra, geometry and trigonometry), chemistry, physics and foreign language.

The 90 quarter units of work required for admission to the School of Dentistry include the following:

General University Requirements: (1) Subject A; (2) American History and Institutions.

Specific UCLA School of Dentistry Requirements† (1) English 1 and 2; (2) Sciences: Chemistry 1A-1B-1C, 4A-4B, 6A-6B; Physics 2A-2B-2C; Biology 1A-1B-1C.

Social Sciences and humanities should also be included in the 90 quarter units for which the student may consider such courses as anthropology, history, economics, psychology, political science, appreciation of art and/or music, and philosophy.

### **Predental Hygiene Curriculum: Two Years§**

*Adviser.* Information may be obtained at the office of the College of Letters and Science.

The University offers a four-year program in dental hygiene leading to the degree of Bachelor of Science. The first two years may be taken at Los Angeles; the last two years must be taken in the School of Dentistry in San Francisco.

The 90 quarter units of work required for admission to the School of Dentistry include general University requirements and additional specific requirements, as follows (the numbers in parentheses refer to courses at the University of California, Los Angeles, which fulfill the requirements):

*Curriculum Requirements.* (1) Subject A; (2) American History and Institutions (The examination in American History and Institutions may be taken in the School of Dentistry, but it is preferable to satisfy the requirements in the predental program.); (3) English 1, 2; (4) Chemistry 1A-1B-1C, 4A-4B, 6A-6B (five courses); (5) Biology 1A-1B-1C; (6) Psychology 10, and one additional course; (7) Electives: Courses in Social Sciences and humanities (including foreign language).

\* School of Dentistry, page 117.

† Other dental schools may have different requirements.

§ The School of Dentistry reserves the right to limit enrollment if applications exceed the available facilities, and to require interviews and aptitude tests if they are necessary in the selection of the class. For further information see the ANNOUNCEMENT OF THE SCHOOL OF DENTISTRY, SAN FRANCISCO.

**Premedical Studies: Four Years†**

*Program Adviser.* See major department.

*Adviser for Applicants to Medical Schools.* Donald Novin, College of Letters and Science.

Students who intend to apply for admission to a medical school and who wish to complete the requirements for a bachelor's degree before such admission should select a major within the College. In addition to fulfilling the requirements of the chosen major, the student is advised to ascertain and satisfy the specific requirements for medical schools to which he expects to apply.

**Premedical Curriculum: Three Years‡**

*Adviser for Applicants to Medical Schools.* Donald Novin, College of Letters and Science.

It is assumed that as preparation for this curriculum the student will have completed in high school the following subjects: English, three units; United States history, one unit; mathematics, two units; chemistry, one unit; physics, one unit; foreign language (preferably French or German), two units. It is desirable that a course in freehand drawing be taken in high school. If possible, the student should also complete in high school intermediate algebra,  $\frac{1}{2}$  unit, and trigonometry,  $\frac{1}{2}$  unit, because these courses cannot be taken in the University.

Students who fulfill the following curriculum requirements in the College of Letters and Science at Los Angeles and who are then admitted to the School of Medicine at Los Angeles without the bachelor's degree may, by petition, upon satisfactory completion of the first year medical curriculum, be eligible for award of the degree Bachelor of Science in Premedical Studies by the College of Letters and Science. *Undergraduate Curriculum Requirements:* A total of not less than 34 courses including: American History and Institutions; English 1; Foreign Languages, five courses; Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C; Physics 2A-2B-2C; Mathematics 3A-3B-3C; Social Sciences,\* three courses; Humanities,\* three courses; Limited Electives,\* two courses; Biology 1A-1B-1C; Zoology 107 and 115; Electives, three courses. Additional electives may be substituted for the requirements in American History and Institutions and in English 1 where these are met by examination and for any portion of the foreign language requirement satisfied by high school credits. This curriculum, if the student is not admitted to medical school, will ordinarily permit completion of a major during three additional quarters in a number of departments of the College of Letters and Science.

It is important for students to bear in mind that the class entering the School of Medicine is limited; in the past there have been a great many more applicants than could be admitted. Premedical students who, upon the conclusion of their ninth quarter, find themselves thus excluded from the School of Medicine, will be unable to obtain the bachelor's degree in the College of Letters and Science at the end of the twelfth quarter, unless they plan their programs with this contingency in mind. They should, therefore, either enter a departmental

† Usually the following courses are required for admission to medical school: English 1, 2; Chemistry 1A-1B-1C, 4A-4B, 6A-6B (Chemistry 4C, 6C recommended); Physics 2A-2B-2C; Biology 1A-1B-1C; Zoology 107, 115. (San Francisco requires 12 units of modern foreign language).

\* These courses should satisfy the G, H and I requirements as indicated on pages 74 and 75 of this catalog.

major at the beginning of the seventh quarter, at the same time meeting all premedical requirements, or include in their premedical program a sufficient number of appropriate courses in some major department. Provision for the completion of such a major does not prejudice the student's eligibility for admission to the School of Medicine.

### **Prenursing Curriculum: Two Years**

*Committee in Charge.* M. M. McCaffery (chairman), A. H. Dowd, G. J. Jann.

The University offers a four-year course leading to the Bachelor of Science degree in nursing. The prenursing curriculum in the lower division of the College of Letters and Science is designed to prepare students for the upper division program in the School of Nursing. The curriculum as set forth below includes the specific requirements for acceptance by the School of Nursing.

Students should apply for admission to the School of Nursing when they have completed or have in progress 90 quarter units of the prenursing curriculum with at least a grade C (2.00) average.

*Curriculum Requirements.* (1) Subject A; (2) American History and Institutions; (3) Foreign language (completion of course 3, or three years of one language in high school validated by a placement examination); (4) Elementary algebra and plane geometry; (5) English 1; (6) Physical sciences: Chemistry 1A-1B-1C, 4A/6A, 4B/6B; Physical Sciences 1 (or a high school course in physics with a grade of B); (7) Life sciences: Bacteriology 100A\*-100B\*; Biology 1A-1B-1C; Psychology 12; (8) Social sciences: Anthropology 22 or 5A; Psychology 10; Sociology 1 or 101; (9) Humanities: two courses in literature or Philosophy 6, 7 or 20, 21 or 31, 32; (10) Limited electives: two courses in art, history, literature, music or philosophy.

### **Prenutritional Sciences Curriculum: Two Years**

*Committee in Charge.* G. A. Emerson (chairman), L. S. Goerke, M. E. Swendseid.

The University offers a four-year program leading to the degree of Bachelor of Science in nutritional sciences. The prenutritional sciences curriculum in the lower division of the College of Letters and Science is designed to prepare students for the upper division program in the School of Public Health. No new students will be admitted to this program. Continuing and transfer students may be admitted if they can complete the degree requirements for the Bachelor of Science in nutritional sciences by September 1971.

The specific requirements for acceptance by the School of Public Health are included in the curriculum as set forth below. Students should apply for admission to the School of Public Health upon completion of 90 quarter units of this program with a grade C (2.00) average or better.

*Curriculum Requirements.* (1) Subject A; (2) American History and Institutions; (3) Foreign language (completion of course 3, preferably German); (4) Elementary algebra and plane geometry; (5) English 1, 2; (6) Physical sciences: Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C; Mathematics 3A-3B-3C; Physics 2A-2B-2C; (7) Life sciences: Biology 1A-1B-1C; (8) Social sciences: three courses, including Economics 1 (two courses must be in one department);

\* Although listed as a prenursing requirement, Bacteriology 100A and 100B may be taken during the first two quarters of the junior year.

(9) Humanities: three courses in literature or three courses in philosophy; (10) Limited electives: two courses in art, history, literature, music, or philosophy.

### **Prepharmacy Curriculum: Two Years**

*Adviser.* J. H. Beckerman. Appointments may be made at A4-205, Center for the Health Sciences.

The School of Pharmacy on the San Francisco campus of the University offers a four-year curriculum leading to the degree of Doctor of Pharmacy. To be admitted to this curriculum a student must have met all requirements for admission to the University and have completed, with an average grade of C (2.00) or better in the University of California or in another institution of approved standing, at least 90 quarter units of the program set forth below. Students taking the prepharmacy work at the University of California normally will be enrolled in the College of Letters and Science. If taken elsewhere, the courses selected must be equivalent to those offered at the University of California. In order to complete prepharmacy studies in the minimum of time, students should complete elementary chemistry, trigonometry, and a full year of intermediate algebra in high school. §

*Curriculum Requirements: First Year.* (1) Subject A; (2) English 1, 2 or Speech 1, 2; (3) Chemistry 1A-1B-1C; (4) Trigonometry and intermediate algebra (if not completed in high school); (5) Electives: six or seven elective courses should be selected from courses in foreign language, social sciences, and humanities, offered in satisfaction of the lower division requirements of the College.

*Curriculum Requirements: Second Year.* (1) Biology 1A-1B-1C; (2) Physics 2A-2B-2C; (3) Mathematics 3A-3B-3C; (4) American History and Institutions; (5) Electives, two-three.

### **Prephysical Therapy Curriculum: Three or Four Years**

*Program Adviser.* Gerald W. Gardner, Department of Physical Education.

*Adviser for Applicants to Physical Therapy Schools.* Bernard Strohm, Division of Rehabilitation.

Students who intend to apply for admission to a Physical Therapy School on completion of their Junior year are advised to ascertain and satisfy the specific requirements for the schools to which they expect to apply. Students who wish to complete the requirements for a bachelor's degree before applying for admission to a school of physical therapy should select a major within the College as well as ascertain and satisfy specific requirements for the physical therapy schools to which they expect to apply.

Students intending to transfer to the University of California, San Francisco Medical Center should satisfy the following specific requirements if they intend

§ Students who have completed the two-year prepharmacy curriculum at Los Angeles cannot be assured of admission to the School of Pharmacy of the San Francisco campus. When the number of qualified applicants for the Doctor of Pharmacy curriculum exceeds the available facilities, selection will be made on the basis of scholarship as determined from the College record. A personal interview may be required. Applications for admission to the School of Pharmacy, San Francisco campus, must be filed between October 1 and February 1 preceeding the September of proposed admission. Blanks may be obtained from the Office of the Director of Admissions, University of California Medical Center, San Francisco 94122. For further information see the ANNOUNCEMENT OF THE SCHOOL OF PHARMACY, SAN FRANCISCO, which may be obtained from the Dean, School of Pharmacy, University of California Medical Center, San Francisco 94122.

to receive both the Certificate of Completion in Physical Therapy and the Bachelor of Science degree: 135 quarter units of college work including 8 units of inorganic chemistry, 4 units of physics, 4 units of human anatomy, 6 units of physiology with laboratory, 5 units of abnormal psychology as well as satisfy the College of Letters and Science A-I requirements.

### **Prepublic Health Curriculum: Two Years**

*Committee in Charge.* L. S. Goerke (chairman), M. J. Pickett, E. L. Rada.

The University offers a four-year program leading to the degree of Bachelor of Science in public health. The prepublic health curriculum in the lower division of the College of Letters and Science is designed to prepare students for the upper division program in the School of Public Health. No new students will be admitted to this program. Continuing and transfer students may be admitted if they can complete the degree requirements for the Bachelor of Science in public health by September 1971.

The specific requirements for acceptance by the School of Public Health are included in the curriculum as set forth below. Students should apply for admission to the School of Public Health upon completion of 90 quarter units of this program with a C (2.00) average or better.

*Curriculum Requirements.* (1) Subject A; (2) American History and Institutions; (3) Foreign language (completion of course 3 or three years of one language in high school); (4) two years of high school mathematics; (5) English 1; (6) Physical sciences: Chemistry 1A-1B-1C; Mathematics 1 or 3A; (7) Life sciences: Biology 1A-1B-1C; (8) Social sciences: two courses in sequence in history and two courses in other social sciences; (9) Humanities: three courses in literature or three courses in philosophy; (10) Limited electives: two courses in art, history, literature, music, or philosophy.

### **Other Professional Curricula in the University**

#### **JOURNALISM**

The University offers no undergraduate major in journalism at Los Angeles. There is, however, an undergraduate program in journalism which is designed primarily to prepare the student for graduate training leading to a career in journalism either on a newspaper or magazine, in broadcasting, or in the communicative aspects of public information.

Undergraduate preparation for journalism embraces three areas: (1) general requirements of the College of Letters and Science, (2) a major in one of the social sciences or humanities disciplines, and (3) a series of undergraduate courses in journalism to be taken as a group of related electives in the junior and senior years.

Undergraduate students interested in journalism should select a major from the list of majors. The department recommends the following: economics, English, history, political science and sociology. Other majors also are suitable, and the student may wish to consult the department before making a selection. On the undergraduate Application for Admission, the student should indicate the college, the major, and the word "journalism" in parentheses, e.g., *Letters and Science, Political Science (Journalism)*. This will permit the College to assign the student to the proper adviser who will help the student plan a

program in his major with electives recommended by the Department of Journalism.

### **LIBRARY SERVICE**

The University of California does not offer an undergraduate major in librarianship. The School of Library Service on the Los Angeles campus and the School of Librarianship on the Berkeley campus have the following basic admission requirements: a bachelor's degree with a subject major, a broad background in the liberal arts and sciences, and a reading knowledge of at least two modern foreign languages. Librarians interested in documentation will also need a background in mathematics. Further information on admission requirements and on recommended undergraduate courses may be obtained from the Office of the School of Library Service, Powell Library 326.

Undergraduate students in the University who are primarily interested in entering a graduate library school should select a major from the list of majors. This major and the appropriate college should be indicated on the undergraduate Application for Admission, with Library Service in parentheses: e.g., *Letters and Science, English (Library Service)*. This will make it possible for the College to assign the student to the proper adviser who will help the student plan a program in his selected major with electives recommended by the School of Library Service. This procedure will also assure that the admission requirements, such as a reading knowledge of two modern foreign languages, of the School of Library Service are known to the student. Neither library service nor librarianship should be listed as a major.

### **RELIGION**

*Advisory Committee.* D. B. Meyer (chairman), B. Befu, C. W. Bolle, H. A. Davidson, B. R. Nevius.

The University does not offer courses in religion nor does it have a graduate school of theology; it therefore does not offer a curriculum in religion or in pre-theological studies. However, a student preparing for admission to a theological seminary, or for religious work in general, will be assigned an adviser prepared to help him plan a program in his selected major with electives recommended by the American Association of Theological Schools and specific Protestant, Catholic, and Jewish seminaries.

Such undergraduate students should select a major from the list of majors on page 71 of this bulletin (recommended majors are English, history, philosophy) and indicate this major on the undergraduate Application for Admission, with the word "religion" in parentheses, e.g., *Letters and Science, History (Religion)*.

It is advisable to choose a major that will follow one's field of interest and meet as nearly as possible the following undergraduate requirements in semester units as set forth by the interdenominational American Association of Theological Schools: English literature, composition, and speech (18 units); history (9-12 units); philosophy (nine units); natural sciences (six units); psychology (three units); other social sciences (15 units); foreign languages 16 units in one or two of the following: Greek, Latin, Hebrew, German, French).

The attention of students interested in religion is directed to the following specific courses: Anthropology 124 (Comparative Religion); Arabic 150A-150B

(Survey of Arabic Literature in English); Art 105A (Early Christian and Byzantine Art); Classics 161 (Introduction to Classical Mythology); English 113 (The Bible as Literature); Hebrew 120A–120B–120C–120D–120E–120F (Biblical Texts), Hebrew 150A–150B (Survey of Hebrew Literature in English); History 121A (The Early Middle Ages), History of 121B (The Later Middle Ages), History 124A–124B (History of Religions), History 131A–131B (Armenian History), History 135 (Introduction to Islamic Culture), History 138A–138B (Jewish History), History 141B (The Reformation), History 177A–177B (Intellectual History of the United States); History 196A (Early History of India), History 204A–204B (History of the Church in the Middle Ages), History 207 (Armenian Intellectual History); Italian 113A–113B–113C (Dante's Divine Comedy); Music 120 (Music in the Middle Ages), Music 139 (History and Literature of Church Music); Oriental Languages 172A–172B–172C (The Influence of Buddhism on Far Eastern Cultures and European Thought); Persian 150A–150B (Survey of Persian Literature in English); Philosophy 103 (Medieval Philosophy from Augustine to Aquinas), Philosophy 104 (Late Medieval and Renaissance Philosophy), Philosophy 150 (Society and Morals), Philosophy 151 (History of Ethics), Philosophy 175 (Philosophy of Religion); Semitics 130 (Biblical Aramaic).

## COLLEGE OF ENGINEERING

The Department of Engineering, in complement with other University departments, offers courses leading to the degrees of Bachelor of Science, Master of Science, Master of Engineering, and Doctor of Philosophy. While many graduates of the College of Engineering enter the profession directly upon achievement of the bachelor's degree, others find it advantageous to continue academic work toward the advanced degrees. Engineering Extension serves students and engineers in Southern California through a wide-ranging program of evening classes, concentrated short courses, and professional institutes and conferences.

The abundance and variety of extracurricular activities on the Los Angeles campus provide many opportunities for valuable experiences in leadership, service, recreation, and personal satisfaction. The faculty of the College strongly encourages engineering students to participate in such activities, especially those of most relevance to engineering. Among the latter are the student Engineering Society, the student publication, *California Engineer*, and the student-oriented programs of the many technical and professional engineering societies in the Los Angeles area. The UCLA chapter of *Tau Beta Pi*, the national engineering honor society, encourages high scholarship, provides volunteer tutors, and offers many services and programs "to foster a spirit of liberal culture in engineering colleges."

Instruction is supported through research conducted in such areas as aerospace engineering, air pollution, biocybernetics, biotechnology, communication systems, computers, control systems, earthquake engineering, materials, nuclear engineering, optimum structural design, technology of developing nations, transportation and traffic engineering, water desalination, and water resources.

A branch of the campus library is housed within the complex of engineering buildings. Known as the Engineering-Mathematical Sciences Library, it serves the departments of Engineering, Mathematics, Astronomy, and Meteorology. Open stacks encourage students to explore and use specialized literature.

The Department of Engineering maintains in Boelter Hall an Evening Information Center which is open from 5 to 10 p.m. Monday through Thursday, and from 9 a.m. to 12 noon on Saturdays, throughout the year except for the month of August.

Students who plan to seek advanced degrees are referred to page 92 of this bulletin and to the announcement of the Graduate Division.

The College of Engineering is in the process of changing to a School of Engineering and Applied Science with some consideration of readjustment of the curricula.

Any students entering under the conditions of the current catalog will be permitted to conduct their programs in accordance with the provisions at the time of their entry, or at their choice, to readjust their curricula to those developed for the School.

### Admission to Engineering

Attention is directed to the calendar on pages 5 and 6 concerning the last days for filing applications for admission to the University for the respective quarters, 1968-1969.

### ADMISSION AT THE FRESHMAN LEVEL

While most applicants will take their first two years in engineering at a junior college, an applicant may qualify for admission to the University in freshman standing under any one of the several plans of admission described on pages 22-28 of this bulletin. It is important for applicants expecting to enter the College of Engineering to include the following subjects in the list of high school courses taken to satisfy the University admission requirements:

Algebra .....	2 units	Chemistry or physics	
Plane geometry .....	1 unit	(both are desirable) .....	1 unit
Trigonometry .....	$\frac{1}{2}$ unit		

In addition to the above preparation, one unit of mechanical drawing, while not required, is strongly recommended. Deficiencies in any of the above subjects will delay the normal course of study.

### ADMISSION AT THE JUNIOR LEVEL

In general, students will be admitted to the College of Engineering only at the freshman and junior levels. Prerequisite to all upper division engineering courses is upper division standing in the College of Engineering.

Admission to junior status in the College of Engineering is determined on the basis of lower division grades and completion of the following minimum subject requirements:

	Minimum Number of	
	Semester Units	Quarter Units
Analytic geometry and Calculus .....	12	18
Chemistry (for engineering and science students)	8	12
Physics (for engineering and science students) . .	10	15
Engineering (subjects such as graphics, properties of materials, surveying, engineering measurements, analytical mechanics, circuit theory and electronic devices, and computers) . . . . .	10	15

Humanities and social studies . . . . .	6	9
Unspecified subjects (at least six quarter units of mathematics, sciences, and engineering; and not more than nine quarter units of humanities and social sciences; none of these units may be in military science or physical education). . . . .	10	15
	<hr/> 56	<hr/> 84

Students who have completed the first two years in the College of Engineering must present a C average in all work undertaken in order to be advanced to the upper division. Transfer students who have met the minimum subject requirements and are otherwise admissible to the University will be classified as juniors. Students admitted on this basis will not be required to take additional lower division courses except those which are prerequisite to upper division courses in their major field elective pattern or those which are degree subject requirements. Students who enter with *only* the minimum subject requirements may need more than six quarters to complete the upper division of the engineering curriculum.

Students transferring from other colleges and universities to the University of California for the study of engineering should have adequate training in subjects basic to the level at which transfer is planned. The full senior year, comprising a minimum of 10½ courses (42 quarter units) in all cases must be completed at the University of California.

A student who wishes to transfer to the College of Engineering from a technical institute or junior college technical education program will be expected to meet existing University requirements for admission to the freshman year. In consultation with a faculty counselor, placement in engineering courses will be determined by the student's previous scholarship record. After he has demonstrated ability to do the work required in the College of Engineering with a satisfactory grade-point average, the College of Engineering will evaluate his noncertificate terminal courses and recommend transfer credit for them to the extent that they are found to have served the student as preparation for his advanced work in engineering.

The Colleges of Engineering on the Berkeley, Davis and Los Angeles campuses have adopted a policy of reciprocity whereby students who have completed *all* the requirements for upper division standing in any one of the three Colleges of Engineering will be admitted with upper division standing in any one of the other Colleges of Engineering.

## Undergraduate Study in Engineering

### Purpose

The purpose is to provide undergraduate preparation for the functions of design, research and development in all branches or fields of professional engineering for an age when all technology must be put to use in a framework of human interests and values.

## **Plan**

A single unified curriculum of 45% courses (182 quarter units) which consists of a required core of fundamental subjects and disciplines (31% courses or 126 quarter units) and a program of 14 elective courses (56 quarter units). The elective program provides each student with two opportunities: first, specialization in the major field of engineering of his choice, and second, development of an understanding of the inescapable interaction between technology and human societies.

## **Required Core**

An integrated group of courses which features fundamentals common to all branches of engineering. These fundamentals pertain to the following subjects and disciplines: mathematics, physics, chemistry, life science, engineering measurements, graphics, properties and strength of materials, engineering mechanics, circuit analysis, electromagnetic theory, thermodynamics and heat transfer, fluid mechanics, engineering design and engineering economics.

## **Electives—Major Field**

Major field electives consist of a group of advanced courses in engineering, mathematics, the sciences (physical, life, and space) and/or business administration.

## **Electives—Humanities**

A group of courses in humanities, social studies, and fine arts (collectively termed humanities for reasons of convenience and brevity) selected from the rich offerings of the many departments on campus for their relevance to human interests and values.

## **English Proficiency**

Proficiency in English is a general requirement of the University and the College. Every accepted student either must pass the Subject A examination (in English composition) or complete an acceptable course in English composition with a satisfactory grade (see page 22). The College of Engineering requires proficiency in written English throughout the undergraduate years. Students who do not maintain proficiency must undertake remedial studies in English composition. None of the units of credit for such studies may be counted as part of the 182 units of the engineering curriculum. Consequently, deficiencies in English require extra work and may delay graduation.

## **Length of Curriculum**

The curriculum consists of 45% courses, scheduled for completion in 12 academic quarters of *full-time* study. These 45% courses may be spread over more than the usual four years for employed students or for those who wish to take broader programs. Alternatively, they may be completed in less than four years by students who wish to enroll in all four quarters of study in an academic year.

## Degree

The Bachelor of Science is awarded upon completion of the engineering curriculum and all associated requirements, including those for all students of the University.

## Requirements for the Degree

Completion of (1) the required core and the elective program of the engineering curriculum with at least a C average in all those courses which are of upper division level, and (2) the general University requirements, including those for American History and Institutions, English proficiency, minimum scholastic standing, and senior residence.

## HONORS AND AWARDS AT GRADUATION

*Cum Laude.* Accorded for high scholarship in advanced study, defined normally as attainment of a grade-point average of 3.25 or more in at least 20 courses (80 units) of upper division studies, or, in exceptional cases, for prominence in special studies or research attested by faculty recommendations.

*Magna Cum Laude.* Granted for distinction in upper division performance, defined normally as attainment of a grade-point average of 3.60 or more in at least 20 courses (80 units) of upper division studies, or, in exceptional cases, for eminence in special studies or research attested by faculty recommendations.

*Summa Cum Laude.* Awarded for markedly superior intellectual achievement, defined normally as attainment of a grade-point average of 3.80 or more in at least 20 courses (80 units) of upper division studies, or, in exceptional cases, for outstanding achievement in special studies or research attested by faculty recommendations.

## FLEXIBILITY FOR TRANSFER STUDENTS

A feature, especially of courses in the junior year, provides smooth transition for students who transfer from the many public junior colleges in California that offer instructional programs equivalent to the first two years of the engineering curriculum. This flexibility derives from long-standing, statewide policies of the University of California which provide that equivalence of the lower division engineering programs of other colleges be judged by a set of minimum subject requirements rather than a fixed pattern of courses. College level courses completed with satisfactory grades in the junior colleges are accepted for full credit, up to a maximum of 70 semester units (105 quarter units). (See pages 25-26 for more complete explanation.)

## STUDENT ADVISING PROGRAM

Regular and special conferences are held between students and the faculty advisers to whom they are individually assigned upon admission to the College. These advisers assist students in planning their academic careers and selecting electives.

## E.C.P.D. ACCREDITATION

The Engineering Curriculum is accredited by the Engineers' Council for Professional Development, the nationally recognized accrediting body for engineering curricula.

**The Engineering Curriculum (182 Units)****LOWER DIVISION**

(See page 89 for transfer students.)

	Units First Quarter	Units Second Quarter	Units Third Quarter
<b>Freshman Year</b>			
Mathematics 11A-11B-11C .....	4	4	4
Chemistry 1A-1B-1C .....	4	4	4
Physics 1A .....	—	4	—
Engineering 6A-6B .....	2	—	2
Introductory Humanities* .....	4	4	—
Humanities Elective .....	—	—	4
	<hr/> 14	<hr/> 16	<hr/> 14
<b>Sophomore Year</b>			
Mathematics 13A-13B-13C .....	4	4	4
Physics 1C-1D .....	4	4	—
Engineering 15A-15B .....	4	4	—
Engineering 16A-16B .....	4	4	—
Engineering 20A .....	—	—	4
Humanities Elective .....	—	—	4
Major Field Elective .....	—	—	4
	<hr/> 16	<hr/> 16	<hr/> 16

**UPPER DIVISION**

Prerequisite for junior status: satisfactory completion of a minimum of 84 quarter units (56 semester units) including the minimum subject requirements specified on page 86.

	Units First Quarter	Units Second Quarter	Units Third Quarter
<b>Junior Year</b>			
Engineering 100BC-100D .....	8	—	4
Engineering 102A-102B .....	—	4	2
Engineering 103A .....	—	4	—
Engineering 104A-104B .....	—	4	4
Engineering 105A-105B-105C .....	4	4	2
Humanities Electives .....	4	—	4
	<hr/> 16	<hr/> 16	<hr/> 16
<b>Senior Year</b>			
Engineering 104C-104D .....	—	4	4
Engineering 107A .....	4	—	—
Engineering 109A .....	—	—	2
Humanities Elective .....	—	4	—
Major Field Electives .....	12	8	4
	<hr/> 16	<hr/> 16	<hr/> 10

**THE ELECTIVE PROGRAM OF THE ENGINEERING CURRICULUM**

The Engineering Curriculum includes an individualized elective program of 14 courses (56 units). Each student, with the approval of his faculty adviser and Dean of the College, selects a program which suits his individual needs, interests and objectives. This program is divided into two parts as follows:

\* May be satisfied by Engineering 9A-9B or acceptable alternates.

1. The major field electives: a minimum of seven courses (28 units) in a field of engineering endeavor selected by the student. Six of these courses must be in upper division and must include one course (4 units) in engineering design, one course (4 units) in engineering economy, and one course (4 units) in engineering materials. There should be a reasonable balance between courses in the practice and the science of engineering. Appropriate advanced courses in other departments on campus may be included.

2. The humanities electives consist of a minimum of 7 courses (28 units) in humanities, social studies and fine arts (collectively termed humanities for the sake of convenience and brevity) including the introductory humanities courses (Engineering 9A-9B or acceptable alternates, 8 units). Of the five courses to be undertaken following completion of the introductory humanities courses, at least three (12 units) must be upper division courses. To provide some depth, at least three courses (12 units) must be in the same academic department or must otherwise reflect coherence in respect to subject matter. In such a group, upper division courses should predominate.

Engineering students are strongly urged to satisfy by examination the University's requirement in American History and Institutions (see page 39). By careful selection of appropriate courses, however, a student may satisfy this requirement while accomplishing the objectives of the humanities electives.

Engineering students may take one course per quarter on a Passed/Not Passed basis if the following conditions are met:

1. The student is in good standing, i.e., not on probation.
2. The student is enrolled in at least 3½ courses for the quarter including the course taken on a Passed/Not Passed basis.
3. The course taken on a Passed/Not Passed basis is not listed as a required course in the Engineering Curriculum as published in the UCLA GENERAL CATALOG.

## ROTC PROGRAMS

A student who enrolls in one of the three Reserve Officers' Training Corps programs offered at UCLA may rearrange the normal pattern of courses in the Engineering Curriculum (see page 90) in order to fit Aerospace Studies, Military Science or Naval Science courses into his program of study, provided that any such rearrangement be planned in consultation with his engineering faculty adviser and that it be approved by the Dean of the College of Engineering. Students may not substitute required military science courses for required courses in the Engineering Curriculum, but some students may find it possible to include in their elective programs of the Engineering Curriculum certain courses offered by other departments that will satisfy specific or general requirements of the military science programs.

## OPTIONAL SENIOR YEAR AT BERKELEY OR DAVIS

Students who desire to take advantage of senior courses on the Berkeley and Davis campuses may elect to complete part or all of the senior year of the Engineering Curriculum, not exceeding 12 courses, on those campuses. In consultation with faculty advisers and with approval of the Dean of the College of Engineering, Los Angeles, such students will substitute appropriate

Berkeley or Davis offerings for courses Engineering 107A, 109A, 104C, and 104D. The major field electives of such students will be made up largely of Berkeley or Davis campus courses chosen from the offerings of two or more departments.

The College of Engineering on the Berkeley campus offers undergraduate curricula in civil engineering, electrical engineering, engineering science, industrial engineering and operations research, mechanical engineering, and materials science. The College of Engineering on the Davis campus offers a curriculum in engineering with optional upper division programs in aerospace, agricultural, chemical, civil, electrical and mechanical engineering. These curricula are described in the GENERAL CATALOG, UNIVERSITY OF CALIFORNIA, BERKELEY, and the GENERAL CATALOG, UNIVERSITY OF CALIFORNIA, DAVIS, respectively. Students in the College of Engineering on the Los Angeles campus may elect to work toward a Bachelor of Science degree from the College of Engineering on the Berkeley or Davis campus. Such students will, with the aid of a Los Angeles faculty adviser, choose Los Angeles campus courses which satisfy the requirements of the Berkeley or Davis curriculum selected. Transfer to the Berkeley or Davis campus will be effected at the appropriate level, but at least the final 45 units must be completed in residence at Berkeley; and at least 36 of the final 45 units at Davis. The first three years of most of the Berkeley and Davis curricula may be completed at Los Angeles.

### **Graduate Study in Engineering**

The Department of Engineering offers graduate study and research in many areas of engineering. Graduate students in Engineering are encouraged to supplement their programs with appropriate offerings from the departments of Biology, Business Administration, Chemistry, Geology, Mathematics, Meteorology, Physics, Physiology, Zoology, or other fields closely allied to Engineering.

Engineering graduate students must meet the minimum residence requirements of the University; in addition, students working toward a master's degree in Engineering must meet the minimum progress requirement of two courses per quarter for a minimum of three quarters (not necessarily consecutive).

Regular graduate students with advanced degree objectives in Engineering are subject to the following time limitations:

A graduate student should complete the requirements for the master's degree within three calendar years after being admitted to regular graduate status in Engineering.

The Ph.D. student who already has a master's degree will be expected to complete the field requirements and the language requirement within two calendar years from the time he is admitted to the Ph.D. program and to complete the remaining requirements for the Ph.D. within an additional two calendar years.

The Ph.D. student who does not already have a master's degree will be expected to complete the field requirements and the language requirement within five calendar years from the time he is admitted to the Ph.D. program and to complete the remaining requirements for the Ph.D. within an additional two calendar years.

Although graduate students are not required to limit their studies to a par-

ticular area Division, the Divisions are expected to serve as centers of activity for graduate studies. The Divisions are as follows:

### **Applied Mechanics**

Mechanics of fluids, aerodynamics, flight mechanics, aircraft stability, control and performance, aeroelasticity, elasticity and plasticity, micromechanics, vibration theory, rigid body dynamics, aeroacoustics, wave propagation in solids, nonlinear theory of continuous media, hypersonics, hydrodynamics, engineering magnetohydrodynamics.

Celestial mechanics as applied to orbit theory, perturbations, observation and prediction. Vehicle dynamics in relation to the problem of attitude, optimum trajectories, navigation, instrumentation, and space technology in its broad interpretation.

### **Chemical, Nuclear and Thermal**

Heat and mass transfer, radiation transfer, molecular processes, aerothermochemistry, thermodynamics, applications of chemical physics, chemical and electrochemical processes, energy conversion and utilization, nuclear processes, nuclear reactor analysis and design.

### **Electronics and Electromagnetics**

Active and passive circuit theory and design, electron and solid state devices, magnetics, electronic systems, electromagnetic theory, solid state electronics, dielectric, magnetic and conductive properties of matter, microwaves, antennas, plasma and ion dynamics, para and ferromagnetic resonance, masers and lasers.

### **Engineering Management**

The complexity of developing advanced devices and systems has focused attention on the central problems of engineering design, management, and planning. Theory and methodology of systems engineering and the broader problems of engineering design including economic evaluation, planning and management of engineering projects.

### **Engineering Systems**

Graduate engineering programs dealing with the conservation and utilization of our natural and human resources. Included are such fields as biotechnology, water resources, air resource engineering, ecological and environmental systems engineering, geoen지니어ing, soil mechanics, sanitary engineering, traffic and transportation engineering, ocean engineering, and the resource aspects of urban and regional planning.

### **Information Systems**

Analog and digital computer systems, control system theory and optimization techniques, sampled data systems, nonlinear systems, simulation, communication systems theory and optimization techniques, detection theory, information theory and prediction and filter theory.

### **Materials**

Metallography, electron microscopy, X-ray diffraction, ceramics, mechanical and physical metallurgy, structure of solids and related properties of materials, thermodynamics of metals and ceramics.

## Structures

Design and analysis of engineering structures under static and dynamic loads. Optimum design of structures, elastic and inelastic stability, failure phenomena, safety. Matrix, relaxation, recursion methods related to beams, plates, frames, and shells. Foundations and soil interaction. Experimental techniques. Dynamic analysis, random excitation.

## REQUIREMENTS FOR ADMISSION TO GRADUATE STATUS

Applications for admission from graduates of recognized colleges and universities will be considered. The basis of selection is promise of success in the work proposed, which is judged largely on previous college record. Before admission is approved, an application for Engineering graduate study will be referred by the Dean of the Graduate Division to the Department of Engineering for recommendation. Final approval is granted by the Graduate Division.

In addition to meeting the requirements of the Graduate Division, the entering student will normally be expected to have completed the requirements for the bachelor's degree with an undergraduate scholarship record equivalent at least to a 3.0 grade-point average (based on 4.0 maximum) in all course work taken in the junior and senior years. An applicant who fails to meet these requirements must complete additional course work before being admitted to graduate status. These additional courses will not be accepted as part of the course requirement for the master's degree.

A student entering the Ph.D. program will normally be expected to have completed the requirements for the Master of Science degree with a scholarship record equivalent at least to a 3.25 grade-point average (based on a 4.0 maximum).

In addition to filing an application for admission with the Graduate Division, prospective students are required to file a special application for admission with the Department of Engineering. These departmental supplements may be secured by writing to the Assistant Dean of Graduate Studies, Department of Engineering.

## GRADUATE RECORD EXAMINATION

All applicants who have received their schooling outside of the United States are required to take the Advanced Engineering Test of the Graduate Record Examination. The test is given in foreign countries.

Applications for the Graduate Record Examination may be secured by applying to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 (for those living in the western hemisphere) and to the Educational Testing Service, Box 955, Princeton, New Jersey 08540 (for those living in the eastern hemisphere).

The Testing Service must be requested to forward the test results to the Assistant Dean of Graduate Studies, Department of Engineering.

There is a fee of \$8 for the Advanced Engineering Test.

## REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE

Students will meet the requirements by completing satisfactorily appropriate courses chosen in accordance with a plan prepared in conference with a graduate engineering adviser and approved by the Department. A majority of the total course requirement, both graduate and upper division undergraduate work, must

consist of courses in engineering. The student may wish also to complete certain analytical and professional courses on other campuses of the University of California.

### **REQUIREMENTS FOR THE DEGREE OF MASTER OF ENGINEERING**

A limited number of graduate students are accepted each year to study for the Master of Engineering degree. A sequence of 400-series courses which comprise the Engineering Executive Program cover the significant aspects of managing a technological enterprise. All applicants are interviewed by a panel of faculty members. Selection is based on the applicant's educational background, industrial experience, and potential for a managerial career. Applicants must have regular graduate status in engineering and must have had some formal course work in statistics. A minimum of five years full-time responsible experience in industry is required. Students are admitted each fall. They form a class which remains together for two years, taking the same courses and participating in the writing of two or more group reports. Classes meet between 3:00 and 9:30 p.m. one day a week during the Fall, Winter and Spring quarters. Special individual and group problems are assigned for the summer quarters. Applications, including official transcripts of college records, must be received by the UCLA Graduate Division before March 15. There is a fee of \$275 each quarter. Inquiries can be made by calling 478-9711 or 272-8911, Engineering Extension 7243, or by writing the Engineering Executive Program, Department of Engineering, University of California, Los Angeles, California 90024.

### **REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY**

The following information supplements the general requirements of the Graduate Division.

A student who expects to complete all the requirements for the M.S. degree at UCLA during the current term, and desires to proceed toward the Ph.D. is required to file Form 1, Notice of Intention to Proceed to Candidacy for the Degree, Doctor of Philosophy, by the end of the current term with the Assistant Dean, Graduate Studies in Engineering, for approval to do so.

The basic program of study toward the Ph.D. degree in Engineering is built around a major field and two minor fields. Certain fields of study have been established as follows:

Atomic Properties of Materials

Biotechnology

Communication Systems

Computers

Control Systems

Deformable Solids.

Dynamics

Electromagnetics

Electronic Systems

Fluid Mechanics

Heat and Mass Transfer

Large Scale Engineering Systems

Mathematical Theory of Systems

Nuclear Engineering

Physical Metallurgy and/or

Ceramics

Soil Mechanics

Solid State Electronics

Structural Analysis

Thermodynamics

Water Resources Engineering

#### **MINOR FIELD ONLY**

Applied Mathematics

Nuclear Reactor Control

Quantum Mechanics

Spectroscopy

However, the Department feels that many significant contributions have arisen and will continue to emerge from a reorientation of existing knowledge and, therefore, that no classification scheme can be considered as unique. Thus prospective Ph.D. candidates will be allowed, and in certain cases encouraged, to undertake (as fields of study) areas which have been previously undefined. Approval of a Ph.D. program is based upon the set of fields considered as a whole and is granted by the Assistant Dean of Graduate Studies. At least two of the three fields must be clearly defined as Engineering.

The requirements for a particular field generally may vary with the student's particular objective, although minimum requirements exist for each field. Ordinarily, the student will engage both in formal course study and in individual study in meeting the field requirements.

While the emphasis in a Ph.D. program is on the ability to correlate knowledge, rather than on the mere satisfaction of course requirements, the extent of a properly chosen field of study is such that the competent student will be able to complete the three field requirements in two years of full-time graduate study or the equivalent.

In general, students in engineering must earn the M.S. degree before the Assistant Dean of Graduate Studies will consider a proposal for a Ph.D. program. However, the course work leading to the M.S. degree will, if selected properly, aid in meeting the field requirements.

### **Preliminary Examinations**

With the aid of his graduate adviser, the student is directed to the staff members representing the standing committee on the respective fields for the current year or to staff members who are willing to guide the student in nonestablished fields. After consulting with members of the committees regarding his program of study for his particular fields, approval is obtained from the Assistant Dean of Graduate Studies.

After completion of the study for the major field and two minor fields as outlined by the members of the field committees, the student should take the preliminary examination which includes a written examination (normally eight hours long) in his major field and a two-hour oral examination covering all three fields. The written and oral examinations occur within a two-week interval.

### **Foreign Language**

Each Ph.D. candidate must demonstrate an oral and written proficiency in a foreign language pertinent to his research area. The student should propose the foreign language to the Assistant Dean of Graduate Studies at the time of his proposal of the three fields of study. In some cases, the undergraduate elective selection may profitably include a foreign language if a Ph.D. degree is visualized at that time.

### **Qualifying Examination**

After the student has demonstrated his competence in the three fields and has fulfilled the language requirement, the Assistant Dean of Graduate Studies will notify the Graduate Division of his readiness for the qualifying examination

and will recommend the committee for this examination, generally as follows: staff member directing research, chairman; members of the guidance committee; two staff members from other departments.

The details of the qualifying examination are at the discretion of the committee, but ordinarily will center around a broad inquiry into the student's preparation for research. The qualifying examination is oral, the preliminary examinations usually constituting the written portion as required by the Graduate Division.

### **Dissertation**

The candidate shall prepare his dissertation in accordance with the instructions furnished by the Student and Academic Affairs Section of the Graduate Division. The orientation meetings on the format of theses and dissertations are scheduled for the beginning of each quarter in the calendar, Standards and Procedures for Graduate Study at UCLA. For additional information and assistance in the preparation and submission of the final copies of the manuscript, consult the Manuscript Adviser for Theses and Dissertations, Office of the University Archivist, Powell Library.

### **Continuing Engineering Studies**

Continuing education of the practicing engineer is a growing concern of the profession. Engineering/Physical Sciences Extension brings to this field the structure and facilities of the statewide University of California Extension organization. Extensive programs of evening classes, conferences, concentrated short courses, correspondence work, sequential certificate plans and special events are constantly available. Restudy, updating and addition of new and timely subject matter characterize the continuing education program and keep it quickly responsive to developing technology and changing professional needs. For further information, please call Engineering/Physical Sciences Extension.

## **THE COLLEGE OF FINE ARTS**

The College of Fine Arts, established on the Los Angeles campus in 1960 to administer the curricula in the arts, presently houses the departments of Art, Dance, Music, and Theater Arts. Located in Los Angeles, one of the nation's greatest and most rapidly growing centers of vitality in the fine arts, the College has the opportunity to take fullest advantage of this vitality and, at the same time, the obligation to nurture the continued growth and development of the fine arts in California generally and southern California in particular.

Combining scholarly study with creativity and performance, the College of Fine Arts believes that for serious students, high competence in the arts can effectively be developed at the university level. The objective, therefore, is a truly professional education of the highest quality for the creative and performing artist on the one hand, and the historian and critic of the arts on the other. By completing additional requirements as determined by the Graduate School of Education and the State Department of Education, students may also qualify for standard teaching credentials (see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION).

## Requirements for the Bachelor's Degree

### UNIT REQUIREMENTS

The minimum number of courses (and units) for the bachelor's degree is 45 courses (180 units), of which at least 24 courses (96 units) are to be outside the student's major department. At least 16 courses (64 units) must be in upper division courses, including two courses (8 units) outside the major department.

### SCHOLARSHIP REQUIREMENTS

A C average (2.0) is required on all work attempted in the University of California, exclusive of courses in University Extension and courses attempted on a pass/fail basis. A C average is also required in all upper division courses in the major attempted in the University.

### RESIDENCE REQUIREMENTS

Of the last 45 units completed for the bachelor's degree, 35 must be earned in the College of Fine Arts. Not more than 18 of the 35 units may be completed in summer session at UCLA.

Students transferring from other institutions or from University Extension with senior standing must complete while enrolled in the College of Fine Arts at least 28 units in upper division courses, including 16 units in the major department. This regulation does not apply to students transferring from other colleges within the University.

*University Extension.* Courses in University of California Extension (either class or correspondence) may not be offered as part of the residence requirement. Otherwise, courses bearing the prefixes X, XB, XD, XI, XL, XR, XSB, XSC, and XSD may be applied toward the bachelor's degree unless numbered in the 400 series. The latter are professional courses and while they may be recommended as supplementary electives, they do not yield credit toward the bachelor's degree in the College of Fine Arts. Only courses bearing the XL prefix are considered the equivalent of courses offered in the regular session at UCLA.

Concurrent enrollment in resident courses and in Extension courses is permitted only when the entire combined program has been approved in advance by the Dean. Extension courses *earn no grade points* and do not affect the student's grade-point standing in the University.

*Junior College.* Courses taken at a junior college after the completion of 70 semester units (105 quarter units) toward the degree may satisfy lower division subject requirements, but they are not given unit credit toward the total units required for graduation. Junior college credits may not apply on any upper division requirement.

### SUBJECT REQUIREMENTS

All students complete the specific subject requirements established by the University, the College of Fine Arts, and the student's major department.

#### General University Requirements

*Subject A* (English Composition). See page 38.

*American History and Institutions.* See page 39.

## General College Requirements\*

The general requirements of the College of Fine Arts provide for breadth in the student's education, and are planned to insure a degree of basic skill in communication—both in English and in at least one foreign language, and to give the student an introduction to each of the broad fields of human learning: natural science, social science, and the humanities. It is intended that these requirements will be spread over the entire undergraduate program, and students are encouraged to take both lower and upper division courses for the completion of these requirements. *Any course applied on one of the five general requirements may not also be applied on another of these requirements.*

### English Composition

At least two courses (8 units) in English composition (English 1–2), with grades of C or better. This requirement may be met in part by passing a proficiency examination in English 1, administered by the Department of English (see page 67).

A foreign student whose entire secondary school work was completed in his native tongue, excluding English, may satisfy this requirement with English 33C and 106J if completed with grades of C or better.

### Foreign Language

At least four courses (16 units) in one language, or five courses (20 units) in two languages.

Without reducing the total number of units required for the bachelor's degree, high school work with grades of C or better and not duplicated by college work will count as follows: the first two years together equal two college courses, and the third and fourth years each equal one college course. Also, students possessing an unaccredited skill in a foreign language may validate it for the purpose of this requirement by passing a proficiency examination.

Courses in foreign literature in English translation may not be applied on this requirement.

A foreign student whose entire secondary school work was completed in his native tongue, excluding English, may *upon petition* be considered as having fulfilled the foreign language requirement.

### Natural Science

At least three courses (12 units) in natural science, including one course (4 units) in physical science and one course (4 units) in biological science.

**Physical Science.** All courses in astronomy, chemistry, geology, mathematics, meteorology, physical science, and physics (see Mathematics 1, 38, 50, 100, Physical Sciences 1, 2). Also, Geography 1A, Philosophy 31.

**Biological Science.** All courses in bacteriology, biology, botany, paleontology, and zoology (see Bacteriology 6, Biology 2, Botany 12). Also, Anthropology 1A, 1B, 11, Geology 115, Physical Education 15, 111A–111B, Psychology 12.

\* Credit earned through the C.E.E.B. Advanced Placement Examinations may be applied on these requirements as follows: all credit in science and mathematics will apply on the natural science requirement; all foreign language credit will apply on the language requirement; credit for English 1 and 2 will apply on the English composition requirement; credit for History 7A will satisfy the American History and Institutions requirement, and additional history credit will apply on the western civilization part of the social science requirement.

**Social Science**

At least four courses (16 units) in social science, including two courses (8 units) in history of western civilization (History 1A-1B or the equivalent), and one course chosen from each of two departments other than history, (anthropology, economics, geography, political science, psychology, and sociology). Courses applied on the American History and Institutions requirement may not be applied on this requirement.

**Humanities**

At least four courses (16 units) in the humanities, including two courses (8 units) in the arts outside the student's major department, and two courses (8 units) from literature and/or philosophy.

*The Arts.* All courses in art, dance, music, theater arts, and integrated arts. Also, Anthropology 127, Classics 151A, 151B, 151C, Folklore 106, and Psychology 188A, 188B.

*Literature.* All courses in English, American, and foreign literature (classical to contemporary), including work in translation. Also, Classics 161, Folklore 101, 105, and Humanities 1A, 1B, 1C-1G.

*Philosophy.* All courses in philosophy. Also, Anthropology 124 and History 142A-142B-142C.

**Departmental Requirements****THE MAJOR**

Each candidate for the bachelor's degree is required to complete a major in the College of Fine Arts with a scholarship average of at least two grade points per unit (C average) in all upper division courses, and must be recommended by the chairman of his major department.

A *major* is composed of not less than 14 courses (56 units), including at least nine upper division courses (36 units). The major includes both lower and upper division courses, arranged and supervised by the department and approved by the Executive Committee of the College.

Special attention is directed to the courses listed as *preparation for the major*. In general, it is essential that these courses be completed before upper division major work is undertaken. In any event, they are essential requirements for the completion of the major.

As changes in major requirements occur, students are expected to satisfy the new requirements insofar as possible. Hardship cases should be discussed with the departmental adviser, and petitions for adjustment submitted to the Dean of the College when necessary.

Any student failing to attain a scholarship average of at least two grade points per unit in his major department may, at the option of the department, be denied the privilege of a major in that department.

A department may submit to the Dean of the College the name of any student who, in the opinion of the department, cannot profitably continue in the major, together with a statement of the basis for this opinion and the probable cause of the lack of success. The Dean may permit a change of major, or may, with the approval of the President, require the student to withdraw from the College.

Any department offering a major in the College of Fine Arts may require from candidates for the degree a general final examination in the department.

## ORGANIZED MAJORS AND CURRICULA IN THE COLLEGE OF FINE ARTS

Departmental majors leading to the degree of Bachelor of Arts, with opportunities for specialization as indicated, are offered in the following areas:

Art, Art History, Design,\* Pictorial Arts.\*

Dance.\*

Music. Composition and Theory, Ethnomusicology, History and Literature, Performance, Music Education.\*

Theater Arts. Theater, Motion Pictures, Television-Radio, Secondary Teaching Curriculum.\*

With the proper selection of courses, including those designated by the Graduate School of Education, teaching credentials are available in the majors and specializations marked with an asterisk (\*).

## Honors in the College of Fine Arts

### DEAN'S HONORS

Dean's Honors will be awarded each quarter to students completing the previous quarter's program with distinction according to criteria established by the Dean of the College.

### DEPARTMENTAL HONORS PROGRAMS

Each department offering an undergraduate major may establish an Honors Program including special courses, or supplementary and advanced directed study, or both.

## COLLEGE HONORS WITH THE BACHELOR'S DEGREE

College Honors are awarded at graduation to students with a superior overall grade-point average. The honor designations and the requirements for each are Cum laude, an overall average of 3.25; Magna cum laude, 3.6; Summa cum laude, 3.8. To be eligible for College Honors, a students must have completed at least 20 courses (80 units) in the University of California.

A list of students graduating with Departmental and/or College honors will be published in the Commencement Program, and honors earned will be recorded on each student's diploma.

## SCHOOL OF ARCHITECTURE AND URBAN PLANNING

The newly established School of Architecture and Urban Planning offers a graduate program in Urban Design. The two-year course of study will lead to the degree of Master of Architecture (Urban Design). The student in the two-year Urban Design curriculum will undertake a comprehensive program of design-oriented studio work based on the social and technological sciences to foster the highest standard of professional competence and deep understanding of the nature of urban design. An interdisciplinary approach is established in the design studio through the organization of a multidisciplinary faculty. The design studio, which is the core of the curriculum, is supplemented by seminars and electives. To insure an effective operation of interdisciplinary work and to maintain the high quality of the instruction, it is necessary to limit the number of students to a maximum of 15. Fifteen carefully selected students, out of

over fifty applicants, were admitted to the first year of the program in the Fall, 1966. An additional fifteen students will be admitted every Fall thereafter.

The School of Architecture and Urban Planning is actively planning the establishment of graduate programs in Architecture, City Planning and a graduate program in the History of Architecture and Urban Development, as well as professional programs leading to first professional degrees. Subject to University approval, the offering of a program in Architecture is planned for Fall, 1968.

### **Admission**

For admission to the Graduate Program in Urban Design, the applicant must have a degree of Bachelor of Architecture from an accredited school or its equivalent and must be admissible to graduate status by the Graduate Division.

An application on forms provided by the School of Architecture and Urban Planning, together with an official transcript from each high school and college attended must be sent to the Head of the Urban Design Program, School of Architecture and Urban Planning, UCLA. In addition, at least three letters of recommendation, two of which are to be from professionals in architecture or planning, and a brochure of the student's work, representative of his design ability must accompany the application.

### **GRADUATE SCHOOL OF BUSINESS ADMINISTRATION**

The Graduate School of Business Administration offers curricula leading to the graduate degrees of Master of Business Administration, Master of Science, and Doctor of Philosophy in Business Administration. The School also offers a Certificate of Resident Study for foreign scholars. The Department of Business Administration offers certain courses which may be elected by undergraduate students.

### **Preparation for Graduate Study**

Students in other schools or colleges may elect a limited number of undergraduate courses in the School, particularly if taken as preparation for graduate study in business administration. Economics majors may, without petition, apply two of the following courses toward the requirement for nine upper division Economics courses.

Business Statistics,	BA 115A
Intermediate Accounting,	BA 120A
Intermediate Accounting,	BA 120B
Managerial Accounting,	BA 120M
Business Finance,	BA 130

Students with an interest in graduate study in business administration may pursue any undergraduate major. For example, a student planning to enter the M.S. degree program in information systems, mathematical methods or statistics may wish to choose an undergraduate major in mathematics; or a student interested in the field of marketing or socio-technical systems may prepare through a major in one of the behavioral sciences or in engineering.

A student may shorten the time necessary to complete a master's degree by taking some of the courses as an undergraduate which fulfill the first-year requirements.

Detailed information about preparation for graduate programs in Business Administration may be obtained from the Office of the Graduate School of Business Administration.

## The Graduate Program

The Graduate School is a professional division of the Graduate Division of the University of California. Its objectives are as follows:

To prepare exceptionally qualified students for careers as teachers and research scholars in the areas of management, organizational behavior and the traditional fields of business administration.

To provide professional education that will develop in qualified students the intellectual and personal attributes that are needed for successful careers in management or as staff specialists in public or private enterprises.

To enlarge through research the body of systematic knowledge about business administration, the management process, and the environment in which the enterprise functions, and to disseminate this knowledge through publications and improved teaching materials.

To offer management development programs for experienced businessmen.

## ADMISSION

Applicants to the Graduate School of Business Administration must meet the requirements for admission to the Graduate Division of the University as well as those of the School. Application forms must be filed by each student for both the Graduate Division and the Graduate School of Business Administration.

**A Word About Applications.** Early application *with complete documentation\** is advisable because the number of applicants may exceed the number of students who may be accommodated in any degree program. Early applicants will receive prompt response. Your complete application must be filed with UCLA by:

Quarter	Masters	Ph.D.	All Foreign
Summer	April 15	No admissions	January 15
Fall	May 15	March 15	March 1
Winter	October 15	October 15	July 1
Spring	January 15	January 15	October 15

**NOTE:** Students may apply for the Integrated MBA Program only in the Fall Quarter.

## ADMISSION TO GRADUATE STATUS

Graduate students are admitted to graduate status on the basis of promise of success in the work proposed, as judged primarily by (1) previous college record and (2) performance on the Admission Test for Graduate Study in Business.

To be admitted to graduate status in the School, a student is required to

\* Documentation includes: 1. Official transcripts of record in *duplicate* covering all collegiate and university work completed, together with official evidence of degree(s) conferred. (Students graduating from UCLA need submit only one copy of the undergraduate record.) 2. Application to the Graduate Division. 3. Application to the Graduate School of Business Administration. 4. Educational Testing Service score on the *Admission Test for Graduate Study in Business*.

have an undergraduate scholarship average of grade B in all courses taken in the junior and senior years and at least a B average in all postbaccalaureate course work completed. Admission to the Ph.D. program is limited and is based on a scholarly record of distinction in both undergraduate and any completed postgraduate work. Two letters of recommendation must accompany all Ph.D. applications.

All applicants are required to take the Admission Test for Graduate Study in Business prior to admission. A minimum score of 450 must be attained. The test is given four times a year in various locations in the United States and several foreign countries. Students should write to the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey, for information regarding application and the time and place of the examination. They must request the Service to forward the test results to the Applications Officer, Graduate School of Business Administration. Foreign students are also required to take the Test of English as a Foreign Language (TOEFL) and score at least 400 to be admitted. Information concerning this test is also available at the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.

Elementary finite mathematics and elementary calculus are required for all graduate programs in the School. This requirement may be fulfilled by passing a placement examination or by taking course 402 during the first quarter of graduate study. Arrangements may also be made with the Dean for Graduate Student Affairs for fulfilling the requirement by taking courses offered by the Mathematics Department.

All graduate programs are full time. Employment, other than research and teaching assistantships, is not permitted for students in the Ph.D. program. Graduate students in all programs are required to enroll for at least two courses per quarter. In addition, students in masters' programs must commit themselves to at least one quarter of full-time residence (three courses).

## **MASTER OF BUSINESS ADMINISTRATION DEGREE**

The student may choose between two programs leading to the MBA degree: the *Curriculum* and the *Integrated Program*. Both programs prepare students for careers in the management of business firms or other formally organized enterprises; and both center upon knowledge, skills, and techniques which are useful for designing and maintaining effective organizations and relating them properly to their environments. Both programs stress the spirit of inquiry, as a basis for lifelong learning and growth.

The following table summarizes certain features of the two programs, indicating their similarities and differences.

### **The Master of Business Administration Curriculum**

The MBA Curriculum is a two-year program, whose first-year course requirements may be satisfied in whole or in part by the completion of equivalent courses prior to admission or by passing placement examinations. Students who have fulfilled part of the first-year requirements may, with the approval of the Director of the MBA Curriculum, take second-year courses concurrently with the completion of their first-year work.

	<b>MBA Curriculum</b>	<b>Integrated MBA Program</b>
<b>Eligibility</b>	Recognized bachelor's degree in business or non-business field	Recognized bachelor's degree in any non-business field
<b>Admission</b>	Any Quarter	Fall Quarter only
<b>Sequence of courses</b>	Student selects from recommended sequence of courses	Faculty team builds sequence into an integrated program
<b>Student relations</b>	Student enrolls in each course as an individual	Student becomes member of group which stays together for two years
<b>Special features</b>	Students with Business Administration major may complete curriculum in one year	Close student-faculty relations Heavy emphasis on student responsibility and initiative Field experience in solving real-life management problems Spontaneous seminars and short-term learning units to meet emerging interests
<b>Time Commitment</b>	Varies with individual class schedule	Varies, usually involves Monday, Tuesday, Thursday and Friday classes
<b>General requirements</b>	B average Minimum two-course loads per Quarter, total program not to exceed three calendar years	B average 2 years continuous residence (3 Quarters each year)

### FIRST YEAR PROGRAM

The required first-year courses and the normal pattern for taking them are as follows. *First quarter:* Business Economics 401, Mathematics for Management 402, Financial and Managerial Accounting 403 (with computing laboratory), and Business Communications 405A (one-quarter course). *Second quarter:* Business Fluctuations 406, Business Statistics 407, Business Finance 408, Management Theory and Policy 409, and Business Communications 405B (one-quarter course). *Third quarter:* Behavioral Science Foundations 404, Operations Management 410, Elements of Marketing 411, Business Communications 405C (one-half course), and one elective.\*

\* X 400 courses offered in University Extension do not apply on these requirements.

Mathematics 2A-2B may be substituted for Mathematics for Management 402, and is normally taken in the first and second quarter.

### **SECOND YEAR PROGRAM**

At least nine courses must be completed, including the following required courses: Business, Labor and Government 421, Business Economic Policy 422, Advanced Management Theory 423, Business and Society 424, and Business Policy 425A-425B (a double course, which must be taken in the last quarter, and which includes the Comprehensive Examination).

Each student also elects at least three courses from within or outside the School, in the 100, 200, 400, and 500 series.

### **GENERAL REQUIREMENTS**

Residence (enrollment in at least two courses each quarter) is required for at least one academic year (three quarters). The nine courses required in the second year must be completed in residence on the Los Angeles Campus. A scholarship average of at least B (3.0 grade points) must be maintained. A student must maintain minimum progress toward the MBA by completing at least two courses per quarter for at least three quarters, subject to a total time limitation of three calendar years for completion of all requirements. There is no foreign language nor thesis requirement.

### **The Integrated Master of Business Administration Program**

The Integrated MBA Program is open to selected students whose undergraduate major is *not* in Business Administration. It is designed to prepare broadly-educated young men and women for executive careers in business, industry, and government.

This program is conceived, not as a traditional series of courses, but as a two-year coordinated effort to sharpen the intellectual skills of selected students, to develop their knowledge of basic organizational and economic concepts, to deepen their understanding of themselves and their potential, and to improve their problem-solving and communication skills. The goal is to develop a capacity for excellence which makes a valued employee, colleague, and leader.

A faculty team, representing all the disciplines of the School, plans and conducts the program. Students enrolling each fall quarter are treated *as a group* of managers in training. Subject matter from the various disciplines is presented in a sequence designed to build the students' ability to analyze and solve the complex problems of modern organizations. The faculty team and the student group work closely together in assessing and adjusting the pacing and pattern of the learning process. Every effort is made to reflect in the learning activities the flexibility and need for initiative and self-direction which is essential for successful management.

### **FIRST YEAR PROGRAM**

The first year of studies emphasizes key concepts in accounting, communications, behavioral science, economics, finance, marketing, personnel management, industrial relations, quantitative methods, and operations management.

**SECOND YEAR PROGRAM**

The second year of work emphasizes the application of management principles to policy problems in selected Los Angeles firms. In addition, students and faculty examine broad issues concerned with the relationship of business and society, the implications of continuous change and growth in business and technology, and management theory. Emphasis is placed throughout on approaches to personal creativity.

Each student also elects two courses from within or outside the School, in the 100, 200, 400, and 500 series.

**GENERAL REQUIREMENTS**

Continuous full time residence (fall, winter and spring quarters) is required for two consecutive years. A scholarship average of at least B (3.0 grade points) must be maintained. No foreign language is required.

**MASTER OF SCIENCE DEGREE**

The M.S. degree program in Business Administration is designed to prepare the student for a career as a specialist contributor to the management of formally organized enterprises, in one of the following major fields:

Accounting	Mathematical Methods
Business Economics	Operations Management
Finance	Risk Bearing and Insurance
Industrial Relations	Socio-Technical Systems
Information Systems	Statistics
International and Comparative Management	Transportation and Traffic Management
Management Theory and Policy	Urban Land Economics
Marketing	

This program is also suitable for students who plan to continue their studies and earn the Ph.D. degree. The major in accounting includes the opportunity to prepare for Certified Public Accountancy.

The M.S. program requires one to two years of study depending upon the student's advance preparation and choice of a major field.

**PREREQUISITES**

The following basic courses or their equivalents, which may be completed before or after admission, are formally required as prerequisites in all areas: Business Economics 401, Accounting 403 (with computing laboratory), and Business Fluctuations 406. The following courses or their equivalents are required in all areas *except* Statistics and Mathematical Methods: Mathematics for Management 402 and Business Statistics 407.\* Additional prerequisites are also specified by the faculty in each major field.

The fulfillment of prerequisite requirements by previous course work may be subject to validation by examination. Such examinations are required for 402 and 407 and are given during Registration week each quarter.

\* X 400 courses offered in University Extension do not apply on these requirements.

**ADVANCED WORK: THE MAJOR FIELD**

The faculty in each major field specifies course requirements for the major, which may include individual courses or minor concentrations in other fields. The student's entire program of advanced work must comprise at least nine courses, beyond the prerequisites (including those specified for his major field). The program must include at least five courses in the 200 series.

Each student must complete a master's thesis or pass a comprehensive examination in his major field. A comprehensive examination is required for majors in accounting. In all other fields, a student may choose, with faculty approval, either a comprehensive examination or a thesis.

Credit up to two courses may be given for research in preparation of a thesis, and one course for work in preparation for a comprehensive examination.

**GENERAL REQUIREMENTS**

Residence (enrollment in at least two courses each quarter) is required for at least one academic year (three quarters). The nine courses of advanced work for the M.S. degree must be completed in residence on the Los Angeles Campus. A scholarship average of at least B (3.0 grade points) must be maintained. A student must maintain minimum progress toward the M.S. degree by completing at least two courses per quarter for at least three quarters subject to a total time limitation of three calendar years for completion of all requirements. There is no foreign language requirement.

**INFORMATION ABOUT MAJOR FIELDS**

Detailed information about the requirements of each major field, including prerequisites as well as required advanced work for the M.S. degree, can be obtained by writing to the Director of the Master of Science Program, Graduate School of Business Administration.

**DOCTOR OF PHILOSOPHY DEGREE****BASIC UNIVERSITY REQUIREMENTS**

See pages 140-142.

**DEPARTMENTAL REQUIREMENTS**

The program leading to the degree of Doctor of Philosophy in Business Administration provides an advanced integrated education in organization and management studies and intensive training in research methods applicable to enterprise problems. The program prepares the student for a career in university teaching and research or for a career as a staff specialist in any organizations where management skills are required.

The doctoral program is intended for mature persons with demonstrated intellectual ability of high order. Applications are welcomed from persons with degrees in the social and physical sciences, engineering and other academic fields as well as those who have had previous work in management studies. It is not necessary to have earned a master's degree in order to enter the program.

**CORE REQUIREMENT**

Each student must attain a basic literacy and analytic competence in management studies early in his course of study. The holder of an MBA degree from UCLA (or another comparable degree) is considered to have fulfilled this require-

ment. Others with substantial, but less extensive, backgrounds in management studies will be directed into additional work, or may take the core examination in business.

#### **FOREIGN LANGUAGE**

See the language announcement available from the Graduate School of Business Administration for the details of the foreign language requirement.

#### **FIELDS OF SPECIFIC INTEREST**

The student will be required to develop competence in two minor fields in addition to his major area of concentration. The student must satisfy requirements for the minor fields prior to his examination in his major field, and the requirements for the major field before the qualifying oral examination. One, and in some cases both, minor fields may be taken in other departments of the University. The level of competence required in the major field is that of a professional scholar. Preparation normally requires the equivalent of at least one year (four quarters) of full time advanced study.

#### **EVIDENCE OF RESEARCH ABILITY**

Before taking the qualifying oral examination, each student must provide evidence of research ability, usually in the form of a finished paper which demonstrates ability *to organize a research activity and carry it to completion*. A master's thesis or any other completed work of significant quality may be accepted as evidence.

#### **QUALIFYING ORAL EXAMINATION**

The qualifying oral examination is a University requirement for advancement to candidacy for the Doctor of Philosophy degree.

#### **THE DISSERTATION AND FINAL ORAL EXAMINATION**

The acceptance of the dissertation and the satisfaction of the committee in the final oral examination complete the formal University requirements. Consult page 141 for the details on the preparation of the dissertation.

#### **Certificate of Resident Study for Foreign Students**

The Certificate of Resident Study is issued to bona fide foreign students who otherwise would have no evidence, other than the formal transcript of record, of full-time resident study. A candidate for the Certificate of Resident Study must have completed at least three quarters of full-time study with a C (2.0) or better scholastic average, or must have carried out satisfactorily a research study program lasting nine calendar months or more. *Certificates of Resident Study will not be issued for any studies covered by a diploma or other certificate.*

It is the policy of the Graduate School of Business Administration to admit all foreign students to the Certificate Program of Resident Study, for at least their first quarter. This program enables the student to take any courses offered at the University, without being held to course requirements for any degree. If the student maintains at least a 3.0 average, he may petition to transfer to a degree program, after completion of one quarter, but no later than the completion of three quarters. When a student transfers to a degree program, credit and grades earned in the Certificate Program will apply toward the degree.

## SCHOOL OF DENTISTRY

The UCLA School of Dentistry occupies facilities in the Center for the Health Sciences. It enrolls classes of 96 students each year in a four-year course of study leading to the degree of Doctor of Dental Surgery. Students undertake a comprehensive program in the biological and technological sciences to foster the highest standards of clinical competence in the practice of dentistry.

### Predental Requirements

Modern dentistry provides exciting opportunities for blending art and science, technology and biology. The predental student will therefore wish to test his abilities in handling both biological and physical sciences. In addition, there are many other aspects in the broadening scope of dentistry which contribute to preparation for a career in private practice, in academic dentistry, and in the Armed Forces and Public Health Service.

It is desirable, however, for the predental student to prepare himself for broad professional activities. He should take advantage of the opportunity at the college level to extend his cultural background, his knowledge of languages and the behavioral sciences. Many predental students now avail themselves of advanced educational opportunities so as to qualify for admission to graduate divisions, in which case the student may find it important to have completed more than two years of college work prior to admission to a school of dentistry.

The basic educational requirement for admission to the School of Dentistry is a minimum of two years of college work (60 semester or 90 quarter units including the courses listed under the College of Letters and Science on page 79 of this bulletin).

### APTITUDE TEST

The School requires satisfactory performance in the American Dental Association Aptitude Test given by the Council on Dental Education of the American Dental Association.

The Aptitude Test is given in October, January and April and all applicants are urged to complete this requirement as early as possible. In any case, it is generally in the candidate's interest to take the examination no later than January of the calendar year in which he is seeking admission.

When taking this test, the candidate should specify the schools where applications are to be filed so that the test results may be mailed directly to the appropriate schools.

### Graduate Training Program

A graduate training program providing support for advanced education in health sciences fundamental to oral biology has been established jointly by the School of Dentistry and the Graduate Division under the auspices of the National Institutes of Health.

Training in this program will ordinarily lead to the Ph.D. degree in one of the following areas: Anatomy, Physiology, Biological Chemistry, or Medical Microbiology and Immunology.

Consideration will also be given to other health science-related disciplines if proved to be in the best interest of potential candidates.

Individuals applying for this opportunity must be qualified for admission to the Graduate Division of the University of California (bachelor's degree or its equivalent) and must have shown promise for research work and motivation for the pursuit of an academic career. They must be citizens of the United States or have filed a declaration of intent.

Interested applicants should contact the Director of Oral Biology Research Training Program, School of Dentistry, Center for the Health Sciences, UCLA.

### **APPLICATION PROCEDURE**

An application for admission to the class entering in September 1969, should be submitted as early as possible, but no later than December 31, 1968. The application form may be obtained from: Office of Admissions, School of Dentistry, Center for the Health Sciences, University of California, Los Angeles, California 90024.

An official transcript from each high school and college attended must be sent directly to the above address. It is the applicant's responsibility to arrange for the forwarding of these documents which should reach this address shortly after formal application (for entry) is made.

Further information is provided in the UCLA ANNOUNCEMENT OF THE SCHOOL OF DENTISTRY, which will be mailed upon request.

### **GRADUATE SCHOOL OF EDUCATION**

Four advanced degrees are offered by the Graduate School of Education: Master of Arts in Education, Master of Education, Doctor of Education, and the Doctor of Philosophy in Education. The degree programs are designed for the development of leadership in various educational fields.\*

The Graduate School of Education offers curricula leading to state credentials in the following fields: elementary; secondary; junior college teaching; pupil personnel services; supervision; and school administration.

### **THE DEPARTMENT**

The Department of Education is organized into six areas. The Area of Cultural Foundations offers instruction in philosophy of education, educational sociology, history of education, and comparative education. The Area of Educational Psychology offers programs in development and learning, statistics and measurement, and pupil personnel services. The Area of Curriculum and Instruction offers work in curriculum at the various levels in specific subject fields, and in special educational programs. The Area of Administrative Studies offers programs in supervision and school administration. The Area of Higher Education offers facilities for studying various aspects of junior college, senior college, and adult education. The Area of Special Education offers instruction and research facilities in the education of exceptional children, emphasizing programs for the mentally retarded, educationally handicapped, and gifted. All areas cooperate in maintaining basic courses for the credential and degree programs.

The School is administered by the Dean, who is also Chairman of the Depart-

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\* Additional documents available in the Office of Student Services of the Graduate School of Education include: *Credential Programs and Teaching Minors; Announcements of Scholarships-Fellowships-Assistantships-Internships; Early Childhood Education; Programs on the Education of Exceptional Children* and others.

ment of Education, an Associate Dean for Academic Affairs, an Assistant Dean for Financial Affairs, and an Assistant Dean for Student Affairs.

### **Credential Programs†**

To assure eligibility for a credential, the student must meet certain requirements *during his first quarter* of enrollment in courses in Education. Only students meeting the following requirements may enroll for a second quarter:

#### **Communication Skills**

During the first quarter the student must pass standardized tests given by the Office of Student Services in English and arithmetic. The student must also demonstrate that he is free from gross speech defects.

#### **Academic Achievement**

An undergraduate's transcripts must indicate at least a 2.0 overall grade point average. A graduate student must meet the admission requirements of the Graduate Division including a 3.0 grade point average. In order to remain in a teaching program after admission, undergraduate students must satisfy the scholarship requirements of the respective colleges. Graduate students must remain in good standing with the Graduate Division and must maintain at least a 3.0 grade point average.

#### **Physical and Mental Health**

The student must secure from the Student Health Service preliminary approval for the study of education, indicating that his physical and mental health is such that he can perform the duties normally expected of teachers at the academic level he plans to teach.

#### **Personal Fitness**

An individual with a criminal record, or one incapable of normal personal-social relationships, is barred by law from teaching in California.

### **University Elementary School**

The University Elementary School serves as a center for research, inquiry and experimentation in education as well as providing a research laboratory for more than twenty other departments in the University. Thousands of visitors from all parts of the world visit the University Elementary School every year. Demonstrations are planned for these visitors as well as university classes in education, psychology, pediatrics, psychiatry, art, music, physical education and many other departments on request. Closed-circuit television provides classroom and other specialized demonstrations for University students at many points on campus. Opportunities for internship are available to a limited number of teachers and education students.

The staff of the School includes a director, principal, master teachers, teachers temporarily assigned from public school districts, teachers engaged in residency training, and students learning to teach. Some are generalists, other specialize in a subject field. Auxiliary personnel include a nurse, social worker, guidance spe-

† For additional information, consult an adviser in the Graduate School of Education.

cialist, and consultants from medicine, psychology and psychiatry.

A heterogeneous population of approximately fifty children at each age level from three to twelve are educated in this nongraded school. Whether they are assigned to a self-contained or team taught classroom, each student is individually diagnosed and his educational program is custom tailored to his needs.

The School plant is designed to utilize fully a beautiful setting combining indoor and outdoor work areas. With minimum architectural change, it has been adapted to house an innovative educational program. The plant includes 17 classrooms, a community hall, art studio, children's library, conference rooms, film and observation room, office facilities and a playground designed to facilitate an innovative instructional program in movement.

### **Neuropsychiatric Institute School**

The Neuropsychiatric Institute School serves as a demonstration, training and research setting for the Department of Education and offers observation, classroom participation and graduate research opportunities for the Area of Special Education. The School is located in the Neuropsychiatric Institute, a California State Department of Mental Hygiene facility, in the UCLA Center for Health Sciences.

The NPI School provides intra-mural schooling for some 55 emotionally disturbed children and adolescents hospitalized on the Children's Service of the Neuropsychiatric Institute. The staff includes a Head, principal, and four teachers who conduct programs at the preschool, elementary, intermediate, secondary, and young adult levels. The Head of the School is a faculty member of the Department of Education, Area of Special Education, appointed through a formal agreement between the Departments of Education and Psychiatry.

### **Office of Student Services**

The Office of Student Services helps prospective students in Education explore and choose appropriate fields and levels of school service; advises them concerning courses and procedures to follow in qualifying for graduate degrees, credentials, and certification for public school service; and counsels them on professional matters during their stay at the University. Students may request interpretation of test results, assistance in programing to meet specific credential and degree requirements, and counseling on personal and professional matters.

In addition, the Office serves as a selection agency to determine eligibility for professional programs under the supervision of the Committee on Professional Fitness; handles details of enrollment in classes; refers candidates for graduate programs to appropriate faculty advisers; makes recommendations for scholarships and fellowships; conducts research on student and professional problems; and formulates periodic reports on student personnel.

The staff consists of a Head who coordinates the work of the Office, a graduate adviser who handles advising of all candidates for graduate degrees, and counselors who advise candidates for credentials.

It is important that each student establish contact with the Office of Student Services so that he may determine his eligibility for the program he wishes to enter, receive assistance in the selection of courses, and fulfill all requirements

for admission. Enrollment for a second quarter is contingent upon his having completed all necessary steps satisfactorily during the first quarter.

### Teacher Training Facilities

Internship and supervised teaching are carried on in selected elementary and secondary schools in the greater Los Angeles area. Opportunities for working with pupils from a range of socio-economic environments are offered. Student teachers are assigned to work in classrooms under the supervision of highly competent, experienced teachers. One or more supervisors is assigned to each training school to help both student teachers and supervising teachers. Certain classes taught by superior teachers are designated as demonstration classes and are open to visitation by University students and others. The Head of Supervised Teaching is responsible for the assignment, supervision and evaluation of student teaching. School classroom observation and participation are included in several courses which precede or parallel student teaching.

### Admission to Graduate Degree Programs

In order to qualify for graduate status in Education, the student must (1) hold a degree of Bachelor of Arts or Bachelor of Science from the University of California, or its equivalent; (2) have completed not less than four upper division courses in Education; (3) have earned a grade point average of at least 3.0 in all 100 series courses; and (4) have earned a grade point average of at least 3.0 in education courses in the 100 series.

A student seeking admission to the Graduate Division must file a formal application, results on the Aptitude Test of the Graduate Record Examination and an official transcript of his record in *duplicate* from each college and university he has attended. Requests for an *Application for Admission to Graduate Status* may be made directly to the Graduate Division, Administration Building, University of California, Los Angeles, or to the Office of Student Services of the Graduate School of Education, Moore Hall, University of California, Los Angeles. Last day to file for admission to the Graduate Division for the Fall Quarter, 1968, is May 15, 1968; the Winter Quarter, 1969, is October 15, 1968; the Spring Quarter, 1969, is January 15, 1969; and the Summer Quarter, 1969, is April 15, 1969.

The Dean of the Graduate Division may deny admission if the record of scholarship is not sufficiently distinguished, or if the undergraduate program has not been of such a character as to furnish an adequate foundation for advanced academic study. Applications for advanced study in Education are referred by the Dean of the Graduate Division to the School of Education for recommendation before admission is approved.

### Summer Sessions

In order to have graduate courses taken in Summer Sessions accepted as partial fulfillment of the requirements of graduate courses for higher degrees or credentials, the student must be admitted in graduate status.

## Transfer Credit

Credit from another accredited college or university which can be applied to the master's degree programs at UCLA is limited to no more than two quarter courses or five semester hours. Only those courses which are accepted by the other institution toward meeting its master's degree requirements may be considered for transfer purposes. Requests for such transfer are made by the student through the Office of Student Services at the time of Advancement to Candidacy. Such courses may not be used to reduce the minimum residence requirement or the minimum requirement for strictly graduate Education courses. No transfer credit is allowed for either the Ed.D. or Ph.D. degree.

## Extension Courses

Upon the recommendation of the School of Education and approval of the Graduate Council, no more than two courses taken in University Extension may be accepted toward the course requirement for the M.A. or M.Ed. degree. None may be used in meeting requirements for doctoral degrees. Credit will be accepted only for those XL-100 series courses prefixed by an asterisk(\*) in the announcement of University Extension course offerings, **LIFELONG LEARNING**. Grades for Extension courses will not be taken into account in computing scholarship averages.

Petitions for acceptance of credit for courses taken in University Extension are presented at the time the candidate files application for advancement to candidacy.

## Graduate Record Examination†

The Aptitude Test of the Graduate Record Examination or the equivalent approved by the Office of Student Services is required prior to admission to graduate status for all candidates for the graduate degrees in education; and for the Pupil Personnel Credential, Administration Credential, Supervision Credential, and Junior College Credential. This regulation applies both to new applicants and to those seeking readmission or renewal of previous applications.

Arrangements for taking the Graduate Record Examination may be made by contacting: (1) Office of Student Services, Graduate School of Education, University of California, Los Angeles, California 90024, for those residing in the Los Angeles area; or (2) a local college or university; or (3) Educational Testing Service, at either 20 Nassau Street, Princeton, New Jersey, or 1947 Center Street, Berkeley, California 94720.

The results of this examination should be sent to the Office of Student Services, Graduate School of Education, University of California, Los Angeles, California 90024.

## Scholarship Requirement

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for graduate degrees. Furthermore, the student must maintain at least a 3.0 grade point average in all courses elected at any

† Foreign students may defer the Graduate Record Examination until they are enrolled. Special arrangements for candidates who cannot meet the schedule demands of the Graduate Record Examination may be made through the Office of Student Services.

campus of the University of California subsequent to the bachelor's degree; this includes all courses in the student's program.

### **Continuous Registration**

All graduate students are required to register for at least three quarters every year until completion of all requirements for the degrees for which they are working, unless they are granted a formal leave of absence. No more than one year of leave is permitted. Failure to register or to take a leave of absence will constitute presumptive evidence that the student has withdrawn from the University.

See announcement of the Graduate Division.

### **Credit by Examination**

A limited amount of credit in courses in the 100 series may be obtained by examination. For general regulations governing credit by examination, consult the pamphlet, **STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA**.

### **Master of Arts in Education**

The Master of Arts degree is designed to permit flexibility and concentration around the candidate's thesis problem.

### **Amount and Distribution of Work**

At least nine courses and a thesis must be completed in graduate status, and at least five of the nine courses must be in the 200 and/or 500 series in Education. With the permission of the candidate's chairman, advanced courses in departments other than Education may be accepted in partial fulfillment of the degree requirement.

All students are required to complete a research course chosen from 200A, 200B, 200C, 210A, 210B, 210C. In addition to this general requirement, and the four upper division courses offered for admission, the candidate selects, with the aid of the graduate adviser, courses from one or more of the following fields of specialization:

**Area I. Cultural Foundations of Education.** (See courses 100, 108, 200A–208B)

**Area II. Educational Psychology.** (See courses 112, 210A–214C, 217A–217C, 415A–415B, 418A–419B)

**Area III. Curriculum and Instruction.** (See courses 124A–124C, 130–137C, 420A–424E, 430, 433A–439B)

**Area IV. Administrative Studies.** (Not available at the master's level)

**Area V. Higher Education.** (See courses 209A–209B, 431) (Available at the master's level by special permission only)

**Area VI. Special Education.** (See courses 116, 128A–128E, 228A–228D, 416A–416B)

### **Residence**

The minimum requirement for the master's degree is one year of work. The candidate must maintain residence by taking a minimum of one and one-half courses in each of three quarters unless granted a formal leave of absence. The total period of time from the beginning of course work to the completion of

requirements for the degree may not exceed four years unless a petition to the Committee on Graduate Degrees for extension of time is granted.

### **Language Requirement**

The student must pass an examination in a foreign language appropriate to his field of study and acceptable to the Deans of the Graduate School of Education and the Graduate Division. The examination is administered by the Graduate Division and should be completed prior to advancement to candidacy.

### **Application for Advancement to Candidacy**

The application must be filed not later than one quarter prior to completion of course requirements for the degree.

### **Thesis**

Though limited in scope, the master's thesis must attack a problem in a systematic and scholarly way. Before beginning work on a thesis, the student must receive from his chairman approval of the subject and general plan of investigation. Ultimately it must be approved by the student's thesis committee. The committee is selected by the chairman and the candidate and officially appointed by the Dean of the Graduate Division. One of the three members must be from a department other than Education.

### **Advising**

Information on step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on initial course selection, faculty members to be consulted, consent for substitutions, forms to be filed at various stages, information on fellowships and subsidies, and general advising may also be requested.

### **Master of Education Degree**

The Master of Education degree is designed to provide a comprehensive background in the fields basic to teaching, combined with an application of that knowledge in a specific field. It is a professional degree, and carries the additional requirement that the candidate must be working toward an elementary, secondary or junior college teaching credential.

### **Amount and Distribution of Work**

At least nine courses must be completed in graduate status, at least six of which are graduate level. With the permission of the Committee on Graduate Degrees, advanced courses in departments other than Education may be accepted in partial fulfillment of the degree requirement.

The candidate must complete such course work as he may need to qualify for the comprehensive examinations.

### **Residence**

The minimum requirement for the master's degree is one year of work. The candidate must maintain residence by taking a minimum of one and one-half courses in each of three quarters unless granted a formal leave of absence. The total period of time from the beginning of course work to the completion of requirements for the degree may not exceed four years, unless a petition to the Committee on Graduate Degrees for extension of time is granted.

### **Application for Advancement to Candidacy**

The application must be filed not later than one quarter prior to completion of course requirements for the degree.

### **Advising**

Information on step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on course selection, consent for substitutions, application for the comprehensive examinations, forms to be filed at various stages, information on fellowships and subsidies, and general advising may also be requested.

### **Doctor of Education Degree**

The Doctor of Education degree is designed to provide breadth in the increasingly complex field of Education, and to aid in the development of leadership in a number of fields.

### **Admission**

After three preliminary quarters, the candidate's qualifications are presented to the Committee on Graduate Degrees for admission. To be admitted, the student must: (1) have completed the equivalent of a master's degree in Education; (2) have passed such examinations as may be specified by the Committee on Graduate Degrees; (3) have maintained at least a 3.0 grade point average in all work completed since the bachelor's degree, including that at UCLA; (4) have secured agreement of a resident graduate faculty member of the Department of Education to serve as sponsor and chairman of his dissertation committee; (5) be recommended for admission by at least two additional resident graduate faculty members of the Department of Education, with whom ordinarily he will have had course work; (6) present evidence of his ability to do research through submitting a master's thesis, independent research, or a major term paper; (7) present evidence he has at least two years of successful professional experience, or the equivalent, or a commitment which will lead to the completion of the requirement before advancement to candidacy.

### **Amount and Distribution of Work**

The student must complete such course work in a major and two minor areas as his dissertation committee may specify, ordinarily at least two full years (six quarters of at least 1½ courses each) prior to advancement to candidacy. The course work is followed by three written comprehensive examinations, an oral qualifying examination, a dissertation and by a final oral examination.

With the permission of the candidate's chairman, advanced courses in departments other than Education may be accepted in partial fulfillment of the requirement.

Once admitted, the candidate's program of study is individually designed by his sponsor to prepare him for examinations in a major and a minor field in education and in a related field either in education or in another department.

## **Residence**

All doctoral candidates will be required to engage in six or more quarters of full-time resident study. Full-time resident study consists of enrollment in one and one-half or more courses during a quarter. Three of these full-time resident quarters must be taken consecutively.

Continuous enrollment is required of all doctoral candidates. The student is allowed no more than one year's formal leave of absence during his program. If he is compelled to extend his leave, he must withdraw from the program and apply to the Committee on Graduate Degrees for formal reinstatement when he is ready to proceed.

Candidates for the Ed.D. degree are allowed a period of time not to exceed four years from the beginning of course work to advancement to candidacy, and four additional years from advancement to candidacy to completion of the dissertation. Petitions for extension of time must be approved by the candidate's sponsor and by the Committee on Graduate Degrees.

## **Qualifying Examinations**

When the candidate has completed the course work recommended by his chairman, he applies for the written qualifying examinations in his major and minor fields. The examinations are given under the direction of the Committee on Graduate Degrees of the Graduate School of Education.

Upon successful completion of the written qualifying examinations, the candidate formulates a dissertation proposal with the aid of his chairman and a dissertation committee. The committee consists of three faculty members in Education and one each from two related departments and is nominated by the candidate's chairman and appointed by the Dean of the Graduate Division. The dissertation committee conducts an oral examination covering his research plan and the candidate's qualifications to conduct meaningful research in the field.

## **Advancement to Candidacy**

The candidate who has passed both the written and oral qualifying examinations files an application for advancement to candidacy. Thereafter he enrolls each quarter in Education 599, or for such course/courses as his chairman may direct, or until the dissertation is completed.

## **Dissertation**

The dissertation embodies the results of the candidate's independent work. It must constitute a professional contribution to education. In preparing the dissertation, the candidate is guided by his dissertation committee. Approval of the dissertation by the committee and the Graduate Council is required before he is recommended for the degree.

A manual of instruction for the preparation and submission of the dissertation may be secured from the Graduate Division or from the Office of the University Archivist. The manuscript adviser in the Office of the University Archivist must approve the format of each dissertation before it is accepted by the Graduate Division. Before preparing the final document, candidates are urged to attend an orientation meeting conducted by the manuscript adviser in the

Office of the University Archivist. Meetings are held during the second week of classes each quarter.\*

Four copies of the approved dissertation must be prepared. The original and two copies must be filed with the Graduate Division before the deadlines published in the *UCLA GENERAL CATALOG*. The fourth copy must be submitted to the Office of the Dean of the Graduate School of Education to be bound at the student's expense for his chairman.

### **Final Examination**

The candidate's final examination is conducted by his dissertation committee. It is oral, and consists of a defense of the dissertation. Admission to the final examination is restricted to committee members, members of the Academic Senate, and guests of equivalent academic rank from other institutions. The outcome of the final examination is reported to the Graduate Division.

### **Check List and Advising**

A check list indicating step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on initial course selection, faculty members to be consulted, forms to be filed at various stages, information on fellowships and subsidies, and general advising may be requested.

### **Doctor of Philosophy in Education**

The Doctor of Philosophy degree in Education is designed to provide preparation for a career of scholarly research in a field of Education. It emphasizes preparation both in a cognate field and in Education, and requires a theoretical dissertation encompassing both fields.

After three preliminary quarters, the candidate's qualifications for admission to the program are presented to the Committee on Graduate Degrees. To be admitted, the student must: (1) have completed a master's degree in either Education or in the cognate field in which the student proposes to work; (2) have passed such examinations as may be specified by the Committee on Graduate Degrees; (3) have maintained at least a 3.0 grade point average in all work completed since the bachelor's degree, including that at UCLA; (4) have secured agreement of a resident graduate faculty member of the Department of Education to serve as sponsor and chairman of his dissertation committee; (5) be recommended for admission by at least two additional resident graduate faculty members of the Department of Education, with whom ordinarily he will have had course work; (6) present evidence of his ability to do research through a predoctoral research project; (7) present evidence of acceptance by the proposed cognate department (in which the Ph.D. is offered); and (8) state the foreign language in which he plans to take an examination.

### **Amount and Distribution of Work**

The candidate will be expected to have a baccalaureate degree in a cognate field and a background (as demonstrated by a Master of Arts degree, a qualifying examination or a program of courses in education and in his cognate department) which prepares him for advanced study in his field of specialization. If any

\* For additional information, consult an adviser in the Office of Student Services in the Graduate School of Education.

aspect of such preparation (in education or his cognate department) is lacking, the student will engage in studies to achieve the requisite background. The candidate will, thereafter, take courses which develop in depth a knowledge of theories and research methods both in Education and in the cognate field. Stress will be on seminars and independent study. His program will be determined by his chairman in cooperation with the cognate department.

### **Residence**

All doctoral candidates will be required to engage in six or more quarters of full-time resident study. Full-time resident study consists of enrollment in one and one-half or more courses during a quarter. Three of these full-time resident quarters must be taken consecutively.

Continuous enrollment is required of all doctoral candidates. The student is allowed no more than one year's formal leave of absence during his program. If he is compelled to extend his leave, he must withdraw from the program and apply to the Committee on Graduate Degrees for formal reinstatement when he is ready to proceed.

Candidates for the Ph.D. degree are allowed a period of time not to exceed four years from the beginning of course work to advancement to candidacy, and four additional years from advancement to candidacy to completion of the dissertation. Petitions for extension of time must be approved by the candidate's sponsor and by the Committee on Graduate Degrees.

### **Qualifying Examinations**

When the candidate has completed the course work recommended by his guidance committee, he applies for the written qualifying examinations in his field in education and in his cognate department. The examinations are given under the direction of the Committee on Graduate Degrees of the School of Education.

Upon successful completion of the written qualifying examinations, the candidate formulates a dissertation proposal with the aid of his chairman and a dissertation committee. The committee consists of three members of the faculty in education, two in the cognate department, and one from the University at large. The committee is nominated by the Department of Education and appointed by the Dean of the Graduate Division. The dissertation committee conducts an oral examination on topics from both education and the cognate discipline related to the candidate's research proposal, designed to determine the candidate's qualifications to conduct meaningful research in the field.

### **Advancement to Candidacy**

The candidate who has passed both the written and oral qualifying examinations, as well as the language examination, files an application for advancement to candidacy. Thereafter he enrolls each quarter in Education 599, or for such course/courses as his chairman may direct, or until the dissertation is completed.

### **Dissertation**

The dissertation embodies the results of the candidate's independent investigation. It must contribute to the body of theoretical knowledge in education, and must draw upon the interrelations of education and the cognate discipline.

In preparing the dissertation, the candidate is guided by his dissertation committee. Approval of the dissertation by the committee and the Graduate Council is required before he is recommended for the degree.

A manual of instruction for the preparation and submission of the dissertation may be secured from the Graduate Division or from the Office of the University Archivist. The manuscript adviser in the Office of the University Archivist must approve the format of each dissertation before it is accepted by the Graduate Division. Before preparing the final document, candidates are urged to attend an orientation meeting conducted by the manuscript adviser in the Office of the University Archivist. Meetings are held during the second week of classes each quarter.\*

Four copies of the approved dissertation must be prepared. The original and two copies must be filed with the Graduate Division before the deadlines published in the UCLA GENERAL CATALOG. The fourth copy must be submitted to the Office of the Dean of the Graduate School of Education to be bound at the student's expense for his chairman.

### **Final Examination**

The candidate must pass a final oral examination conducted by his dissertation committee, the major emphasis of which will be on defense of the dissertation. Admission to the final examination is restricted to committee members, members of the Academic Senate, and guests of equivalent academic rank from other institutions.

### **Check List and Advising**

A check list indicating step-by-step progress in the program is available from the graduate adviser in the Office of Student Services. Advice on initial course selection, faculty members to be consulted, forms to be filed at various stages, information on fellowships and subsidies, and general advising may be requested.

## **SCHOOL OF LAW**

Applicants for admission to the School of Law must have a bachelor's degree from an accredited institution and must have taken the Law School Admission Test. The application for admission to the School of Law must be made on forms supplied by the Admissions and Records Office, School of Law, University of California, Los Angeles, California 90024, and transcripts of all college, university, and professional school records, including the records of work completed on the Los Angeles campus of the University of California, must be sent from the institutions of origin to the Admissions and Records Office, School of Law, University of California, Los Angeles, California 90024. If the applicant is currently enrolled in a college or university, the transcripts should cover all work completed to date, including a statement showing work in progress. The transcripts should be accompanied by a statement indicating the date on which it is expected the work in progress will be completed, and the necessary supplementary transcripts should be sent to the School of Law.

The Educational Testing Service will supply each applicant with a bulletin of

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\* For additional information, consult an adviser in the Office of Student Services in the Graduate School of Education.

information concerning the Law School Admission Test. For permission to take the Law School Admission Test, applicants should write directly to the Educational Testing Service, Box 944, Princeton, New Jersey 08540, requesting an application blank and bulletin of information listing places where the test may be taken.

Admissions will be on a competitive basis. Applications for admission to the first-year class together with all transcripts and Law School Admission Test Scores must be received by May 1. Applicants for admission with advanced standing may file applications until August 15.

Official notice of admission, or denial of admission, to the first-year class is sent in most cases after May 1. Applicants for advanced standing are notified after August 15.

For further details concerning the program of the School of Law consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF LAW.

## SCHOOL OF LIBRARY SERVICE

In December of 1958 the Regents of the University of California authorized the establishment of the School of Library Service on the Los Angeles campus, to begin a course of instruction in September, 1960, leading to the Master of Library Science degree. In January of 1965, a second degree, Master of Science in Information Science (Documentation), was approved and added to the School's program.

The M.L.S. degree is accepted in the United States and in many other countries as the basic preparation for professional positions in municipal, county, regional, college, university, school, children's and special library service. The degree is also widely regarded as valuable preparation for careers in literature searching, editing, and in publishing or the book trade. The course of study and preparation for the comprehensive examination normally require four quarters of full-time enrollment. Only under special circumstances are part-time students admitted to the course of study.

The Master of Science degree program is open to persons who hold appropriate B.A. or B.S. degrees in other fields such as one of the physical or biological sciences, business administration, engineering, or mathematics. The purpose of the degree is to prepare information scientists. The degree program comprises an integrated course of study and research in the theoretical and practical foundations of information handling. The program is an interdisciplinary one with emphasis upon research and general principles. A thesis is required. Four areas of specialization are offered: system integration, usage of information, organization and operation of information activities, and equipment and the design of information services. A reading knowledge of one foreign language is required. The preferred languages are French, German and Russian.

Requirements for admission to the School of Library Service include admission to graduate status by the Graduate Division, an undergraduate course of study appropriate to the degree objective, an acceptable score on the Aptitude Test of the Graduate Record Examination, and a scholastic average accepted by both the Graduate Division and the School of Library Service. Acceptable undergraduate majors and minors are those offered by departments of the College of Letters and Science at UCLA, or the equivalent subjects in other colleges

and universities: UCLA has no undergraduate major or minor in librarianship or library science. A special prerequisite for M.L.S. degree candidates is a reading knowledge of two modern foreign languages, preferably German and French; a special prerequisite for M.S.I.S. (Documentation) degree candidates is a background in mathematics through the calculus.

Since the admission of entering students is limited by the available laboratory space and research facilities, selection is on a competitive basis. Candidates are chosen because, in the judgment of the Admissions Committee of the School of Library Service, they have demonstrated a potential of becoming excellent professional librarians or information scientists. Criteria of selection by the Admissions Committee are: (1) recency of formal education; (2) undergraduate and graduate scholarship records; (3) score on the Aptitude Test of the Graduate Record Examination; (4) report of an interview of the applicant by the Dean of the School of Library Service or by a person designated by the Dean to conduct an interview; and (5) letters of recommendation. The Admissions Committee may, if it believes a candidate has an inadequate understanding of the purposes and requirements of modern library service, recommend postponement of admission until the candidate has obtained nonprofessional working experience with a satisfactory performance rating in a reputable library.

Further information concerning entrance requirements, degree requirements, the California State Credential for School Librarians, age limitations, and exclusions due to physical handicaps may be obtained from the Office of the School of Library Service.

## **SCHOOL OF MEDICINE**

The School of Medicine on the Los Angeles campus, which opened in 1951, will admit 128 freshman students in the fall of 1969. Applications for the class entering in September, 1969, with all transcripts of record and other necessary documents, must be filed between May 1, 1968, and October 31, 1968, with the Office of Student Affairs, UCLA School of Medicine, Los Angeles, California 90024. Application forms and information may be obtained from that office. Applications must be accompanied by a nonrefundable fee of \$10.

### **THE CURRICULUM**

In September, 1966, the School of Medicine adopted the quarter system and inaugurated a new four-year curriculum. The first two years consist of six quarters of required study in the basic medical sciences and one summer quarter of elective study. The final two years consist of a required 52-week clerkship period for training in the clinical fields, followed by three quarters of elective study. The electives include research training, advanced clinical clerkship opportunities, and depth elective studies which emphasize the scientific foundation underlying the knowledge of diseases of specific organ systems.

### **BASIS OF SELECTION**

Candidates will be selected on the basis of the following considerations:

1. Undergraduate and, where applicable, graduate scholarship.
2. Score on the Medical College Admission Test, which is administered for the Association of American Medical Colleges by the Psychological Corporation.

3. Interview of the applicant by a member or members of the Admissions Committee.

4. Evaluation of the applicant's accomplishments and character in letters of recommendation.

Candidates are selected who, in the opinion of the Committee on Admissions, present best evidence of broad training and high achievement in college, a capacity to develop mature interpersonal relationships, and the traits of personality and character essential to success in medicine. Preference will not be given students who major in natural science, since study in the social sciences and humanities is considered equally valuable.

## REQUIREMENTS FOR ADMISSION

Ordinarily a baccalaureate degree is required for admission; but in certain instances outstanding students who have completed three full academic years at an accredited college or university are admitted. College years should be devoted to obtaining as broad an education as possible. The major objectives should be the following: (1) competence in the use of English, written and spoken; (2) capacity for quantitative thinking represented by mastery of mathematics; (3) such training in physical and biological science as will facilitate comprehension of medical science and the scientific method; (4) a foundation for an ever-increasing insight into human behavior, thought and aspiration, through the study of man and his society as revealed by the social sciences and the humanities; and (5) some knowledge of a language and culture other than the student's own.

These objectives will ordinarily require completion of the following studies:

	<i>Quarter Units</i>	<i>Semester Units</i>
English .....	9	6
Physics .....	12	8
Chemistry		
Inorganic chemistry .....	12	8
Organic and quantitative chemistry .....	8	5½
(Also physical chemistry is highly recommended)		
Biology		
Biology .....	12-14	8-10
Vertebrate Embry-		
ology .....	4- 5	3
Genetics .....	4- 5	3
Mathematics (including college algebra) .....	6	4
(Also introductory calculus is highly recommended)		

Under certain circumstances the Committee on Admissions may consider students who have not fully satisfied all of these requirements.

Courses (e.g., bacteriology, human anatomy) which overlap in subject matter with those in the School of Medicine are not advised. However, advanced or specialized courses in biological science (e.g., cellular physiology) are desirable.

## **COMPLETION OF REQUIREMENTS**

The student must complete the premedical requirements before beginning the first year of medical studies, although these requirements need not be completed at the time application for admission is filed.

## **PHYSICAL EXAMINATION**

Successful candidates must pass a physical examination before registering.

## **FEES**

For residents of California the total fee for each quarter is \$161.50 for graduate students, \$163.50 for undergraduate students; for nonresidents the total fee is \$405.50 for graduate students, \$407.50 for undergraduate students. These fees are subject to change.

## **ADMISSION TO ADVANCED STANDING**

Students who have completed one or two years in an approved medical school and who desire to transfer to this School may apply to the Office of Student Affairs of the School of Medicine for instructions. Applications will be received after April 1, but not later than June 1, and are accepted on a competitive basis to fill any available places in the second- and third-year classes. In no case will applications for transfer to the fourth-year class be considered.

## **INDIVIDUAL PROGRAMS OF STUDY IN THE MEDICAL CURRICULUM**

Special programs of study for individual students may be arranged within the framework of the medical school curriculum. Normally these programs are available only after the student has completed his first year and with the approval of the Dean's Office and the chairman of the department responsible for the additional course work. Every effort is made to maintain flexibility within the medical school curriculum, although extensive changes in the course of study can be arranged for only a limited number of students.

## **GRADUATE WORK**

Graduate work leading to the M.S. and/or Ph.D. degrees is offered, either separately or in conjunction with the M.D. program, in anatomy, biological chemistry, biomathematics, biophysics, medical history, medical microbiology and immunology, pharmacology, physiology, and radiology. See the departmental announcements elsewhere in this catalog for further information. For details concerning the medical curriculum, consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF MEDICINE.

## **SCHOOL OF NURSING**

The Regents of the University of California authorized the establishment of a School of Nursing at Los Angeles in the summer of 1949. The School admits students of junior or higher standing, and offers curricula leading to the degrees of Bachelor of Science, Master of Science and Master of Nursing.

## Curricula

### THE BACCALAUREATE PROGRAM

The Baccalaureate Program leading to the Bachelor of Science degree provides for a close interweaving of general and professional education. The social, emotional, and health aspects of nursing are emphasized throughout the curriculum. Nursing laboratory under the guidance of faculty members is provided in hospitals, outpatient clinics, schools, homes, and community health centers.

*Requirements for admission.* (1) Admission to the University; (2) completion of 22½ courses of college work, including courses required by the School of Nursing. Personal recommendations as required by the School of Nursing. Eligibility for the study of nursing as determined by demonstrated aptitudes, recommendations, interviews, physical examinations and scholastic attainment.

### REGISTERED NURSES

Students who are registered nurses will complete the curriculum required in the Baccalaureate Program.

*Requirements for admission.* (1) Graduation from an accredited school of nursing and evidence of the fulfillment of the legal requirements for the practice of nursing; (2) personal and professional recommendations as required by the School of Nursing; (3) completion of the lower division requirements or transfer credit evaluated as the equivalent. (See the UCLA ANNOUNCEMENT OF THE SCHOOL OF NURSING.)

### GRADUATE PROGRAM

Under the jurisdiction of the Graduate Division, Los Angeles, the School of Nursing administers programs leading to the Master of Science degree and the Master of Nursing degree. Available courses provide the opportunity for advanced study in several areas of nursing and research training for increased professional competence and specialization in a clinical field, for functional preparation in teaching, administration, supervision or public health—mental health nursing consultation. The Thesis Plan is followed in the Master of Science degree program; and the Comprehensive Examination Plan is followed in the Master of Nursing Program. For further information about the graduate programs in nursing, consult the UCLA ANNOUNCEMENT OF THE GRADUATE DIVISION and the UCLA ANNOUNCEMENT OF THE SCHOOL OF NURSING.

*Requirements for admission.* (1) Completion of an accredited baccalaureate program satisfactory to the UCLA School of Nursing, and to the UCLA Graduate Division; (2) evidence of status as a registered nurse; (3) recommendations as requested by the School of Nursing; (4) evidence of the fulfillment of the legal requirements for the practice of nursing; (5) an undergraduate scholarship record satisfactory to the UCLA School of Nursing, and to the UCLA Graduate Division; and (6) personal and professional recommendations as requested by the UCLA School of Nursing.

### ADMISSION

Applications for admission to the baccalaureate program in the School of Nursing should be filed not later than May 1, 1968 for the summer quarter; February 1, 1968 for the fall quarter; November 1, 1968 for the winter quarter;

January 1, 1969 for the spring quarter. Applications for admission to the graduate program should be filed not later than April 15, 1968 for the summer quarter; May 15, 1968 for the fall quarter; October 15, 1968 for the winter quarter. The School of Nursing reserves the right to admit students on the basis of scholarship, recommendations, interviews, and demonstrated aptitudes.

Applications for admission to the undergraduate program (accompanied by a \$10 application fee) should be filed with the Office of Admissions, University of California, 405 Hilgard Avenue, Los Angeles, California 90024.

Applications for admission to the graduate program (accompanied by a \$10 application fee) should be filed with the Admissions Section of the Graduate Division, University of California, Los Angeles, California 90024.

Educational programs are planned in the School of Nursing after evaluations of credentials have been made by the Office of Admissions or the Graduate Division following receipt of applications for admissions.

### **Requirements for the Degree of Bachelor of Science**

The degree of Bachelor of Science will be granted upon fulfillment of the following requirements:

1. The candidate shall have completed at least 45 courses of college work, and shall have satisfied the general University requirements.
2. The candidate shall include, in the required 45 courses, at least 22½ courses in general education.
3. The candidate shall have completed at least 23 upper division courses toward the degree.
4. The candidate shall have maintained at least a grade of C average in all courses taken.
5. The candidate shall have completed all required nursing courses in the School of Nursing and shall have maintained an average grade of C in all clinical nursing courses.
6. The candidate is required to have been enrolled in the School of Nursing during the final three quarters of residence; the last nine courses must be completed while so enrolled.

### **HONORS**

The faculty of the School of Nursing or a duly authorized committee thereof shall recommend for Honors or Highest Honors candidates for the bachelor's degree who meet the criteria determined by the faculty of the School of Nursing.

### **Requirements for the Degree of Master of Science**

The degree of Master of Science will be granted upon fulfillment of the following requirements:

1. The candidate shall have met the general requirements of the Graduate Division.
2. The candidate shall have completed in graduate status at least ten courses in upper division and graduate level courses; six must be in the 200 series, with five courses in nursing. Three courses must be in relevant basic science work 100-200 series. The additional courses required for the degree may be

distributed among courses in the 100 or 200 series subject to approval of the student's faculty adviser.

3. A Thesis is required.

### **Requirements for the Degree of Master of Nursing**

The degree of Master of Nursing will be granted upon fulfillment of the following requirements:

1. The candidate shall have met the general requirements of the Graduate Division.

2. The candidate shall have completed in graduate status at least ten courses in upper division and graduate level courses; seven courses must be in nursing with five courses in the 200 and 400 series. The additional courses may be distributed among courses in the 100, 200 or 400 series subject to approval of the student's faculty adviser.

3. A Comprehensive examination is required.

For further information concerning graduate work consult announcement of the Graduate Division.

## **SCHOOL OF PUBLIC HEALTH**

### **General Information**

Public Health is a broad, multidisciplinary field of study directed toward understanding and controlling factors affecting the health of populations. One feature of the field of public health is a reliance on research methods to identify important health relationships. Another feature is a community or social approach to the problems of health and disease in their preventive or therapeutic aspects. The concerns of public health cut across national boundaries and include the functions of both voluntary and governmental agencies and of research and teaching institutions.

There are many areas of emphasis in the field, and five may be singled out as follows: (1) nature, extent and distribution of disease; (2) quantitative methods of description and analysis; (3) environmental hazards, their identification and control; (4) the organization and delivery of community health services—emphasis is on the development of strategies for optimal provision of health care of high quality for all members of society; (5) basic biological and psychosocial processes that affect the health and well-being of populations.

The purpose of programs of instruction in the field of public health is to provide opportunity to develop understanding of the theoretical foundations and philosophy of the field, and to permit specialization in fields of professional service or research. This is achieved through required and elective courses that stress broad exposure to basic issues as well as intensive study in selected specialties.

Because of multidisciplinary concerns, programs of study are available to students whose academic preparation has been in the natural or social sciences as follows:

1. Medicine, nursing, engineering, dentistry and related fields.
2. Mathematics and statistics.

3. Sociology, psychology, economics, political science, etc.
4. Physical and life sciences.

Through organized programs in the School of Public Health, students entering the field may thus prepare themselves for careers in such basic specialties as epidemiology, biostatistics, nutritional science, or environmental health. They may also prepare themselves for the newer challenges of community well-being such as the operation of hospitals, health maintenance in industry, the health education of the public, organization of medical care, international health, behavioral sciences in public health, and community health administration.

The School of Public Health offers the following degrees: Bachelor of Science, Master of Science in Public Health, Master of Science in Biostatistics, Master of Science in Nutritional Sciences, Master of Public Health, Doctor of Public Health, Doctor of Philosophy (Biostatistics). The School of Medicine offers the degree of Master of Science in Preventive Medicine.

### **Bachelor of Science Degree**

The School of Public Health is discontinuing its Bachelor of Science degree program and will accept new students in this program only if they can complete the requirements for the degree by September, 1971. However, undergraduate courses in public health will continue to be available as electives or in preparation for the graduate degree programs.

Candidates for the degree of Bachelor of Science must have completed at least 45 courses (180 units) of college work, of which at least the last 9 courses (36 units) must have been completed while enrolled in the School of Public Health. The student must earn at least twice as many grade points as the number of courses undertaken in the University.

### **PREPARATION FOR THE MAJOR**

Courses recommended for the first two years of college work in preparation for upper division study in the School of Public Health will be found under the Prepublic Health Curriculum and Prenutritional Sciences Curriculum in the College of Letters and Science, pages 81 and 83 of this bulletin.

### **THE MAJOR**

1. The following Public Health courses are required: Public Health 100, 110, 147, 160A, 170.

2. In addition to the above requirements, those of one of the following *pre-graduate curricula* must be met: Biostatistics, Environmental Health, School Health Education, Health Record Science, Nutritional Sciences. For specific requirements of these curricula, consult the Announcement of the School of Public Health.

### **Fields of Concentration**

The School of Public Health offers master's degree programs in the following areas of concentration: Behavioral Sciences in Public Health, Biostatistics, Environmental and Occupational Health, Epidemiology, Health Education, Infectious and Tropical Diseases, Medical Care Organization, Nutritional Sci-

ences, Public Health Administration, International Health, and Hospital Administration.

## **Master of Science in Public Health**

The Master of Science program provides research orientation within the general field of public health. It is intended to prepare the student in depth within a specialty, culminating in research activity suitable for a publishable thesis. If the student's undergraduate course has been deficient in breadth of fundamental training and fails to provide a proper foundation for advanced work in the special area of his choice, it probably will be necessary for him to take specified undergraduate courses.

A student seeking admission to the Master of Science program at UCLA should hold a bachelor's degree from an institution of acceptable standing. His academic work should be substantially equivalent, in distribution of subject matter and in scholastic achievement to the requirements for a comparable degree at the University of California.

### **GENERAL REQUIREMENTS FOR THE DEGREE**

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a master's degree, and the student must maintain a B average to remain in graduate status.

The Master of Science in Public Health requires one to two years and must include at least three quarters in academic residence. The program will be planned on an individual basis, according to the student's need, and will include formal courses and research leading to a thesis.

In accordance with the research-oriented objectives of the M.S. program, the thesis shall be of depth and quality to meet the standards of the Graduate Division. While library materials may, of course, be fully used, emphasis is placed on findings from some original investigation. The thesis shall be approved by a Master's Committee of three faculty members.

A minimum of nine courses (36 quarter units) is required of which at least five must be graduate level (courses numbered in the 200 or 500 series) although some programs may involve more than this.

Mandatory courses for the Master of Science in Public Health include one quarter in each of the following subjects: (1) epidemiology (Public Health 147 or Public Health 246A); (2) biostatistics (usually Public Health 160A); (3) public health organization (usually Public Health 200A).

## **Master of Science in Biostatistics**

For admission to the Master of Science program in Biostatistics the student must have completed the bachelor's degree in statistics, mathematics, or in a field of application of biostatistics. Undergraduate preparation for the program should include Mathematics 12A-12B-12C or equivalent (second-year calculus), and Public Health 160A, 160B or the equivalent (introduction to biostatistics).

### **GENERAL REQUIREMENTS FOR THE DEGREE**

A minimum of nine courses (36 quarter units) is required, at least five of which must be graduate level (200 or 500 series) in biostatistics or mathematical statistics, including at least three courses in biostatistics. A comprehensive exami-

nation is also required. Under some conditions a thesis plan may be substituted for the comprehensive examination plan.

### **DEGREE REQUIREMENTS**

1. Public Health 160C–160D (Introduction to Biostatistics)
2. Public Health 240A–240B–240C (Biostatistics)
3. Public Health 269A–269B–269C (Seminar in Biostatistics)
4. Mathematics 152A, 152B (Applied Mathematical Statistics) or Mathematics 150A–150B–150C (Probability and Statistics)

Other courses are selected with the adviser's consent. These may be additional courses in biostatistics or mathematical statistics, or they may be courses in related areas such as biology, mathematics, physiology, public health, or sampling theory.

### **Master of Science in Nutritional Sciences**

Candidates for admission to the Master of Science program in nutritional sciences must have completed the bachelor's degree in nutrition, chemistry or a life science. The undergraduate program should include courses in biology, general chemistry, quantitative analysis, organic chemistry, biological chemistry, bacteriology, calculus and German or French in addition to courses in nutritional sciences. Deficiencies must be satisfied.

### **GENERAL REQUIREMENTS FOR THE DEGREE**

At least nine courses (36 quarter units), of which five must be graduate level (200 or 500 series), and a thesis are required. In accordance with the research-oriented objectives of the M.S. program, the thesis shall be of depth and quality to meet the standards of the Graduate Division. While library materials may be fully used, emphasis is placed on findings from some original investigation. The thesis shall be approved by a Master's Committee of three faculty members. Six courses (24 quarter units), including three strictly graduate courses, must be chosen from courses in nutritional sciences. The remaining three courses will be selected, following consultation with the adviser, from courses in chemistry, biological chemistry and related areas which are not prerequisite to the graduate major.

### **Master of Public Health**

Candidates to be admitted for the degree of Master of Public Health may be either:

1. Holders of professional doctoral degrees in medicine, dentistry, or veterinary medicine (with or without a prior bachelor's degree) from an acceptable school, or
2. Holders of a bachelor's degree from an acceptable institution, with adequate preparation in sciences basic to public health. Such sciences basic to public health include various combinations of: (a) Life sciences; (b) Physical sciences and mathematics; (c) Social sciences; (d) Behavioral sciences.

Applicants are not expected to be prepared in all four of these fields, but a background in a suitable combination of these sciences is required.

## GENERAL REQUIREMENTS FOR THE DEGREE

Only courses in which the student is assigned grades A, B, or C are counted in satisfaction of the requirements for a master's degree, and the student must maintain a B average to remain in graduate status.

Award of the M.P.H. degree requires: (1) A minimum of 11 courses (44 quarter units) at least five of which must be graduate level (200, 400, or 500 series). For students with suitable previous graduate studies in public health subjects, this may be reduced to a requirement of 10 courses. Students majoring in hospital administration are required to take an administrative residency up to 12 months. Students majoring in health education are required to take six quarters of full-time study. (2) Mandatory courses of at least one quarter in each of the following subjects: (a) biostatistics (usually Public Health 160A); (b) epidemiology (Public Health 147 or Public Health 246A); (c) environmental health (usually Public Health 110); (d) public health administration (usually Public Health 200A). Students majoring in any of the fields of health administration such as public health administration, hospital administration, and medical care organization are required to take an additional course in principles of health administration (usually Public Health 200B). (3) A comprehensive final examination in (a) the general field of public health, and (b) the student's field of major concentration. (4) Field training in an approved health program of 10 weeks may be required of candidates who have not had prior field experience.

At least 4½ courses are required in the field of major concentration, beyond the mandatory courses. Additional courses may be chosen from areas or departments other than that of the major concentration in consultation with the student's faculty adviser. By special permission of his faculty adviser a candidate may present an acceptable thesis in lieu of 1½ of the 4½ courses required in the major field.

## Doctor of Public Health

The Dr.P.H. program is offered to provide education for higher level research, teaching, or professional service in public health than is attainable through the master's level programs.

High scholastic performance at undergraduate and master's level and a favorable recommendation by a faculty member in whose field the student intends to do his major concentration are required for admission, as well as a master's degree in public health or a master's degree in an appropriately related field such as education, social work, psychology, physical and life sciences, etc.

## GENERAL REQUIREMENTS

A student must select two areas of concentration, a major area and a minor area. The major area may be selected from the following: Behavioral Sciences in Public Health, Biostatistics, Environmental and Occupational Health, Epidemiology, Health Education, Infectious and Tropical Diseases, Medical Care Organization, Nutritional Sciences.

In general, two years of study in residence are required beyond the master's degree. In the first of these years, a full program of formal courses is ordinarily required for three quarters. In the second year, a minimum of one and one-half

courses per quarter for three quarters is required together with substantial concentration on research for the dissertation.

For persons with a previous doctoral degree in medicine or a related field, the Dr.P.H. requires four quarters in residence beyond the master's degree.

Academic preparation for the Dr.P.H. is directed toward general competence and depth of understanding in the major and minor areas as well as general understanding of the scope and aims of the broad field of public health. Instruction will include at least the mandatory course work required for the master's degree in the major as well as appropriate study in the minor.

On the advice of his major faculty adviser, a doctoral committee of five faculty members is appointed for each doctoral candidate. This committee advises the student on his course of study, reviews his dissertation and conducts the necessary examinations. Written and oral qualifying examinations are held near the conclusion of the academic preparation.

### **DISSERTATION**

The Dr.P.H. program culminates in a dissertation based on original research leading to a final examination. The subject of the dissertation should bear on some aspect of the student's field of major concentration and should demonstrate ability to plan and carry out independent investigation. Work on the dissertation is ordinarily started after successful completion of the qualifying examinations. Completion of the dissertation is at the student's own pace, but in any event, no more than five years after his advancement to candidacy.

### **FIELD TRAINING**

Field study in the major field may be required for a period up to 10 weeks dependent on the student's previous work and future objectives.

### **Doctor of Philosophy (Biostatistics)**

A program of study leading to the degree of Ph.D. in biostatistics is offered. Reference should be made to the UCLA ANNOUNCEMENT OF THE GRADUATE DIVISION for general University requirements. The student's program of study must be approved by the department and by the Graduate Council and it must embrace at the graduate course level three areas of knowledge: biostatistics, mathematical statistics, and a biomedical field such as biology, epidemiology, infectious diseases, medicine, microbiology, pharmacology, physiology, psychology, public health or zoology. Recommendation for the degree is based on the attainments of the candidate rather than on the completion of specific courses.

### **SCHOOL OF SOCIAL WELFARE**

The School of Social Welfare offers a two-year graduate program leading to the Master of Social Welfare degree. The curriculum deals with four major areas of study: Human Behavior, Social Welfare Services and Policy, Social Work Methods Theory and Social Work Research. In addition to academic courses in the above subjects, the curriculum provides for field instruction in selected social agency programs under tutorial direction. The School offers curriculum

concentrations in Social Casework and Community Organization. Students are expected to enroll in the same concentration for two years of study.

### **ADMISSION REQUIREMENTS**

The School of Social Welfare offers courses on the graduate level only. *Admission to the School is scheduled in the Fall Quarter only, and applications for admission should be filed by April 15 for the following Fall Quarter.* Applicants must file an Application for Admission to Graduate Status with the Graduate Division of the University and, in addition, must file an application with the School of Social Welfare and submit other specified information.

Candidates are expected to meet the general requirements of the Graduate Division for admission to graduate status.

The School requires a minimum of 22.5 quarter units (or 15 semester units) in the social sciences or a combination of social science and social welfare subjects as prerequisite undergraduate preparation for graduate study in the field of social work. Completion of courses in psychology, sociology and statistics is ordinarily expected.

In addition to an acceptable academic record and completion of the above preparatory courses, the School of Social Welfare applies the following criteria in the selection of candidates: personal suitability for professional education and potential for successful social work practice, as defined by the School; a satisfactory state of health, as determined by a physical examination immediately prior to registration; and in the case of applicants over 35 years of age, assessment on an individual basis of the candidate's previous education and work experience.

### **APPLICATIONS FOR TRANSFER**

Opportunities for transfer from other schools of social work into the second-year program of study will be extremely limited in number and will be determined by the credentials and potentialities of the individual candidate.

Such applicants must have successfully completed the first year of the master's program in an accredited school of social work within five years immediately preceding request for admission to the School. In addition, candidates must meet all other admission requirements of the School.

The School will prescribe the program required to qualify for the Master of Social Work degree. Candidates may be required to make up courses lacking for fulfillment of the degree requirements or to audit courses for up-dating of knowledge even though credit may have been granted for a similar course in another school.

A written evaluation of the candidate's first year of study will be requested from the institution in which the student completed his first year's work.

### **APPLICATIONS FOR READMISSION**

Applications for candidates who have completed the first-year program in the UCLA School of Social Welfare at some prior time and wish to return for completion of work toward the master's degree in social welfare will be considered on an individual basis. If more than five years have elapsed since completion of the first year's work, candidate may be required to enroll for the full two-year program.

## **PART-TIME STUDY**

The majority of students in the Master of Social Welfare program are in full-time attendance, completing all requirements for the degree within two consecutive years. Class scheduling is therefore arranged to meet the needs of this majority. A limited number of students may be admitted for study on a part-time basis which permits completion of the first-year academic courses and field instruction over a period of two academic years. The second-year program of study requires concurrent course and field instruction and necessitates enrollment on a full-time basis. Prospective students who are interested in completing the first year of study on a part-time basis are urged to discuss their plans fully with the School early in the admissions process.

## **FINANCIAL AID**

A number of federal, state, and local agencies make available scholarships and traineeships to graduate students in social welfare. Applications are for the most part made directly to the School. Additional information regarding these resources may be obtained from the Admissions Office of the School.

In addition to the above grants, a number of scholarships are offered through voluntary national and local organizations. General information concerning these scholarships may be obtained by writing to the School or to the Council on Social Work Education, 345 East 46th Street, New York, New York 10017. For information on University scholarships available to Social Welfare students, consult the announcement of the Graduate Division, GRADUATE STUDY AT UCLA.

## **MASTER OF SOCIAL WELFARE**

The degree of master of Social Welfare will be granted upon fulfillment of the following requirements:

1. The candidate shall have fulfilled the general requirements of the Graduate Division and the University.

2. The candidate shall have satisfactorily completed the School's prescribed program of classroom and field instruction, in either the Social Casework or Community Organization curriculum concentration. This includes satisfactory completion of the required courses in the Research sequence and of a research project to be undertaken during the second year of study.

3. The candidate shall have achieved a minimum grade average of B in academic courses and in field instruction.

4. The candidate shall have spent a minimum of one year (three quarters) of study in residence at UCLA.

5. The candidate shall have satisfactorily passed a comprehensive final examination in the field of social welfare.

For information concerning courses and curricula, see the UCLA ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE and page 456 of this bulletin.

## **THE GRADUATE DIVISION**

UCLA offers advanced study leading to the degrees of Master of Architecture (Urban Design), Master of Arts, Master of Arts in Teaching (in Physics and in Mathematics), Master of Business Administration, Master of Education, Master

of Engineering, Master of Fine Arts, Master of Journalism, Master of Library Science, Master of Nursing, Master of Public Administration, Master of Public Health, Master of Science, Master of Social Psychiatry, Master of Social Welfare, Doctor of Philosophy, Doctor of Education, and Doctor of Public Health as well as to certificates of completion for the general secondary and junior college teaching credentials and other advanced credentials for public school service. For more complete information concerning the requirements for higher degrees, consult the Graduate Division publications, **STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA** and **STANDARDS AND PROCEDURES FOR PROGRESS AND EXAMINATIONS IN GRADUATE PROGRAMS AT UCLA**, and consult the offerings of the major department under the appropriate section of this bulletin.

### **Definition of Academic Residence**

A graduate student is considered in academic residence if he is registered for and completes a minimum of  $1\frac{1}{2}$  courses (6 quarter units or the equivalent) in graduate or upper-division work during any regular University term.

### **Study List Limits**

University policy requires all graduate students holding appointments as Teaching or Research Assistants to be registered throughout their tenure in these appointments. Should it become necessary for a student holding such an appointment to request a leave of absence or withdraw, his appointment is thereby automatically terminated.

During the first quarter of their appointments, the maximal program limit for Teaching or Research Assistants shall be no more than 2 courses. Throughout their appointments, the minimal permissible program is  $1\frac{1}{2}$  courses per quarter.

Graduate students holding fellowships administered by the University are required to carry a minimum of 2 courses per quarter both before and after advancement to candidacy. These courses may be in the 500 series of courses (individual study or research).

## **Requirements for the Master's Degree**

### **PREPARATION**

A candidate for the master's degree is expected to hold a bachelor's degree from an institution of acceptable standing, based on a curriculum that includes the prerequisites for graduate study in the department of his major subject.

The minimum requirements for the master's degrees which follow are set by the Graduate Council and the Academic Senate. Individual departments may impose additional requirements. More detailed information about the requirements for the master's degree in a given major will be found under the appropriate major in this catalog.

The Master of Arts is offered in the following fields:

African Area Studies	German	Near Eastern Languages and Literatures
Anthropology	Greek	and Literatures
Anthropology-Sociology	History	Oriental Languages
Art	Islamic Studies	Philosophy
Astronomy	Italian	Physics (M.A.T.)*
Botany	Journalism	Political Science
Classics	Latin	Psychology
Dance	Latin American Studies	Slavic Languages and Literatures
Economics	Linguistics	Sociology
Education	Mathematics	Spanish
English	Mathematics (M.A.T.)*	Speech
Folklore & Mythology	Medical History	Theater Arts
French	Microbiology	Zoology
Geography	Musie	

The Master of Science is offered in the following fields:

Anatomy	Geology	Pharmacology
Biochemistry	Information Science	Physical Education
Biological Chemistry	(Documentation)	Physics
Biophysics	Medical Microbiology and Immunology	Physiology
Biostatistics	Medical Physics (Radiology)	Planetary and Space Physics
Business Administration	Meteorology	Preventive Medicine and Public Health
Chemistry	Nursing	Public Health
Engineering	Nutritional Sciences	
Geochemistry		

Other master's degrees offered:

Architecture (M. Arch. U.D.)	Engineering (M.Engr.)	Public Health (M.P.H.)
Art (M.F.A.)	Journalism (M.J.)	Social Psychiatry (M.S.P.)
Business Administration (M.B.A.)	Library Science (M.L.S.)	Social Welfare (M.S.W.)
Education (M.Ed.)	Nursing (M.N.)	Theater Arts (M.F.A.)
	Public Administration (M.P.A.)	

## UNIVERSITY MINIMUM STANDARDS

At the option of his major department, a student may pursue either of two plans for a Master of Arts or a Master of Science degree.

**Thesis Plan.** The University minimum standard is a program of nine graduate and upper-division courses,\*\* of which at least five are graduate courses (200 and 500 series), and a thesis. A department may prescribe additional courses and/or examinations to evaluate the candidate's capability in his field.

**Comprehensive Examination Plan.** The University minimum standard is a program of nine graduate and upper-division courses, of which at least five are graduate level (200 and 500 series), followed by a comprehensive final examination formulated by the department concerned. A department may prescribe additional courses and/or additional examinations to evaluate the candidate's capability in his field.

\* Master of Arts in Teaching.

\*\* The term "course" refers to a full course (4 quarter units). With this as a standard, departments may offer a half course (2 quarter units), a course and a half (6 quarter units), or a double course (8 quarter units). The requisite nine-course minimum for a master's degree may be fulfilled through combinations of such courses.

## **Master's Degrees Other Than the M.A. or M.S.**

For those departments offering master's degrees other than the M.A. and M.S., the same minimum requirements outlined above for the M.A. and M.S. degrees will apply except that the graduate courses may be in the 200, 400 and/or 500 series.

## **RESIDENCE**

A minimum residence of 3 quarters in graduate status at the University of California is prescribed for the master's degree, of which at least 2 quarters are spent on the UCLA campus. A graduate student is considered in academic residence if he is registered for and completes a minimum of 1½ courses (6 quarter-units or the equivalent) in graduate or upper-division work during any regular University term.

## **SCHOLARSHIP**

A graduate student must maintain at least a B average in all courses taken in graduate status,\* and at least a B average in all courses applicable to a master's degree.

## **FOREIGN LANGUAGE**

Each department specifies whether and to what extent knowledge of a foreign language forms part of the student's preparation for a master's degree. The candidate takes the Educational Testing Service Graduate School Foreign Language Test in French, German, Russian, or Spanish or the UCLA examination in any other language. Students are advised to consult their major department regarding its foreign language requirement and the Examination Coordinator, Student and Academic Affairs Section of the Graduate Division, for further information on foreign language examinations.

## **GRADUATE WORK AT OTHER CAMPUSES OF THE UNIVERSITY OF CALIFORNIA**

Through petition, up to one-third the minimum standards for residence, one-half the total courses, and one-half the graduate courses necessary for a master's degree at UCLA may be satisfied through work completed on other campuses of the University of California.

## **GRADUATE WORK COMPLETED ELSEWHERE**

With the approval of the student's major department and of the Dean of the Graduate Division, credit for a maximum of 2 courses (the equivalent of 8 quarter units or 5 semester units) completed in graduate status at another institution of acceptable standing may be applied toward an advanced degree program at UCLA. Work completed at another institution shall not apply, however, toward either the prescribed minimum period of UCLA residence or the required minimum number of UCLA graduate courses.

## **APPLICATION FOR ADVANCEMENT TO CANDIDACY**

Applications for advancement to candidacy, on forms available in the Student and Academic Affairs Section of the Graduate Division, are filed no later than the second week of the quarter in which the degree requirements are to be completed.

\* On any campus of the University of California.

## THE THESIS

The thesis is the student's report of the results of his original investigation. Before beginning work on the thesis, the student obtains approval of the major department concerning the subject and general plan of investigation. The thesis is submitted by the candidate to his Thesis Committee for final approval. For information on preparation of the manuscript, the student is referred to the Graduate Division publication, *STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION*, and to the Manuscript Adviser, Office of the University Archivist, Powell Library.

## Requirements for the Degree of Doctor of Philosophy

### PREPARATION

The degree, Doctor of Philosophy is awarded by the University of California to candidates who have mastered in depth the subject matter of their discipline and displayed, in addition, an ability to make original contributions to knowledge in their field. More generally, the degree constitutes an affidavit of critical ability in scholarship, imaginative enterprise in research, and proficiency and style in communication.

A prospective candidate is expected to hold a bachelor's degree from an institution of acceptable standing, based on a curriculum that includes the prerequisites for graduate study in the department of his major subject.

The Ph.D. is offered in the following fields:

Anatomy	Geology	Near Eastern Languages
Anthropology	Germanic Languages	and Literatures
Anthropology-Sociology	Hispanic Languages	Neuroscience
Art History	and Literatures	Oriental Languages
Astronomy	History	Pharmacology
Biochemistry	Indo-European Studies	Philosophy
Biological Chemistry	Islamic Studies	Physics
Biophysics	Italian	Physiology
Biostatistics	Linguistics	Planetary and Space
Botany	Mathematics	Physics
Business Administration	Medical History	Political Science
Chemistry	Medical Microbiology	Psychology
Classics	and Immunology	Romance Languages
Economics	Medical Physics	and Literatures
Education	(Radiology)	Slavic Languages
Engineering	Meteorology	and Literatures
English	Microbiology	Sociology
French	Molecular Biology	Speech
Geochemistry	Music	Theater History
Geography		Zoology

A professional doctor's degree is offered in the following major fields: (1) Education (Ed.D.); (2) Public Health (Dr.P.H.).

### RESIDENCE

A minimum of two years of academic residence at UCLA is required for the Ph.D., of which one year, ordinarily the second, is spent in continuous residence at UCLA. Most students find a longer period of academic residence necessary, however, and from three to five years is generally considered optimal.

A graduate student is considered in academic residence if he is registered

for and completes a minimum of 1½ courses (6 quarter units or the equivalent) in graduate or upper-division work during any regular University term.

## **FOREIGN LANGUAGE**

With the approval of the Graduate Council, each department specifies whether and to what extent knowledge of a foreign language forms part of the student's preparation for an advanced degree. If language capability is assessed by written examination(s), the candidate takes the Educational Testing Service Graduate School Foreign Language Test in French, German, Russian, or Spanish or the UCLA examination in any other language. Students are advised to consult their major department regarding its foreign language requirements and the Examination Coordinator, Student and Academic Affairs Section of the Graduate Division, for further information on foreign language examinations.

## **QUALIFYING EXAMINATIONS**

At a time the department deems appropriate, a Departmental Guidance Committee is appointed. Ordinarily, this committee later conducts the preliminary Written Qualifying Examination(s).

Upon nomination by the department, or interdepartmental group, a Doctoral Committee is appointed by the Dean of the Graduate Division, acting for the Graduate Council. This committee conducts the student's Oral Qualifying Examination. Upon its completion, a report on the Oral Qualifying Examination, containing the signatures and recorded vote of each member of the Doctoral Committee, is made on a form available in the Student and Academic Affairs Section of the Graduate Division.

## **ADVANCEMENT TO CANDIDACY**

Upon successful completion of the Oral Qualifying Examination, the student pays the Advancement to Candidacy fee and files an application for Advancement to Candidacy, bearing the signature of approval of the chairman of his Doctoral Committee.

## **DISSERTATION**

Each doctoral candidate completes a dissertation in his principal field of study, on a subject of his choice as approved by his Doctoral Committee. This dissertation demonstrates his ability to undertake independent investigation. In its preparation, the candidate is guided by his Doctoral Committee, which also, with the Dean of the Graduate Division, approves the completed dissertation.

For information on preparation of the manuscript, the student is referred to the Graduate Division publication, **STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION**, and to the Manuscript Adviser, Office of the University Archivist, Powell Library.

## **FINAL ORAL EXAMINATION**

The candidate's final examination is conducted by his Doctoral Committee. It is oral and deals primarily with the relation of his dissertation to the field of knowledge to which it contributes. A report on the final examination is to be

signed by each member of the doctoral committee on a form which is available in the Student and Academic Affairs Section of the Graduate Division.

### **Requirements for the Degree of Doctor of Education**

For the requirements for the degree of Doctor of Education, consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION pages 118-120 of this bulletin.

### **Requirements for the Degree of Doctor of Public Health**

For the requirements for the degree of Doctor of Public Health, see the UCLA ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH or pages 133-134 of this bulletin.

### **Duplication of Higher Degrees**

The duplication of higher degrees is discouraged on the same basis as the duplication of the bachelor's degree. The holder of a master's degree in a given field received at another institution may not become a candidate for a degree in the same field in this University. Petitions for a second master's degree in a different field will be considered on their individual merits, but in no case can courses applied to the first master's be used to reduce the requirement for a second master's.

# Courses of Instruction

## CLASSIFICATION AND NUMBERING

The classification and numbering of courses are described below.

### Undergraduate Courses

Undergraduate courses are classified as lower division and upper division. *Lower division courses* (numbered 1–99) are open to freshmen and sophomores, and are also open to upper division students but without upper division credit. *Upper division courses* (numbered 100–199) are ordinarily open to students who have completed at least one lower division course in the given subject, or two years of college work. Courses in the 100 series may be offered in partial satisfaction of the requirements for the master's degree by a student registered in graduate status, if taken with the approval of the major department.

### Graduate Courses

Graduate courses (numbered 200–299) are ordinarily open to students admitted in graduate status. As a condition for enrollment in a graduate course the student must submit to the instructor in charge of the course evidence of satisfactory preparation for the work proposed.

*Individual study or research graduate courses* (numbered 500–599) may be used to satisfy minimum higher degree requirements within the limitations prescribed by the major department and approved by the Graduate Council.

### Professional Courses

*Teacher-training courses* (numbered 300–399) are highly specialized courses dealing with methods of teaching, and are acceptable toward the bachelor's degrees only within the limitations prescribed by the various colleges or schools. Courses in this series do not yield credit toward a higher degree.

Courses numbered 400–499 are professional courses other than teacher-training courses. They are acceptable toward academic degrees only within the limitations prescribed by the various colleges, schools, or Graduate Division, Los Angeles.

### University Extension Courses

University of California Extension courses bearing numbers prefixed by X, XB, XD, XI, XL, XR, XSB, XSC, XSD yield credit toward the bachelor's degree. They are rated, with respect to the general and specific requirements for the degree, on the same basis as courses taken in residence at collegiate institutions of approved standing. Concurrent enrollment in resident courses and in University Extension courses (or courses at another institution) taken with a view to credit toward a degree is permitted only when the entire program has been approved in advance by the dean of the student's college.

### Course Listings

Each course in the following listings by departments, as in the samples that follow, has the credit value of a full course unless otherwise noted. Thus a listing

**Mathematics 11A–11B–11C. Calculus and Analytic Geometry.**  
indicates three full courses, 11A, 11B, and 11C; while a listing

**Botany 211A–211F. Advanced Plant Physiology. ( $\frac{1}{2}$  course each)**  
indicates six half courses, 211A, 211B, 211C, 211D, 211E, and 211F. Some courses have a variable value; for example,

**Business Administration 596A–596N. Research in Business Administration.**  
( $\frac{1}{4}$  to  $1\frac{1}{2}$  courses)

where within the limits indicated, the exact value of the course is fixed for each individual student when he enrolls.

Where noted, credit for a specific course is dependent upon completion of a subsequent course.

#### **Credit for Courses**

The normal undergraduate program is four courses each quarter and a minimum of 45 courses is required for the bachelor's degree. At least nine courses are required for the master's degree. The credit value of a course is equivalent to 4.0 quarter units or 2.7 semester units. Fractional or multiple courses are equivalent to proportionate numbers of quarter or semester units. Quarter units will be posted to the records of all students (graduate or undergraduate) registered during the Fall Quarter 1966 or thereafter.

## ■ AEROSPACE STUDIES

(Department Office, 251 Social Welfare Building)

Sidney A. Sosnow, B.S., Major, U. S. Air Force, Professor of Aerospace Studies (Chairman of the Department).

Stephen L. Sutton, B.A., M.A., Major, U. S. Air Force, Assistant Professor of Aerospace Studies.

### Air Force Reserve Officers Training Corps (Air Force ROTC)

The mission of the Air Force ROTC is to develop in selected college students those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the U. S. Air Force. The objectives of the program are to: (1) develop in cadets an understanding of the U. S. Air Force mission, organization, operation, problems, and techniques; (2) develop in cadets the ability to work with others on group activities and assume a leadership role when required; (3) heighten each cadets appreciation of and dedication to American principles; and (4) prepare cadets to discharge the responsibilities required of them as U. S. Air Force officers.

### Four-Year Program

The four-year program is open to beginning freshmen. It consists of an initial two-year General Military Course (GMC), and a terminal two-year Professional Officer Course (POC). In this program, the cadets in the POC are required to attend a four-week summer field training course between their junior and senior years. Students attending the summer field training are provided meals, quarters, travel expenses, and are paid about \$100.00. All students enrolled in the POC receive a \$50.00 per month retainer fee for 20 consecutive months.

Applicants desiring to enter flying training as pilots after being commissioned must have 20-20 vision, uncorrected, in each eye and normal color perception. Qualified students will receive 36 hours of flight training in civilian aircraft during their second year of the POC at no cost to the individual.

Applicants for training as navigators must have uncorrected distance vision of better than 20-50 bilaterally, corrective to 20-20 bilaterally and near vision of 20-20 bilaterally, uncorrected. Pilot and navigator applicants must not have reached 28½ years of age at the time of their commissioning.

Students not desiring flight training must

have a bilateral distance vision of at least 20-400, corrective to 20-40 in one eye and 20-30 in the other and must not have reached their 28th birthday at time of commissioning.

### Freshman Year

#### 1A. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. An analysis of the nature and principles of war and of national power. The Staff

#### 1B. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. An analysis of the organization of the Department of Defense and of the mission and organization of the U. S. Air Force and the Strategic Offensive Forces. The Staff

#### 1C. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: course 1B. A survey of the mission and organization of the Strategic Offensive Forces and of the Strategic Defensive Forces. The Staff

### Sophomore Year

#### 21A. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: courses 1A, 1B and 1C. This course continues the study of world military systems. This course surveys the mission and organization of the Strategic Offensive Forces and the Aerospace Support Forces. The Staff

#### 21B. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: course 21A. A survey of the mission and organization of Aerospace Support Forces and a comparative analysis of the conceptual bases and operational techniques of Democracy and Communism. The Staff

#### 21C. World Military Systems. (½ course)

Lecture-seminar, one hour; leadership laboratory, one hour. Prerequisite: course 21B. A discussion of national alliances and collective security. Concludes with an analysis of the search for peace. The Staff

### Four-Week Field Training Course

This course comprises 232 hours which includes academics, physical training, individual weapons familiarization, flying familiarization, and field exercises. The training is conducted on a United States Air Force base. Field Training Course Staff

### Two-Year Program

The two-year Air Force ROTC program is offered to accommodate those students who have attained at least junior standing and

have two years remaining in the University, either as an undergraduate or graduate student. A prerequisite for students entering this program is successful completion of a six-week field training course on an Air Force base during the summer preceding their enrollment in the program.

Students interested in this program must make application to the Professor of Aerospace Studies during the fall quarter preceding the six-week summer field training course. Students attending the six-week summer field training are provided meals, quarters, travel expenses, and are paid about \$120.00. Students enrolled in the POC receive \$50.00 per month retainer fee for 20 consecutive months.

Data concerning physical and age qualifications for flying and navigator training and for nonflying applicants is the same as for four-year program.

#### **Six-Week Field Training Course**

This course comprises 296 hours of six-week duration which includes academics, physical training, individual weapons familiarization, familiarization flying and field exercises. The training is conducted on a United States Air Force base.

Field Training Course Staff

#### **131A. Growth and Development of Aerospace Power.**

Seminar, three hours; leadership laboratory, one hour. Prerequisite: completion of GMC or six-week FTU (Summer Field Training). A survey course about the nature of war; development of airpower in the U. S.; and mission and organization of the Defense Department. Practicing communication techniques and developing communicative abilities under the close supervision of the instructor.

The Staff

#### **131B. Growth and Development of Aerospace Power.**

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 131A. A survey course about Air Force concepts; doctrine and employment, the importance of a national space effort, development of the space program, the spatial environment, and orbits and trajectories. A continued emphasis on communicative abilities. The Staff

#### **131C. Growth and Development of Aerospace Power.**

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 131B. A survey course about the United States space vehicle systems, the propulsion, propellants and power sources, control and guidance, ground support, manned space flight, and operations in space. Continued emphasis on communicative abilities. The Staff

#### **141A. The Professional Officer.**

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 131C. An introduction to the foundation of the military profession, management and human relations. Leadership theories and their practical application. The Staff

#### **141B. The Professional Officer.**

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 141A. An introduction to the principles of military discipline, human relations, and personnel policies. Development of oral and written communicative skills and the Air Force approach to problem solving. The Staff

#### **141C. The Professional Officer.**

Seminar, three hours; leadership laboratory, one hour. Prerequisite: course 141B. An introduction to the principles and functions of management. The junior officer as an administrator and the Military Justice System. Briefing for commissioned service. The Staff

## **■ AFRICAN STUDIES**

### **Special Program in African Studies**

For details of the program in African Studies taken in conjunction with a bachelor's degree, see page 71 of this bulletin.

### **Master of Arts in African Area Studies**

The program for the Master of Arts in African Area Studies is designed to provide interdisciplinary training in the African area. It provides more extensive information about Africa and a greater number of disciplinary approaches to it than the regular degree programs. The student will gain a broad knowledge of Africa and then continue with more advanced work in a primary and two secondary fields. The degree is intended (a) to give an African area dimension to the studies of students in a specific academic discipline

and (b) to help prepare students who wish to work in Africa. The Center intends to give new emphasis to the study of the arts and humanities in relation to Africa, and a master's degree is now possible in this field under the Master of Arts in African Area Studies as presently constituted. Such components as literature in French or English, ethnomusicology, and traditional art may be combined with background studies in anthropology or an African language to produce a synthesis in the field. A doctor's degree is not offered because it is believed that at such a level training should be in one academic discipline with the emphasis on Africa which the department recommends. The master's degree is administered by the Committee on the Master Degree in African Area Studies.

**Admission to the M.A. Program**

In addition to meeting the requirements of the Graduate Division, the student must have adequate preparation in undergraduate fields related to the program. Required preparation includes: (1) a degree of Bachelor of Arts in one of the appropriate social sciences or humanities, or its equivalent, (2) a reading and speaking knowledge of an appropriate foreign language, and (3) a general knowledge of African studies. The last two subjects must be passed by examination, as soon after admission as possible. A student may be admitted to the program with deficiencies in preparation but must make them up in addition to the other M.A. requirements. The program requires between one and two years to complete, depending upon the student's preparation and the courses selected.

**Requirements for the Master's Degree**

*General Requirements:* See page 136.

*Foreign Language.* A proficiency in reading and speaking one of the following languages: Afrikaans, Arabic, Dutch, French, German, or Portuguese. In addition, study of an African language is recommended.

*Course of Study.* A minimum of nine courses on Africa in three fields must be taken. Of these, at least four must be in a principal field and two courses in each of the two secondary fields. Five or more graduate courses (200 series) must be included, with a minimum of two in the principal field and one in each secondary field. Courses taken prior to the M.A. program, if appropriate, may be counted as meeting part of the requirements in the three fields, but will not reduce the total of nine courses.

*Qualifying Examination.* The student must demonstrate in a written and/or oral examination a genuinely multi-disciplinary knowledge of Africa.

There is no thesis requirement. An examining board, with a chairman from the student's principal field, will administer a final examination designed to test the student's ability to relate knowledge from his three fields.

The following courses pertaining to Africa are offered by the departments listed. With the approval of the Committee, other related courses may be included in a student's program.

**Anthropology 108A-108B. Peoples of Africa.**

- 122. Traditional Political Systems.
- 127. Primitive Art.
- 145. Oral Art and Drama of Non-Western Peoples.
- 148. The Theory of Oral Literature.

- 208. African Cultures.
- 258. African Cultures.
- 261. Myth and Ritual.
- 289. African Arts.
- 285. Social Anthropology.
- 596. Directed Studies (Africa).

**Art 118C. The Arts of Sub-Saharan Africa.**

- 119A. The Arts of Africa: Western Sudan
- 119B. The Arts of Africa: The Guinea Coast.
- 119C. The Arts of Africa: The Congo.
- 220. The Arts of Africa, Oceania and Pre-Columbian America.

**Economics 110. Economic Problems of Underdeveloped Countries.**

- 111. Theories of Economic Growth and Development.
- 112. Policies for Economic Development.
- 211. Economic Growth of Underdeveloped Areas: Theory and Structure.
- 212. Economic Growth of Underdeveloped Areas: Models and Policy.
- 213. Selected Problems of Economic Development.
- 596. Directed Studies (Africa).

**Education 204A. Comparative Education.**

- 204B. African Education.
- 253A. Current Problems in Comparative Education.
- 253B. African Education.

**English 114. Survey of African Literature in English.**

- 250K. Contrastive Analysis of English and Other Languages.
- 271. Studies in African Literature in English.
- 370K. The Teaching of English as a Second Language.

**French 221A. Introduction to the Study of French African Literatures.**

- 221B. French African Literature of Madagascar and Bantu Africa.
- 221C. French African Literature of Berber-Sudanese and Arabo-Islamic Africa.
- 257A-257B. Studies in French African Literature.

**Geography 188. Northern Africa.**

- 189. Middle and Southern Africa.
- 288. Africa.
- 290. Seminar: Selected Regions (Africa).

**History 125A-125B. History of Africa.**

- 126. History of West Africa.
- 127. History of East Africa.
- 128A-128B. History of South Africa.
- 133A-133B. History of North Africa from the Muslim Conquest.
- 135. Introduction to Islamic Culture.

198. Undergraduate Seminar in African History.  
 199. Special Studies in History (Africa).  
 230N. Advanced Historiography (Africa).  
 240N. Topics in History (Africa).  
 265A-265B. Seminar in African History.  
 267A-267B. Seminar in Near Eastern History.  
 596. Directed Studies.
- Music** 140A-140B. Musical Cultures of the World.  
 143A-143B. Music of Africa.  
 190A-190B. Proseminar in Ethnomusicology.  
 255. Seminar in Musical Instruments of the Non-Western World.  
 280. Seminar in Ethnomusicology.
- Linguistics** 220. Linguistic Areas (Africa).
- African Languages** 101A-101B-101C. Elementary Swahili.  
 102A-102B-102C. Intermediate Swahili.  
 103A-103B. Advanced Swahili.  
 104A-104B-104C. Elementary Luganda.  
 107A-107B-107C. Elementary Sotho.  
 108A-108B-108C. Elementary Zulu.  
 109A-109B-109C. Elementary Xhosa.  
 111A-111B-111C. Elementary Yoruba.  
 112A-112B-112C. Intermediate Yoruba.  
 113A-113B-113C. Elementary Igbo.  
 115A-115B-115C. Elementary Twi.  
 121A-121B-121C. Elementary Fula.  
 131A-131B-131C. Elementary Bambara.  
 132A-132B-132C. Intermediate Bambara.  
 141A-141B-141C. Elementary Hausa.  
 142A-142B-142C. Intermediate Hausa.  
 150A-150B. African Literature in English Translation.  
 190. Survey of African Languages.  
 192. Comparative Studies in African Languages.  
 199. Special Studies in African Languages. (% to 1½ courses)  
 201A-201B. Comparative Niger-Congo.  
 202A-202B. Comparative Bantu.  
 260. Seminar in African Languages.  
 270. Seminar in African Literature.  
 596. Directed Studies.
- Near Eastern Languages**  
**Arabic** 102A-102B-102C. Intermediate Arabic.  
 103A-103B-103C. Advanced Arabic.  
 111A-111B-111C. Spoken Egyptian Arabic.  
 130A-130B-130C. Classical Arabic Texts.  
 140A-140B-140C. Modern Arabic Texts.  
 150A-150B. Survey of Arabic Literature in English.  
 199. Special Studies in Arabic.
- Berber Languages** 101A-101B-101C. Elementary Berber.  
 102A-102B-102C. Advanced Berber.  
 120A-120B-120C. Introduction to Berber Literature.  
 199. Special Studies in Berber Languages.  
 201. Berber Structure.
- Semitics** 101A-101B-101C. Elementary Amharic (Modern Ethiopic).  
 102A-102B-102C. Advanced Amharic (Modern Ethiopic).  
 201A-201B-201C. Old Ethiopic.  
 202A-202B-202C. Readings in Old Ethiopic Literature.  
 209A-209B-209C. Comparative Study of The Ethiopian Languages.  
 280A-280B-280C. Seminar in Comparative Semitics.  
 290A-290B-290C. Comparative Morphology of the Semitic Languages.
- Political Science** 115. Theories of Political Change.  
 130. New States in World Politics.  
 165. Government and Politics in North Africa.  
 166. Government and Politics in Tropical Africa.  
 250E. African Studies.  
 250K. North African Studies.  
 271. Seminar in Political Change.  
 596. Directed Studies (Africa).
- Sociology** 130. Social Processes in Africa.  
 132. Population and Society in the Middle East.  
 140. Political Sociology.  
 235. Social Structure and Social Movements.  
 255. Systematic Sociological Theory.  
 258. Sociology of Religion.  
 272. Sociology of Political Movements.  
 596. Special Problems in Sociology (Africa).

## ■ AGRICULTURAL SCIENCES

(Department Office, 280 Kinsey Hall)

Walter Ebeling, Ph.D., *Professor of Entomology.*

Vernon T. Stoutemyer, Ph.D., *Professor of Ornamental Horticulture (Chairman of the Department).*

Arthur Wallace, Ph.D., *Professor of Plant Nutrition.*

Sidney H. Cameron, Ph.D., *Emeritus Professor of Plant Physiology.*

William H. Chandler, Ph.D., LL.D., *Emeritus Professor of Horticulture.*

### Undergraduate Study

Requirements for a major in the field of agriculture can no longer be met at Los Angeles and students beginning their work at Los Angeles with intentions to transfer should consult the catalogs of the campus on which the major is available.

Students electing majors in agriculture may satisfy certain lower division requirements in courses in other departments at Los Angeles and then transfer to the campus, Berkeley, Davis, or Riverside, where the major work is offered. The available majors cover a broad range of interests from soil,

food, plant and animal sciences to family and consumer interests. Various phases of agricultural economics and agricultural education are also available.

The first three years of the agricultural engineering curriculum are available in the College of Engineering at Los Angeles.

Students who register at Los Angeles with the intention of transferring to another campus for completion of their studies in agriculture, may obtain information and advice through the office of the Chairman of the Department of Agricultural Sciences at Los Angeles.

## ■ ANATOMY

(Department Office, 73-235 Health Sciences Center)

W. Ross Adey, M.D., *Professor of Anatomy and Physiology.*

Mary A. B. Brazier, Ph.D., *Professor of Anatomy, Biophysics and Physiology in Residence.*

Nathaniel A. Buchwald, Ph.D., *Professor of Anatomy in Residence.*

Carmine D. Clemente, Ph.D., *Professor of Anatomy (Chairman of the Department).*

Earl Eldred, M.D., *Professor of Anatomy.*

John D. French, M.D., *Professor of Anatomy and Clinical Professor of Surgery.*

Lawrence Kruger, Ph.D., *Professor of Anatomy.*

H. W. Magoun, Ph.D., *Professor of Anatomy.*

Richard E. Ottoman, M.D., *Professor of Radiology and Anatomy.*

Daniel C. Pease, Ph.D., *Professor of Anatomy.*

Charles H. Sawyer, Ph.D., *Professor of Anatomy.*

Arnold B. Scheibel, M.D., *Professor of Anatomy and Psychiatry.*

Jose P. Segundo, M.D., *Professor of Anatomy in Residence.*

Reidar F. Sognaes, Ph.D., D.M.D., *Professor of Anatomy and Oral Biology.*

Roger A. Gorski, Ph.D., *Associate Professor of Anatomy (Vice-Chairman, Graduate Affairs).*

James N. Hayward, M.D., *Associate Professor of Anatomy.*

David S. Maxwell, Ph.D., *Associate Professor of Anatomy.*

John D. Schlag, M.D., *Associate Professor of Anatomy in Residence.*  
 Richard W. Young, Ph.D., *Associate Professor of Anatomy.*  
 John H. Campbell, Ph.D., *Assistant Professor of Anatomy.*  
 Edwin L. Cooper, Ph.D., *Assistant Professor of Anatomy.*  
 Emilio E. Decima, M.D., *Assistant Professor of Anatomy in Residence.*  
 Rafael Elul, M.D., *Assistant Professor of Anatomy.*  
 Albert V. LeBouton, Ph.D., *Assistant Professor of Anatomy.*  
 Richard N. Lolley, Ph.D., *Assistant Professor of Anatomy in Residence.*  
 Anselmo R. Pineda, M.D., *Assistant Professor of Anatomy in Residence.*  
 Eberhardt K. Sauerland, M.D., *Assistant Professor of Anatomy.*  
 M. B. Sterman, Ph.D., *Assistant Professor of Anatomy and Physiology in Residence.*  
 Jack D. Thrasher, Ph.D., *Assistant Professor of Anatomy.*  
 ———, *Assistant Professor of Anatomy.*



Elmer Belt, M.D., *Lecturer in Surgical Anatomy and Medical History and Clinical Professor of Surgery.*  
 Jan Berkhout, Ph.D., *Assistant Research Anatomist.*  
 George W. Bernard, Ph.D., *Lecturer in Anatomy and Associate Clinical Professor of Dentistry (Oral Biology).*  
 Donald J. Davenport, M.D., *Assistant Clinical Professor of Anatomy.*  
 Thelma Estrin, Ph.D., E.E., *Associate Research Engineer in Anatomy.*  
 Rochelle J. Cavalas, Ph.D., *Assistant Research Anatomist.*  
 William S. Glassman, M.D., *Assistant Clinical Professor of Anatomy.*  
 J. C. B. Grant, M.B., Ch.B., F.R.C.S., *Visiting Professor of Anatomy.*  
 Fred Herzberg, D.D.S., *Associate Research Anatomist and Associate Clinical Professor of Oral Biology.*  
 Gunnar Heuser, M.D., *Assistant Research Anatomist and Assistant Professor of Medicine in Residence.*  
 Jessamine O. Hilliard, Ph.D., *Associate Research Anatomist.*  
 Takashi Hoshizaki, Ph.D., *Assistant Research Anatomist.*  
 Chester D. Hull, Ph.D., *Associate Research Anatomist.*  
 Raymond T. Kado, B.S., *Associate in Anatomy.*  
 Harold Lyons, Ph.D., *Research Theoretical Physicist in Anatomy.*  
 Allen C. Norton, Ph.D., *Assistant Research Physiologist and Anatomist.*  
 Robert W. Porter, M.D., *Clinical Professor of Anatomy and Surgery.*  
 Robert H. Schiffman, Ph.D., *Associate Research Anatomist.*  
 Sant S. Sekhon, Ph.D., *Assistant Research Anatomist.*  
 George D. Silva, M.D., D.D.S., *Visiting Associate Professor of Anatomy.*  
 Anna N. Taylor, Ph.D., *Assistant Research Anatomist.*  
 Donald O. Walter, Ph.D., *Associate Professor of Physiology in Residence and Associate Research Anatomist.*  
 Wanda Wyrwicka, Ph.D., *Assistant Research Anatomist.*  
 ———, *Assistant Research Anatomist.*

#### **Admission to Graduate Status**

Students intending to take advanced degrees in the Department of Anatomy must have a bachelor's degree in physical or biological science, or in the premedical curriculum. Introductory courses in zoology and vertebrate embryology are required, as well

as one year of general and organic chemistry and one year of college physics. Deficiencies in these courses must be made up before the student is admitted. Strongly recommended are courses in comparative anatomy, microscopic technique, elementary statistics, philosophy of science, and scientific German and French.

### Requirements for the Master of Science Degree

The student seeking to enter the profession of anatomy must apply himself directly to attaining the Ph.D. degree. The Department offers the Master of Science degree only for the restricted purposes of individuals whose major interest lies in allied fields (paramedical subjects, postgraduate medicine or dentistry).

Candidates may elect either the thesis or examination plan. If the latter, the candidate must demonstrate a knowledge of general principles of anatomy, as well as competence in a restricted area of the science. The following courses are required of all master's candidates: two of the major anatomy courses chosen from Anatomy 101, 206 and 207; one departmental seminar; other courses as necessary to the candidate's particular program. No foreign language is required.

### Requirements for the Doctor of Philosophy Degree

The following courses are required: Anatomy 101, 206, 207; Biochemistry; Mammalian Physiology; at least two different departmental seminars; additional courses selected by the student and his adviser as necessary to his program. Anatomy 210 and 257 are strongly recommended.

The student must demonstrate the ability to read two foreign languages. The first should be selected from a choice of German or French, but Russian and Spanish may be accepted upon departmental approval. The second language may be any modern language, provided the student can demonstrate its particular value to his area of study. An individual course of study may be substituted for the second language upon departmental approval. He must complete successfully both written and oral qualifying examinations; gain teaching experience in three of the major anatomy courses; present and defend his dissertation on his research. His total program should not require more than four years to complete.

#### Upper Division Courses

#### 101. Microscopic Anatomy. (2 courses)

Four 3-hour sessions per week in the fall quarter. Prerequisite: enrollment in School of Medicine or consent of the instructor. Microscopic study of the tissues and organs of the human body.

Mr. Pease and Staff

#### 102A-102B. Gross Anatomy of the Human Body.

(½ course, 2 courses)

(Formerly numbered 100 and 102.) One hour of lecture and four of lab per week in the winter quarter; four hours of lecture and twelve of lab per week in the spring. Prerequisite: enrollment in

School of Dentistry or consent of the instructor. Course 102A is prerequisite to 102B. Credit and grade are given only upon completion of 102B. Systemic and topographical human anatomy with dissection of the human cadaver. Emphasis on head and neck.

Mr. Sauerland and Staff

#### 103. Basic Neurology.

Two 4-hour sessions and one 3-hour session per week in the spring quarter. Prerequisite: enrollment in School of Medicine. Must be taken concurrently with Physiology 103. Lectures, conferences, demonstrations and laboratory procedures necessary to an understanding of the function of the human nervous system.

Mr. Eldred and Staff

#### 104. Mammalian Histology. (1½ courses)

Three 3-hour sessions per week in the fall quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures, demonstrations and laboratories dealing with the structural organization of tissues and organs at the microscopic level.

Mr. Cooper and Staff

#### 105A-105B. Gross Anatomy.

See 207A-207B Gross Anatomy.

#### 106. Mammalian Neurology.

One 1-hour session and one 4-hour session per week in the winter quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures, demonstrations and laboratories dealing with the fundamental structure and functional organization of the nervous system.

Mr. Sterman

#### Graduate Courses

#### 206. Neurosciences: The Introductory Course for Graduate Students. (2 courses)

Six hours of lecture and four of lab per week in the spring quarter. Prerequisite: consent of the instructor. Fundamental approaches to neuroanatomy, neurophysiology and the brain mechanisms for behavior.

Mr. Adey, Mr. Scheibel

#### 207A-207B. Gross Anatomy. (2 courses, 1 course)

Four 4-hour sessions per week in the fall quarter; two 4-hour and one 1-hour session per week in the winter quarter. Prerequisite: consent of the instructor. Course 207A is prerequisite to 207B. Credit and grade are given only upon completion of 207B. Medical students enroll for 105A-105B. Lectures and dissection of the human body.

Mr. Sawyer and Staff

#### 208A-208B. Basic Electronics for Research in Experimental Anatomy and Neurophysiology.

Two hours of lecture and four of lab per week in the fall and winter quarters. Prerequisite: consent of the instructor. Course 208A is prerequisite to 208B. Credit and grade are given only upon completion of 208B. Applications of electronic instrumentation to problems of data acquisition, recording and analysis with emphasis on practical solutions.

Mr. Kado

#### 209. Fine Structure and Function in the Central Nervous System. (½ course)

Two 1-hour sessions per week in the fall quarter. Prerequisite: Basic Neurology. Lectures and discussion of the fine structure of selected areas of central nervous system, together with related electrical and biochemical patterns of activity.

Mr. Scheibel

**210A-210B. Selected Techniques in Anatomical Research. (½ course each)**

One 4-hour session per week in the winter and spring quarters. Credit and grade will be given only upon completion of 210B. Laboratory exercises, demonstrations and lectures to provide experience with a variety of research techniques, including fixation, embedding, sectioning, staining, autoradiography, microradiography, electron microscopy, electrophoresis, paper and thin layer chromatography, photomicrography, and tissue culture.

Mr. Young

**211A-211B. Anatomical and Physiological Substrates of Behavior.**

One 2-hour lecture and demonstration per week in the fall and winter quarters with labs scheduled by instructor when desirable. Prerequisite: Microscopic Anatomy, Mammalian Physiology. Credit and grade will be given only upon completion of 211B. Anatomy and physiology of cerebral processes in alerting, learning and memory. Neurophysiological techniques in behavioral studies; data acquisition systems and computer analysis of neurophysiological data.

Mr. Adey

**212. Neural Mechanisms of Inhibition. (½ course)**

Two hours per week in the fall quarter. Prerequisite: Basic Neurology. A systematic consideration of inhibitory processes in the nervous system from the synapse to integrated behavior. Special attention is given to the recent concepts of inhibition at the behavioral level and their implications for learning, emotion and mental health.

Mr. Sterman

**213. Evolution and the Structure of Biomolecules.**

(½ course)

One 2-hour session per week in the spring quarter. Prerequisite: consent of instructor and upper level courses in two of the following subjects: genetics, evolution, biochemistry. Interpretation of pattern in molecular organization of living organisms in terms of evolution, and considerations of the impact of such pattern on evolutionary theory.

Mr. Campbell

**218. Instrumentation and Apparatus for Research in Experimental Anatomy and Neurophysiology.**

Two hours of lecture and four of lab in the spring quarter. Prerequisite: courses 208A-208B or consent of the instructor. Techniques are presented for reduction of biologic data to metrics and experience is provided in their use.

Mr. Kado

**250. Problems in Developmental and Cellular Biology. (½ course)**

One 2-hour session per week in the fall quarter. Prerequisite: consent of the instructor. Review of literature in comparative cell biology with emphasis on cellular and molecular mechanisms controlling cell proliferation and specialization.

Mr. Thrasher

**251. Problems in Developmental and Comparative Immunology. (½ course)**

One 2-hour session per week in the winter quarter.

Prerequisite: consent of the instructor. Review of current literature emphasizing early development and evolution of immune competence.

Mr. Cooper

**253. Seminar in Experimental Neurology. (½ course)**

One 1-hour session per week in the winter and spring quarters. Prerequisite: consent of the instructor.

Mr. Segundo

**254. Interdisciplinary Research Seminar. (½ course)**

One 2-hour session per week. Prerequisite: Basic Neurology. Lectures by senior research workers and staff dealing with problems related to mental health.

The Staff

**255. Seminar in Endocrinology. (½ course)**

One 2-hour session per week in the spring quarter. Prerequisite: consent of the instructor.

Mr. Gorski, Mr. Sawyer

**256A-256B. Survey of the Basic Neurological Sciences. (½ course each)**

One 2-hour session per week in the winter and spring quarters. Prerequisite: Basic Neurology. Lectures and laboratory exercises dealing with the most recent advances in the study of the central and peripheral nervous system.

The Staff

**257. Journal Reviews in Experimental Anatomy. (½ course)**

One 2-hour session per week in the spring quarter. Research frontiers in various fields of experimental anatomy are reviewed and mutually discussed by graduate students and professors.

Mr. Clemente, Mr. Kruger

**258. Seminars in Neuroscience. (½ course)**

Two hours per week in the fall, winter and spring quarters. Prerequisite: Basic Neurology and Anatomy 209. Discussion and criticism of topics of current interest and/or ongoing research projects.

Mr. Scheibel

Individual Study and Research

**596. Directed Individual Study or Research. (½ course to 3 courses)**

The Staff

**597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. (½ course to 3 courses)**

The Staff

**598. Thesis Research for Master's Candidates. (½ course to 3 courses)**

The Staff

**599. Dissertation Research for Ph.D. Candidates. (½ course to 3 courses)**

The Staff

**■ ANTHROPOLOGY**

(Department Office, 360 Haines Hall)

Ralph L. Beals, Ph.D., *Professor of Anthropology and Sociology.*

Joseph B. Birdsell, Ph.D., *Professor of Anthropology.*

- William O. Bright, Ph.D., *Professor of Linguistics and Anthropology.*  
 Walter R. Goldschmidt, Ph.D., *Professor of Anthropology (Chairman of the Department).*  
 Harry Hoiyer, Ph.D., *Professor of Anthropology.*  
 Hilda Kuper, Ph.D., *Professor of Anthropology.*  
 William A. Lessa, Ph.D., *Professor of Anthropology.*  
 Clement W. Meighan, Ph.D., *Professor of Anthropology.*  
 Michael G. Smith, Ph.D., *Professor of Anthropology.*  
 Ralph H. Turner, Ph.D., *Professor of Anthropology and Sociology.*  
 Johannes Wilbert, Ph.D., *Professor of Anthropology.*  
 Eshref Shevsky, Ph.D., *Emeritus Professor of Anthropology and Sociology.*  
 Henry B. Nicholson, Ph.D., *Associate Professor of Anthropology.*  
 Wendell H. Oswalt, Ph.D., *Associate Professor of Anthropology.*  
 C. Rainer Berger, Ph.D., *Assistant Professor in Residence of Anthropology.*  
 Mary B. Black, Ph.D., *Assistant Professor in Residence of Anthropology and Public Health.*  
 Robert B. Edgerton, Ph.D., *Assistant Professor of Anthropology and Psychiatry in Residence.*  
 Michael Gilsenan, Ph.D., *Assistant Professor of Anthropology.*  
 James N. Hill, Ph.D., *Assistant Professor of Anthropology.*  
 Paul E. Hockings, Ph.D., *Assistant Professor of Anthropology.*  
 John G. Kennedy, Ph.D., *Assistant Professor of Anthropology and Psychiatry in Residence.*  
 Murray J. Leaf, Ph.D., *Assistant Professor of Anthropology.*  
 Michael Moerman, Ph.D., *Assistant Professor of Anthropology.*  
 Philip L. Newman, Ph.D., *Assistant Professor of Anthropology.*  
 William B. Rodgers, Ph.D., *Assistant Professor of Anthropology.*  
 James R. Sackett, Ph.D., *Assistant Professor of Anthropology.*  
 Theodore Schwartz, Ph.D., *Assistant Professor of Anthropology.*  
 Bobby J. Williams, Ph.D., *Assistant Professor of Anthropology.*



- Christopher Donnan, M.A., *Acting Assistant Professor of Anthropology.*  
 Madeleine Mathiot, Ph.D., *Lecturer of Anthropology.*  
 Sterling Robbins, B.A., *Acting Assistant Professor of Anthropology.*  
 Clyde M. Woods, Ph.D., *Acting Assistant Professor of Anthropology.*

#### **Preparation for the Major**

Required: Anthropology 1A-1B, 5A-5B-5C.

#### **The Major**

Required: (1) ten quarter courses or their equivalent including at least one course each from groups 1 through 7; and (2) four upper division courses from other social science departments, or psychology, chosen in consultation with the adviser.

Note: Students intending to continue for a graduate degree are advised to take Anthropology 162A-162B, at least one course in field training (Group 8), and Anthropology 186 or its equivalent. These are not required

for the B.A., but if not completed before graduation, the student will be held for them as part of his graduate program.

The student must also meet the requirements of the University and the College of Letters and Science for graduation.

#### **Admission to Graduate Status**

Applicants for admission to graduate status, in addition to the general requirements of the Graduate Division, normally must have the A.B. degree with a major in anthropology or its equivalent. In some cases students may be admitted with deficiencies but will be required to take additional preparatory work prior to the normal M.A. re-

quirements. Students who have not had Anthropology 112, 162, and 186 (or their equivalent) must include these courses in their graduate program.

### **The Master of Arts Degree**

The M.A. degree demands a breadth of knowledge in anthropology, and the student is required to demonstrate his competence in all recognized fields of the discipline: cultural anthropology, social anthropology, archeology, physical anthropology and linguistics.

Students are admitted to the M.A. program who have an undergraduate major in anthropology from UCLA or other institutions of comparable standing. The Department follows the Comprehensive Examination Plan (for the general University requirements, see page 136). The students must demonstrate reading proficiency in one foreign language by passing the Language Examination administered by the Graduate Division, preferably in French, German, Russian, or Spanish.

A series of graduate courses (Anthropology 202, 212, 222, 232, and 242), commonly referred to as "core courses," are primarily for M.A. candidates. Prerequisites for these courses are Anthropology 112, 162A-162B, and 186.

The M.A. Comprehensive Examination, normally taken not later than the sixth quarter of residence in the program, tests the candidate in all fields of anthropology. In addition, the student writes a research paper under the guidance of an Advisory Committee in the field of his special interest.

### **The Doctor of Philosophy Program**

For general University requirements, see page 140. Students are accepted for the Doctor of Philosophy program after passing the M.A. Comprehensive Examination with honors, or with an M.A. degree in anthropology from an institution of equivalent standing. In the latter case, the student must take the M.A. Comprehensive Examination, but not the library problem, normally during his first quarter of residence.

For the doctoral degree, each student specializes in a major (cultural anthropology, social anthropology, archeology, linguistics or physical anthropology) and two minor fields. One minor field is areal, and in this the student must know the basic relevant data from the other major fields. The definition of areas will be determined in consultation with his Advisory Committee, delimited by meaningful criteria of ethnic distri-

butions. The second minor will be a field of particular concentration within his major field (e.g., kinship analysis, belief systems, archeological dating techniques, human genetics) and will also be determined in consultation with his Advisory Committee. A field of concentration in a related discipline may be substituted for one minor field, with the approval of the student's Advisory Committee.

Reading proficiency in one foreign language, preferably French, German, Russian, or Spanish is required of each student. The student must demonstrate a high reading proficiency and a control of relevant literature in his chosen area of work under the supervision of his Advisory Committee.

Each student, before formal advancement to candidacy will be given an examination, administered by his Doctoral Advisory Committee. In addition to a written examination covering three fields in anthropology, the candidate prepares an essay, normally a research project plan for his dissertation. The University administers an Oral Preliminary Examination and a Final Oral Examination in defense of the Dissertation. The Dissertation is an original contribution to anthropological literature, normally but not necessarily based upon field work.

### **Lower Division Courses**

#### **1A-1B. The Principles of Human Evolution.**

Lecture, three hours; discussion-demonstration section, one hour. Course 1A is prerequisite to course 1B. Human population biology in the conceptual framework of evolutionary processes. Vertebrate and primate evolution and interpretation of the fossil human record. Concepts of race formation and classification in terms of human population genetics. These courses are required as preparation for the major. The Staff

#### **5A. Principles of Cultural Anthropology.**

(Formerly numbered 2B.) Lecture, three hours; discussion section, one hour. Course 5A is prerequisite to courses 5B and 5C. The character of culture and nature of social behavior as developed through anthropological study of contemporary peoples. The Staff

#### **5B. Methods of Ethnology.**

(Formerly numbered 80A-80B.) Lecture, three hours; discussion section, one hour. An introduction to the strategy of anthropological field work; data recording; concepts of sampling and traditional classifications of substantive materials from non-Western cultures and societies. Theoretical assumptions for anthropological interpretation; techniques of anthropological writing. The Staff

#### **5C. Culture History.**

(Formerly numbered 2A.) Lecture, three hours; discussion section, one hour. The development of culture from its first beginnings to the advent of

writing as developed through archeological investigation. Courses 5A-5B-5C are required as preparation for the major. The Staff

# 11. The Evolution of Man.

Not open for credit to students who have had Anthropology 1A-1B. This course does not satisfy major requirements. An intensive course in the biology of man, with emphasis on his evolutionary development and his place in nature (with particular attention to nonhuman primates and fossil man); genetic and racial diversity; and theories and problems of race. Mr. Birdsell

# 22. General Cultural Anthropology.

Lecture, three hours; discussion section, one hour. This course does not satisfy major requirements. Students who have had Anthropology 12 will not receive credit for Anthropology 22. An introduction to the cultural understanding of human behavior designed for students who do not plan further work in anthropology. Stress is placed on those concepts and theories that are applicable to the everyday life and professional activities in the modern world. Examples of institutions and individual behavior of modern America are counterpointed against studies of primitive life. Mr. Goldschmidt, Mr. Rodgers

## Upper Division Courses

Courses 1A-1B, 5A-5B-5C or upper division standing are prerequisite to all upper division courses, except as otherwise stated.

# 100. Anthropology and the Modern World.

(Formerly numbered 12.) Lecture, three hours. May not be taken for credit by students who have taken Anthropology 12 or 22. Not applicable toward group requirements for the B.A. degree in Anthropology but may be applied toward the ten required anthropology courses for the major. The impact of cultural and social anthropology upon modern consciousness and contemporary affairs. Effects of anthropology upon selected areas such as psychology, art, music, literature. Role of anthropology in various professions, in policy making and in directed culture change. Mr. Oswalt

# 101. The Social Sciences in Psychiatry.

(Same as Psychiatry 105.) Prerequisite: consent of the instructor. Not applicable toward degree in anthropology. An introduction to the fields of social psychology, sociology, cultural anthropology and ethnology. Mr. Kennedy

## GROUP I

# 102. World Ethnography.

Survey of principal culture types and their distribution; discussion of ethnological problems. Mr. Oswalt

*Area Courses.* Prerequisite: courses 5A, 5C, 22 or 102. Each course is a survey of native peoples and cultures in designated areas of the world. The survey will include discussions of technological, social and ideational patterns among the ethnic groups of the area. Special ethnological and theoretical problems will be covered as appropriate. Outside reading and papers may be required.

# 103A-103D. Peoples of Asia.

(Each part may be taken independently.)

- 103A. South Asia. Mr. Leaf
- 103B. Southeast Asia. Mr. Moerman
- 103C. East Asia.
- 103D. Soviet Asia.

# 104. Peoples of the Pacific.

Mr. Lessa

# 105. Peoples of North America.

Mr. Oswalt

# 106. Peoples of California.

Mr. Meighan

# 107. Peoples of South America.

Mr. Wilbert

# 108A-108B. Peoples of Africa.

(Each part may be taken independently.)

- 108A. East and South Africa. Mrs. Kuper
- 108B. West and Central Africa. Mr. Smith

# 109. Indians of Modern Mexico and Peru.

# 121. Latin American Societies.

(Same as Sociology 131.) A descriptive survey of the major Latin American societies emphasizing their historical backgrounds and their emergent characteristics, with special attention to the relations between rural and urban life.

## GROUP II

# 122. Traditional Political Systems.

Prerequisite: course 125 or Sociology 101 or consent of the instructor. Political organization in pre-industrial societies of varying degrees of complexity. Law and the maintenance of order; corporate groups; ideology. The relations of political to other institutions of society. Mr. Smith

# 125. Comparative Society.

Prerequisite: courses 5A-5B-5C, or Sociology 1 or consent of the instructor. The general principles of the organization of society; the relation of these to the technological complexity and ecological conditions of the culture; the principles of evolutionary development of social systems. Mr. Newman

# 126. Technology and Invention of Nonliterate Peoples.

Significance of material culture in archeology and ethnology; problems of invention and the acceptance of innovations; the ecological and sociological concomitants of technological systems; selected problems in material culture. Mr. Donnan

# 127. Primitive Art.

Development and change of conventions of visual art forms of various nonliterate peoples; effects of craftsmanship, materials and local culture on primitive art. Mr. Oswalt

# 145. Oral Art and Drama of Non-Western Peoples.

(Same as Folklore 145.) Various genres of oral art found among non-Western peoples including myth, legend, proverb, riddle, song text and ritual drama; social functions of oral art; role of the innovator; dynamics of stability and change in oral art; various classical theories of folklore. Mr. Schwartz

**146. Musical Arts of Non-Western Peoples.**

(Same as Folklore 146.) Music as an aspect of culture in various non-Western societies. Native ideas about music and systems of criticism. The social functions of music. Music in relation to anthropological theories of symbolic behavior, enculturation, innovation, unconscious patterning, and culture history.

**147. The Cultures of the Arab World.**

Contemporary social life and cultural characteristics of diverse ethnic groups in the Near East and Northern Africa; continuities in cultural orientations; cultural conflict and development; the relation of cultural orientation to modern political organization and social problems.

**148. The Theory of Oral Literature.**

(Same as Folklore 148.) The historical development of the study of oral literature among preliterate people; theoretical bases for the analysis of oral traditions.

**GROUP III****120. The Individual in Culture.**

The relationship between psychological characteristics of the individual and the demands of the cultural milieu; the nature and limits of human psychological plasticity; cultural forces in the formulation of personality; transcultural similarities in personality attributes.

Mr. Schwartz

**123. Culture and Personality.**

Theories of the relationship between personality and culture. The development of such theories in the history of anthropology. The relationship of culture and personality research to general social and cultural research. A review of the modern sub-field of psychological anthropology.

Mr. Edgerton, Mr. Robbins

**124. Comparative Religion.**

The origins, elements, forms and symbolism of religion; the role of religion in society.

Mr. Hockings, Mr. Lessa, Mr. Newman

**128. Kinship and Social Organization.**

Prerequisite: courses 5A-5B-5C or course 22. Kinship systems, principally in non-Western societies, and their significance in the organization of social life. Theories of kinship, marriage regulations, and kinship role patterns.

Mr. Leaf, Mr. Smith

**129. Economic Anthropology.**

A survey of the ethnology and ethnography of economic life, principally in non-Western societies, with an emphasis on the operation of systems of production and distribution within diverse cultural contexts.

Mr. Leaf

**GROUP IV****130A-130B. Origins of Old World Civilization.**

Prerequisite: courses 5A-5B-5C or course 22. Course 130A is prerequisite to 130B. A survey of the prehistoric foundations and cultural development of primary civilizations in the Near East, Europe and Asia as revealed by archeology; theories of cultural evolution and diffusion based upon archeological discovery.

Mr. Hockings

**131A-131B. Old Stone Age Archeology.**

Prerequisite: courses 5A-5B-5C or consent of the instructor. Course 131A is prerequisite to 131B. No credit will be allowed for course 131A without course 131B. The development of Paleolithic and Mesolithic cultures of Europe, Africa and Asia, emphasizing the ordering and interpretation of archeological data, Pleistocene geology and chronology, the relationship between human, cultural and biological evolution.

Mr. Sackett

**133A. Ancient Civilizations of Western Middle America (Nahuatl Sphere).**

Prerequisite: course 5A-5B-5C or course 22 or consent of the instructor. Pre-Hispanic and Conquest period native cultures of western Middle America as revealed by archeology and early colonial writing in Spanish and Indian languages. Toltec-Aztec and Mixteca civilizations and their predecessors, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements.

Mr. Nicholson

**133B. Ancient Civilizations of Eastern Middle America (Maya Sphere).**

Prerequisite: courses 5A-5B-5C or course 22 or consent of the instructor. Pre-Hispanic and Conquest period native cultures of eastern Middle America as revealed by archeology and early colonial writings in Spanish and Indian languages. Lowland and Highland Maya civilizations and their predecessors, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements.

Mr. Donnan

**134. Ancient Civilizations of Andean South America.**

Prerequisite: courses 5A-5B-5C or course 22 or consent of the instructor. Pre-Hispanic and Conquest period native cultures of Andean South America as revealed by archeology and early Spanish writings. The Inca and their predecessors in Peru, with emphasis on socio-political systems, economic patterns, religion, and esthetic and intellectual achievements.

Mr. Nicholson

**135A-135B. Archeology of North America.**

Prerequisite: courses 5A-5B-5C or course 22 or consent of the instructor. Course 135A is prerequisite to 135B. Prehistory of the North American Indians; prehistoric culture areas; relations with historic Indians.

Mr. Hill

**138A-138B The Strategy of Archeology.**

Prerequisite: course 5B. Course 138A is prerequisite to 138B. An introduction to research design in the cultural interpretation of archeological materials, with special emphasis upon the techniques of laboratory analysis and data-processing. The history and contemporary developments of archeological research in both the Old and New Worlds are reviewed as part of the course.

Mr. Binford, Mr. Meighan, Mr. Sackett

**Related Courses in Another Department****Indo-European Studies 130. Introduction to European Archeology.****131. European Archeology: The Neolithic Period.****132. European Archeology: The Bronze Age.**

133. European Archeology: The Early Iron Age.  
 134. Eastern Mediterranean and Anatolian Archeology.  
 135. History of European and Near Eastern Archeology.  
 136. European Paleodemography.

**GROUP V**

Prerequisites for this group: courses 1A-1B or Biology 2A-2B, and consent of the instructor.

**151A-151B. The Genetics of Race.**

Course 151A is prerequisite to 151B. No credit will be allowed for course 151A without course 151B. A general survey of the techniques and problems of racial classification. Emphasis is on the genetic approach. The methods of modern classical genetics and population genetics are applied to human evolution. Mr. Birdsell

**152. Evolution and Biology of Human Behavior.**

A comparative survey of the behavior patterns of preliterate and Paleolithic peoples and those of non-human primates. The biological variables fundamental to human and prehuman behavior will be assessed with regard to theories on the evolution of human culture.

**153. Comparative Morpho-Physiology of the Higher Primates.**

Lecture, two hours; laboratory, three hours. The comparative anatomy of monkeys, apes and man will be surveyed. The methods and data prerequisite to the interpretation of the primate fossil records will be discussed.

**155A-155B. Fossil Man and His Culture.**

Course 155A is prerequisite to 155B. No credit will be allowed for course 155A without course 155B. An introduction to paleoanthropology; the morphology, ecology and culture of fossil man in the light of the synthetic theory of evolution. Mr. Sackett

**158. History of Human Evolutionary Theory.**

The men, the events, and the spirit of the time which mark man's attempt to understand his origins and diversity.

**GROUP VI****110. Language in Culture.**

(Same as Linguistics 190.) The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning. Miss Black, Mrs. Mathiot

**\*112. Introduction to Linguistics.**

(Same as Linguistics 100.) A beginning course in the descriptive and historical study of language; linguistic analysis; linguistic structures; language classification; language families of the world; language in its social and cultural setting. Mr. Hoijer

**\*113. Introduction to Historical Linguistics.**

(Same as Linguistics 110 and Indo-European Studies 149.) Prerequisite or corequisite: course 112.

The methods and theories appropriate to the historical study of languages, such as the comparative method and the method of internal reconstruction. Sound change, grammatical change, semantic change. Mr. Hoijer

**\*114. Linguistic Analysis.**

(Same as Linguistics 120.) Prerequisite: course 112 or equivalent. Descriptive analysis of phonological and grammatical structures. Mr. Bright

**117. Introduction to Nahuatl Language and Literature.**

(Same as Indigenous Languages 117.) Prerequisite: reading knowledge of Spanish. The Nahuatl (Aztec) language and historical sources published in Nahuatl. Mr. Bright

**GROUP VII****149. Urban Anthropology.**

Prerequisite: consent of the instructor. The evolution, structure, systemics and culture of the city as artifact and environment for its component individuals, status groups and communities, explored in terms of the methods and perspectives of anthropology. Mr. Rodgers, Mr. Schwartz

**161. Social Anthropology.**

Prerequisite: courses 5A-5B-5C or course 22 or Sociology 1 or 101 and upper division standing in anthropology or sociology. Formal presentation of the methods, aims and development of social anthropology. Analysis of culture within systems of social relationships. Emphasis on structural-functional approach and the process of social change. Mrs. Kuper, Mr. Smith

**162A-162B. History of Anthropology.**

Prerequisite: senior major or graduate status in anthropology. Prerequisite to graduate work in the theory and method of anthropology. Course 162A is prerequisite to 162B. A systematic survey of the development of anthropology as a scientific field, especially designed for majors in anthropology and sociology. Mr. Leaf, Mr. Rodgers, Mr. Smith

**163. History of Archeology.**

The intellectual history of archeology from the ancient world to the present. Although each of its major traditions is reviewed, particular emphasis is given to those branches of archeology that have evolved during the last century within the discipline of anthropology. Mr. Sackett

**165. Culture Stability and Culture Change.**

Problems of cultural and social change, including the impact of western civilization on native societies. Mr. Moerman, Mr. Rodgers, Mr. Schwartz

**166. Development Anthropology.**

Prerequisites: courses 5A-5B-5C and upper division standing or consent of the instructor. An

\* Graduate courses in linguistics (see page 329) are open to students who have had Anthropology 112 and 114. Graduate students in anthropology who propose to specialize in linguistics must take Anthropology 112 and 114 plus graduate courses in linguistics chosen from Linguistics 200A-205B and 210A-210B in consultation with an adviser; or they may take the M.A. in linguistics together with the Ph.D. in anthropology.

anthropological perspective on the problems of development in formerly primitive or peasant societies and the cultural factors in planning economic and social institutions in emergent national entities. The cultural and social implications of continuing development in industrial societies will also be examined.

Mr. Moerman, Mr. Schwartz

## GROUP VIII

These courses are intended primarily for majors and beginning graduate students in anthropology.

### 139. Dating Techniques in Archeology.

Introduction to radioisotope dating techniques, relative dating techniques and applicable geophysical methods.

Mr. Berger

### 180. Field Training in Ethnology.

Prerequisite: consent of the instructor. No other course may be taken concurrently. Introduction to ethnographic field methods involving participation in field studies among ethnic groups. Students will spend most of the period in off-campus research activities, including interviewing, collection of ethnographic data, photography, recording and analysis of data from informants. Limited to 15 students. Until a full summer quarter is established, this course will be held in conjunction with a summer session for one quarter course credit. When the summer quarter is established the course will be a double course.

The Staff

### 181. Methods and Techniques of Field Archeology.

Prerequisite: consent of the instructor. Brief introduction to archeological problems, theories and methods; archeological survey, excavation, mapping, recording; introduction to data analysis and publication. May be repeated once for credit. During most of the quarter Saturdays (8:00-5:00) will be spent in the field.

Mr. Hill

### 182. Methods and Techniques of Archeology.

Lecture, two hours; laboratory, four hours. Prerequisite: consent of the instructor. The interpretation and presentation of archeological finds. Chronological sequencing; stylistic and statistical analysis; documentation; publication. Techniques of preservation, restoration and illustration of artifacts.

Mr. Nicholson

### 183. Field Training in Archeology.

Prerequisite: consent of the instructor. Introduction to archeological field methods involving participation in actual site excavation during the entire session. Recording and mapping of archeological sites; photography; recovering of archeological specimens; cataloging, preservation and restoration of archeological finds; archeological records and reports. Until the full summer quarter is established this course will be held in conjunction with summer session for one quarter course credit. When a summer quarter is established it will become a double course.

The Staff

### 184. Laboratory Methods in Physical Anthropology.

Lecture, one hour; laboratory, four hours. Prerequisite: course 1A-1B or 11. Laboratory methodology and analysis of human variation data in living populations and on skeletons.

Mr. Birdsell

### 185A-185B. Linguistic Field Methods in Anthropology.

(Same as Linguistics 185A-185B.) Prerequisite: course 112. Course 185A is prerequisite to 185B.

An introduction to linguistic field methods and analysis intended to prepare students to record and analyze linguistic data pertinent to ethnological studies. Informants will be used and emphasis will be placed on practical problems.

Miss Mathlot

### 186. Quantitative Methods in Anthropology.

An introduction to sampling statistics with an emphasis on anthropological data. Statistical inference, common sampling distributions, tests on hypotheses, estimation, parametric and nonparametric methods will be introduced.

Mr. Leaf, Mr. Rodgers, Mr. Williams

## GROUP IX

### 198. Special Courses.

Special topical or regional studies to be offered to the extent justified by student demand or the presence of special visitors.

The Staff

### 199. Special Studies in Anthropology.

( $\frac{1}{4}$  to 1 course)

Prerequisite: senior standing in anthropology and consent of the instructor.

The Staff

#### Graduate Courses

Courses numbered 250 and above are generally seminars and may be repeated for credit.

### 202. Ethnography. (1½ courses)

Intensive examination of current theoretical views; research methods; modern form of analysis.

Mr. Edgerton, Mr. Rodgers

### 203. Cultures of Asia.

Survey of literature and problems of selected areas of Asia.

Mr. Moerman

### 204. Pacific Island Cultures.

Survey of literature and problems of the Pacific Islands.

Mr. Lessa

### 205. North American Indians.

Survey of the literature and problems of the American Indians north of Mexico.

Mr. Oswalt

### 207. Indians of South America.

Survey of the literature and problems of the Indians of South America.

Mr. Wilbert

### 208. African Cultures.

Survey of literature and problems of African culture.

Mrs. Kuper

### 209. Cultures of the Soviet Union.

Literature and problems of the peoples of the Soviet Union.

### 212. Anthropological Linguistics. (1½ courses)

Prerequisite: course 112 or its equivalent. The development of anthropological linguistics, modern linguistic theory and its application to the study of nonlinguistic aspects of culture, including relationship of language to world view; comparative historical linguistics; lexico-statistics; semantic analysis; linguistic acculturation; and socio- and ethnolinguistics.

Mr. Hoijer

**214A. Linguistic Areas: Aboriginal North America.**

(Same as Linguistics 220F.) Prerequisite: Linguistics 120. Recommended preparation: Linguistics 200B and 205A. Mr. Hoijer

**214B. Linguistic Areas: Aboriginal South America.**

(Same as Linguistics 220G.) Prerequisite: Linguistics 120. Recommended preparation: Linguistics 200B and 205A. Mr. Hoijer

**220. Social Anthropology.**

Intensive examination of current theoretical views and literature. Mrs. Kuper, Mr. Smith

**222. Research Methods and Procedures.**

(1½ courses)

Lecture, three hours. An integrated review of the research methods in anthropological inquiry focusing on problem formulation, methods of setting up testable hypotheses, the kinds of data available for anthropological explanation, statistical and non-statistical means of "explanation" in anthropology. Mr. Hill, Mr. Robbins, Mr. Schwartz

**230. Analytical Methods in Archeological Studies.**

Mr. Hill

**232. Archeology. (1½ courses)**

Lecture, three hours. A review of the history of archeology and the basic techniques of archeological investigation and analysis as these have established the present state of knowledge of major prehistoric periods in diverse parts of the world. Mr. Sackett

**240. Current Problems in Physical Anthropology.**

A detailed examination of present, on-going research by physical anthropologists in order to determine the direction and place of physical anthropology in the general discipline of anthropology. Mr. Williams

**242. Physical Anthropology. (1½ courses)**

Lecture, three hours. The examination of the concepts, methods, and problems in physical anthropology with respect to man's evolutionary past, and the evolutionary biology of living human populations. The last part to be conducted as a seminar on current literature. Mr. Williams

**246. Population Genetics of Man.**

(Formerly numbered 159.) Prerequisite: 1A-1B. Recommended: an introductory course in statistics. The study of population concepts, probability, the conditions of gene frequency equilibria and factors causing gene frequency change. Mr. Williams

**252. Ethnography.**

Prerequisite: course 202 or consent of the instructor. Mr. Wilbert

**253. Cultures of Asia.**

Prerequisite: course 202 or consent of the instructor. Course 253A is prerequisite to 253B. Emphasis on different subcultural areas will vary in accordance with the instructor. Mr. Hockings, Mr. Moerman

**254. Cultures of the Pacific Islands.**

Prerequisite: course 204 or consent of the instructor. Mr. Lessa, Mr. Newman

**255. North American Indians.**

Prerequisite: course 205 or consent of the instructor. Mr. Oswalt

**256. Arctic Cultures.**

Prerequisite: course 105 or consent of the instructor. Mr. Oswalt

**257. Indians of South America.**

Prerequisite: course 207 or consent of the instructor. Mr. Wilbert

**258. African Cultures.**

Prerequisite: course 208 or consent of the instructor. Mrs. Kuper

**259. Cultures of the Soviet Union.**

Prerequisite: course 209 or consent of the instructor.

**260. Middle Eastern Culture in Society.**

**261. Myth and Ritual.**

Prerequisite: course 124 or consent of the instructor. Mrs. Kuper, Mr. Lessa, Mr. Newman

**262. The Individual in Culture.**

Mr. Edgerton

**263. Ethnolinguistics.**

(Same as Linguistics 265A.) Problems in the relation of language to culture; structural semantics; language and prehistory. Miss Black, Mr. Bright

**264. Higher Cultures of Nuclear America.**

Prerequisite: course 109 or consent of the instructor. Mr. Nicholson

**265. Contemporary Latin American Problems.**

Prerequisite: course 121 or consent of the instructor. Preference given to students with a reading knowledge of Spanish or Portuguese. Mr. Beals

**266. Culture and Personality.**

Mr. Robbins, Mr. Schwartz

**267. Culture Change.**

Prerequisite: course 165 or consent of the instructor. Mr. Moerman

**268A-268B. European Archeology. (½ course each)**

(Same as Indo-European Studies 250A-250B.) Prerequisite: consent of the instructor. Must take both quarters for credit to be given. Studies in ancient European archeological materials, and their relationship to those of the Near East, Western Siberia, and Central Asia. Mrs. Gimbutas

**269. African Arts.**

Prerequisite: course 208 or consent of the instructor.

**270A-270B-270C. Documentary Film.**

(Same as Theater Arts 209C, 265A, 265B respectively.) Lecture, two hours. Prerequisites: consent of the instructor. Course 270A is prerequisite to courses 270B and 270C. A study of the possibilities and problems in the use of motion picture techniques for ethnographic documentation, analysis, and instruction. Examination of selected ethnographic films. Subsequent field work for selected students. Mr. Hockings

**271. Historical Reconstruction and Archeology.**

Prerequisite: consent of the instructor. Interpretation of historical development through archeological research. Application of ethnohistory to archeological problems. Mr. Meighan, Mr. Nicholson

**272. Prehistoric Nonagricultural Societies.**

Prerequisite: course 230 or consent of the instructor. Regional studies in the development of early human culture.  
Mr. Binford, Mr. Meighan

**273. Problems in Old World Archeology.**

Prerequisite: course 130B or consent of the instructor.  
Mr. Sackett

**274. Prehistoric Civilizations of the New World.**

Prerequisite: consent of the instructor.  
Mr. Nicholson

**275. Principles of Human Ecology.**

Prerequisite: course 151B or 152 or consent of the instructor.  
Mr. Birdsell

**276. Current Problems in Population Genetics.**

Prerequisite: course 246. A consideration of some of the special methods of the genetics of human populations and their current application in research.  
Mr. Williams

**277. Human Microevolution.**

Prerequisite: course 151B.  
Mr. Birdsell

**280. Field Training in Ethnography.**

Supervised collection of ethnographic information in the field. To be offered only in summers; until four-quarter system is established, to be given in connection with summer session to carry one quarter credit; when four-quarter system established, to become a double course. In each case students will spend full time in the field for most of the period.  
The Staff

**281. Childhood and Society.**

Lecture, two hours. Prerequisite: consent of the instructor. An examination of the relationship between childhood experiences and institutionalized adult behavior and beliefs.  
Mr. Robbins

**282. Seminar in Advanced Topics in Archeological Dating Techniques.**

Prerequisite: course 139 and consent of the instructor. Advanced topics in archeological dating techniques will be discussed in seminar form. In addition, students will be instructed in actual experimental dating techniques in the laboratory.  
Mr. Berger

**283. Field Training in Archeology.**

Prerequisite: previous experience in archeology. Advanced training in archeological excavation techniques, including organization of projects, supervision of field crews, methodology of field recording and preliminary analysis of field data. Until four-quarter system is established, will be offered in connection with summer session for one quarter course credit; after four-quarter system is established will be offered for full quarter as a double course involving full time.  
The Staff

**284. Cultural Ecology.**

Prerequisite: consent of the instructor.  
Mr. Binford, Mr. Rodgers

**285. Social Anthropology.**

Prerequisite: course 220 or consent of the instructor.  
Mrs. Kuper, Mr. Smith

**286. Problems in Cultural Anthropology.**

Prerequisite: consent of the instructor.  
Mr. Goldschmidt

**287. Kinship.**

Prerequisite: course 202 or 220 or consent of the instructor.  
Mrs. Kuper

**288. Comparative Political Institutions.**

Prerequisite: course 202 or 220 or consent of the instructor.  
Mr. Smith

**289. Economic Anthropology.**

Prerequisite: course 202 or 220 or consent of the instructor.

**290A-290B. Methods in Psychological Anthropology.**

Prerequisites: adequate background in psychology in fields of personality, clinical psychology and psychological testing, as evaluated by the instructor. Course 290A is prerequisite to course 290B. The methods of study of aspects of personality, perception, cognition, and mental health as applicable to non-Western and particularly primitive cultures. 290A deals with methods other than testing. 290B deals with diverse standardized tests applicable in cross-cultural research.

**Individual Study and Research****596. Individual Studies for Graduate Students.**

( $\frac{1}{4}$  to 2 courses)

Prerequisite: consent of the instructor. The Staff

**597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. ( $\frac{1}{4}$  to  $1\frac{1}{2}$  course)**

Prerequisite: consent of the instructor. Preparation for the comprehensive examination for the master's degree or the qualifying examination for the Ph.D.  
The Staff

**599. Research for Dissertation. ( $\frac{1}{4}$  to 2 courses).**

Ph.D. dissertation research or writing. Student will have completed qualifying examination and ordinarily will take no other course work. The Staff

**Related Courses in Other Departments****Art 118A. The Arts of Oceania.**

118B. The Arts of Pre-Columbian America.

118C. The Arts of Sub-Saharan Africa.

119A. The Arts of Africa: Western Sudan.

119B. The Arts of Africa: The Guinea Coast.

119C. The Arts of Africa: The Congo.

220. The Arts of Africa, Oceania and Pre-Columbian America.

**Folklore 101. Introduction to Folklore.**

104. The Literature of Myth and Oral Traditions.

118. The Folklore of Material Culture.

161. Decorative Textiles in Folk Cultures.

201A-201B. Field Collecting.

213. Folk Belief and Custom.

216. The Folk Tale.

259. Seminar in Folklore.

**Indo-European Studies 250A-250B. Seminar in European Archeology.**

251. Seminar in Early Iron Age

Archaeology.

252. Seminar in Eastern Mediterranean

Archaeology.

253. Seminar in European

Paleodemography.

259. Field Work in Old World

Archaeology.

Musical 140A-140B. Musical Cultures of the World.

141. Music of Indonesia.

143A-143B. Music of Africa.

190A-190B. Proseminar in Ethnomusicology.

253. Seminar in Notation and Transcription in Ethnomusicology.

254. Seminar in Field and Laboratory Methods in Ethnomusicology.

255. Seminar in Musical Instruments of the Non-Western World.

280. Seminar in Ethnomusicology.

## ■ ART

(Department Office, 1300 Dickson Art Center)

Laura F. Andreson, M.A., *Professor of Art.*

Karl M. Birkmeyer, Ph.D., *Professor of Art (Chairman of the Department).*

E. Maurice Bloch, Ph.D., *Professor of Art and Curator of Graphic Arts.*

William J. Brice, *Professor of Art.*

J. LeRoy Davidson, Ph.D., *Professor of Art.*

Richard Diebenkorn, M.A., *Professor of Art.*

Henry Dreyfuss, *Professor of Art in Residence.*

Archine V. Fetty, M.A., *Professor of Art.*

Thomas Jennings, M.A., *Professor of Art.*

Lester D. Longman, Ph.D., L.H.D., D.F.A., *Professor of Art.*

Gordon M. Nunes, M.A., *Professor of Art.*

Jan Stussy, M.F.A., *Professor of Art.*

Frederick S. Wight, M.A., *Professor of Art and Director of Art Galleries.*

Dorothy W. Brown, A.B., *Emeritus Professor of Art.*

Annita Delano, *Emeritus Professor of Art.*

Josephine P. Reys, *Emeritus Professor of Art.*

Karl E. With, Ph.D., D.F.A., *Emeritus Professor of Art.*

S. Macdonald Wright, *Emeritus Professor of Art.*

Samuel Amato, B.F.A., *Associate Professor of Art.*

Oliver W. Andrews, A.B., *Associate Professor of Art.*

Alexander Badawy, B.Arch., D.I.A., Ph.D., *Associate Professor of Art.*

Jack B. Carter, M.A., *Associate Professor of Art.*

Elliot J. Elgart, M.F.A., *Associate Professor of Art.*

Robert F. Heineken, M.A., *Associate Professor of Art.*

J. Bernard Kester, M.A., *Associate Professor of Art.*

Lee Mullican, *Associate Professor of Art.*

Carlo Pedretti, M.A., *Associate Professor of Art.*

Marcel Rothlisberger, Ph.D., *Associate Professor of Art.*

Nathan Shapira, Dottore in Architettura, *Associate Professor of Art.*

Otto-Karl Werckmeister, Ph.D., *Associate Professor of Art.*

Helen Clark Chandler, *Emeritus Associate Professor of Art.*

Melvin Best, M.A., *Assistant Professor of Art.*

Leslie Biller, M.A., *Assistant Professor of Art.*

Raymond B. Brown, M.A., *Assistant Professor of Art.*

Hans Brummer, Ph.D., *Assistant Professor of Art.*

John Caruthers, *Assistant Professor of Art in Residence.*

Lois Charney, M.F.A., *Assistant Professor of Art.*

Christian E. Choate, B.Arch., *Assistant Professor of Art.*

Niels Diffrient, B.F.A., *Assistant Professor of Art in Residence.*  
 Susan B. Downey, Ph.D., *Assistant Professor of Art.*  
 George Foy, B.Arch., *Assistant Professor of Art in Residence.*  
 David Gordon, B.Arch., *Assistant Professor of Art.*  
 Mitsuru Kataoka, M.A., *Assistant Professor of Art.*  
 Eugene Kleinbauer, Ph.D., *Assistant Professor of Art.*  
 Alice E. M'Closkey, M.A., *Assistant Professor of Art.*  
 Velizar Mihich (Vasa), *Assistant Professor of Art in Residence.*  
 John Neuhart, *Assistant Professor of Art.*  
 Rex Raymer, B.Arch., *Assistant Professor of Art in Residence.*  
 Gilbert Rios, B.S., *Assistant Professor of Art in Residence.*  
 Donald Roberts, *Assistant Professor of Art.*  
 Madeleine Boyce Sunkees, B.E., *Assistant Professor of Art.*  
 Edward H. Traynor, M.A., *Assistant Professor of Art.*



Frank A. Humelbaugh, B.A., *Associate in Art.*  
 Benjamin Johnson, M.A., *Lecturer in Art.*  
 Arnold Rubin, M.A., *Acting Assistant Professor of Art.*  
 ———, *Assistant Professor of Art.*

All students majoring in art are required to have each quarter's program approved by a departmental adviser.

The departmental major offered in the College of Fine Arts leads to the degree of Bachelor of Arts with the opportunity to specialize in one of three areas: (1) Art History, (2) Pictorial Arts, (3) Design.

#### Preparation for the Major

*Art History.* Courses 1A, 1B, 1C.

*Pictorial Arts.* Two courses selected from 1A, 1B, 1C; courses 10A, 10B, 20A, 20B, 25.

*Design.* Two courses selected from 1A, 1B, 1C; courses 30A, 30B; one course selected from 10A, 25, 1A, 1B, 1C.

#### The Major

*Art History.* A minimum of 17 upper division courses selected in consultation with an art history adviser, including one course from each of the following eight groups: 101A-104; 105A-105D; 106A-108B; 109A-109B-109D; 110A-112B; 114A-116; 118A-119C; 120A-123B. Six courses in not more than two of the above groupings and three courses of art electives. Classics 151A-151B-151C, Anthropology 127, Oriental Languages 170A-170B-170C, or Philosophy 160 may be substituted for the art electives. Other related courses in anthropology, classics, literature, foreign languages, history, philosophy, music and theater arts are recommended as nonmajor electives for the degree. Course 124 is required of students who plan to pursue graduate work in art history.

*Pictorial Arts.* A minimum of 13 upper division courses selected in consultation with a pictorial arts adviser including one course each in courses 130, 132, 133, 135, 140, 145 and 147; two courses selected from courses 101-123 and four courses of art electives.

*Design.* A minimum of 15 upper division courses selected in consultation with a design adviser, including courses 150A-150B-150C, 151A-151D, four courses from 101-123B; and four courses of art electives.

#### Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division, the student will usually be expected to have a bachelor's degree in art. Students whose preparation in Art is deficient as determined by the departmental adviser will be required to take additional work before proceeding with the graduate program.

#### Requirements for the Master's Degree

For the general University requirements, see page 136. The Department of Art offers graduate study in three areas of specialization: (1) History of Art, (2) Pictorial Arts, (3) Design. When applying for admission, it is advisable to designate the area of specialization.

*Art History.* The program for the Master of Arts degree in art history follows the Thesis Plan, a minimum of nine courses in art history (six courses in the 200 series, including course 201) and a thesis. The program for the degree is worked out under

the guidance of the adviser in the area of specialization. Knowledge of at least one approved foreign language is required; this requirement must be fulfilled by the end of the third quarter. A final written examination covers the following fields: primitive and preclassical art, art of the ancient near east, classical art, medieval art, renaissance art, baroque art, art of the eighteenth and nineteenth centuries, modern art, American art, Oriental art, theory of art. Following submission of the thesis the candidate must pass an oral examination.

**Pictorial Arts or Design.** The master's program with these specializations follows the Comprehensive Examination Plan, a minimum of nine courses of graduate work including a minimum of five courses in the 200 series in the field of specialization. The final comprehensive examination is oral. Those majoring in pictorial arts may concentrate on painting, sculpture, printmaking or photography in their advanced project. Majors in design may stress graphic, industrial, environmental, costume, textile design or ceramics, but the ideal degree candidate is the comprehensive designer rather than the specialist. All candidates are expected to have a good general knowledge of the history and theory of art. The specific program for the Master of Arts degree is worked out under the guidance of a staff member in the area of the advanced project.

#### **Master of Fine Arts Degree in Pictorial Arts or Design**

The program requires a minimum of 18 courses, with at least ten courses in the 200 series. Candidates must have completed, whether as undergraduates or graduate students, a minimum of ten courses in art history. The pictorial arts candidate must complete a minimum of 11 courses in the field of specialization (including 10 courses in the 200 series), and three courses in an advanced project. Candidates in the fields of design must complete a minimum of 13 courses in the field of specialization (including ten courses in the 200 series) and three courses in an advanced project. Students who have an M.A. degree may be accepted as candidates for the M.F.A., but the M.A. degree is not a prerequisite. The M.F.A. is the highest degree in course for prospective professional artists. Two to three years of graduate work will normally be required to complete the requirements in terms of quality of creative work.

#### **Doctor of Philosophy Degree in Art History**

In addition to the general University regulations for the Doctor of Philosophy degree, including the dissertation and final examination (see page 140), a candidate must satisfy the following departmental requirements:

**Foreign Language.** A reading knowledge of German and French is requisite for all candidates. The chairman of the candidate's committee may advise an additional language. The requirements for the first language must be fulfilled by the end of the third quarter of graduate work, the requirement for the second language at the end of the fifth quarter. Both language requirements must be satisfied before advancement to candidacy for the degree.

**Qualifying Examination.** Preparation for the qualifying examination, which advances the student to candidacy, will include a minimum of six graduate seminars and a term paper or master's thesis demonstrating scholarly competence. The examination is both written and oral and may be combined with the master's examinations if this intention is declared in advance.

#### **Lower Division Courses**

##### **1A. History of Art.**

Lecture, three hours; quiz, one hour. Painting, sculpture, and architecture from prehistoric times to the year 1000. Miss Downey

##### **1B. History of Art.**

Lecture, three hours; quiz, one hour. Painting, sculpture, and architecture from the year 1000 to the year 1600. Mr. Kleinbauer

##### **1C. History of Art.**

Lecture, three hours; quiz, one hour. Painting, sculpture, and architecture from the year 1600 to the present.

##### **10A. Drawing.**

Studio, eight hours; six hours arranged. Beginning course in drawing. Mr. Berlant

##### **10B. Drawing.**

Studio, eight hours; six hours arranged. Prerequisite: course 10A. Beginning course in figure drawing. Mr. Elgart

##### **20A. Painting.**

Studio, eight hours; six hours arranged. Prerequisite: courses 10A and 10B. Beginning course in painting. Mr. Berlant

##### **20B. Painting.**

Studio, eight hours; six hours arranged. Prerequisite: course 20A. Composition and color. Mr. Biller

##### **25. Sculpture.**

Studio, eight hours; six hours arranged. Modeling and basic sculptural form. Mr. Andrews

**30A. Introduction to Design and Technology.**

Lecture, four hours. An introduction to the visual design process with emphasis on the development of visual awareness; a study of the technical, economic, environmental and cultural factors influencing the design of objects.

Mr. Neuhart

**30B. Delineation.**

Studio, eight hours; five hours arranged. Exploration of the fundamentals of three dimensional structuring and their relation to appearance; expression of conceptual structures through delineation.

Mr. Vasa

Related Courses in Other Departments

**Integrated Arts 1A-1B-1C.**

Upper Division Courses

**HISTORY AND THEORY OF ART****100A. History and Criticism of Art.**

Lecture, three hours; quiz, one hour. Not open to students having credit for 1A. Painting, sculpture and architecture from prehistoric time to the year 1000.

**100B. History and Criticism of Art.**

Lecture, three hours; quiz, one hour. Not open to students having credit for 1B. Painting, sculpture and architecture from the year 1000 to the year 1600.

Mr. Longman

**100C. History and Criticism of Art.**

Lecture, three hours; quiz, one hour. Not open to students having credit for 1C. Painting, sculpture and architecture from the year 1600 to the present.

Mr. Longman

**101A. Egyptian Art and Archaeology.**

(Formerly numbered 110F.) Lecture, three hours; quiz, one hour. A comprehensive study of art in Ancient Egypt from the earliest times to the Roman period, covering architecture, sculpture, graphic and minor arts. Relations with contemporaneous arts of the Aegean and Greece.

Mr. Badawy

**101B. Egyptian Art and Archaeology.**

(Formerly numbered 110F.) Lecture, three hours; quiz, one hour. Prerequisite: course 101A. Continuation of 101A.

Mr. Badawy

**101C. Egyptian Art and Archeology.**

(Formerly numbered 110F.) Lecture, three hours; quiz, one hour. Prerequisite: course 101B. Continuation of 101B.

Mr. Badawy

**103B. Hellenistic Greek Art.**

Lecture, three hours; quiz, one hour. Miss Downey

**103C. Roman Art.**

Lecture, three hours; quiz, one hour. Miss Downey

**103D. Etruscan Art.**

Lecture, three hours; quiz, one hour. The arts of Italy from 1000 B.C. to the period of the Roman domination (about the 2nd century B.C.).

Miss Downey

**104. Art of the Ancient Near East.**

Lecture, three hours; quiz, one hour. Art and architecture of Mesopotamia, the Hittites and the Levant.

Mr. Badawy

**105A. Early Christian and Byzantine Art.**

(Formerly numbered 111E.) Lecture, three hours; quiz, one hour. Architecture, painting, sculpture of the early Christian and Byzantine periods to 1453.

Mr. Kleinbauer

**105B. Early Medieval Art.**

(Formerly numbered 105B.) Lecture, three hours; quiz, one hour. Art and architecture of Western Europe from the Migration period until 1000 A.D.

Mr. Kleinbauer, Mr. Werckmeister

**105C. Romanesque Art.**

(Formerly numbered 112B.) Lecture, three hours; quiz, one hour. Art and architecture of Western Europe in the 11th and 12th centuries.

Mr. Werckmeister

**105D. Gothic Art.**

Lecture, three hours; quiz, one hour. Art and architecture of Europe in the 13th century.

Mr. Brummer, Mr. Werckmeister

**106A. Italian Art of the Trecento.**

(Formerly numbered 113A.) Lecture, three hours; quiz, one hour. Art and architecture of the 14th century.

Mr. Birkmeyer

**106B. Italian Art of the Quattrocento.**

(Formerly numbered 113B.) Lecture, three hours; quiz, one hour. Art and architecture of the 15th century.

Mr. Birkmeyer, Mr. Brummer

**106C. Italian Art of the Cinquecento.**

Lecture, three hours; quiz, one hour. Art and architecture of the 16th century.

Mr. Pedretti

**108A. Northern Renaissance Art.**

(Formerly numbered 114.) Lecture, three hours; quiz, one hour.

Mr. Birkmeyer

**108B. Northern Renaissance Art.**

Lecture, three hours; quiz, one hour. Continuation of 108A.

Mr. Birkmeyer

**109A. Baroque Art.**

(Formerly numbered 107A.) Lecture, three hours; quiz, one hour. Art and architecture of Italy and Spain, 16th to late 17th century.

Mr. Brummer, Mr. Rothlisberger

**109B. Baroque Art.**

(Formerly numbered 107B.) Lecture, three hours; quiz, one hour. Art and architecture of Northern Europe, 16th to late 17th century.

Mr. Brummer, Mr. Rothlisberger

**109C. European Art of the 18th Century.**

Lecture, three hours; quiz, one hour. Art and architecture of this period.

**109D. Art and Architecture of Georgian England.**

Lecture, three hours; quiz, one hour.

**110A. Art of the 19th and 20th Centuries.**

Lecture, three hours; quiz, one hour. Art and architecture from 1789 to the present.

**110B. Art of the 19th and 20th Centuries.**

Lecture, three hours; quiz, one hour. Continuation of 110A. Mr. Wight

**110C. Art of the 19th and 20th Centuries.**

Lecture, three hours; quiz, one hour. Continuation of 110B. Mr. Wight

**110D. Art of the 19th and 20th Centuries.**

Lecture, three hours; quiz, one hour. Continuation of 110C. Mr. Wight

**112A. American Art.**

(Formerly numbered 116A.) Lecture, three hours; quiz, one hour. Art and architecture in the United States from the Colonial period to 1900. Mr. Bloch

**112B. American Art.**

(Formerly numbered 116B.) Lecture, three hours; quiz, one hour. Art and architecture of the 20th century in the United States. Mr. Bloch

**114A. Indian Art.**

(Formerly numbered 111A.) Lecture, three hours; quiz, one hour. Art and architecture of India and Indonesia from prehistoric times to the present. Mr. Davidson

**114B. Chinese Art.**

(Formerly numbered 111B.) Lecture, three hours; quiz, one hour. Art and architecture of China from prehistoric times to the present. Mr. Davidson

**114C. Japanese Art.**

Lecture, three hours; quiz, one hour. Art and architecture of Japan from prehistoric times to the present.

**115A. Advanced Indian Art.**

Lecture, three hours; quiz, one hour. Prerequisite: course 114A. Study in Indian sculpture and architecture. Mr. Davidson

**115B. Advanced Chinese Art.**

Lecture, three hours; quiz, one hour. Prerequisite: course 114B. Study in Chinese painting and sculpture.

**116. Buddhist Art in Asia.**

Lecture, three hours; quiz, one hour. Buddhist art of India, China, Japan, Korea, Central and Southeast Asia; an analysis of changing forms as effected by developments in Buddhist religion and geographic expansion. Mr. Davidson

**118A. The Arts of Oceania.**

Lecture, three hours; quiz, one hour. Mr. Rubin

**118B. The Arts of Pre-Columbian America.**

Lecture, three hours; quiz, one hour. Mr. Rubin

**118C. The Arts of Sub-Saharan Africa.**

Lecture, three hours; quiz, one hour. Mr. Rubin

**119A. The Arts of Africa: Western Sudan.**

Lecture, three hours; quiz, one hour. Mr. Rubin

**119B. The Arts of Africa: The Guinea Coast.**

Lecture, three hours; quiz, one hour. Mr. Rubin

**119C. The Arts of Africa: The Congo.**

Lecture, three hours; quiz, one hour. Mr. Rubin

**120A. History of Prints.**

Lecture, three hours; quiz, one hour. Development of style and techniques of expression in the graphic arts. Mr. Bloch

**120B. History of Prints.**

Prerequisite: course 120A. Continuation of 120A. Mr. Bloch

**121A. Critical and Historical Studies in Drawing.**

(Formerly numbered 117D.) Lecture, three hours; quiz, one hour. Development of style and means of expression in drawing from late Middle Ages to the present. Mr. Rothlisberger

**121B. Critical and Historical Studies in Drawing.**

(Formerly numbered 117D.) Lecture, three hours; quiz, one hour. Continuation of 121A. Mr. Rothlisberger

**122. History of Style and Ornament.**

Lecture, three hours; quiz, one hour. Development of stylistic ideas and motifs in the Western world and their expression in design media from the Renaissance to 1900. A study in connoisseurship. Mr. Bloch

**123A. Theory and Criticism of Art.**

(Formerly numbered 101.) Lecture, three hours. Criteria of criticism; analysis of works of historic art; elements of psychology and sociology of art; semantics of critical terminology; relation of aesthetic meaning to reality and truth; studies in criticism of modern art. Mr. Longman

**123B. Theory and Criticism of Art.**

(Formerly numbered 101.) Lecture, three hours. Mr. Longman

**124. Bibliography and Research Methods.**

Proseminar: two hours. Instruction in research methods, use of library, bibliography, etc. Required for all majors intending to undertake graduate work in art history. The Staff

**Related Courses in Other Departments****Anthropology 127. Primitive Art.**

**Classics 151A. Classical Archaeology: Greco-Roman Architecture.**

**151B. Classical Archaeology: Greco-Roman Sculpture.**

**151C. Classical Archaeology: Greco-Roman Painting.**

**Oriental Languages 170A-170B-170C. Archaeology in Early and Modern China.**  
**Philosophy 160. Philosophy of Art.**

**DRAWING, PAINTING, PRINTS, SCULPTURE AND PHOTOGRAPHY****130. Life Drawing.**

(Formerly numbered 120.) Studio, eight hours; five hours arranged. Prerequisites: courses 10A, 10B, or consent of instructor. Maximum three courses. Studies from the model. Mr. Brice, Mr. Stussy

**132. Drawing.**

(Formerly numbered 125.) Studio, eight hours; five hours arranged. Prerequisite: consent of the

instructor. Maximum two courses. Drawing as a terminal medium of artistic expression.

Mr. Biller, Mr. Mullican

### 133. Painting.

(Formerly numbered 130.) Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, or consent of the instructor. Maximum three courses. Varied media and subjects. Composition, interpretation, expression.

Mr. Amato, Mr. Levine

### 135. Life Painting.

Studio, eight hours; five hours arranged. Prerequisite: course 133. Maximum three courses. Varied media. Composition, interpretation, expression.

Mr. Elgart

### 140. Print Making.

Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, 132A, or consent of the instructor. Maximum three courses. Engraving, etching, drypoint, aquatint, softground, lithography, woodcut, and mixed media. Traditional and experimental studies. Fine printing.

Mr. Brown, Mr. Glines

### 145. Sculpture.

Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 25 or consent of the instructor. Maximum three courses. Modeling or carving. Clay, plaster, wood, stone, metals, and welding. Plaster casting.

Mr. Andrews

### 147. Photography.

Studio, eight hours; five hours arranged. Prerequisites: courses 10A-10B, 20A-20B, or consent of the instructor. Maximum three courses. Photography as a medium of artistic expression.

Mr. Heinecken

### 148. Scientific Illustration. (½ course)

Studio, six hours. Descriptive drawing adapted to the needs of scientists and recommended to students whose major is science, study of media for reproduction.

Mr. Humelbaugh

### 149A-149D. Biological Illustration.

(½ course each)

Studio, six hours. Descriptive drawing for biologists, with emphasis on scientific observation, interpretation, and rendering.

Mr. Humelbaugh

## DESIGN

### 150A. Principles of Design.

Studio, eight hours, five hours arranged. Prerequisite: course 30A. Abstract Structuring in design.

The Staff in Design

### 150B. Principles of Design.

Studio, eight hours, five hours arranged. Prerequisite: course 150A. Forms for process; fundamentals of modulation, modification, and variation.

The Staff in Design

### 150C. Principles of Design.

Studio, eight hours, five hours arranged. Prerequisite: course 150A. Design in terms of materials of construction.

The Staff in Design

### 151A-151D. Comprehensive Design.

Studio, eight hours, five hours arranged. Prerequisites: courses 150B, 150C or consent of the instructor. Investigation, experimentation, and evaluation of aesthetic content in form and processes. 151A, Materials; 151B, Communication; 151C, Function; 151D, Environment. Each course may be repeated once.

The Staff in Design

### Special Studies for All Majors

### 197. Honors Course.

Hours to be arranged. Prerequisite: recommendation of staff. Individual studies for majors with 3.0 average.

The Staff

### 198. Special Courses in Art. (½ to 1 course)

### 199. Special Studies in Art. (½ to 2 courses)

Hours to be arranged. Prerequisites: Senior standing and consent of the instructor or adviser. Maximum two courses. Projects may be in history or studio courses. (For majors with 3.5 average.)

The Staff

### Graduate Courses

Prerequisite for all courses: consent of the instructor. All courses may be repeated for credit upon recommendation of adviser.

### 201. Historiography of Art History.

Seminar, two hours. A critical study of the various approaches to art history through the centuries.

Mr. Kleinbauer, Mr. Werckmeister

### 205. Studies in Prints.

Seminar, two hours.

Mr. Bloch

### 206. Studies in Drawings.

Seminar, two hours. Mr. Bloch, Mr. Rothlisberger

### 210. Egyptian Art.

Seminar, two hours.

Mr. Badawy

### 220. The Arts of Africa, Oceania and Pre-Columbian America.

(Formerly numbered 250.) Seminar, two hours.

Mr. Rubin

### 223. Classical Art.

Seminar, two hours.

Miss Downey

### 225. Medieval Art.

(Formerly numbered 252.) Seminar, two hours.

Mr. Kleinbauer, Mr. Werckmeister

### 230. Italian Renaissance Art.

(Formerly numbered 253.) Seminar, two hours.

Mr. Pedretti

### 231. Leonardo and Renaissance Theory of Art.

Seminar, two hours.

Mr. Pedretti

### 235. Northern Renaissance Art.

(Formerly numbered 254.) Seminar, two hours.

Mr. Birkmeyer

**240. Baroque Art.**

(Formerly numbered 256.) Seminar, two hours.  
Mr. Rothlisberger

**245. European Art from 1700 to 1900.**

(Formerly numbered 259.) Seminar, two hours.

**248. Art and Architecture of Georgian England.**

Seminar, two hours.

**253. Modern Art.**

(Formerly numbered 258.) Seminar, two hours.  
Mr. Wight

**255. American Art.**

Seminar, two hours. Mr. Bloch

**280. Asian Art.**

Seminar, two hours. Mr. Davidson

**283. Theory and Criticism of Art.**

Seminar, two hours. Mr. Longman

**271. Graduate Painting. (½ to 2 courses)**

Hours to be arranged. The Staff

**272. Graduate Printmaking. (½ to 2 courses)**

Hours to be arranged. Mr. Brown

**273. Graduate Sculpture. (½ to 2 courses)**

Hours to be arranged. Mr. Andrews

**274. Graduate Photography. (½ to 2 courses)**

Hours to be arranged. Mr. Heinecken

**280. Graduate Graphic Design. (½ to 2 courses)**

Hours to be arranged. Mr. Jennings

**281. Graduate Industrial Design. (½ to 2 courses)**

Hours to be arranged. Mr. Diffrient

**282. Graduate Environmental Design.**

(½ to 2 courses)  
Hours to be arranged. Mrs. Fetty

**283. Graduate Costume Design. (½ to 2 courses)**

Hours to be arranged. Mrs. McCloskey

**284. Graduate Ceramics. (½ to 2 courses)**

Hours to be arranged. Miss Andreson, Mr. Traynor

**287. Graduate Design and Structure: Fiber.**

(½ to 2 courses)

(Formerly numbered 285B.) Hours to be arranged.  
Mr. Kester, Mrs. Sunkees

**288. Seminar in Design.**

Seminar, three hours. Mrs. Fetty

**289. Seminar in Pictorial Arts.**

Seminar, two hours.

**Professional Courses****401. History of Museums and Collecting.**

Prerequisite: B.A. in Art History and course 201.  
The Staff

**402. Connoisseurship.**

Prerequisite: B.A. in Art History and course 201.  
The Staff

**403A-403B. Restoration, Preservation and Conservation.**

Prerequisite: B.A. in Art History and course 201.  
Mr. Johnson

**Individual Study and Research****596. Directed Individual Study or Research.**

(½ to 2 courses)  
Prerequisite: consent of the instructor. The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (½ to 2 courses)**

Prerequisite: consent of the instructor. The Staff

**598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)**

Prerequisite: consent of the instructor. The Staff

**599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)**

Prerequisite: consent of the instructor. The Staff

**Related Courses in Another Department****Classics 251A. Seminar in Classical Archaeology: The Aegean Bronze Age.****251B. Seminar in Classical Archaeology: Greco-Roman Architecture.****251C. Seminar in Classical Archaeology: Greco-Roman Sculpture.****251D. Seminar in Classical Archaeology: Greco-Roman Painting.**

The Department of Art reserves the right to hold for exhibition purposes examples of any work done in classes and to retain for the permanent collection of its galleries such examples as may be selected.

**University Art Galleries**

The UCLA Art Galleries in the South Wing of the Dickson Art Center present a series of major exhibitions throughout the year. The main emphasis is on modern art and its origins. Scholarly exhibitions dealing with earlier periods are integrated with the teaching program. An active print room is devoted primarily to the collection of the Grunwald Graphic Arts Foundation.

## ■ ASTRONOMY

(Department Office, 8979 Mathematical Sciences Building)

George O. Abell, Ph.D., *Professor of Astronomy.*

†Lawrence H. Aller, Ph.D., *Professor of Astronomy.*

Samuel Herrick, Ph.D., *Professor of Astronomy and Engineering.*

Daniel M. Popper, Ph.D., *Professor of Astronomy.*

Harland W. Epps, Ph.D., *Assistant Professor of Astronomy.*

\*\*Stanton J. Peale, Ph.D., *Assistant Professor of Astronomy and Geophysics.*

Kurt W. Riegel, Ph.D., *Assistant Professor of Astronomy.*

Edward K. L. Upton, Ph.D., *Assistant Professor of Astronomy.*



Albert E. Whitford, Ph.D., *Director of Lick Observatory.*

### Advising

Every student enrolled in the curriculum in astronomy is required to have each quarter a program approved by a departmental adviser.

### Preparation for the Major

Required: Physics 1A-1B-1C-1D; Mathematics 11A-11B-11C, 12A-12B-12C. Recommended: Chemistry 1A; a reading knowledge of French, German and/or Russian.

### The Major

Required: Astronomy 101, 103A-103B-103C; 117A-117B-117C; Physics 105A-105B, 131, 110A-110B, 115A-115B. Mathematics: at least one upper division course chosen from 130 through 152. Also recommended: Astronomy 104; Physics 108, 112, 124A; Engineering 160A, 160B; Planetary and Space Science 180A-180B-180C.

*Astrodynamics.* Students with a major interest in the applications of celestial mechanics to problems of space flight are referred to the Department of Engineering, which offers courses in this field.

### Requirements for the Master's Degree

*General Requirements.* See page 136. The Department offers work under The Comprehensive Examination Plan. This examination consists of tests in three fields specified by the Department. A reading knowledge of French, German, or Russian must be demonstrated. Each student must attempt to pass the language examination during his first year of graduate studies. The requirements for the master's degree should normally be completed at the end of one year, and must

be completed not later than two years after beginning graduate studies. Only two courses from the 500 series may be applied toward the course requirement, and only one toward the graduate course requirement.

In fulfilling the graduate course requirement, courses in astrodynamics, offered in engineering (courses 260A-260B-260C, 261A), are to be considered courses in astronomy.

Each graduate student admitted from another institution is required to take a placement examination before enrolling in classes his first quarter. The examination will test the student's preparation in subject matter equivalent to that in the following UCLA undergraduate courses: Astronomy 101, 103A-103B-103C, 117A-117B-117C; Physics 105A-105B, 110A-110B, 115A-115B, and 131. Those courses that may be required on the basis of this examination must be completed in the student's first year of graduate enrollment.

### Requirements for the Degree of Doctor of Philosophy

*General Requirements.* See page 140. The Department requires reading knowledge in two of the languages: French, German, and Russian. At least one language examination must be attempted during each year of graduate studies until two of them have been passed. The candidate must obtain a master's degree. (See the preceding section.)

A total of seven field examinations in subjects designated by the Department must be passed. The field examinations should normally be completed after two years and must be completed not later than three years after

† Absent on leave, 1968-1969.

\*\* Member of the Institute of Geophysics and Planetary Physics.

beginning graduate studies. The candidate will also be required to pass an oral qualifying examination, conducted by his doctoral committee, that will test his preparation to conduct a specialized research problem.

The Department of Astronomy operates an off-campus observatory at Ojai, California, which features a 24-inch reflecting telescope that is available to students in their independent study and research programs in connection with courses 199, 596A and 599.

#### Lower Division Courses

### Physical Sciences 3A. Astronomy.

(Formerly numbered Astronomy 1.) See Physical Sciences, page 393.

### 2. Practice in Observing. (½ course)

Meets one evening a week for 2½ hours. Prerequisite: knowledge of plane trigonometry and some previous or concurrent course in astronomy, or consent of the instructor. Practical work for beginners, including telescopic observations and laboratory exercises cognate to an introductory course in astronomy. **The Staff**

#### Upper Division Courses

### 101. Introduction to Astronomy.

Meets four hours per week. Prerequisites: Physics 1A and Mathematics 11A-11B or their equivalents. Open to qualified sophomores as well as upper division students. Course 2 may be elected for observatory and laboratory work in connection with this course. A survey of the whole field of astronomy, designed primarily for students majoring in a physical science or mathematics. **The Staff**

### 103A. Spherical and Gravitational Astronomy.

Meets three hours per week. Prerequisites: Physics 1A-1B-1C-1D; Mathematics 11A-11B-11C and either 12A-12B or 13A-13B or their equivalents. Spherical astronomy; the two body problem; orbit determination of minor planets and binary stars. **Mr. Abell, Mr. Epps**

### 103B. The Solar System.

Meets three hours per week. Prerequisite: course 103A. Gravitational potential of a planet, precession, perturbations, radar astronomy, theory of solar radio observations, planetary temperatures and atmospheres, interplanetary medium, origin of the solar system. **Mr. Peale**

### 103C. Stars and Galaxies.

Meets three hours per week. Prerequisites: the same as for course 103A plus course 101; or 103A-103B. Thus a non-astronomy major may take 101 and 103C. Properties of stars; stellar distribution and motions; structure of the galaxy; galaxies and cosmology. **The Staff**

### 104. Astronomical Optics.

Meets three hours per week. Prerequisite: Physics 105A. Geometrical optics, including ray tracing and optical aberrations commonly encountered in optical design. Interference, diffraction, dispersion, photoelectric emission and other aspects of physical optics with particular emphasis placed on practical applications in astronomical investigation. **Mr. Epps**

### 117A-117B-117C. Introduction to Astrophysics.

Meets three hours per week. Prerequisite: senior standing in astronomy or physics, or consent of the instructor. Course 117A: spectroscopy and the physical foundations of astrophysics. Course 117B: radiative transfer; outer layers of the sun and stars; stellar chemical abundances. Course 117C: stellar interiors and evolution; interstellar matter and star formation. **The Staff**

### 199. Special Studies. (½ or 1 course)

Prerequisite: senior standing in astronomy or physics, with an outstanding record and consent of the instructor. Special studies with an individual faculty member. With prior approval, this course may be used to carry out a meritorious observing program at the UCLA Students' Observatory, or in special cases with the 24-inch reflector at the Department's Field Station in Ojai. **The Staff**

#### Graduate Courses

Prerequisite to graduate courses is by consent of the instructor. Graduate courses 201 through 229 are offered in alternate years.

### \*201A-201B-201C. Astrophysics of the Solar System.

The sun, solar phenomena, and solar-terrestrial relationships. The interplanetary medium and astronomical plasma physics, comets, meteorites, meteors, satellites and planets, planetary atmospheres. Origin and evolution of the solar system. **Mr. Aller, Mr. Peale**

### \*204A-204B-204C. Observational Astronomy.

Positional astronomy, data reduction, telescopes, photometric, spectroscopic and radio instruments and techniques. Includes laboratory. **Mr. Epps, Mr. Popper, Mr. Riegel**

### 208. The Interstellar Medium.

Interstellar gas and dust. Diffuse and planetary nebulae. Magnetic fields in space and the acceleration of cosmic rays. Star formation. **Mr. Aller**

### 217A-217B. Stellar Photospheres.

Meets three hours per week. Physics of stellar photospheres and radiative transfer. The continuous and line spectra of stars. Chemical abundances in stars.

### 219A-219B. Galactic Astronomy.

Statistical astronomy. Distance determinations. Stellar motions and populations. Radio observations of the interstellar medium. Stellar dynamics. Structure of the galaxy from optical and radio observations. **Mr. Riegel, Mr. Upton**

### \*227A-227B. Stellar Structure and Evolution.

Structure and evolution of the stars. Stellar energy sources and origin of the elements. Pulsation theory of variable stars. The second quarter is devoted primarily to the application of machine computation to the solution of astrophysical problems, including the computation of stellar models. **Mr. Epps, Mr. Upton**

### 229. Extragalactic Astronomy.

Galaxies and clusters of galaxies. Distribution of matter in space. The observational approach to cosmology. **Mr. Abell**

\* Not to be given, 1968-1969.

**240. Modern Problems in Astronomy and Astrophysics.**

Special topics offered by distinguished visiting professors. May be repeated for credit. Open to qualified graduate students in astronomy and in related fields (physics, meteorology, planetary and space physics).

**250. Seminar on Current Astronomical Research.**  
(½ course)

The Staff

**261. Seminar in High Energy Astrophysics.**

Origin of high energy particles in astronomical sources including supernova remnants, radio galaxies, quasars.

**285. Seminar on the Origin of the Solar System.**

(Same as Planetary and Space Science 285.) Dynamical problems of the solar system; chemical evidences from geochemistry, meteorites, and the solar atmosphere; nucleosynthesis; formation of the solar nebula; solar contraction; hydromagnetic processes in the nebulae, condensation of the planets; origin of satellite systems.

The Staff

**Individual Study and Research**

The following courses, 596A, 596L and 599, may be repeated by a student at the discretion of the Department.

**596A. Directed Individual Studies.** (½ to 2 courses)

The Staff

**596L. Advanced Study and Research at the****Lick Observatory.** (½ to 3 courses)

Intended for graduate students who require ob-

servational experience as well as for those working upon observational problems for their theses.  
Mr. Whitford in charge

**599. Doctoral Research and Writing.**  
(2 to 3 courses)

The Staff

**Related Courses in Other Departments**

The following courses are of interest jointly to qualified students in astronomy. Credit toward the M.A. in astronomy may be allowed for one or two of these courses.

**Engineering 160A. Astrodynamic and Rocket Navigation.****160B. The Determination of Orbits.****260A-260B. Celestial Mechanics.****260C. Nongravitational Astrodynamic.****261A. Advanced Orbit Theory.****Meteorology 228A-228B. Theory of Radiation Transfer in Planetary Atmospheres.****244. Solar and Geomagnetic Influences.****Planetary and Space Science 101. Introduction to Planetary and Space Physics.****220A-220B-220C. Planetary and Orbital Dynamics 1, 2, 3.****225A-225B. Physics and Chemistry of Planetary Interiors 1, 2.****228A-228B. Magnetic Fields of the Earth and Planets 1, 2.****260A-260B-260C. Particles and Fields in Space.****■ BACTERIOLOGY**

(Department Office, 5304 Life Sciences Building)

June Lascelles, Ph.D., *Professor of Bacteriology.*

M. J. Pickett, Ph.D., *Professor of Bacteriology.*

†Sydney C. Rittenberg, Ph.D., *Professor of Bacteriology.*

William R. Romig, Ph.D., *Professor of Bacteriology (Acting Chairman of the Department).*

Meridian Ruth Ball, Sc.D., *Emeritus Professor of Bacteriology.*

Anthony J. Salle, Ph.D., *Emeritus Professor of Bacteriology.*

Gregory J. Jann, Ph.D., *Associate Professor of Bacteriology.*

David R. Krieg, Ph.D., *Associate Professor of Bacteriology.*

Rafael J. Martinez, Ph.D., *Associate Professor of Bacteriology.*

Eli E. Sercarz, Ph.D., *Associate Professor of Bacteriology.*

R. John Collier, Ph.D., *Assistant Professor of Bacteriology.*

Frederick A. Eiserling, Ph.D., *Assistant Professor of Bacteriology.*

Donald P. Nierlich, Ph.D., *Assistant Professor of Bacteriology.*

†Eugene Rosenberg, Ph.D., *Assistant Professor of Bacteriology.*

† Absent on leave, 1968-1969.

Wilbur T. Ebersold, Ph.D., *Associate Professor of Botany.*  
 Dan S. Ray, Ph.D., *Assistant Professor of Zoology.*  
 Richard W. Siegel, Ph.D., *Professor of Zoology.*

#### Preparation for the Major

Biology 1A-1B-1C; Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C; Mathematics 3A-3B-3C; Physics 2A-2B-2C. For transfer students lacking the equivalent of Chemistry 1B laboratory, Chemistry 5, half course, will be required.

#### The Major

Bacteriology 100A-100B-100C, 107, plus two additional upper division courses in bacteriology; Chemistry 153. Three additional courses chosen from the bacteriology list or from botany, chemistry, mathematics, or zoology with approval of the Department. For those planning graduate work in microbiology, Chemistry 102 and 154 recommended. Bacteriology 195 or 199 will not be counted toward the major without departmental approval.

#### Graduate Study

The Department of Bacteriology offers programs of study and research leading to the M.A. and Ph.D. degrees in microbiology (see page 351). Financial aid is available to qualified graduate students in the form of teaching assistantships, traineeships and research assistantships. More detailed information may be obtained by writing to the Chairman, Department of Bacteriology.

#### Advisement

Each undergraduate and graduate student will be assigned an official departmental adviser upon entrance. It is the student's responsibility to confer with his adviser at least once every quarter.

#### Lower Division Courses (See also Biology)

#### 8. Introduction to Microbiology.

Lecture, three hours; laboratory-demonstration, one hour. For the nontechnical student; an introduction to the biology of microorganisms (bacteria, viruses, protozoa, algae, fungi), their significance as model systems for understanding fundamental cellular processes, and their role in human affairs.

Mr. Jann, Mr. Pickett, Mr. Sercarz

#### Upper Division Courses

#### 100A. Fundamentals of Bacteriology.

Lecture, three hours; laboratory, discussion, five hours. Prerequisite: Biology 1A-1B-1C; Chemistry 4A-4B-4C, 6A-6B-6C. The historical foundations of the science; the structure, physiology, ecology and applications of bacteria. Mr. Jann, Mr. Rittenberg

#### 100B. Fundamentals of Bacteriology.

Lecture, three hours; laboratory, four hours. Prerequisite: course 100A. Host-parasite relations; the agents of infection, host response, and diagnosis and control of infection. Mr. Collier

#### 100C. Fundamentals of Bacteriology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 100A. Bacterial taxonomy; the biology of the major groups of bacteria, and the application of elective culture procedures.

Mr. Rittenberg

#### 107. Comparative Genetics.

(Formerly numbered 186. Same as Botany 107 and Zoology 107.) Lecture, three hours. Prerequisite: Biology 1A-1B-1C. Mendelian principles. The gene: its structure, function, and chemistry, with emphasis on mutation, coding, regulation and transmission.

Mr. Ebersold, Mr. Krieg, Mr. Romig

#### 110. The Microbiology of Infection.

(Formerly numbered 103.) Lecture, two hours, laboratory, six hours. Prerequisite: courses 100A-100B. The salient characteristics of bacteria, rickettsiae, and viruses, both pathogenic and adventitious, associated with diseases of man. Mr. Pickett

#### 110C. The Laboratory Diagnosis of Infection.

(½ course)

Laboratory, six hours. Prerequisite: course 110. Techniques in the laboratory examination of clinical material.

#### 111. Immunology.

(Formerly numbered 130.) Lecture, three hours; laboratory, four hours. Prerequisite: course 100B; or consent of instructor. Structure of antigens and antibodies; nature of immunochemical specificity; cellular aspects of the immune response; regulatory mechanisms in immunology; hypersensitivity.

Mr. Sercarz

#### 112A-112B. Structure and Physiology of Bacteria.

(Formerly numbered 106.) Lecture, three hours. Prerequisite: course 100A, Chemistry 152 or 153; or consent of instructor. A review of current knowledge of bacterial growth and reproduction, considered at the molecular level. Discussions of cellular structure, growth kinetics, the synthesis of DNA, RNA, and protein, the regulation of metabolism, and general cellular physiology.

Mr. Eiserling, Mr. Martinez, Mr. Nierlich

#### 112C. Laboratory in Structure and Physiology.

(½ course)

(Formerly numbered 106C.) Laboratory, six hours. Prerequisite or corequisite: course 112B. The experimental basis of modern microbial physiology.

Mr. Eiserling, Mr. Martinez, Mr. Nierlich

#### 113. Bacterial Metabolism.

Lecture, three hours; laboratory, four hours. Prerequisite: course 100A, Chemistry 152, or 153; or consent of instructor. The major patterns of energy generation and biosynthesis, and their regulation.

Miss Lascelles

**119. Bacterial Viruses.**

(Formerly numbered 109.) Lecture, three hours. Prerequisite: courses 100B, 107, Chemistry 152, or 153; or consent of instructor. Bacteriophage: their reproduction, genetics, and radiobiology; lysogeny. Bacteriophage as model systems for virus-host relations and their utilization in molecular biology.

Mr. Krieg, Mr. Ray

**195. Preseminar. (½ course)**

Discussion, two hours. Prerequisite: senior stand-

ing and consent of instructor. Oral and written reports on current research literature. The Staff

**199. Special Studies in Bacteriology.**

(½ to 1 course)

Prerequisite: senior standing and consent of the department prior to registration. Maximum enrollment for three quarters. The Staff

**Microbiology****Graduate Courses****200A-200B. Research Methods of Microbiology.**

(Formerly numbered 201.) A course for beginning graduate students normally taken the first two quarters in residence. Experimental introduction to modern research techniques and instrumentation.

Mr. Rosenberg and Staff

**202. Gene Structure and Function.**

(Same as Botany 202 and Zoology 202.) Lecture and discussion, three hours. Prerequisites: course 107 and Chemistry 153 or consent of the instructor. The genetic coding of information and its transfer from DNA through RNA to protein; the operon model and other aspects of regulatory genetics, mutations and genetic fine structure.

Mr. Krieg, Mr. Siegel

**203. Chromosome Structure and Replication.**

(Same as Botany 203 and Zoology 203.) Prerequisites: course 107, Chemistry 152 or 153, Physics 1A-1B-1C or consent of the instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems.

Mr. Ray

**204. Microbial Genetics.**

(Formerly numbered 212.) Lecture, one hour; laboratory, nine hours. Prerequisite: consent of the instructor. Advanced methodology for the study of bacterial and viral genetics.

Mr. Romig

**206. Subcellular Structure and Function in Bacteria.**

Lecture and discussion, three hours. Prerequisite: course 112A-112B, or consent of the instructor. A discussion of the structure, chemical nature, biosynthesis, and function of subcellular elements of bacteria.

Mr. Eiserling, Mr. Martinez

**207. Electron Microscopy in Microbiology.**

Lecture, two hours; laboratory, ten hours. Prerequisites: courses 112A-112B or 206, Chemistry 113 or 102, or consent of instructor. Corequisite: concurrent enrollment in related studies in course 599. Principles of electron microscopy as applied to microbiology; quantitative methods and high resolution studies of bacteria, viruses, and subcellular particles.

Mr. Eiserling

**208. Regulatory Mechanisms in Microbial Physiology.**

Lecture and discussion, three hours. Discussions based on the current literature on control mechan-

isms regulating fundamental cellular processes. Topics include the regulation of enzyme and gene activities at the molecular and cellular levels.

Mr. Nierlich, Mr. Rosenberg

**210. Advanced Microbial Biochemistry.**

Lecture and discussion, three hours. Prerequisite: course 113 or consent of the instructor. A consideration of specialized aspects of microbial chemistry and metabolism with emphasis on current developments.

Miss Lascelles, Mr. Nierlich

**222A-222I. Advanced Topics in Microbiology.**

(½ course each)

Lecture and discussion, two hours. The subject matter of this course will be in an advanced field of microbiology in which the instructor has special proficiency. The fields for each quarter will be announced in the Schedule of Classes.

The Staff

**250. Seminar in Microbial Metabolism. (½ course)**

Miss Lascelles, Mr. Rittenberg

**251. Seminar in Regulation and Differentiation.**

(½ course)

Mr. Nierlich, Mr. Rosenberg

**252. Seminar in Medical Microbiology. (½ course)**

Mr. Pickett

**253. Seminar in Immunology. (½ course)**

Mr. Sercarz

**254. Seminar in Microbial Physiology. (½ course)**

Mr. Collier, Mr. Jann, Mr. Martinez

**255. Seminar in Bacterial Viruses. (½ course)**

Mr. Krieg

**256. Seminar in Microbial Genetics. (½ course)**

Mr. Eiserling, Mr. Romig

**Individual Study and Research****596. Directed Individual Research.**

(½ to 2 courses)

The Staff

**598. Research for Master's Thesis.**

(½ to 2 courses)

The Staff

**599. Research for Doctoral Dissertation.**

(½ to 2 courses)

The Staff

## ■ BIOCHEMISTRY

### Graduate Study

Programs of study and research leading to the M.S. and Ph.D. degrees in the general area of biochemistry are offered in the Department of Biological Chemistry, School of Medicine (see page 173), in the Division of Biochemistry, Department of Chemistry

(see page 198), and in the Department of Botanical Sciences (see page 179). More detailed information regarding admission requirements and opportunities for graduate studies in these programs may be obtained by writing to the graduate adviser in the department in which you are interested.

## ■ BIOLOGICAL CHEMISTRY

(Department Office, 33-257 Center for the Health Sciences)

Robert M. Fink, Ph.D., *Professor of Biological Chemistry.*

Isaac Harary, Ph.D., *Professor of Biophysics and Professor of Biological Chemistry.*

David R. Howton, Ph.D., *Professor of Biophysics in Residence and Professor of Biological Chemistry in Residence.*

Ralph W. McKee, Ph.D., *Professor of Biological Chemistry.*

James F. Mead, Ph.D., *Professor of Biophysics and Professor of Biological Chemistry.*

Joseph F. Nyc, Ph.D., *Professor of Biological Chemistry.*

John G. Pierce, Ph.D., *Professor of Biological Chemistry (Vice-Chairman of the Department).*

George J. Popjak, M.D., *Professor of Psychiatry and Biological Chemistry.*

Sidney Roberts, Ph.D., *Professor of Biological Chemistry.*

Emil L. Smith, Ph.D., *Professor of Biological Chemistry (Chairman of the Department).*

Marian E. Swendseid, Ph.D., *Professor of Nutrition and Professor of Biological Chemistry.*

Irving Zabin, Ph.D., *Professor of Biological Chemistry.*

Stephen Zamenhof, Ph.D., *Professor of Biological Chemistry and Professor of Microbial Genetics, Medical Microbiology and Immunology.*

Max Dunn, Ph.D., LL.D., *Emeritus Professor of Chemistry and Biological Chemistry.*

Samuel Eiduson, Ph.D., *Associate Professor of Biological Chemistry in Residence and Associate Professor of Psychiatry in Residence.*

Alexander N. Glazer, Ph.D., *Associate Professor of Biological Chemistry.*

John E. Snoke, Ph.D., *Associate Professor of Biological Chemistry.*

Robert J. DeLange, Ph.D., *Assistant Professor of Biological Chemistry.*

Armand J. Fulco, Ph.D., *Assistant Professor of Biophysics in Residence and Assistant Professor of Biological Chemistry in Residence.*

Dohn G. Glitz, Ph.D., *Assistant Professor of Biological Chemistry.*

† Bruce D. Howard, M.D., *Assistant Professor of Biological Chemistry.*

Francis S. Markland, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*

David S. Sigman, Ph.D., *Assistant Professor of Biological Chemistry.*

Patrice J. Zamenhof, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*

### Requirements for Admission to Graduate Status

1. For general University requirements for the M.S. degree, see page 136; for the Ph.D. page 140 of this catalog.

2. Minimum departmental requirements:

applicants must have received the bachelor's degree, preferably with an undergraduate major in chemistry. Students who have degrees in a biological science are also eligible. A previous course in biochemistry is not a

† Absent on leave, 1968-1969.

prerequisite for acceptance as a graduate student. Minimum course requirements for admission normally include the following: general chemistry; quantitative chemistry; organic chemistry (including laboratory); physical chemistry (including laboratory); general physics; and mathematics through calculus. In some cases the requirement in physical chemistry or mathematics may be fulfilled during the first year of graduate study. Courses in life sciences such as biology (similar to General Biology 1A-1B-1C) or zoology or bacteriology and advanced quantitative analysis, qualitative organic analysis and advanced organic chemistry are recommended.

#### Concurrent M.D. and Ph.D. Programs

Students may enroll in both the School of Medicine and the Graduate Division in order to fulfill some graduate degree requirements while obtaining the M.D. degree. This dual registration makes it possible for a medical student to utilize for graduate work one vacation period and the four elective quarters during the four-year medical curriculum and to offer this work in partial fulfillment of the requirements for the Ph.D. The Department of Biological Chemistry offers this opportunity to qualified applicants. There are various ways in which financial support can be made available to students in the program after completion of one or two years of the medical curriculum. Contact Dr. Joseph Nyc, the Department Adviser, for further information concerning the program.

#### Requirements for the M.S. degree

1. General University Requirements, see page 136.

2. Thesis Plan. Courses 253, 255 and 263 following completion of a beginning course in biochemistry either before or after admission to graduate status. A reading knowledge of German. Completion of a satisfactory thesis based on laboratory research. Oral examination on thesis and a written qualifying examination if performance in courses 253, 255 and 263 is not B or better. By arrangement in special cases a comprehensive examination may be substituted.

#### Requirements for the Ph.D. degree

1. General University Requirements, see page 140.

2. Courses 253, 255 and 263 following completion of a beginning course in biochemistry either before or after admission to graduate status plus courses 220, 260 and

599 and other courses recommended on an individual basis. A reading knowledge of German, Russian or French plus a second language (programs of special subjects such as computer techniques may be substituted for the second language).

The Department of Biological Chemistry in the Medical School and the Division of Biochemistry of the Chemistry Department offer coordinated programs leading to the M.S. and Ph.D. degrees. Although there is close cooperation between the two departments, a student must be formally admitted into the program of one department or the other. For more information concerning graduate study in biological chemistry, write to Joseph F. Nyc, Graduate Adviser, Center for Health Sciences, University of California, Los Angeles, California 90024.

#### Upper Division Courses

##### 101A-101B-101C. Biological Chemistry.

Lecture, three hours. Prerequisite: organic chemistry. Required in the medical curriculum; consent of the instructor is required for nonmedical students. The Staff

##### 101D-101E. Biological Chemistry Laboratory.

(½, 1 course)

Laboratory, four hours (101D); seven hours (101E). Required in the medical curriculum; consent of the instructor is required for nonmedical students. Mr. Fink and the Staff

##### 102A-102B. Biological Chemistry (Dental Students).

Lecture, three hours. Prerequisite: courses for admission to dental school. Required in the dental curriculum; consent of the instructor is required for nondental students. The Staff

##### 102C. Biological Chemistry Laboratory (Dental Students). (½ course)

Laboratory, four hours. Required in the dental curriculum; consent of the instructor is required for nondental students. Mr. McKee and the Staff

#### Graduate Courses

##### 220A-220D. Biochemical Preparations.

(½ to 2 courses each)

Lecture or recitation, one hour; laboratory, by arrangement. Prerequisite: consent of the instructor. Laboratory techniques important in biochemical research; isolation, identification and determination of biologically active compounds. Mr. Nyc

##### 221. Neurobiochemistry.

Lecture or recitation, three hours. Prerequisites: Biological Chemistry 101A-101B-101C or equivalent. Chemistry and metabolism of the nervous system with particular emphasis on development, differentiation and function. Mr. Eiduson, Mr. Roberts

##### 253. Proteins and Nucleic Acids.

(Formerly numbered 243 and 244. Same as Chemistry 253.) Lecture or recitation, four hours. Prerequisites: Chemistry 153 or Biological Chemistry 101B and Chemistry 113B-113C or equivalent.

Chemical and physical properties of proteins, amino acids, nucleotides and nucleic acids; structure and sequence determination; correlation of structure and biological properties; synthesis and properties of polypeptides and polynucleotides. **The Staff**

### 255. Biological Catalysis.

(Formerly numbered 245. Same as Chemistry 255.) Lecture or recitation, four hours. Prerequisites: Chemistry 143A, Chemistry 153 or Biological Chemistry 101B and Chemistry 118B-118C or equivalent. Discussion of approaches to the understanding of enzymes and enzymic catalysis; characteristics of different enzymes and enzymic reactions of special biological processes. **The Staff**

### 260A-260B-260C. Seminar in Biological Chemistry.

(½ course each)

Lecture or recitation, one hour. Prerequisite: consent of the instructor. Oral reports by graduate students on topics selected from current biochemical literature. **Mr. Snook**

### 261A-261B-261C. Seminar in the Biochemistry of Lipids. (½ course each)

Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C or equivalent; consent of the instructor. Biochemistry of lipids including methods of isolation, characterization and determination; role of lipids in animal metabolism. **Mr. Howton, Mr. Mead**

### 262A-262D. Seminar in the Biochemistry of Proteins. (½ course each)

Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C and consent of the instructor. An advanced seminar in the field of protein structure including current methods used in research and the relationships between the structure and function of proteins. **Mr. Glazer and the Staff**

## ■ BIOLOGY

(See also Bacteriology, Botanical Sciences, and Zoology)

### Lower Division Courses

#### 1A-1B-1C. Introductory Biology.

Lecture, three hours; laboratory, three hours. Prerequisite: Chemistry 1A. Offered primarily for majors in bacteriology, botany, zoology, and other sciences, as well as premedical and pre dental students. The general principles of biology. **The Staff**

#### 2. Principles of Biology.

Lecture, three hours; discussion, one hour. Prerequisites: Physical Sciences 1 and 2. Offered for students other than majors in the biological sciences. The general principles of biology. **The Staff**

#### 21. Field Biology.

Lecture, three hours; required field trips. Prerequisite: Biology 2. An introduction to the natural history and ecology, interrelationships, and classifica-

### 263. Cellular Metabolism.

(Formerly numbered 246. Same as Chemistry 263.) Lecture or recitation, four hours. Prerequisites: Chemistry 153 or Biological Chemistry 101B and Chemistry 118B or equivalent. Patterns of biological degradation and synthesis; metabolic interrelationships and control; energetics of metabolism; protein biosynthesis and molecular genetics. **The Staff**

### 264. Regulation of Cell Metabolism. (1½ course)

Lecture or recitation, one hour. Prerequisites: courses 101A-101B-101C or equivalent. Regulatory processes in animal metabolism. Membrane transport, intracellular compartmentation, protein biosynthesis, enzyme activation and inhibition; relationship to hormone action and cell function. **Mr. Roberts**

### Individual Study and Research

#### 596. Directed Individual Study and Research.

(½ to 3 courses)

Laboratory, by arrangement. Prerequisite: consent of graduate adviser. **The Staff**

#### 597. Preparation for Examinations.

(½ to 1 course)

Individual study for qualifying examination for Ph.D. or comprehensive examination for the master's degree. Prerequisite: consent of graduate adviser. **The Staff**

#### 598. Preparation of the Master's Thesis.

Preparation of research data and writing of master's thesis. Prerequisite: consent of the graduate adviser.

#### 599. Research for and Preparation of the Doctoral Dissertation. (½ to 3 courses)

Preparation of research data and writing Ph.D. dissertation. Prerequisite: consent of graduate adviser. **The Staff**

cation of the common animals and plants, with emphasis on western North America. **Mr. Norris**

### 181A-181B. Biology for Majors in Physical Sciences and Engineering.

Lecture, three hours; demonstration or discussion, one hour. Prerequisite: upper division standing with a major in physical sciences or engineering. This course may be taken in place of Biology 2 in fulfillment of two quarters of the life sciences requirements for nonmajors in the biological sciences. Principles of biology for students with an advanced background in physical sciences. **The Staff**

### Professional Courses

#### 370. Methods and Materials for Teaching Life Sciences.

Lectures, demonstrations, field trips. Prerequisite: major in biological sciences, senior or graduate standing, and one of the following courses: Biology 21 or Zoology 103. **The Staff**

## ■ BIOMATHEMATICS

(Department Office, AV-111 Center for the Health Sciences)

Wilfrid J. Dixon, Ph.D., *Professor of Biomathematics and Biostatistics (Chairman of the Department).*

Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology and Biomathematics.*

Frank J. Massey, Ph.D., *Professor of Biostatistics and Biomathematics.*

Olive Jean Dunn, Ph.D., *Associate Professor of Biostatistics and Biomathematics.*

Carol M. Newton, M.D., Ph.D., *Associate Professor of Biomathematics.*

Abdelmonem A. Affi, Ph.D., *Assistant Professor of Biostatistics and Biomathematics.*

Virginia A. Clark, Ph.D., *Assistant Professor of Biostatistics and Biomathematics.*

Jan W. Kuzma, Ph.D., *Assistant Professor of Biomathematics in Residence.*

Robert I. Jennrich, Ph.D., *Assistant Professor of Biomathematics and Mathematics in Residence.*

Michael A. Fox, Ph.D., *Assistant Professor of Biomathematics in Residence.*



Morton B. Brown, Ph.D., *Assistant Research Statistician.*

Edward W. Forgy, Ph.D., *Assistant Research Statistician.*

Alan B. Forsythe, Ph.D., *Assistant Research Statistician.*

M. Ray Mickey, Ph.D., *Research Statistician.*

The Department of Biomathematics will offer instruction primarily to graduate students from mathematics and the biological and physical sciences. The field of biomathematics relates to the biological domain, which comprises many and diverse sciences, much as mathematical physics relates to the physical universe. All graduate students enrolled in biomathematical courses must be familiar with some aspects of biology, as well as with mathematical and computational tools.

Students may fulfill these requirements with a broad basis of biology with considerable mathematics; those who concentrate more on the mathematical and computational preparation should do so in sufficient depth to enable them to fashion new analytical tools required by the emerging theoretical components of the biological sciences. Further information may be obtained by writing to the Department of Biomathematics.

### Upper Division Courses

#### 110. Elements of Biomathematics.

Prerequisite: calculus. Analysis of deterministic models including some general approaches to the study of homeostasis. Conditions under which deterministic and probabilistic descriptions of biological phenomena are appropriate. Both approaches will be applied to selected examples in epidemiology and enzyme kinetics.

Miss Newton and the Staff

#### 199. Special Studies in Biomathematics.

(½ to 1 course)

Prerequisites: upper division standing and consent of the instructor. Special studies in biomathematics, including either reading, assignments or laboratory

work or both, designed for appropriate training of each student who registers in this course. The Staff

### Graduate Courses

#### 201. Deterministic Models in Biology.

Prerequisites: linear algebra and differential equations. The conditions under which deterministic approaches can be employed are examined, and conditions where they may be expected to fail. Topics receiving special attention include compartmental analysis, enzyme kinetics, membrane theory, and the homeostatic control of physiological systems.

Miss Newton and the Staff

#### 202A-202B. Time Series Analysis.

Prerequisites: calculus, linear algebra and probability. Spectral representation, linear time invariant systems, ergodic theory, and prediction theory. Estimation of spectra, coherence, frequency response and bi-spectra. Statistical stability, hypothesis testing, and design. Use of the fast Fourier transform, complex demodulation, and instrumental variables. Biomedical and physical applications.

Mr. Jennrich and the Staff

#### 203. Stochastic Models in Biology.

Prerequisites: courses 201 and 202. The mathematical description of physiological relationships with particular attention directed to biological areas where the conditions for deterministic models are inadequate. The appropriateness of various stochastic approaches for these analyses will be evaluated.

Mr. Dixon and the Staff

#### 210. Introduction to Biomedical Computation.

Prerequisite: graduate standing. Basic concepts of data acquisition and machine computation, with special reference to biomedical applications.

The Staff

#### 596. Directed Individual Study or Research in Biomathematics. (1 to 2 courses)

Independent study of an advanced nature.

The Staff

## ■ BIOPHYSICS

(Department Office, B1-153 Health Sciences Center)

Mary A. B. Brazier, D.Sc., *Professor of Anatomy, of Biophysics and of Physiology in Residence.*

Isaac Harary, Ph.D., *Professor of Biophysics and of Biological Chemistry.*

David R. Howton, Ph.D., *Professor of Biophysics and of Biological Chemistry in Residence.*

Alexander Kolin, Ph.D., *Professor of Biophysics.*

O. Raynal Lunt, Ph.D., *Professor of Biophysics and of Plant Nutrition (Acting Chairman of the Department and Acting Director of the Laboratory of Nuclear Medicine and Radiation Biology).*

Norman S. MacDonald, Ph.D., *Professor of Biophysics and of Radiology in Residence.*

James F. Mead, Ph.D., *Professor of Biophysics and of Biological Chemistry.*

Wilbur A. Selle, M.D., Ph.D., *Professor of Biophysics.*

Norman S. Simmons, D.M.D., Ph.D., *Professor of Biophysics and of Oral Medicine.*

Albert W. Bellamy, Ph.D., *Emeritus Professor of Biophysics.*

Stafford L. Warren, M.D., L.L.D., D.Sc., *Emeritus Professor of Biophysics.*

Armand J. Fulco, Ph.D., *Assistant Professor of Biophysics and of Biological Chemistry in Residence.*

Lawrence S. Myers, Jr., Ph.D., *Assistant Professor of Biophysics and of Radiology in Residence.*

E. Hardin Strickland, Ph.D., *Assistant Professor of Biophysics in Residence.*



Benedict Cassen, Ph.D., *Clinical Professor of Biophysics.*

Thomas G. Hennessy, M.D., Ph.D., *Lecturer in Biophysics.*

Ole A. Schjeide, Ph.D., *Lecturer in Biophysics.*

### Admission to Graduate Status

In addition to fulfillment of the requirements of the Graduate Division, applicants for admission to graduate status in biophysics should have adequate training and experience in mathematics, chemistry, biology, and physics.

It is expected that completion of a major in any one of these fields, with some upper division courses in the other areas of concern would adequately prepare the student for beginning his graduate studies. There will be an opportunity for the graduate student to take courses during his residence to fulfill these broad requirements.

Students who are planning their undergraduate curriculum may wish to orient their programs to include: (a) mathematics through differential equations; (b) chemistry through physical chemistry including the laboratory; (c) biology to include an upper division course in general physiology and an upper division course in genetics; (d) physics to include an upper division course in electromagnetic theory or electrodynamics, and an upper division laboratory course in electrical and electronic measurement.

### Graduate Study

The Department of Biophysics offers programs of study and research leading to the M.S. and the Ph.D. For the general requirements for the M.S. degree, see pages 136-140. A foreign language is not required for the master's degree. The general University requirements for the Ph.D. degree are given on pages 140-142. The student is not required to earn the M.S. degree before undertaking work for the Ph.D. degree. A program of study will be recommended by the departmental committee on graduate study on the basis of the student's completion of and record of achievement in the basic course of study noted above. Upper division and graduate courses necessary to fulfill specific needs will be required, but the most important requirement for the doctoral degree is demonstration of competence for original and significant research accomplishment.

More detailed information regarding admission to and requirements for graduate study may be obtained by writing to the Chairman, Department of Biophysics, University of California, Los Angeles, California 90024.

## Upper Division Courses

**101. Elements of Medical Biophysics. (½ course)**

Lectures on the physical basis of biological processes, with emphasis on understanding the physical fundamentals. Includes discussion of physical principles employed in biological research.

Mr. Myers and the Staff

**102. Elements of Dental Biophysics. (½ course)**

Lecture, two hours. Lectures and demonstration on the physical basis of biological processes, with emphasis on understanding the physical fundamentals. Areas of greatest importance to dentistry are stressed.

Mr. Myers and the Staff

**103. Applications of New Development in Physics and Engineering to Medicine. (½ course)**

Prerequisite: post sophomore standing in UCLA Medical School or consent of the instructor. A survey of present developments and potential possibilities of medical applications of new materials, newly engineered systems (blood dialyzers, oxygenators), new diagnostic procedures (radioisotope techniques, scanning), and new optical devices (lasers, fiber optics, etc.).

Mr. Cassem

**109. Special Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. The Staff

## Graduate Courses

**201A-201B. General Biophysics.**

Lecture, three hours; discussion one hour. Prerequisite: a major in physics, chemistry, or a life science; calculus; consent of the instructor. An introductory course in the application of physical and physical chemical principles to biological systems, including the structure of macromolecules, intermolecular forces, photoreception, nerve conduction, contractile tissues, enzyme kinetics and thermodynamics, bioacoustics, biological replication, and effects of ionizing radiation.

Mr. Strickland and the Staff

**240. Electrodiagnostic Techniques.**

Lecture and demonstration, four hours. The principles of electrocardiography, electromyography, electroencephalography, electroplethysmography, and other electronic methods involving a consideration of electrophysics, action potentials, and techniques and procedures of taking records. Certain periods will be devoted to experimental work and to taking of records on hospital patients.

Mr. Selle

**†241A-241B-241C. Molecular Biophysics.**

Lecture, two hours; tutorial, two hours. The biophysical aspects of the structure and properties of molecules, macromolecules, interfaces and colloids, and their relation to life processes in subcellular structure such as membranes, mitochondria, chloroplasts, and chromosomes.

Mr. Howton, Mr. Myers

**243. Selected Methods of Cellular and Molecular Biophysics. (½ course)**

(Formerly numbered 242A-242B.) Prerequisite: consent of the instructor. Biophysical principles and methods applied to the study of biological phenomena and medical research.

Mr. Kofin

**244. Laboratory Techniques of Biophysical Research.**

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. A laboratory

course in which modern physical methods are applied to problems of biological interest. Emphasis is on techniques useful in the separation, isolation, analysis, and structure determination of macromolecules and in the study of their physical and biological properties.

Mr. Fulco

**245. Cellular Biophysics.**

(Formerly numbered 245A-245B.) Lecture, three hours; tutorial, one hour. Prerequisite: consent of the instructor. Physical and chemical methods for the study of whole cells, subcellular structures and cellular interactions, with emphasis on achieving an understanding of living organization through a study of the mechanisms of control of biological processes.

Mr. Harary

**†246A-246B-246C. Sub-Cellular Radiation.****Biophysics.**

Lecture, two hours; tutorial, two hours. Prerequisite: consent of the instructor. The effects of visible, ultraviolet, and ionizing radiation on sub-cellular systems, with emphasis at the molecular level on the mechanisms by which these effects are brought about.

Mr. Myers, Mr. Howton

**250. Advanced Topics in Biophysics. (½ course)**

Lecture, one hour; tutorial, one hour. Prerequisite: consent of the instructor. The subject matter of this course will be in the field of biophysics in which a staff member, or invited scholar giving the course, has developed a special proficiency owing to his research interest.

Mr. Schjeide

**251A-251B-251C. Seminar in Biophysics.****(½ course each)**

Prerequisite: consent of the instructor. All graduate students in the department are required to take this seminar. Oral reports by the graduate students on important topics suggested from the current literature in biophysics and related fields.

Mr. MacDonald

**252. Experimental Neurobiophysics. (½ course)**

Laboratory, four hours. Prerequisite: course 262, or consent of the instructor. Experiments on the application of biophysical methods to the study of the nervous system.

The Staff

**260. Seminar on the Physics of Viruses. (½ course)**

A review of the results of the application of physical concepts and physical methods to the study of viruses.

The Staff

**262. Seminar in Neurobiophysics.**

Lecture, two hours; tutorial, two hours. Prerequisite: consent of the instructor. A study of the biophysical aspects of the electrical activity of the nervous system.

The Staff

**270. Seminar in Biomedical Aspects of Nuclear Radiation. (½ course)**

(Formerly numbered 270A-270B.) A seminar covering current topics of interest in the biomedical aspects of nuclear radiation, with emphasis on student participation in the consideration of these topics.

Mr. Henneay

† Given alternate years only. To be given, 1968-1969.

† Given alternate years only. Not to be given, 1968-1969.

## Individual Study and Research

**596. Directed Individual Study or Research.**

(½ to 3 courses)

For properly qualified students to pursue a problem by individual study or research, supervised by a member of the staff. Graded on Satisfactory/Unsatisfactory basis. The Staff

**597. Preparation for Advanced Degree Examinations.**

(½ to 3 courses)

Individual study in preparation for the comprehensive examination for the master's degree, or for

the qualifying examination for the Ph.D. Graded on Satisfactory/Unsatisfactory basis. The Staff

**598. Research for the Master's Thesis in****Biophysics. (½ to 3 courses)**

Graded on Satisfactory/Unsatisfactory basis.

The Staff**599. Research for and Preparation of Doctoral****Dissertation. (½ to 3 courses)**

Graded on Satisfactory/Unsatisfactory basis.

The Staff**■ BOTANICAL SCIENCES**

(Department Office, 320 Botany Building)

Jacob B. Biale, Ph.D., *Professor of Plant Physiology.*Karl C. Hamner, Ph.D., *Professor of Botany.*George C. Laties, Ph.D., *Professor of Plant Physiology.*F. Harlan Lewis, Ph.D., *Professor of Botany.*O. Raynal Lunt, Ph.D., *Professor of Plant Nutrition and Biophysics.*Mildred E. Mathias (Mildred Mathias Hassler), Ph.D., *Professor of Botany and Director of the Botanical Gardens.*Bernard O. Phinney, Ph.D., *Professor of Botany.*Charles A. Schroeder, Ph.D., *Professor of Botany.*Henry J. Thompson, Ph.D., *Professor of Botany.*Samuel G. Wildman, Ph.D., *Professor of Botany.*David Appleman, Ph.D., *Emeritus Professor of Plant Physiology.*Carl C. Epling, Ph.D., LL.D., *Emeritus Professor of Botany.*Arthur W. Haupt, Ph.D., *Emeritus Professor of Botany.*Orda A. Plunkett, Ph.D., *Emeritus Professor of Botany.*Flora Murray Scott, Ph.D., *Emeritus Professor of Botany.*Wilbur T. Ebersold, Ph.D., *Associate Professor of Botany.*Alfred G. Diboll, Ph.D., *Assistant Professor of Botany.*Park S. Nobel, Ph.D., *Assistant Professor of Molecular Biology.*David R. Krieg, Ph.D., *Associate Professor of Bacteriology.*William R. Romig, Ph.D., *Associate Professor of Bacteriology.*Vernon T. Stoutemyer, Ph.D., *Professor of Ornamental Horticulture.***Preparation for the Major**

Biology 1A-1B-1C, Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C, Physics 1A, 1B, 1C, 1D, Mathematics 3A-3B-3C.

**The Major**

Botany 103A-103B, 105, 107, 109, 111, 113, plus at least four additional courses selected either from botany or from an approved list of courses in related departments.

**Graduate Study**

Applicants for admission to the graduate program will be expected to submit evidence of adequate undergraduate preparation in the biological and physical sciences. The De-

partment grants advanced degrees with specialization in areas of anatomy, morphology, ecology, systematics, genetics, evolution, plant physiology, plant biochemistry, and soils.

**Requirements for the Master's Degree**

General requirements are given on page 136. Either a thesis or comprehensive examination plan is required. There is no foreign language requirement.

**Requirements for the Doctor's Degree**

The Department offers two programs leading to the Ph.D. degree in botany: Plan A for the major areas of botany; and Plan

B for biochemical plant physiology and genetics. Students who plan to do graduate work are expected to have background preparation as listed in the section "Preparation for the Major." Students on Plan A must complete the equivalent of the undergraduate major in botany. Students on Plan B must complete at least nine quarter courses in the biological sciences, including three upper division courses in a plant science, and the following courses or their equivalents: organic chemistry (Chemistry 133A-133B) and physical chemistry (Chemistry 102 or Chemistry 113A-113B-113C).

In addition to the general requirements of the Graduate Division, students intending to become candidates for the doctoral program must pass a written qualifying examination administered by the Department. The language requirements for the Ph.D. degree in botany are usually met by examinations or course work in one of the following: French, German, Spanish, or Russian. Preparation in the languages before application to graduate school is strongly recommended.

Students working toward a teaching credential should consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF EDUCATION for general requirements.

Lower Division Courses  
(See also Biology)

#### 10. Plants and Civilization.

Lecture, three hours; lecture-demonstration, one hour. Prerequisite: Biology 2 or 181A-181B. The importance of plants to man's social and economic development; man's role in modification and distribution of plants.

Mr. Schroeder

#### 12. Taxonomy and Ecology of Ornamental Plants.

(Formerly numbered Agricultural Science 131.) Lecture, one hour; laboratory and field trips, nine hours. Prerequisite: Biology 2, the equivalent, or consent of the instructor. The origin, classification, and identification of the more important ornamental plants in southern California with special emphasis on their environmental requirements and adaptation. A course primarily for art students majoring in design.

Mr. Stoutemyer

Upper Division Courses

#### 102. The Soil as a Medium for Plant Growth.

Lecture. Prerequisite: Biology 1A-1B-1C, or the equivalent. A general treatment of soil development, its physical and chemical properties as they relate to plant growth; soil resources, management and conservation.

Mr. Lunt

#### 103A-103B. The Natural History of Plants.

(Formerly numbered 104 and 105.) Students must complete both courses in order to receive credit. Lecture, two hours; laboratory, four hours; field trips. Prerequisite: Biology 1A-1B-1C, or the equivalent.

valent. The evolution and development of plant form; a comparison of vegetative and reproductive systems among major plant groups.

Mr. Dibold, Mr. Phinney

#### 105. Ecology and Evolution.

(Formerly numbered 150. Same as Zoology 105.) Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Introduction to the study of mechanisms that control the structure, distribution, and evolution of populations.

Mr. Thompson in charge

#### 107. Comparative Genetics.

(Formerly numbered 136. Same as Bacteriology 107 and Zoology 107.) Lecture, four hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Mendelian principles; the gene: its structure, function, and chemistry, with emphasis on mutation, coding, regulation, and transmission.

Mr. Ebersold, Mr. Krieg, Mr. Romig

#### 109. Plant Physiology.

(Formerly numbered 107.) Lecture, two hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Physiological principles underlying soil plant relations; translocation and transpiration; photosynthesis; chemical regulation of growth; photoperiodism and photomorphogenesis.

Mr. Biale, Mr. Wildman

#### 111. Cell Structure.

Lecture, four hours; laboratory, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Structural aspects of cells and tissues in relation to function.

The Staff

#### 113. General and Cell Physiology.

Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. The general physiology of cells and tissues with special emphasis on the physical and chemical nature of specialized activities.

Mr. Laties, Mr. Nobel

#### 115. Marine Botany.

Lecture, two hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. A survey of the littoral and sublittoral plant life occurring along the coast of California with emphasis on systematics, morphology, and ecology.

The Staff

#### 117. Taxonomy and Distribution of Seed Plants.

(Formerly numbered 151 and 155.) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: Biology 1A-1B-1C, or consent of the instructor. A taxonomic survey of the families of seed plants; historical and ecological factors responsible for past and present distributions.

Miss Mathias

#### 119. Mycology.

Lecture, two hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Structure, development, and classification of the important groups of fungi.

The Staff

#### 151. Developmental Plant Anatomy.

(Formerly numbered 108 and 109.) Lecture, two hours; laboratory, four hours. Prerequisite: courses 103A-103B. A study of the ontogeny of the vascular plant body and comparisons of that development among the major plant taxa; discussion of the concepts of plant development.

Mr. Dibold

**153. Plant Population Ecology.**

(Formerly numbered 150 and 152.) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 105, or the equivalent. A study of genetic and ecological variation, structure, and distribution of plant populations emphasizing field studies of selected populations and ecosystems. Mr. Thompson

**163. Cytogenetics.**

(Same as Zoology 163.) Lecture, two hours; laboratory, six hours. Prerequisite: course 107. The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena.

**191. Special Studies in Plant Structure. (½ course)**

Prerequisite: senior standing and consent of the instructor. The Staff

**193. Special Studies in Plant Physiology.**

(½ course)

Prerequisite: senior standing and consent of the instructor. The Staff

**195. Special Studies in Plant Systematics and Ecology. (½ course)**

Prerequisite: senior standing and consent of the instructor. The Staff

**197. Special Studies in Plant Genetics. (½ course)**

Prerequisite: senior standing and consent of the instructor. The Staff

**Graduate Courses****201. Comparative Genetics Laboratory.**

(Formerly numbered 136C. Same as Zoology 201.) Laboratory, nine hours. Prerequisite: course 107 (may be taken concurrently). Experimental techniques demonstrating recombination, mutagenesis, biochemical pathways, complementation, and cytogenetics of plants, animals, and microorganisms. The Staff

**202. Gene Structure and Function.**

(Formerly numbered 222. Same as Microbiology 202 and Zoology 202.) Lecture. Prerequisites: course 107 and Chemistry 153 or consent of the instructor. The genetic coding of information and its transfer from DNA through RNA to protein; the operon model and other aspects of regulatory genetics, mutations and genetic fine structure.

**203. Chromosome Structure and Replication.**

(Same as Microbiology 203 and Zoology 203.) Prerequisites: course 107, Chemistry 152 or 153, Physics 1A-1B-1C-1D or consent of the instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems. Mr. Ray

**204. Evolution and Population Genetics.**

(Formerly numbered 224. Same as Zoology 204.) Lecture, two hours; individual study. Prerequisite: courses 105 and 107. Genetic mechanisms of evolutionary change. Mr. Lewis

**205A-205F. Topics in Genetics.**

(Formerly numbered 225A-225F. Same as Zoology 205A-205F.) Lecture. Prerequisite: course 107 and consent of the instructor. Intensive study of selected topics. Mr. Ebersold, Mr. Siegel

**206A-206F. Advanced Genetics Laboratory.**

(Formerly numbered 226A-226F. Same as Zoology 206A-206F.) Laboratory, nine hours. Prerequisite: course 107 and consent of the instructor. A course designed to give the student a working knowledge of a particular group of organisms or concepts. The Staff

**211A-211F. Advanced Plant Physiology.**

(½ course each)

Lecture. A survey devoted to the intensive study of photosynthesis, growth and growth regulators, respiratory metabolism, nitrogen and intermediary metabolism, mineral nutrition and transport, development and reproduction.

Mr. Biale, Mr. Laties

**215. Advanced Plant Taxonomy.**

(Formerly numbered 221.) Lecture, two hours; laboratory, four hours; field trips. The principles, concepts, and methods of plant taxonomy.

Mr. Lewis, Miss Mathias, Mr. Thompson

**217. Advanced Plant Ecology.**

(Formerly numbered 171.) Lecture, two hours; laboratory, field study, and special problems, six hours. The origin and development of ecological concepts. Principles and techniques of the quantitative analysis of plant-environmental relationships.

The Staff

**219A-219F. Advanced Plant Morphology.**

(½ course each)

Lecture. A survey of the major groups of plants, covering a period of two years. Each quarter will be devoted to an intensive study of one of the following groups: algae, fungi, bryophytes, pteridophytes, gymnosperms, angiosperms. The Staff

**221. Advanced Plant Anatomy. (½ course)**

Lecture. A review of contemporary studies of vascular plant structure. The fine structure of plant cells, tissues and embryonic zones including discussions of experimental studies on developing systems *in vivo*. Mr. Diboll

**252A-252B-252C. Seminar in Plant Ecology.**

(½ course each)

The Staff

**253A-253B-253C. Seminar in Plant Structure.**

(½ course each)

The Staff

**254A-254B-254C. Seminar in Plant Physiology.**

(½ course each)

The Staff

**255A-255B-255C. Seminar in Systematics.**

(½ course each)

The Staff

**258A-258B-258C. Seminar in Genetics.**

(½ course each)

The Staff

**Individual Study and Research****596. Directed Individual Studies. (½ to 2 courses)**

The Staff

**597. Preparation for Comprehensive Examination for the Master's Degree or Qualifying Examination for the Ph.D. (½ to 1 course)**

The Staff

598. Master's Thesis Research and Writing.  
(½ to 2 courses)

The Staff

599. Doctoral Dissertation Research and Writing.  
(½ to 2 courses)

The Staff

## ■ BUSINESS ADMINISTRATION

(Department Office, 3250 Graduate School of Business Administration)

Eugene F. Brigham, Ph.D., *Professor of Finance (Vice-Chairman—Finance, Insurance, Urban Land Economics, Business Economics and Marketing).*

William F. Brown, Ph.D., *Professor of Marketing.*

Elwood S. Buffa, Ph.D., *Professor of Operations Management.*

Leland S. Burns, Ph.D., *Professor of Urban Land Economics.*

Joseph D. Carrabino, Ph.D., *Professor of Management.*

A. B. Carson, Ph.D., C.P.A., *Professor of Accounting.*

Fred E. Case, D.B.A., *Professor of Urban Land Economics.*

Louis E. Davis, M.S., *Professor of Operations Management (Chairman of the Department).*

Benjamin Graham, B.S., *Professor of Business Administration in Residence.*

James R. Jackson, Ph.D., *Professor of Business Administration.*

Neil H. Jacoby, Ph.D., LL.D., *Professor of Business Economics and Policy.*

Raymond J. Jessen, Ph.D., *Professor of Business Statistics.*

Paul Kircher, Ph.D., C.P.A., *Professor of Accounting.*

Harold Koontz, Ph.D., *Mead Johnson Professor of Management.*

Frederic Meyers, Ph.D., *Professor of Industrial Relations.*

Irving Pfeffer, Ph.D., *Professor of Insurance.*

Barry M. Richman, Ph.D., *Professor of Management and International Business (Vice-Chairman—Management Theory, Transportation, Behavioral Science, Business Communications, and Industrial Relations).*

George W. Robbins, M.B.A., *Professor of Marketing.*

Harry Simons, M.A., C.P.A., *Professor of Accounting.*

R. Clay Spowls, Ph.D., *Professor of Business Statistics.*

George A. Steiner, Ph.D., Litt.D., *Professor of Management and Public Policy.*

Robert Tannenbaum, Ph.D., *Professor of Behavioral Science.*

Eric L. Trist, M.A., *Professor of Organizational Behavior and Ecology.*

J. Fred Weston, Ph.D., *Professor of Finance and Business Economics.*

Robert M. Williams, Ph.D., *Professor of Business Economics and Statistics.*

Ralph M. Barnes, Ph.D., *Emeritus Professor of Production Management and Engineering.*

Ralph Cassady, Jr., Ph.D., *Emeritus Professor of Marketing.*

John C. Clendenin, Ph.D., *Emeritus Professor of Finance.*

Ira N. Frisbee, M.B.A., C.P.A., *Emeritus Professor of Accounting.*

§Leo Grebler, Ph.D., *Emeritus Professor of Urban Land Economics.*

Ralph C. Hoerber, J.D., Ph.D., *Emeritus Professor of Business Law.*

Wilbert E. Karrenbrock, Ph.D., *Emeritus Professor of Accounting.*

§Jacob Marschak, Ph.D., *Emeritus Professor of Business Administration and Economics.*

§Wayne L. McNaughton, Ph.D., *Emeritus Professor of Business Administration.*

Cyril J. O'Donnell, Ph.D., *Emeritus Professor of Business Organization and Policy.*

Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance.*

Robert B. Andrews, Ph.D., *Associate Professor of Operations Management (Vice-Chairman—Operations Management and Quantitative Methods).*

§ Recalled to active service.

- James V. Clark, D.B.A., *Associate Professor of Business Administration.*  
 David K. Eiteman, Ph.D., *Associate Professor of Finance.*  
 Walter A. Fogel, Ph.D., *Associate Professor of Industrial Relations.*  
 John Hutchinson, Ph.D., *Associate Professor of Industrial Relations.*  
 Harold H. Kassarian, Ph.D., *Associate Professor of Business Administration.*  
 Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*  
 James B. MacQueen, Ph.D., *Associate Professor of Business Administration in Residence.*  
 Fred Massarik, Ph.D., *Associate Professor of Behavioral Science and Industrial Relations.*  
 William H. McWhinney, Ph.D., *Associate Professor of Organizational Behavior.*  
 Frank G. Mittelbach, M.A., *Associate Professor of Business Administration in Residence.*  
 Alfred Nicols, Ph.D., *Associate Professor of Business Economics.*  
 Frank E. Norton, Ph.D., *Associate Professor of Business Economics.*  
 R. Bruce Ricks, Ph.D., *Associate Professor of Finance.*  
 John P. Shelton, Ph.D., *Associate Professor of Finance.*  
 William J. Abernathy, D.B.A., *Assistant Professor of Operations Management.*  
 Richard B. Chase, Ph.D., *Assistant Professor of Operations Management.*  
 Michael Chatfield, D.B.A., C.P.A., *Assistant Professor of Accounting.*  
 Douglas J. Dalrymple, D.B.A., *Assistant Professor of Marketing.*  
 Eugene P. Durbin, Ph.D., *Assistant Professor of Business Administration.*  
 Arthur M. Geoffrion, Ph.D., *Assistant Professor of Business Administration.*  
 Richard A. Goodman, D.B.A., *Assistant Professor of Business Administration.*  
 Maurice Goudzwaard, Ph.D., *Assistant Professor of Finance.*  
 Glenn W. Graves, Ph.D., *Assistant Professor of Business Administration.*  
 Alfred E. Hofflander, Jr., Ph.D., *Assistant Professor of Insurance.*  
 Michael N. Kawaja, Ph.D., *Assistant Professor of Business Economics.*  
 Archie Kleingartner, Ph.D., *Assistant Professor of Industrial Relations.*  
 Robert Hal Mason, Ph.D., *Assistant Professor of Business Administration.*  
 Anthony A. Mastor, Ph.D., *Assistant Professor of Operations Management.*  
 William W. McKelvey, Ph.D., *Assistant Professor of Organizational Sociology.*  
 Harold T. Moody, Ph.D., *Assistant Professor of Business Economics.*  
 Rosser T. Nelson, Ph.D., *Assistant Professor of Business Administration.*  
 David R. Peters, Ph.D., *Assistant Professor of Behavioral Science.*  
 Frank W. Puffer, Ph.D., *Assistant Professor of Business Economics.*  
 Michael Quinn, Ph.D., *Assistant Professor of Business Administration.*  
 M. Ali Raza, D.B.A., *Assistant Professor of Industrial Relations and Business Law.*  
 Thomas S. Robertson, Ph.D., *Assistant Professor of Business Administration.*  
 Hans Schöllhammer, D.B.A., *Assistant Professor of Management Theory and International Business.*  
 Philip J. Schreiner, Ph.D., *Assistant Professor of Business Administration.*  
 Keith V. Smith, Ph.D., *Assistant Professor of Finance and Business Economics.*  
 F. Corine Thompson, Ph.D., C.P.A., *Assistant Professor of Accounting.*  
 Peter Vaill, D.B.A., *Assistant Professor of Business Administration.*  
 Donald Woods, D.B.A., *Assistant Professor of Finance.*  
 Michael Y. Yoshino, Ph.D., *Assistant Professor of Business Administration.*



Ichak Adizes, M.B.A., *Acting Assistant Professor of Management and International Business.*

John W. Buckley, D.B.A., *Acting Associate Professor of Accounting (Vice-Chairman—Accounting and Business Law).*

Robert W. Buttrey, LL.B., C.P.A., *Lecturer in Accounting.*

John W. Cave, B.S., *Lecturer in Business Administration.*

Francis M. Fillerup, M.B.A., *Lecturer in Business Administration.*

Lee C. Garrison, Jr., M.A., *Acting Assistant Professor of Marketing.*

Clarence J. Huizenga, M.S., *Lecturer in Business Administration.*

J. Morgan Jones, M.B.A., M.S., *Acting Assistant Professor of Business Administration.*

Joan K. Lasko, Ph.D., *Lecturer in Behavioral Science.*

Steven A. Lippman, M.S., *Acting Assistant Professor of Business Administration.*

S. H. Nerlove, A.M., *Senior Lecturer in Business Economics and Policy.*

Paul Prasow, Ph.D., *Senior Lecturer in Industrial Relations.*

Warren H. Schmidt, Ph.D., *Lecturer in Behavioral Science.*

Arthur J. Shedlin, M.A., *Lecturer in Business Administration.*

Donald E. Stout, Ph.D., *Lecturer in Business Economics.*

Margaret Thompson, M.Ed., *Lecturer in Business Administration.*

#### Lower Division Course

#### 1A-1B. Elementary Accounting.

Prerequisite: sophomore standing. Course 1A is prerequisite to course 1B. An introduction to accounting theory and practice. The first quarter presents the recording, analyzing and summarizing procedures used in preparing balance sheets and income statements. The second quarter includes payroll and tax accounting, partnership and corporation accounts, manufacturing and cost accounting and supplementary statements. The Staff

#### Upper Division Courses

Upper division courses in business administration are open to all University students who have completed the necessary prerequisites. Courses 1A, 1B, Economics 1 and 2, and Mathematics 2C are prerequisites to all upper division courses in Business Administration.

### BUSINESS ECONOMICS

#### 100. Business Economics.

Prerequisite: Mathematics 2A-2B-2C, course 115A (may be taken concurrently). Required of all students in their first quarter of residence. Effort of the enterprise to secure profits, nature of demand for its products. Costs and production. Allocation of resources through competition. Forms of market competition. Relation of size to efficiency. Markets for productive factors. Incentives and growth, capital budgeting.

Mr. Kawaja, Mr. Nicols, Mr. Smith

#### 101. Business Fluctuations and Forecasting.

Prerequisite: courses 100, 115A, and Economics 160 (may be taken concurrently). Required of all students in their second quarter of residence or immediately following course 100. How the enterprise reacts to general economic fluctuations and how its decisions, in turn, affect them. Important forces in past fluctuations. Behavior of indexes of business activity. Appraisal of forecasting techniques. Entrepreneurial and public policies to mitigate business fluctuations.

Mr. Moody, Mr. Norton, Mr. Puffer

### BUSINESS LAW

#### 108A-108B. Legal Analysis for Business

##### Managers. (1 and ½ course)

Not open to students who have credit for course 18 (Berkeley) or equivalent. Must be completed in the first year in residence. Course 108A is prerequisite to course 108B. Significance and growth of the law; law in its relationship to business, with special emphasis on current problems; coverage of the law of contracts, agency sales, property, negotiable instruments, business organizations including the functions of inside and outside counsel and trade regulations.

Mr. Raza

### BUSINESS COMMUNICATIONS

#### 109. Business Communications.

(Formerly numbered 110.) The development of information, skills, and attitudes as they relate to the types of communication required in the management of enterprises.

Mr. Keithley, Mr. Schreiner, Mrs. Thompson

### QUANTITATIVE METHODS

#### 111. Introduction to Operations Research.

Prerequisite: course 115A. An introduction to the philosophy, techniques, and business applications of operations analysis, with emphasis on the managerial viewpoint.

Mr. Durbin, Mr. Jackson

#### 113A. Electronic Computers in Business.

An introduction to electronic computers and computer programming with substantial laboratory work in problem solving using computers and both machine language and FORTRAN.

Mr. Sprowls

#### 113B. Electronic Computer Methods.

Prerequisite: course 113A or consent of the instructor. A continuation of course 113A with emphasis upon solving problems related to business and general social sciences with such languages as COBOL for data processing, IPL for list processing and others.

Mr. Sprowls

**115A. Business Statistics.**

Prerequisite: Mathematics 2A-2B-2C (formerly 37A-37B) or the equivalent. Elements of probability, probability distributions, estimation and confidence intervals, tests of significance and of hypotheses, linear regression and correlation, time series analysis and principles of index numbers. Applications to the analysis of and the decision-making aspects of everyday business problems. Mr. Jones

**115D. Statistical Forecasting Techniques.**

(Formerly numbered 117.) Prerequisite: course 115A or equivalent. Analysis of the important business indexes in current use. Index number construction. Methods of measuring business trends and fluctuations with applications to business forecasting. Serial and multiple correlation. The use of electronic computers in the analysis of business series. Mr. Puffer

**115E. Statistical Survey Techniques.**

Prerequisite: course 115A. Principles and methods of designing statistical surveys and analyzing the data therefrom. Basic ideas and methods of sampling: simple random, stratified, multi-stage design. Techniques for constructing sampling frames. Techniques of detecting and controlling nonsampling errors. Mr. Jensen

**115F. Statistical Experiment Techniques.**

Prerequisite: course 115A. Principles and methods of designing statistical experiments and analyzing the data therefrom. Simple randomized, randomized block, Latin-square designs; factorial experiments. Methods of choosing experimental units. Mr. Jensen

**116A. Statistical Methods: Decision.**

Prerequisite: course 115A or graduate status. Statistical decision under uncertainty; statistical decision rules and their evaluation; Bayesian inference; applications to business problems. Mr. Nelson

**116B. Statistical Methods: Analysis.**

Prerequisite: course 115A or equivalent. Analysis of variance; design and analysis of statistical experiments and surveys; multiple regression and correlation, curvilinear regression; analysis of enumeration data; nonparametric methods. Mr. Jensen

**ACCOUNTING****120A-120B. Intermediate Accounting.**

Prerequisite: courses 1A-1B. Not open for credit to students who have credit for 120M. The preparation of the principal accounting statements. Recording, valuation, and presentation of cash, temporary investments, receivables, inventories, investments, plant and equipment, intangibles, current obligations, long-term debt, paid-in capital, and retained earnings. Statement analysis. Statement of application of funds. Mr. Simons, Miss Thompson

**120M. Managerial Accounting.**

Prerequisite: courses 1A-1B. May be elected by students in fields of concentration other than accounting to meet core course requirement in accounting. Not open to students who have credit for 120AB. Basic concepts of accounting; procedures for financial reporting; systems and internal control; cost estimates budgets; interpretation of administrative reports. Mr. Chatfield, Mr. Kircher

**122. Cost Accounting.**

Prerequisite: courses 120A-120B. The nature, objectives, and procedures of cost accounting and control; job costing and process costing; accounting for manufacturing overhead; cost budgeting; cost reports; joint-product costing; distribution cost; standard costs; differential cost analysis; profit-volume relationships and break-even analysis. Mr. Carson

**124A-124B. Advanced Accounting.**

Prerequisite: courses 120A-120B, 122. Partnerships and joint ventures; installment sales and consignment sales; home office and branch relationships; corporate combinations; the preparation of consolidated statements; foreign branches and subsidiaries; receiverships, estates and trusts; governmental units; actuarial science. Mr. Chatfield, Mr. Simons

**127. Federal Tax Accounting.**

Prerequisite: courses 124A-124B or consent of the instructor. A study of the fundamentals of federal income taxation with emphasis on the taxation of the income of individuals. Mr. Buttrey

**FINANCE**

Economics 135 is required of all students in the School of Business Administration.

**130. Business Finance.**

A study of the forms and sources of financing business firms large and small, corporate and noncorporate. The emphasis is on financial planning and developing judgment in formulating decisions on financial problems. Financial problems are also considered in their social, legal, and economic effects. Mr. Brigham, Mr. Goudzwaard, Mr. Weston

**133. Investment Principles and Policies.**

Principles underlying investment analysis and policy; salient characteristics of governmental and corporate securities; policies of investment companies and investing institutions; relation of investment policy to money markets and business fluctuations; security price-making forces; construction of personal investment programs. Mr. Eiteman, Mr. Ricks, Mr. Smith

**RISK BEARING AND INSURANCE****135. Principles of Insurance.**

Basic principles of risk and insurance and their applications to business management and personal affairs. Analysis of concepts and methods of handling risks; insurance carriers, contracts, and underwriting; loss prevention and settlement; government insurance programs; economic functions of insurance. Mr. Hofflander, Mr. Pfeffer

**OPERATIONS MANAGEMENT****140. Elements of Production and Operations****Research.**

Prerequisite: course 115A or consent of the instructor. Principles and decision analyses related to the effective utilization of the factors of production in manufacturing and nonmanufacturing activities for both intermittent and continuous systems. The study of production organizations, analytical models and methods, facilities design, and the design of control systems for production operations. Mr. Andrews, Mr. Chase

**INDUSTRIAL RELATIONS****150. Elements of Industrial Relations.**

Note: Students preparing for an industrial relations field of concentration are advised to take Business Administration 180 (formerly 106) before this course. Principles and methods of effectively utilizing human resources in organizations. The relationship between social, economic, and other environmental factors and current problems in industrial relations.

The Staff

**MARKETING****160. Elements of Marketing.**

A survey of the major marketing methods, institutions, and practices. The subjects of retailing, wholesaling, distribution channels, marketing legislation, advertising, cooperative marketing, pricing, marketing research, and marketing costs are treated from the standpoint of consumers, middlemen, and manufacturers.

Mr. Robbins

**\*162. Retail Store Management.**

Prerequisite: course 160. A study of retailing from the standpoint of management. Includes the case-method treatment of such problems as buying, sales promotion, inventory planning and control, pricing, style merchandising, and general management problems.

Mr. Brown, Mr. Dalrymple

**\*163. Advertising Principles and Policies.**

Lecture, three hours; laboratory, two hours. Prerequisite: course 160. The preparation, use and administration of advertising, emphasizing the use of research to direct and measure the effectiveness of each stage in the operation. The economic and social implications of advertising also are evaluated.

Mr. Robertson

**\*165. Sales Management.**

Prerequisite: course 160 or consent of the instructor. A case-method study of sales strategy from the managerial viewpoint. Includes merchandising policies, distribution policies, forecasting and planning, sales method and campaigns, pricing, sales department organization, management of the sales force, and budgetary control of sales.

Mr. Brown

**\*169. Marketing Policies. (1½ courses)**

Lecture, four hours; laboratory, four hours. Prerequisite: course 160 and senior standing. Marketing management and research methods, including product and promotional policies, distribution channel decisions, the theory of pricing and price policies, and restrictive legislation. Business cases constitute the basis for class discussion. Laboratory periods provide practice in the application of principles.

Mr. Brown, Mr. Cassidy

**TRANSPORTATION****170. Physical Distribution Management.**

Prerequisite: Economics 175 or consent of the instructor. Principles of purchasing transportation services of all types by business managers analysis. Selection of transportation alternatives as a distribution logistics problem of overall product spatial activities.

Mr. Quinn

**171A-171B. Transportation Management.**

Prerequisite: Economics 175 or consent of the instructor. Management of transportation enterprises. Application of management principles and techniques

\* Course to be phased out, presumably by 1969.

to problems faced by managers in transport enterprises. Includes impact of public policy, capital facilities, industry structure, costs, operations, pricing, and intercompany relationships.

The Staff

**URBAN LAND ECONOMICS****175. Elements of Real Estate and Urban Land Economics.**

(Formerly numbered 180.) An examination of business decision-making as related to logical forces shaping cities and influencing real estate market functions and land uses. Emphasis is placed on decision-making as it relates to appraising, building, financing, managing, marketing and using urban property.

Mr. Burns, Mr. Case

**176. Real Property Valuation.**

(Formerly numbered 181.) Prerequisite: course 175 or consent of the instructor. Methods of developing criteria for establishing land values and selecting alternative uses and locations. Ability to reason and choose effectively is cultivated through attention to the theoretical framework underlying property valuation.

Mr. Case

**177. Urban Economics and Business Policy.**

(Formerly numbered 182.) Prerequisite: course 175 or consent of the instructor. Business policies involved in converting raw land to urban uses. Emphasis on private, local governmental and Federal programs for housing and construction as related to economic stability and progress as well as the efficient use of urban space.

Mr. Burns, Mr. Case

**BEHAVIORAL SCIENCE****180. Behavioral Science Foundations.**

(Formerly numbered 106.) An introduction to selected concepts in behavioral science, their integration and application to management. Organization, group, cultural, individual behavior in relation to managerial environment and functional fields of business administration. Simulations and demonstrations of behavioral science principles.

Mrs. Lasko

**182. Leadership Principles and Practice.**

(Formerly numbered 152.) Prerequisite: senior standing. Knowledge and skills leading to effectiveness in interpersonal relations. Understanding oneself as a leader, and others as individuals and as members of working groups. Understanding of group process, including group leadership. Lectures and "sensitivity training" laboratory.

The Staff

**MANAGEMENT THEORY AND POLICY****190A-190B. Organization and Management Theory.**

Prerequisite: senior standing. Required of all business administration students. A study of the principles of business management. Emphasis is placed upon the application of these principles to the general, as distinguished from the functional, management of enterprise by means of readings and case studies.

Mr. Cave, Mr. Quinn, Mr. Yoshino

**ADVANCED STUDY IN BUSINESS ADMINISTRATION****199. Special Studies in Business Administration.**

(¼ to 2 courses)

Prerequisite: senior standing and consent of the instructor and the dean by special petition available in the Office of the Dean.

The Staff

## Graduate Courses

**BUSINESS ECONOMICS****200. Managerial Economics.**

Prerequisite: courses 100, 101, or 401, 406 and 115A or 407. Analysis of decision-making in the enterprise. The market environment measurement of the influence of policy and nonpolicy variables on sales and costs. Sales, cost, and profit forecasting. Capital budgeting and criteria for investment decisions. Inventory, depreciation, dividend and financial policies.

Mr. Kawaja, Mr. Nicols, Mr. Smith

**201A. Business Forecasting.**

(Formerly numbered 201.) Prerequisite: courses 100, 101 or 401, 406 and 115A or 407. The role of business forecasting in managerial planning. Principles and methods of forecasting. Evaluation of the reliability of existing forecasting techniques. Covers both short-term and long-term forecasting of industry, regional and national business trends.

Mr. Andersen, Mr. Norton, Mr. Williams

**201B. Industry Forecasting.**

Prerequisite: courses 200, 201A. Evaluation of various methodologies found useful in preparing industry forecasts; differences between short- and long-range forecasting techniques, etc.

Mr. Andersen, Mr. Moody

**201C. Regional Economic Forecasting.**

Prerequisite: course 201A. Forecasting of economic activity in a region; emphasizing special problems such as population and industry migration; the effects of external forces on the regional economy.

Mr. Moody

**202A. Economic Policy and Business Environment.**

(Formerly numbered 202.) Prerequisite: consent of the instructor. Analysis of economic policies shaping the business policy; stabilizing policy instruments; structural policies for efficiency and progress; policy needs for the future. Treats policy formation and administration as well as design.

Mr. Jacoby, Mr. Norton

**202B. Competition and Business Policy.**

Prerequisite: course 200. Theory of price and non-price competition in different market structures; analysis of structure and competitive practices of various industries; methods of measuring competition, etc.

Mr. Kawaja

**203A. Economics of Decision.**

(Same as Economics 203A.) Prerequisite: rudiments of economic theory, calculus, and probabilities or statistics (e.g., course 116A). Norms and facts of decision-making in household, business, and government. Consistent behavior in terms of personal utilities and probabilities. Departures from consistency: stochastic theories of behavior and resulting econometric models.

Mr. Marschak

**203B. Economics of Information.**

(Same as Economics 203B.) Prerequisite: rudiments of economic theory of the firm, and of calculus and probabilities or statistics (e.g., course 116A); course 203A, or consent of the instructor. Optimal decision and information rules. Amount, cost and value of information.

Mr. Marschak

**203C. Economics of Organization.**

(Same as Economics 203C.) Prerequisite: course 203A-203B. Rational models of teams. Relation to the theory of games.

Mr. Marschak

**205A. Introduction to International Business.**

Prerequisite: courses 401, 406 or consent of the instructor. The international business environment, international economic institutions, national and regional trade policies and developments, trends in foreign markets, international monetary problems are studied for their influence on the organization and operation of the international corporation.

Mr. Mason, Mr. Yoshino

**205B. Comparative Market Structure and Competition.**

Prerequisite: course 205A or consent of the instructor. A comparative study of public policies toward competition, market structures and competitive practices in key industries in selected countries.

Mr. Williams

**205C. Business Forecasting for Foreign Economies.**

Prerequisite: course 201A or consent of the instructor. Forecasting changes in business activity, population, industrial structure, productivity, Gross National Product, and its components for selected countries.

Mr. Williams

**208. Selected Topics in Business Economics.**

Prerequisite: courses 200, 201. Special topics in business economics. Current development in theory or practice in business economics. May be repeated for credit.

The Staff

**QUANTITATIVE METHODS****210A. Mathematical Programming.**

Prerequisite: Mathematics 12A and 152A or the equivalent. The theory and computational methods of linear programming and two-person zero-sum finite games, with applications to business and related disciplinary areas.

Mr. Geoffrion, Mr. Graves

**210B. Stochastic Processes.**

Prerequisite: Mathematics 11C and 150A or Engineering 120A. Elements of deterministic and Markov processes in discrete and continuous time, with and without deliberate control; dynamic programming; applications to queueing, inventory, and other systems in the business and industrial domains.

Mr. Geoffrion, Mr. Jackson, Mr. Lippman

**210C. Optimization Techniques.**

Prerequisite: course 113A. A survey of methods of utilizing the digital computer in selecting business policies in complex situations. Students are expected to program various problems for a computer.

Mr. Geoffrion, Mr. Graves

**211A. Nonlinear Mathematical Programming.**

Prerequisite: Mathematics 12B, and course 210A or Mathematics 144. Theory, methods, and applications of the optimization of nonlinear systems. Review of classical optimization methods; saddle-point characterizations for concave programs; gradient and pivotal methods; parametric and sub-problem strategies; nonlinear duality theory; combinatorial programming.

Mr. Geoffrion

**214A. Business Systems.**

(Formerly numbered 213.) Prerequisite: course 113B or consent of the instructor. Analysis and design problems of business systems that utilize electronic computers.

Mr. Sprowls

**214B. Behavioral Science Models.**

Prerequisite: course 113B or consent of the instructor. Computerized behavioral science models as they may be used in business research with emphasis upon such topics as artificial intelligence, heuristic programming, learning experiments, and pattern recognition. Laboratory exercises in the design and programming of student models.

The Staff

**214C. Business Simulation.**

Prerequisite: course 113B or consent of the instructor. The design and testing of simulated models of various parts of the business system. Simulation techniques. Literature of simulation. Simulation model available. Laboratory assignments in the construction and programming of a model.

Mr. Nelson, Mr. Sprowls

**215D. Time Series Analysis.**

(Formerly numbered 217.) Prerequisite: course 116B or consent of the instructor. Econometric models and advanced time series analysis in measuring trends and fluctuations in business series, electronic computers in the analysis of business series; input-output analysis; the learning curve.

Mr. Puffer

**215E. Statistical Design of Surveys.**

(Formerly numbered 218.) Prerequisite: course 116B or equivalent. Mathematical theory and practices of statistical survey design and analysis.

Mr. Jessen

**215F. Statistical Design of Experiments.**

(Same as Engineering 275A.) Prerequisite: course 116B and Mathematics 11C. Matrix treatment of linear hypotheses in statistical experimentation. Statistical estimation, tests of hypotheses, analysis of variance, regression models. Randomized blocks, factorial, Latin square, multiple factor and level experiments. Principles of orthogonality, confounding, fractional replication, incomplete block designs with applications.

The Staff

**217A. Statistical Decision Theory.**

Prerequisite: course 116A or equivalent; Mathematics 152A recommended. Relationships among statistical decision theory, game theory, and classical statistical inference, with emphasis on sequential analysis and dynamic decision processes; axiomatic foundations, Bayes' and minimax solutions, applications to selected models of dynamic decision problems in business.

The Staff

**217B. Game Theory.**

Prerequisite: course 116A; Mathematics 152A recommended. Nature of models for rational behavior in presence of conflicts of interests, zero-sum and nonzero-sum games, two-person and many-person games, state of the art, philosophical and computational limitations, relations with individual and group decision making.

The Staff

**218A. Selected Topics in Mathematical Methods.**

( $\frac{1}{4}$  to 1 course)

(Formerly numbered 211.) Prerequisite: consent of the instructor. Newly developing topics and viewpoints in the field of operations research will be

presented from time to time under this course designation. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

**218B. Selected Topics in Data Processing.**

( $\frac{1}{4}$  to 1 course)

(Formerly numbered 214.) Prerequisite: consent of the instructor. Special topics in data processing. Current developments in data processing principles and practices. Analysis of recent literature. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

**218C. Selected Topics in Business Statistics.**

( $\frac{1}{4}$  to 1 course)

Prerequisite: consent of the instructor. Special topics in statistical methods. Current developments in statistical theory and practice. Analysis of recent literature. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

**218D. Selected Topics in Quantitative Methods.**

( $\frac{1}{4}$  to 1 course)

(Formerly numbered 219.) Prerequisite: consent of the instructor. Topics, usually recent developments, in statistics, decision theory, operations research, data processing and management science. Topics and instructors will be announced when they become known. May be repeated for credit.

The Staff

**ACCOUNTING****220. The Evolution of Accounting Thought.**

Prerequisite: course 124 or consent of the instructor. The formulation of accounting principles and practices are studied in their historical context and with regard to their socio-economic-political environment.

Mr. Carson, Mr. Chatfield, Mr. Kircher

**221. Institutional Accounting.**

Prerequisite: course 124B or 403. The seminar provides a penetrating analysis of the accounting practices of government and nonprofit institutions. The application of innovative commercial accounting methods to institutional accounting management are investigated and vice versa and current research topics are featured.

Mr. Buckley, Mr. Carson, Mr. Simons

**222. Industrial Accounting.**

Prerequisite: course 122. A study of industrial and cost accounting problems; theories of cost allocation and absorption; problems of cost budgeting and control. Current cost accounting literature is examined in connection with case studies.

Mr. Carson

**223. Verification of Financial Statements.**

Prerequisite: course 124. Problems of examination, verification, and presentation of financial statements from the standpoint of the independent public accountant. Legal and professional responsibilities of public accountants; professional ethics. Relation of examinations to internal controls.

Mr. Buckley

**224. Accounting Data for Management Purposes.**

A study of accounting procedures to provide management with data to make decisions; types of data required for planning and control; availability and reliability of such data in accounting systems; provision of special-purpose data; conditions of good internal reporting.

Mr. Kircher

**225. Accounting Systems and Control.**

Prerequisite: course 122. Purposes of accounting systems; relation of systems design to organization structures; provision of data for planning control and external reporting; methods of systems study; characteristics of important routines; use of mechanical and electronic equipment; special control needs in major industries. Mr. Kircher

**226. International Accounting.**

Prerequisite: graduate status. Comparative analysis of accounting concepts and practices in other countries; study of contrasts between various systems; problems of accounting for international corporations including transfers of funds and income measurement; and accounting influences on economic development. Mr. Buckley, Mr. Kircher

**227. Advanced Tax Accounting.**

Prerequisite: course 127. Problems in federal and state income, franchise, gift and estate taxes; study of source materials and research methods for ascertaining current rulings and trends in laws and regulations. Mr. Buttrely

**228. Advanced Accounting Problems.**

Prerequisite: courses 223, 225, 227, 229 (may be taken concurrently). Contemporary financial accounting theory and practice with emphasis upon pronouncements of the American Institute of Certified Public Accountants, and American Accounting Association, and the Securities and Exchange Commission. Application of principles to advanced problems. Mr. Simons

**229. Accounting Theory.**

Prerequisite: consent of the instructor. A survey of accounting literature, with emphasis on the development of basic accounting concepts. An attempt is made to explain contemporary practice as it has evolved in accordance with basic theory and expanding demands for accounting information. Mr. Carlson

**FINANCE****230A. Money and Capital Markets.**

(Numbered 230B in 1966-67.) Prerequisite: Economics 135, and course 130 or 408, or consent of the instructor. Application of interest theory and flow of funds analysis to the price determination process in the markets for bonds, mortgages, stocks and other financial instruments. An historical and cross-sectional study of the role of financial markets in economic development. Mr. Andersen, Mr. Brigham, Mr. Case

**230B. Financial Institutions.**

(Numbered 230A in 1966-67.) Prerequisite: Economics 135 and course 130 or 408 or consent of the instructor. Study of the financial policies and practices of commercial banks, savings and loan associations, pension funds, insurance companies and other major financial institutions. Analysis of the sources and uses of funds, their cost and return, and government regulation of the financial sector. Mr. Andersen, Mr. Brigham, Mr. Case

**230C. Money and Capital Market Theory.**

Prerequisite: course 230A or 230B. Study of selected aspects of financial institutions and markets, their operation and regulation. Discussion of data sources and research methodology in this area. Mr. Andersen, Mr. Brigham

**231A. Business Financial Policies.**

(Formerly numbered 232.) Prerequisite: course 130 or 408, or consent of the instructor. Application of principles of finance to the financial management of business enterprises. The program includes reading assignments on principles and methods of finance, analysis of business case problems, and individual student reports of financial problems of particular corporations. Mr. Goudswaard, Mr. Shelton, Mr. Weston

**231B. Business Finance Theory.**

(Formerly numbered 231.) Prerequisite: courses 130 or 408, or consent of the instructor. Normally taken after course 231A. The social and economic consequences of business financial policies. Projections of aggregate sources and uses of business funds, dividend policy and business saving, possible financing gaps, business and social aspects of mergers and reorganization. Mr. Brigham, Mr. Weston, Mr. Woods

**232A. Investment Analysis.**

(Formerly numbered 134.) Prerequisite: 130 or 408 or consent of the instructor. Examination of specific industries, companies, and securities from an investment point of view; sources of information; techniques of analysis; measurement of risks, returns, and investment values; evaluation of corporate credit; preparation of reports. Annual reports of business corporations and current cases are studied. Mr. Eiteman, Mr. Ricks

**232B. Investment Portfolios.**

Prerequisite: course 130 or 408 or consent of the instructor. Normally taken after course 232A. Focus on entire portfolios rather than individual securities. Review of existing literature on portfolio selection, revision, and measurement and evaluation. Term report involves empirical testing of a portfolio strategy or hypothesis. Mr. Smith

**232C. Investment Theory.**

Prerequisite: courses 232A and 232B or consent of the instructor. Review of theoretical literature on investment analysis, valuation, and management. Topics include mathematical techniques for valuation of growth securities, competitive returns on alternative investments, the investment decision process, computers in investment decision-making, and functioning of securities markets in the U. S. and abroad. Mr. Eiteman, Mr. Ricks, Mr. Smith

**233A. International Business Finance.**

Prerequisite: courses 130 or 408 and 205A, or consent of the instructor. Financial problems of multi-national businesses are studied. Included are the international financial environment, problems surrounding the decision to commit long-term capital to an international venture, and financial techniques for the operation of a multi-national firm. Mr. Eiteman

**RISK-BEARING AND INSURANCE****235A. Problems in Insurance Management.**

(Formerly numbered 235.) Prerequisite: course 135, or consent of the instructor. Advanced consideration of the problems of insurance management. Treats the actuarial, underwriting, investment, marketing, and regulatory problems relating to insurance activities. Mr. Hoffmader, Mr. Pfeiffer

**235B. Risk and Risk Bearing.**

(Formerly numbered 239.) Prerequisite: course 135 or consent of the instructor. Advanced consideration of the theory of risk and risk bearing. The analysis of alternative ways of meeting risk and uncertainty, the scope and limits of insurance, and the economics of insurance. Mr. Pfeffer

**236. Life Insurance in Business and Estate Management.**

Prerequisite: course 135 or consent of the instructor. An advanced study of business life insurance and estate programming with emphasis on the analysis, conservation, management and disposition of the individual or business estate. Mr. Pfeffer

**237. Property and Casualty Insurance in Business Management.**

Prerequisite: course 135 or consent of the instructor. An advanced treatment of the property and liability risks found in business enterprise, with emphasis on the role of the risk manager in the firm. Mr. Pfeffer

**238. Selected Topics in Finance and Insurance.**

Selected topics in the study of financial theories and policies. Models of financial behavior. Study of financial institutions. Relations between theory and institutional practices. May be repeated for credit. The Staff

**OPERATIONS MANAGEMENT****240A. Deterministic Models of Operational Systems.**

Prerequisite: Mathematics 11C. The use of deterministic models for the analysis of operational systems. Formulation and application of linear, network, and dynamic models. Optimization and heuristic solution techniques. The Staff

**240B. Stochastic Models of Operational Systems.**

Prerequisite: courses 116A and 240A. Analytic techniques for stochastic operational systems. Formulation and application of stochastic programming, probabilistic dynamic programming, Markovian, waiting line and information models. The Staff

**240C. Synthesis of Operational Systems.**

Prerequisites: Mathematics 11C and course 115A. Examination of the design process, alternative design methodologies, value systems and search techniques. Special emphasis on broad aspects of the synthesizing processes underlying the creation of operational systems. Mr. Andrews

**240D. Simulation of Operational Systems.**

Prerequisite: FORTRAN programming. Fundamentals of modeling and simulation of systems with special attention devoted to business applications of digital computer simulation. Group and individual student projects offer direct experience with computer simulation. Mr. Nelson

**240E. Research Methods in Socio-Technical Analysis.**

Prerequisite: consent of the instructor. Conceptual foundations for socio-technical analyses of operational systems. Analytical methods for identification and measurement of elements of socio-technical systems, relationships among elements and changes over time in elements and their relationships. Mr. Andrews, Mr. Davis, Mr. McWhinney

**241A. Work Design and Measurement, I.**

Design of work systems; human engineering; job simplification and motion study; job enlargement and methods change programs; motion study, mechanization, and automation; motivation of workers; psycho-sociological implications of technological systems. Mr. Barnes

**241B. Work Design and Measurement, II.**

Work measurement by time study, elemental data, and systems of motion-time data; measuring work by statistical methods; work physiology; labor cost control; and the compensation of labor. Mr. Barnes

**242A-242B. Design of Processes and Facilities.**

Prerequisite: courses 240A-240B-240C. Design of intermittent and continuous processes and facilities to transform inputs into desired products or services. Examination of spatial economics, material flow, relative location of facilities, and line balancing. Mr. Andrews, Mr. Davis, Mr. Mastor

**242C. Design of Socio-Technical Systems.**

Prerequisite: consent of the instructor. Discussion and interpretations field studies leading to the design of socio-technical systems. To be taken concurrently with course 292B. The Socio-Technical Staff

**243A. Operations Planning and Control.**

Prerequisite: courses 240A and 240B or equivalent. Planning and control models and methods applicable in continuous, intermittent and one-time systems for both manufacturing and nonmanufacturing situations. Forecasting, the role of inventories, aggregate planning, and scheduling. Mr. Buffa

**243B. Inventory Theory.**

(Formerly numbered 245B.) Prerequisite: courses 240A-240B or equivalent. It is not necessary to have credit for course 243A before taking course 243B. Single product inventory systems are studied using analytic mathematical models. Demands are assumed to be known only statistically. Mr. Lippman

**243C. Production Scheduling.**

(Formerly numbered 242.) Prerequisite: courses 240A-240B or equivalent. Determination of production schedules, product mixes, man-machine combinations and sequences of products and operations for continuous and intermittent production systems. Determination of in-process inventories. Use of network scheduling methods. Mr. Buffa, Mr. Mastor

**243D. Integrated Operational Systems.**

(Formerly numbered 242.) Prerequisite: courses 243A-243B. Design and analysis of models of integrated operational systems. Business games and applications of simulation techniques. Mr. Nelson

**244A. Research and Development Policy.**

Examination of research and development as a process and as an element of a goal oriented organization. Factors affecting invention and innovation; transfer of technology; organizational and behavioral considerations; coupling of science, technology and organizational goals; assessing and forecasting technological futures. Mr. Abernathy, Mr. Goodman

**244B. Project Management.**

Management of development projects. Decision making environment, economic analysis, network analysis, scheduling and control of development projects. Sequential and aggregate development decisions. Mr. Abernathy

**245. Scientific Approach to Management.**

(Formerly numbered 249A-249B.) A study of the historical development of the scientific approach to management; analysis of the contributions of the pioneers, Taylor, Gilbreth, Gantt, Fayol and others; evaluation of current trends; case studies. Mr. Barnes

**246. Manufacturing Policy.**

(Formerly numbered 240A-240B.) Case studies in manufacturing companies dealing with broad problems of process planning, product planning, justification of facilities, integration of facilities. Case studies are grouped by industries to study elements of the economics of the industry and the nature of productive processes. Mr. Abernathy, Mr. Chase

**247A. Survey of Operations Management.**

Prerequisite: enrollment in the M.S. program. Survey of the research literature in operations management. Seminar reports dealing with special topics. The Staff

**247B. Survey of Operations Management.**

Prerequisite: enrollment in the Ph.D. program. Survey of the research literature in operations management. Seminar reports dealing with special topics. The Staff

**248. Special Topics in Operations Management.**

Studies of advanced subjects of current interest in operational management. Emphasis is on recent developments and the application of specialized knowledge to operational problems. Topics change each offering, and in the absence of significant duplication, the course may be repeated. The Staff

**INDUSTRIAL RELATIONS****250A. Personnel Management.**

Consideration, at an advanced level, of factors underlying the formation and execution of managerial policies relating to the selection, development, adjustment, and motivation of individual employees. Emphasis on independent investigations and presentations by students. The Staff

**250B. Personnel Management.**

Consideration, at an advanced level, of factors underlying the formation and execution of managerial policies relating to employee participative programs, administration of benefits and services, effects of work environment, and evaluation of the personnel program. Emphasis on independent investigations and presentations by students. The Staff

**251. The Management of Labor Relations.**

Consideration, at an advanced level, of the collective bargaining process, the labor-management agreement, the administration of the contract, and the impact on public policy on the management of industrial relations. Case studies, field trips, and visiting lecturers will be part of the seminar curriculum. The Staff

**252. Law and Governmental Policy in Industrial Relations.**

Prerequisite: course 150. Governmental policies on employer-employee relations; historical background; constitutional and common law principles; application of Taft-Hartley, Labor Reform, Antitrust, Anti-Injunction, Fair Labor Standards, Workmen's Compensation and other acts; trends and proposed legislation on labor-management affairs. Mr. Hutchinson, Mr. Raza

**253. Settlement of Industrial Disputes.**

Prerequisite: course 150 or Economics 151. Principles that underlie adjustments of labor controversies. The character and procedures of arbitration, mediation, fact-finding, and conciliation. Policies of existing agencies dealing with industrial disputes. Mr. Meyers, Mr. Prasow

**254. Analysis of Labor Markets.**

Prerequisite: consent of the instructor. Problems of verifying hypotheses concerning labor market behavior and the application of data to managerial problems. Problems of operationally defining labor market concepts. Critical evaluation of available labor market data. Case studies applying these data to managerial problems. Mr. Fogel, Mr. Meyers

**255. Comparative Industrial Relations.**

Prerequisite: course 150 or an elementary knowledge of labor economics. At national and international level historical and contemporary analytical comparison of industrial relations systems within their political, social and economic environments. Included are: the institutions, philosophies and ideologies of labor, management and government and the interaction of their power relationships; the substance and manner of determination of "web of rules" governing the rights and obligations of the parties, and the resolution of conflicts. The Staff

**256. Technological Bases of Jobs and Organizations.**

Prerequisite: consent of the instructor. Technological determinants of operating systems and jobs; productive system design models; behavioral models underlying operating system design; technology and social system design; operating system variability, control and measurement. Mr. Davis, Mr. Kleingartner

**257. Labor Relations, Law and Industrial Organization.**

Given every third year. Prerequisite: course 251, 252, or 253 or consent of the instructor. An examination at an advanced level of the legal, managerial and economic factors relevant to union-management relations. Investigation in depth of specific labor relations problems from the point of view, simultaneously, of law, management and economics. Mr. Meyers

**258. Selected Topics in Industrial Relations.**

(Formerly numbered 259.) Prerequisite: open primarily to Ph.D. candidates, but also to others with consent of the instructor. An examination in depth, of problems or issues of current concern in industrial relations. Emphasis on recent contributions to theory, research, and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit. The Staff

**MARKETING****260A. Marketing Management Theory.**

Prerequisite: B.S. in business administration or courses 401, 407, 120M, and 411 or equivalent, or consent of the instructor. An analysis of marketing management concepts developed from economic, sociological, psychological and organization theory. These concepts will be applied in a comprehensive view of the more difficult problems arising in product, price, channel, and promotion policy and decision-making. Mr. Dalrymple, Mr. Garrison

**261A. Marketing Institutions: Retail.**

Prerequisite: course 260A or consent of the instructor. A study of special issues associated with the retail sector of the distribution process. Includes a discussion of the importance and impact of current research studies on retailing efficiency. Individual projects and reports.

Mr. Brown, Mr. Dalrymple

**261B. International Marketing Management.**

Prerequisite: course 260A, Economics 190 or consent of the instructor. Opportunities, distinctive characteristics, and emerging trends in foreign markets are analyzed. Including an exploration of alternative methods and strategies, organizational planning and control, impact of social, cultural, economic, and political differences, and problems of adapting American marketing concepts and methods.

Mr. Yoshino

**262. Price Policies.**

Prerequisite: course 260A or consent of the instructor. Consideration of such concepts as product classification, demand, competition, and costs, as they apply to price-making. The theory of price leadership, geographical pricing, price discrimination, price warfare, and leader pricing are also studied in relation to the price-making process. In addition, some attention is given to the price policies of individual firms in which these concepts are applicable.

Mr. Cassidy

**263A. Consumer Behavior.**

Prerequisite: courses 180, 115A and 160 or equivalent, or consent of the instructor. A study of the nature and determinants of consumer behavior. Attention will be focused on the influence of socio-psychological factors such as personality, small groups, demographic variables, social class, and culture on the formation of consumers' attitudes, consumption and purchasing behavior.

Mr. Kassarian, Mr. Robertson

**263B. Theory of Marketing Stimulation.**

Prerequisite: course 263A. Analysis of factors influencing consumer demand. Techniques for stimulating demand are evaluated in relation to specific marketing objectives. Material is drawn from economics, psychology, sociology, anthropology, and marketing research.

Mr. Robertson

**264A. Techniques of Marketing Measurement.**

Prerequisite: courses 115A, 160 or consent of the instructor. Methods of measuring and predicting the forces affecting marketing, including quantitative aspects of demand, consumer reaction to product characteristics, effectiveness of advertising and other promotional devices, influence of rewards and organizational systems on sales efficiency, and effectiveness of competitors' strategies.

Mr. Dalrymple, Mr. Jensen, Mr. Kassarian

**264B. Mathematical Models in Marketing.**

Prerequisite: course 260A, or equivalent or consent of the instructor. A study of the utilization of models for the solution of marketing problems. Discussion will be focused on models concerned with such problems as brand switching, media selection, pricing, competitive strategy, scheduling, allocation problems, and waiting time.

Mr. Jones

**265A. Marketing and the Law.**

Prerequisite: course 260A, completion of screening examination for doctoral candidates, or consent

of the instructor. A detailed study of the legislative enactments (federal, state, or local) which influence the operation of institutions engaged in marketing activities, together with an analysis of the judicial decisions which have interpreted these laws.

Mr. Brown, Mr. Cassidy

**266A. Product and Channel Policies.**

Prerequisite: course 260A. A study of the influence of technique and marketing variables on the adaptation of product design to market requirements and on the selection of channels of distribution.

Mr. Brown

**266B. Advertising Policy.**

Prerequisite: courses 260A, 263A, or consent of the instructor. A study of the formulation of advertising policies, involving an analysis of cases dealing with: the role of advertising in marketing, the definition of advertising objectives, strategy, appropriation policy, media selection, evaluating advertising results, and the organization of the advertising function.

Mr. Robertson

**266. Selected Topics in Marketing.**

(¼ to 1½ courses)

(Formerly numbered 269.) Prerequisite: course 260A and final semester standing for M.S. degree candidates, passage of screening examinations for Ph.D. degree candidates, or consent of the instructor. A study of selected areas of marketing knowledge and thought. Specific subjects discussed to be changed each semester depending on the particular interests of the instructor and students. Individual projects and reports. May be repeated for credit.

The Staff

**TRANSPORTATION****270. Physical Distribution Management.**

Prerequisite: Economics 175 or consent of the instructor. Advanced analysis of spatial problems of firms, including transportation problems of physical distribution.

Mr. Quinn

**271. Transportation Management.**

Prerequisite: Economics 175 or consent of the instructor. Application, through individual research, analysis, and group discussion of management principles and techniques applicable to transportation enterprises.

Mr. Quinn

**URBAN LAND ECONOMICS****275. The Urban Environment and Business.**

Prerequisite: consent of the instructor. Extent of urbanization in the U. S., forces causing urbanization, impact of urbanization on land uses, patterns of residential, industrial, and commercial development, management impact on city growth and structure impact on management, government and urbanization.

Mr. Burns, Mr. Case

**276A. Theory and Methods of Urban Space Allocations.**

Prerequisite: courses 175, 401, or equivalent or consent of the instructor. Systematic analysis of determinants of real property values and allocation of land uses over urban space. Emphasis given to the role of entrepreneurial decisions in shaping the urban land use structure within the context of public powers and policies.

Mr. Burns, Mr. Case, Mr. Grebler

**276B. Urban Land Economics.**

Prerequisite: courses 175, 401, or consent of the instructor. Public and private forces affecting urban change. Emphasis on the role of the public sector and tools for analyzing policy alternatives for metropolitan growth and development.

Mr. Burns, Mr. Case, Mr. Grebler

**277. Real Estate Finance.**

(Numbered 277A-277B in 1966-67) Prerequisite: course 175 or consent of the instructor. The market for real estate funds as part of the capital market. Instruments of equity and mortgage investment. The major mortgage lenders. Competitive market structure. Government policies. Investment analysis for equity and loan investments.

Mr. Grebler

**278A. Housing Economics.**

Prerequisite: courses 175, 276B, or consent of the instructor. Consideration of determinants of private and public demand for housing. Housing programs and relationships between construction and economic trends are examined in detail.

Mr. Burns, Mr. Case

**278B. Housing Policy.**

Prerequisite: courses 175, 278A, or consent of the instructor. U. S. and foreign housing programs. Housing low income groups, new town legislation, improving environment—urban renewal and development and related topics. Criteria for assessing public policy, policy implementation, policy and stages of national economic development, the role of private enterprise.

Mr. Burns, Mr. Case

**279. Studies in Urban Land Economics.**

Prerequisite: post-screening examination status in urban land economics. An examination in depth of problems or issues of current concern in urban land economics. Emphasis on recent contributions to theory, research, and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

Mr. Burns, Mr. Grebler

**BEHAVIORAL SCIENCE****280A-280B-280C. Foundations in Managerial Behavioral Science. (2 courses each)**

Prerequisite: successful completion of Ph.D. screening examinations. Credit and grade given upon completion of the full sequence. An integrated and interdisciplinary study of behavioral science for management. Content areas include the person, dyad, group, intergroup, organization and society. Processes of concept formation, change, and research are examined for these human units and their interrelationships.

The Staff

**281. Behavioral Foundations of Socio-Technical Systems.**

(Formerly numbered 281A.) Prerequisite: consent of the instructor. Study of task groups, intergroup relations, and organizations in context of socio-technical systems. Structure and dynamics of these social units in relation to their physical/technical environment. Emphasis on the design of technologies and formal structures to enhance the emergence of viable social structures. Consideration of the impact of technological change on social relations.

Mr. Vaill

**282A. Direction and Leadership.**

(Formerly numbered 292.) The management function of direction and its implementation through leadership. Emphasis on research and theories dealing with the key variables underlying the manager's interpersonal effectiveness in an organizational context.

The Staff

**282B. Leadership Training: Theory and Practice.**

(Formerly numbered 256.) Problems in the application of scientific knowledge for the development of effective leaders. Comparative analysis of the research findings, theories, and practices of different approaches to leadership training. Critical analysis of the role of the training specialist.

Mr. Clark, Mr. Peters

**283. Organizational Change Processes.**

(Formerly numbered 206A-206B.) Prerequisite: courses 180, 404 or consent of the instructor. Analysis of research, theory and practice relevant to behavioral change processes at many social levels to illuminate these processes in an organizational setting. Concepts and methods will be examined and tested by laboratory and field experiences.

Mr. Goodman, Mr. Tannenbaum

**285. Advanced Behavioral Science.**

(Formerly numbered 207.) Prerequisite: consent of the instructor. Focuses on advanced theory, integration and application of knowledge concerning individual, group, organizational, subcultural and cultural behavior. The student explores in depth selected theoretic positions, extending and consolidating behavioral science knowledge and its application to specialized business administration fields.

Mr. Massarik

**286. Field Studies in Socio-Technical Systems.**

Prerequisite: consent of the instructor. Basic concepts, principles and methodologies of socio-technical analysis applied to operational problems of organizations. Emphasis will be on the conduct of empirical studies.

The Socio-Technical Staff

**288. Special Topics in Behavioral Science.**

Prerequisite: open primarily to Ph.D. candidates, but also to others with consent of the instructor. An examination, in depth, of problems or issues of current concern in behavioral science. Emphasis on recent contributions to theory, research and methodology of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**MANAGEMENT THEORY****290. Organization Theory.**

Prerequisite: courses 190A-190B or 409 or consent of the instructor. Analysis of the theory and practice of the managerial function of organizing through study of the literature, case analyses, and seminar discussion. Individual projects and reports.

The Staff

**291. Planning and Control.**

Prerequisite: courses 190A-190B or 409 or consent of the instructor. Analysis of the theory and practice of the managerial function of planning and control. The implementation of objectives through policy formulation, decision-making, and control. Individual projects and reports.

The Staff

**292A. Environmental Settings of Socio-Technical Systems.**

Prerequisite: consent of the instructor. Complexity, interdependence and uncertainty of organizational environments. Analysis of environments along socio-cultural, political and economic dimensions, their interrelationships and relations to technology. Organizational responses to various environments.

Mr. Trist

**292B. Models of Organizational Behavior.**

Prerequisite: consent of the instructor. Theoretical frameworks for developing explanatory and predictive models of complex organizations. Exercises in constructing formal models, usually in mathematical or stochastic form, and where appropriate, using materials from field studies to develop empirical tests. These models may be used to discover implications for the systems changes recommended in the socio-technical field study.

Mr. McWhinney

**293. The Philosophy of Enterprise Control.**

Prerequisite: courses 190A-190B or 409 or consent of the instructor. A study of the business enterprise as a social institution, with emphasis on the changing purposes of social action. Adjustments of the firm to changes in the social environment. Ethical problems in management. Social responsibilities of the business manager.

Mr. O'Donnell, Mr. Steiner

**294A-294B. Business Policies.**

Prerequisite: courses 190A-190B or 409, or consent of the instructor. Analyses of business cases; the identification of salient problems encountered by managers at all levels, and the application of management principles to their identification and solution.

Mr. Adizes, Mr. Mason, Mr. Nerlove

**295. The History of the Businessman.**

Prerequisite: courses 190A-190B. The functions and methods of businessmen as they were shaped by the social environment of selected historical periods. Special attention is given to the institutions which were developed to facilitate or regulate business activity.

The Staff

**296. Comparative and International Management.**

Prerequisite: courses 190A-190B or 409. A comparative study of the practice of management in selected foreign countries, as affected by their social environments and the development of management theory.

Mr. Richman, Mr. Schollhammer, Mr. Yoshino

**297. International Business Policy.**

Prerequisite: course 205A and consent of the instructor. Analysis of key managerial problems encountered in a multinational corporation. Concepts and theories acquired in other courses in International Business and Comparative Management will be applied to a series of complex cases and simulations of international business operations.

Mr. Mason, Mr. Richman, Mr. Yoshino

**298A. Special Topics in Management Theory.**

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in management theory. Emphasis on recent contribution to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**298B. Special Topics in International and Comparative Management.**

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in international and comparative management. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**298C. Special Topics in Socio-Technical Systems.**

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in socio-technical systems. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**298D. Special Topics in Business Administration.**

Prerequisite: open primarily to Ph.D. candidates or with consent of the instructor. An examination in depth of problems or issues of current concern in Business Administration. Emphasis on recent contributions to theory, research, and methodology. Of special interest to advanced doctoral candidates, the academic staff, or distinguished visiting faculty. May be repeated for credit.

The Staff

**INTERNATIONAL AND COMPARATIVE  
MANAGEMENT STUDIES**

See courses 205A, 205B, 205C, 226, 233A, 255, 261B, 296, 297, 298B.

**SOCIO-TECHNICAL SYSTEMS STUDIES**

See courses 240C, 240E, 242C, 256, 281, 283, 286, 292A, 292B, 298C.

**MASTER OF BUSINESS ADMINISTRATION  
CURRICULUM****401. Business Economics.**

(Formerly numbered 100G.) Analysis of decision-making in the firm, competitive policies and market structure, revenue and cost behavior.

The Staff

**402. Mathematics for Management.**

(Formerly numbered 110G.) Fundamental mathematics for business, including topics from matrix algebra, probability, and calculus; with applications to model building and decision-making in business firms.

The Staff

**403. Survey of Financial and Managerial  
Accounting. (1½ courses)**

(Formerly numbered 120G.) An introduction to fundamental systems and procedures in financial and managerial accounting, with an emphasis on income measurement, marginal analysis, standard and direct costing. The laboratory includes computer programming and case problems in managerial accounting.

The Staff

**404. Behavioral Science Foundations.**

(Formerly numbered 180G.) Fundamental concepts in behavioral science; their integration and application to management. Theoretical and practical aspects of organization, group, cultural and individual behavior. The managerial environment as a field for systematic behavioral science investigation.

The Staff

**405A-405B-405C. Business Communications.**

(1/4, 1/4, 1/2 course)

(Formerly numbered 109G.) Examination of communication as a social and symbolic process affecting the management function and analysis of the communication alternatives available to managers for the solution of specific problems.

The Staff

**406. Business Fluctuations.**

(Formerly numbered 101G.) Sales, costs, and profit forecasting. General business forecasting and cyclical mechanisms.

The Staff

**407. Business Statistics.**

(Formerly numbered 115G.) An introduction to statistics for graduate students who have had no previous course in which emphasis is upon applications to business problems.

The Staff

**408. Business Finance.**

(Formerly numbered 180G.) Contents include business financial planning, financial management, securities and other financial instruments, securities markets, and securities valuation.

The Staff

**409. Management Theory and Policy.**

(Formerly numbered 190G.) An analysis of the functions of managers, emphasizing underlying principles applicable to general, rather than functional management.

The Staff

**410. Operations Management.**

(Formerly numbered 140G.) Principles and decision analysis related to the effective utilization of the factors of production in manufacturing and manufacturing activities for both intermittent and continuous systems. The study of production organizations, analytical models and methods, facilities design, and the design of control systems for production operations.

The Staff

**411. Elements of Marketing.**

(Formerly numbered 160G.) A study of institutions and functions as they relate to the distribution of goods and services, emphasizing the viewpoint of management in the planning, execution, and measurement of marketing activities and strategies, and the viewpoint of society in the analysis of costs, impact, and results.

The Staff

**412. Business Economics and Fluctuation.**

(Formerly numbered 102G.) Analysis of decision-making in the firm, competitive policies and market structure, revenue and cost behavior. Sales, cost, and profit forecasting. General business forecasting and cyclical mechanisms. The role of enterprise under political democracy and public policy.

The Staff

**421. Business, Labor and Government.**

Prerequisite: Completion of first year of MBA Curriculum. Examines the nature of national policy issues which involve both organized and unorganized labor and have implications for the performance of business firms and other employing organizations.

Also provides general familiarity with approaches to the problems of labor utilization within unionized and non-union firms.

The Staff

**422. Business Economic Policies.**

Prerequisite: Completion of first year of MBA Curriculum. Major government policies affecting the economic environment of the business firm. Monetary and fiscal policies to achieve economic stability and growth. Public policies toward competition and its regulation. Social and economic rationale for regulation. Measuring competition and monopoly.

The Staff

**423. Advanced Management Theory.**

Prerequisite: Completion of first year of MBA Curriculum. Advanced study of management theory in formally organized enterprise through significant readings; discussing advanced approaches and techniques developed from applying theory; using theory to integrate methods and findings of quantitative and behavioral sciences; lectures on sophisticated application of management theory in practice.

The Staff

**424. Business and Society.**

Prerequisite: Completion of first year of MBA Curriculum. Study of the broad evolving interrelationships between business and society, the changing role of the businessman in his environment, the ethical problems and social responsibilities of business managers, and the business enterprise as a social institution.

The Staff

**425A-425B. Business Policy.**

Prerequisite: Completion of first year of MBA Curriculum. Case course dealing with basic policy decisions, executive action, and administrative behavior involved in managing total enterprises. The student is confronted with single company situations to develop ideas essential to overall managerial direction.

The Staff

**INDIVIDUAL STUDY COURSES****506A-506N. Research in Business Administration.**

(1/4 to 2 courses)

Prerequisite: consent of Director of Master's Programs or Director of Doctoral Program by special petition. Directed individual study or research.

The Staff

**507. Preparation for Examinations in Business****Administration. (1 or 2 courses)**

Prerequisite: consent of Director of Master's Programs or Director of Doctoral Program by special petition. Preparation for comprehensive examination for the master's degree or the qualifying examination for the Ph.D. degree.

The Staff

**508. Thesis Research in Business Administration.**

(1 or 2 courses)

Prerequisite: consent of Director of Master's Program by special petition. Research for and preparation of the master's thesis.

The Staff

**509. Dissertation Research in Business****Administration. (1 or 2 courses)**

Prerequisite: consent of Director of Doctoral Program by special petition. Research for and preparation of the doctoral dissertation.

The Staff

## ■ BUSINESS EDUCATION

(Department Office, 244 Moore Hall)

Samuel J. Wanous, Ph.D., *Professor of Education.*

Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*

Students wishing to prepare for teaching in the field of business education should plan to complete the business-economics major shown below:

### Business-Economics Major for Business Teachers

This major has been designed in accordance with the State law governing the Standard Teaching Credential with a Specialization in Secondary Teaching for business teachers. The program, offered by the Department of Economics, consists of a departmental major in economics and business administration. This combination major also satisfies the teaching credential minor requirement. A fifth year is necessary for the completion of the credential requirements.

**Lower Division Requirements.** (1) Language: five courses in one or two languages (or placement examination); (2) Mathematics: Mathematics 1 (if less than three years of high school mathematics); (3) English and Speech: English 1 (or proficiency examination)—in addition to Subject A examination) and Speech 1; (4) American History and Institutions: Economics 10 or approved alternative; (5) Physical sciences: Physical Sciences 1, 2, Mathematics 2A, 2B, 2C; (6) Life Sciences: Biology 2A, 2B, Psychology 10, 12; Humanities and Electives: three courses from Humanities 1A, 1B, 1C–1G or English 10A, 10B, 10C or English 100, 101, 102, 103, 104, 110, 113, 115. One additional course from art, history, literature, music, or philosophy.

**Lower Division Requirements for Major.** Economics 1, 2, Business Administration 1A, 1B.

**Upper Division Requirements.** (1) Economics 101A, 101B, 102, 160; three courses from Economics 107, 130, 150, 170, 180, 190; (2) Business Administration 108A, 109, 113A; 115A or Economics 140; Business Administration 120A, 130; three courses from Business Administration 108B, 113B, 120B, 135, 160.

**Credential Requirements.** Applicant must complete a minimum of 36 quarter units (nine courses) beyond the bachelor's degree. The three student-teaching courses and any Education courses not completed during the

fourth year may be included. In addition, course work may be taken toward the M.A. or M.Ed. in Education, M.A. in Economics, M.B.A. or M.S. in Business Administration. (1) Fourth or Fifth Year Courses: Education 100, 112, 130, 137A; 137B or 137C; (2) Fifth Year Courses: two courses in 200 or 400 series in major; student teaching: Education 330A, 330B, 330C; or internship.

### Graduate Division

Students in business education may earn the following graduate degrees: Master of Business Administration or Doctor of Philosophy in the School of Business Administration; Master of Education, Master of Arts, Doctor of Education or Doctor of Philosophy in the Graduate School of Education. For further information see the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, THE ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION, and the announcement of the Graduate Division, GRADUATE STUDY AT UCLA.†

### Requirements for Teaching Credentials

Candidates for the teaching credentials with a major or minor in business education should consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.†

#### Upper Division Course

#### 199. Special Studies. (¼ to 1 course)

Prerequisite: senior standing and consent of the instructor. The Staff

#### Professional Course

#### 410. Case Studies in Office Management.

Mr. Erickson

#### Individual Study and Research

#### 598. Independent Study in Business Education.

(½ to 1 course)

The Staff

#### Related Courses in Other Departments

Education 137A. The Curriculum in Business Education. Mr. Erickson

137B. The Teaching of Secretarial

Subjects. Mr. Erickson

137C. The Teaching of Bookkeeping, General Business, and Economics.

Mr. Erickson

† For further information, see Professor Erickson or Professor Wanous.

## CHEMISTRY

(Department Office, 3010 Chemistry Building)

- Frank A. L. Anet, Ph.D., *Professor of Chemistry*.  
 Daniel E. Atkinson, Ph.D., *Professor of Chemistry*.  
 Paul D. Boyer, Ph.D., *Professor of Chemistry*.  
 †Donald J. Cram, Ph.D., *Professor of Chemistry*.  
 Mostafa A. El-Sayed, Ph.D., *Professor of Chemistry*.  
 Paul S. Farrington, Ph.D., *Professor of Chemistry*.  
 Clifford S. Garner, Ph.D., *Professor of Chemistry*.  
 Theodore A. Geissman, Ph.D., *Professor of Chemistry*.  
 Eugene R. Hardwick, Ph.D., *Professor of Chemistry*.  
 Thomas L. Jacobs, Ph.D., *Professor of Chemistry*.  
 Daniel Kivelson, Ph.D., *Professor of Chemistry*.  
 \*\*Willard F. Libby, Ph.D., D.Sc., *Professor of Chemistry*.  
 †James D. McCullough, Ph.D., *Professor of Chemistry*.  
 William G. McMillan, Jr., Ph.D., *Professor of Chemistry*.  
 Robert L. Pecsok, Ph.D., *Professor of Chemistry (Vice-Chairman of the Department)*.  
 Howard Reiss, Ph.D., *Professor of Chemistry*.  
 Verne N. Schumaker, Ph.D., *Professor of Molecular Biology in Chemistry*.  
 †Robert L. Scott, Ph.D., *Professor of Chemistry*.  
 Kenneth N. Trueblood, Ph.D., *Professor of Chemistry (Chairman of the Department)*.  
 †Charles A. West, Ph.D., *Professor of Chemistry*.  
 †Saul Weinstein, Ph.D., D.Sc., *Professor of Chemistry*.  
 William G. Young, Ph.D., D.Sc., *Professor of Chemistry*.  
 Francis E. Blacet, Ph.D., D.Sc., *Emeritus Professor of Chemistry*.  
 Max S. Dunn, Ph.D., LL.D., *Emeritus Professor of Chemistry and Biological Chemistry*.  
 G. Ross Robertson, Ph.D., *Emeritus Professor of Chemistry*.  
 †Mario E. Baur, Ph.D., *Associate Professor of Chemistry*.  
 Kyle D. Bayes, *Associate Professor of Chemistry*.  
 Christopher S. Foote, Ph.D., *Associate Professor of Chemistry*.  
 Herbert D. Kesz, Ph.D., *Associate Professor of Chemistry*.  
 Roberts A. Smith, Ph.D., *Associate Professor of Chemistry*.  
 \*\*John T. Wasson, Ph.D., *Associate Professor of Chemistry*.  
 Alan L. Balch, Ph.D., *Assistant Professor of Chemistry*.  
 John Birely, Ph.D., *Assistant Professor of Chemistry*.  
 Craig W. Deutsche, Ph.D., *Assistant Professor of Chemistry*.  
 David A. Evans, Ph.D., *Assistant Professor of Chemistry*.  
 David E. Fahrney, Ph.D., *Assistant Professor of Chemistry*.  
 Edward W. Graham, Ph.D., *Assistant Professor of Chemistry*.  
 Jerome V. V. Kasper, Ph.D., *Assistant Professor of Chemistry*.  
 Charles M. Knobler, Ph.D., *Assistant Professor of Chemistry*.  
 Michael W. Konrad, Ph.D., *Assistant Professor of Chemistry*.  
 David A. Lightner, Ph.D., *Assistant Professor of Chemistry*.  
 Malcolm F. Nicol, Ph.D., *Assistant Professor of Chemistry*.  
 James E. Sudmeier, Ph.D., *Assistant Professor of Chemistry*.



\*\*George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology*.

† Absent on leave, 1968-1969.

† Absent on leave, spring quarter, 1969.

\*\* Member of the Institute of Geophysics and Planetary Physics.

### Admission to Courses in Chemistry

Regular and transfer students who have the prerequisites for the various courses are not thereby assured of admission to those courses. The Department may deny admission to any course if a grade D was received in a course prerequisite to that course, or if in the opinion of the Department the student shows other evidence of inadequate preparation.

### Preliminary Examination in Chemistry

Students who wish to enroll in course 1A or in course 1AH must take the Preliminary Examination in Chemistry during the enrollment period for the quarter in which they intend to enroll in these courses. Enrollment usually will be limited to students who have passed the examination. During 1968-1969, the Preliminary Examination in Chemistry is scheduled on June 17, 1968 for the Summer Quarter; September 23, 1968 for the Fall Quarter; January 2, 1969 for the Winter Quarter; and March 31, 1969 for the Spring Quarter. The time and location of the examination will be posted on the Chemistry 1A Bulletin Board located near Room 1054 in the Chemistry Building.

### Preparation for the Major

Required: Chemistry 1A, 1B, 1C, 4A, 4B, 4C, 6A, 6B, 6C; Physics 1A, 1B, 1C, 1D; Mathematics 11A, 11B, 11C, and either 12A and 12B or 13A and 13B; English 1 and one other English course selected from courses 2, 100, 101, 102, 103, 105, 107, 108, and 109; German 1, 2, 3 or Russian 1, 2, 3 and a fourth language course in German, Russian, or French. Students should note that a reading knowledge of German is usually necessary for graduate study in chemistry.

### The Major

The minimum requirement for the major in chemistry consists of courses 113A, 113B, 113C, 114A, 133A, 133B, and three other upper division chemistry courses including: 1) one laboratory course selected from 114B, 136, 144, 154, and 184; 2) one course in analytical chemistry, biochemistry, or inorganic chemistry selected from courses 153, 154, 173, 175, and 184; 3) one course in an area of chemistry different from that selected under 2). Courses 102, 152, and 199A-ZZ cannot be used toward fulfilling this three upper division chemistry course requirement.

The selection of courses taken during the senior year is determined somewhat by the area of chemistry in which the student decides to specialize. The courses normally taken by students interested in each of the

five principal divisions of chemistry are, as follows:

*Analytical Chemistry.* Course 184 and others selected from 115A, 115B, 123A, 123B, 136, 143A, 153, 173, and 175.

*Biochemistry.* Courses 153, 154, and others selected from 123A, 136, 143A, and certain courses in microbiology, genetics, and other life sciences.

*Inorganic Chemistry.* Courses 114B, 173, 175, and others selected from 115A, 123A, 123B, 143A, 143B, 144, and 184.

*Organic Chemistry.* 143A, 143B, 136 or 144, and others selected from 115A, 123A, 153, 173, and 175.

*Physical Chemistry.* 114B, 115A, 115B, 123A, 123B, and others selected from 143A, 153, 173, 175, and certain advanced courses in physics and mathematics.

Chemistry majors are urged to seek help and advice in the Chemistry Undergraduate Adviser's Office, Room 1037, Chemistry Building.

### Transfer Students

An entering transfer student who has satisfactorily completed a year course in general college chemistry should enter courses 4A and 6A. However, if he has not completed the equivalent of one quarter of quantitative analysis, which is a prerequisite for course 6B, he must also enroll in course 5. If he has completed one or more semesters of quantitative analysis and one or two semesters of organic chemistry, he should enter courses 4C and 6C. Students who are unsure of which course to enter should consult the Chemistry Undergraduate Adviser.

### Graduate Study

The Department of Chemistry offers programs of study and research leading to the M.S. and Ph.D. degrees in chemistry and to the M.S. and Ph.D. degrees in biochemistry. Prospective candidates for advanced degrees in chemistry may specialize in any of the following fields: analytical chemistry, biochemistry, inorganic, organic, or physical chemistry.

The general University requirements for the M.S. degree are given on page 136. The Department of Chemistry makes use of the Thesis Plan. The General University requirements for the Ph.D. degree are given on page 140. The student is not required to earn the M.S. degree before undertaking work for the Ph.D. degree. More detailed information regarding admission to and requirements for graduate study may be obtained by writing

to the Graduate Adviser, Department of Chemistry, University of California, Los Angeles, California 90024.

#### Lower Division Courses

For the combination of course 1A and Physical Sciences 2, a total of only 1½ courses of credit will be allowed.

#### Physical Sciences 2. Chemistry.

See Physical Sciences, page 393.

#### 1A. General Chemistry.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: three years of high school mathematics; high school chemistry and physics are strongly recommended. All students who intend to take this course must take the Preliminary Examination in Chemistry which will normally be given within about 10 days before instruction begins. Enrollment usually will be limited to those students who have passed that examination. Students appearing for the examination must be prepared to identify themselves. This course is required of all majors in chemistry and most other fields of science or technology. Knowledge of calculus will be useful for this course, but is not required. Lecture: stoichiometry and atomic theory; atomic structure and periodic table; molecular structure and chemical properties; kinetic molecular theory of gases and the gas laws; solutions and colligative properties; volumetric analysis. Laboratory: use of the balance; stoichiometry; molecular and equivalent weights; use of volumetric equipment.

The Staff in Freshman Chemistry

#### 1AH. General Chemistry—Honors Sequence.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: An outstanding high school record in either chemistry or physics, and in at least three years of high school mathematics. Mathematics 11A should be taken concurrently. All students who intend to take this course must take the Preliminary Examination in Chemistry which will normally be given within about 10 days before instruction begins. Enrollment in this course will be open only to students who have passed that examination. An honors course parallel to course 1A.

Mr. El-Sayed

#### 1B. General Chemistry.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1A or 1AH with the grade C or higher, or all the prerequisites for course 1A and satisfactory performance on a special examination, or consent of the instructor. Lecture: molecular interactions; the solid and liquid state; solutions; chemical and phase equilibria; thermochemistry and thermodynamics. Laboratory: precise volumetric and gravimetric analysis; thermochemistry; solution equilibria.

The Staff in Freshman Chemistry

#### 1BH. General Chemistry—Honors Sequence.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1AH with the grade C or higher, or course 1A and consent of the instructor. An honors course parallel to course 1B.

Mr. Graham

#### 1C. General Chemistry.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1B or 1BH with the grade

C or higher, or consent of the instructor. Lecture: redox systems; electrochemistry; chemical kinetics; nuclear chemistry; systematic descriptive chemistry. Laboratory: qualitative analysis; rate experiments; quantitative electrochemical determinations.

The Staff in Freshman Chemistry

#### 1CH. General Chemistry—Honors Sequence.

Lecture and quiz, four hours; laboratory, four hours. Prerequisite: course 1BH with the grade C or higher, or course 1B and consent of the instructor. An honors course parallel to course 1C. Mr. Libby

#### 4A. Elementary Organic and Biochemistry.

(½ course)

Lecture and quiz, two hours. Prerequisite: course 1C with the grade C or higher, or consent of the instructor. Students enrolled in course 4A must be enrolled concurrently in course 6A unless they have passed course 6A previously or have had another course beyond the freshman level which involved laboratory work in Organic Chemistry. All transfer students (from junior colleges and four-year colleges) and others who wish to take course 4A without 6A should discuss this with the instructor in course 4A, but this need not be done prior to registration. Organic structure; the functional and hydrocarbon groups; compounds with saturated functional groups; compounds with unsaturated functional groups; reactions.

Mr. Evans, Mr. Foote, Mr. Lightner

#### 4B. Elementary Organic and Biochemistry.

(½ course)

Lecture and quiz, two hours. Prerequisite: courses 4A and 6A with grades C or higher, or consent of the instructor. Students enrolled in course 4B must be enrolled concurrently in course 6B unless they have passed course 6B previously or have had an equivalent course which involved laboratory work in Organic Chemistry. Transfer students and other who have not taken course 6A at UCLA and wish to take course 4B without course 6B should discuss this with the instructor in course 4B, but this need not be done prior to registration. Stereochemistry; structure and reactivity; substitution, addition, and elimination reactions; synthesis; special topics.

Mr. Evans, Mr. Foote, Mr. Lightner

#### 4C. Elementary Organic and Biochemistry.

(½ course)

Lecture and quiz, two hours. Prerequisite: courses 4B and 6B with grades C or higher, or consent of the instructor. Students enrolled in course 4C must be enrolled concurrently in course 6C unless they have passed course 6C previously or have had an equivalent course which involved laboratory work in Biochemistry. Transfer students and others who wish to take course 4C without 6C should discuss this with the instructor of course 4C, but this need not be done prior to registration. Enzymes, amino acids, peptides and proteins; nucleic acids and nucleotides; RNA, DNA, and genetic code; metabolism; glycolysis and citric acid cycle; carbon transformation.

Mr. Boyer, Mr. Smith

#### 5. Quantitative Analysis. (½ course)

Lecture, two hours; laboratory, four hours. Prerequisite: one year of college chemistry involving laboratory work. This course is intended for transfer students and others who have not had at least 40 hours of laboratory instruction in quantitative analysis (this is now included in courses 1B and 1C at

UCLA); for such students course 5 is required for admission to course 6B. Course 5 is not open to students who have completed courses 1A, 1B, and 1C at UCLA with grades C or higher. Principles and techniques of gravimetric and volumetric analysis.

Mr. McCullough, Mr. Sudmeier

### 6A. Analytical Methods of Organic and Biochemistry. (½ course)

Lecture and quiz, two hours; laboratory, four hours. Prerequisite: course 1C with the grade C or higher, or consent of the instructor. Students enrolled in course 6A must be enrolled concurrently in course 4A unless they have passed course 4A previously or have had an equivalent course in Organic Chemistry beyond freshman level. Transfer students and others who wish to take course 6A without 4A should discuss this with the instructor of course 6A, but this need not be done prior to registration. Students are warned that enrollment in course 6A is often limited in the Fall Quarter by the laboratory spaces available; the Winter and Spring Quarters have been far less crowded. Where possible, students should plan to take courses 4A and 6A in these less crowded quarters. Phase equilibria; chromatography; spectra; structure determinations. Mr. Evans, Mr. Foote, Mr. Lightner

### 6B. Analytical Methods of Organic and Biochemistry. (½ course)

Lecture and quiz, two hours; laboratory, four hours. Prerequisite: course 1C or 5 taken at UCLA or 40 hours of laboratory instruction in quantitative analysis; courses 4A and 6A with grades C or higher, or consent of the instructor. Students enrolled in course 6B must be enrolled concurrently in course 4B unless they have passed course 4B previously or have had an equivalent course in Organic Chemistry. Transfer students and others who wish to take course 6B without 4B should discuss this with the instructor of course 6B, but this need not be done prior to registration. Polarimetry; mass spectrometry; isotopic labeling; electrochemistry; acidity; chelates; reaction kinetics. Mr. Pecock, Mr. Sudmeier

### 6C. Analytical Methods of Organic and Biochemistry. (½ course)

Lecture and quiz, two hours; laboratory, four hours. Prerequisite: courses 4B and 6B with grades C or higher, or consent of the instructor. Students enrolled in course 6C must be enrolled concurrently in course 4C unless they have passed course 4C previously or have had an equivalent course in Biochemistry. Transfer students and others who wish to take course 6C without 4C should discuss this with the instructor of course 6C, but this need not be done prior to registration. Enzyme kinetics; radioisotope applications; macromolecules; ion exchange; viscosity. Mr. Fahrney, Mr. Konrad

#### Upper Division Courses

Certain combinations of courses involve limitations of total credit as follows: 102 and 113B, 1½ courses; 102 and 113C, 1½ courses; 102, 113B and 113C, 2½ courses; 152 and 153, 1½ courses.

### \*102. General Physical Chemistry.

Prerequisite: course 6B, Mathematics 3A-3B-3C, Physics 2A-2B-2C. The fundamental principles of physical chemistry, with examples of particular inter-

est in the life sciences. This course is not open to students who have received credit for course 113B or 113C and may not be offered as part of the major in chemistry.

### 113A. Physical Chemistry.

Lecture and quiz, four hours. Prerequisite: courses 4C and 6C, Mathematics 12B or 13B, Physics 1C, 1D. Fundamentals of quantum chemistry; atomic structure and spectra; molecular spectra; molecular structure. Mr. Bayes, Mr. Kasper, Mr. Kivelson

### 113B. Physical Chemistry.

Lecture and quiz, four hours. Prerequisite: courses 4C and 6C, Mathematics 12B or 13B, Physics 1B; course 113A strongly recommended. Laws of thermodynamics; free energy and entropy; kinetic theory of gases; Boltzmann factor; statistical concept of entropy; heat capacities; change of state; chemical equilibria. Mr. Deutsche, Mr. Garner, Mr. McMillan

### 113C. Physical Chemistry.

Lecture and quiz, four hours. Prerequisite: course 113B, Physics 1C. Equilibria; solutions; colligative properties; phase diagrams; electrochemistry; chemical kinetics; electric and magnetic properties of matter. Mr. Bayes, Mr. Garner, Mr. McMillan

### 113D. Physical Chemistry.

Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 113A in this institution. Mr. Bayes, Mr. Kasper, Mr. Kivelson

### 113E. Physical Chemistry.

Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 113B in this institution. Mr. Deutsche, Mr. Garner, Mr. McMillan

### 113F. Physical Chemistry.

Lecture and quiz, four hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 113C in this institution. Mr. Bayes, Mr. Garner, Mr. McMillan

### 114A. Physical Chemistry Laboratory.

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: courses 113A-113B-113C (113A or 113C may be taken concurrently, but this is not recommended). Lecture: techniques of physical measurement, error analysis and statistics, special topics. Laboratory: ultraviolet, infrared, Raman, electron spin resonance, charge transfer spectroscopy; dipole moment, magnetic susceptibility; light scattering, viscosity of polymers; calorimetry; gas thermometer; thermal conductivity; conductance; phase diagrams; kinetics; effusion. Mr. Birely, Mr. Nicol, Mr. Wasson

### 114B. Advanced Physical Chemistry Laboratory.

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 114A with the grade B or higher, graduate standing, or consent of the instructor. Physical chemistry experiments involving high vacuum, cryogenics, measurements of low level signals, resonance techniques, and pulse techniques. Mr. Knobler

\* Not to be given, 1968-1969.

**115A. Quantum Chemistry.**

Lecture and quiz, four hours. Prerequisite: course 115A. Classical mechanics and vectors; postulates of quantum mechanics; square well, harmonic oscillator, rotor and hydrogen atom problems; approximation techniques; chemical bonding and spectroscopy. Mr. Kivelson

**115B. Quantum Chemistry.**

Lecture and quiz, four hours. Prerequisite: course 115A, Mathematics 12C or 13C, Mathematics 130A or 13A or Physics 131 (one of the last three may be taken concurrently). Waves and expansion theorems; transformations; mathematical treatment of wells, barriers, periodic potentials; time-dependent perturbation theory; group theory; applications to atomic and molecular systems. Mr. Kivelson

**123A. Classical and Statistical Thermodynamics.**

Lecture and quiz, four hours. Prerequisite: course 119C. Fundamentals of classical and statistical thermodynamics; translation, rotation, vibration, hindered rotation and excited electronic states of perfect gases; ortho-para hydrogen; heat capacities and chemical equilibria of perfect gases; electric and magnetic effects; statistical theory of reaction rates; intermolecular forces; the imperfect gas. Mr. Reiss

**123B. Classical and Statistical Thermodynamics.**

Lecture and quiz, four hours. Prerequisite: course 123A, Mathematics 12C or 13C. Thermodynamics of phase equilibria; the solid and fluid states; non-electrolyte and electrolyte solutions; surface phenomena; high polymers; gravitation. Mr. Reiss

**133A. Intermediate Organic Chemistry.**

Lecture and quiz, three hours; laboratory, four hours. Prerequisite: courses 4C and 6C. Lecture: organic reactions; synthesis; classes of compounds. Laboratory: methods of organic reactions and synthesis; techniques of product isolation. Mr. Geissman, Mr. Jacobs

**133B. Intermediate Organic Chemistry.**

Lecture, two hours; laboratory, eight hours. Prerequisite: course 133A. Lecture: organic reactions and synthesis. Laboratory: methods of organic reactions, synthesis and isolation. Mr. Jacobs

**133D. Intermediate Organic Chemistry. (½ course)**

Lecture and quiz, three hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 133A in this institution. Mr. Geissman, Mr. Jacobs

**133E. Intermediate Organic Chemistry. (½ course)**

Lecture and quiz, two hours. Open only by consent of the Chemistry Graduate Adviser to graduate students who have not taken course 133B in this institution. Mr. Geissman, Mr. Jacobs

**136. Qualitative Organic Analysis.**

Lecture, two hours; laboratory, eight hours. Prerequisite: course 133B. Identification of unknown organic compounds; separations of mixtures; derivatives; instrumental methods; micro techniques. Mr. Geissman

**143A. Advanced Organic Chemistry.**

Lecture and quiz, three hours. Prerequisite: course 133B. Gross mechanisms of organic reactions; simple molecular orbital theory; Hammett and Taft relationships; conformational analysis; reaction intermediates. Mr. Anet

**143B. Advanced Organic Chemistry.**

Lecture and quiz, three hours. Prerequisite: course 143A. Organic reactions; organic synthesis; naturally occurring compounds. Mr. Geissman

**144. Organic Synthesis.**

Lecture, two hours; laboratory, eight hours. Prerequisite: course 133B. Methods of organic synthesis. Mr. Jacobs

**\*152. General Biochemistry.**

Lecture and quiz, four hours. Prerequisite: courses 4C and 6C. Survey of biochemistry, terminal course in subject. This course is not open to students who have received credit for course 153, and cannot be used toward fulfillment of the three elective upper division chemistry course requirement for the B.S. in chemistry. The Staff in Biochemistry

**153. Biochemistry.**

Lecture and quiz, four hours. Prerequisite: courses 4C and 6C; 133A recommended. Survey of biochemistry, with emphasis on chemical properties associated with biological function. Mr. Atkinson

**154. Biochemical Methods.**

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: courses 133B, 153, or consent of the instructor. Applications of biochemical procedures to metabolic reactions; properties of living systems; enzymes; proteins; nucleic acids and other tissue constituents. Mr. Konrad

**173. Structural Inorganic Chemistry.**

Lecture and quiz, three hours. Prerequisite: courses 113A, 113B (113B may be taken concurrently). Course 133B is also recommended. Selected survey of inorganic compounds: hydrides; fluorine compounds; organo-metallics; nonmetal compounds; stereochemistry; coordination chemistry of the transition metals; inorganic polymers. Mr. Kaesz

**175. Inorganic Reaction Mechanisms.**

Lecture and quiz, three hours. Prerequisite: courses 113A–113B–113C or consent of the instructor (113C may be taken concurrently). Electronic structure of metal ions; thermodynamics of ion hydration; inner- and outer-sphere and chelate complexes; hydrolysis; polymerization; substitution, isomerization and racemization reactions; stereochemistry; reactions of oxyanions; photochemical reactions; electron-transfer and free-radical reactions of inorganic species. Mr. Garner

**184. Chemical Instrumentation.**

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 113B. Lecture: theory and application of instrumental methods to chemical problems. Laboratory: gas chromatography, polarography, mass spectrometry, nuclear magnetic resonance, electronic techniques, and other modern methods. Mr. Farrington, Mr. Pecsok, Mr. Sudmeier

\* Not to be given, 1968–1969.

**196. Special Courses in Chemistry. (½ to 1 course)**

To be arranged. Prerequisite: consent of the Chemistry Undergraduate Adviser required.

The Staff

**199A-199ZZ. Undergraduate Chemical Research.**

To be arranged with individual faculty members involved. Prerequisite: senior standing and consent of the Chemistry Undergraduate Adviser. This course cannot be used toward fulfillment of the three elective upper division chemistry course requirement for the B.S. in chemistry. Each faculty member has a unique letter designation, which is the same for the 199 and 599 series.

The Staff

**Graduate Courses****213. Advanced Quantum Chemistry.**

Lecture and quiz, four hours. Prerequisite: course 115B, Physics 131. Thomas-Fermi and Hartree-Fock theory; molecular calculations; density matrix and applications; applications of group theory and angular momentum; relaxation phenomena; relativistic effects.

Mr. Deutsche

**215. Molecular Spectra, Diffraction and Structure.**

Lecture and quiz, four hours. Prerequisite: course 115B, Physics 131. Selected topics from electronic spectra of atoms and molecules; vibrational, rotational and Raman spectra; magnetic resonance spectra; x-ray, neutron and electron diffraction; coherence effects.

Mr. El-Sayed

**221A-221F. Advanced Topics in Physical Chemistry. (½ course each)**

Lecture, two hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in physical chemistry, and will be taught by a staff member whose research interests embrace that specialty.

The Staff in Physical Chemistry

**\*223. Statistical Mechanics.**

Lecture and quiz, four hours. Prerequisite: courses 115B, 123B, Physics 131. Fundamentals of statistical mechanics; classical equations of state; coulomb systems; phase transitions; quantum statistical mechanics; quantum corrections to the equation of state; density matrix; second quantization.

**225. Chemical Kinetics.**

Lecture and quiz, four hours. Prerequisite: courses 115A, 123A, 123B. Theories of chemical reactions and their applications to experimental systems; general kinetic postulates; theories of elementary reactions; energy transfer processes; experimental studies.

Mr. Graham

**226A-226F. Physical-Inorganic Chemistry Seminar. (½ course each)**

Seminars will be presented by staff, outside speakers, postdoctoral fellows and each graduate student enrolled in this course. Each student carrying out research in physical or inorganic chemistry enrolls in this course, usually during his second year of graduate study.

The Staff in Physical and Inorganic Chemistry

**231A-231F. Advanced Topics in Organic Chemistry. (½ course each)**

Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in organic

chemistry, and will be taught by a staff member whose research interests embrace that specialty.

The Staff in Organic Chemistry

**233A. Physical Organic Chemistry. (½ course)**

Lecture, two hours. Prerequisite: course 143A. Kinetics and mechanisms of organic reactions; linear free energy relationships; correlations between structure, equilibria and reactivity.

Mr. Anet

**233B. Physical Organic Chemistry. (½ course)**

Lecture, two hours. Prerequisite: course 233A. Approaches to organic reaction mechanisms; criteria of mechanism; nuclear magnetic resonance; stereochemistry.

Mr. Anet

**238. Organic Chemistry Student Seminar. (½ course)**

Each student enrolled presents at least one seminar on a timely and significant topic outside of his immediate research specialty. Each student carrying out research in organic chemistry enrolls in this course, usually in his second year of graduate work.

The Staff in Organic Chemistry

**247A-247F. Physical Organic Seminar. (½ course each)**

Seminars will be presented by staff, outside speakers, postdoctoral fellows and graduate students. Satisfactory/unsatisfactory grades are used for this course.

Mr. Cram, Mr. Winstein

**248A-248F. Natural Products Seminar. (½ course each)**

Seminars will be presented by staff, outside speakers, postdoctoral fellows and graduate students. Satisfactory/unsatisfactory grades are used for this course.

Mr. Evans, Mr. Geissman

**253. Proteins and Nucleic Acids.**

(Same as Biological Chemistry 253.) Lecture and quiz, four hours. Prerequisite: courses 113B-113C, and course 153 or Biological Chemistry 101B. Chemical and physical properties of proteins, amino acids, nucleotides and nucleic acids; structure and sequence determination; correlation of structure and biological properties; synthesis and properties of polypeptides and polynucleotides.

Mr. Smith and the Staff in Biological Chemistry

**254. Advanced Biochemical Methods.**

Lecture and quiz, two hours; laboratory, eight hours. Prerequisite: course 153 or consent of the instructor. Theoretical and practical basis of metabolic, chromatographic, kinetic, electrophoretic, ultracentrifugal, isotopic and other techniques as applied to biochemical systems.

Mr. Schumaker

**255. Biological Catalysis.**

(Same as Biological Chemistry 255.) Lecture and quiz, four hours. Prerequisite: courses 113B-113C, 143A, and course 153 or Biological Chemistry 101B. Discussion of approaches to the understanding of enzymes and enzymic catalysis; characteristics of different enzymes and enzymic reactions of special biological processes.

Mr. Boyer, Mr. Fahrney

**258. Biochemistry Student Seminar. (½ course)**

Each student enrolled conducts or participates in discussions on assigned topics.

The Staff in Biochemistry

\* Not to be given, 1968-1969.

**261A-261F. Advanced Topics in Biochemistry.**

(½ course each)

Lecture, two hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in biochemistry, and will be taught by a staff member whose research interests embrace that specialty. The Staff in Biochemistry

**263. Cellular Metabolism.**

(Same as Biological Chemistry 263.) Lecture and quiz, four hours. Prerequisite: courses 113B, 153, or Biological Chemistry 101B. Patterns of biological degradation and synthesis; metabolic interrelationships and control; energetics of metabolism; protein biosynthesis and molecular genetics.

Mr. West and the Staff in Biological Chemistry

**265. Biological Macromolecules.**

Lecture and quiz, four hours. Prerequisite: course 113B or consent of the instructor. Theory of hydrodynamic, optical, and x-ray techniques used to study the structure and function of biological macromolecules; interaction of proteins and nucleic acids with large and small molecules. Mr. Schumaker

**268A-268F. Biochemistry Research Seminar.**

(½ course each)

Seminars will be presented by staff, outside speakers, postdoctoral fellows and graduate students. Satisfactory/unsatisfactory grades are used for this course. The Staff in Biochemistry

**271A-271F. Advanced Topics in Inorganic****Chemistry. (½ course each)**

Lecture, two hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in inorganic chemistry, and will be taught by a staff member whose research interests embrace that specialty. The Staff in Inorganic Chemistry

**\*273. Nuclear Chemistry.**

Lecture and quiz, four hours. Prerequisite: consent of the instructor. Radioactivity; nuclear reactions; interactions of nuclear radiation with matter; nuclear detection methods; preparation, isolation and identification of radionuclides; chemical effects of nuclear transformations; isotope effects; application of isotopes in chemistry.

**281A-281F. Advanced Topics in Analytical****Chemistry. (½ course each)**

Lecture, two hours. Prerequisite: consent of the instructor. Each course will encompass a recognized specialty in analytical chemistry, and will be taught by a staff member whose research interests embrace that specialty. The Staff in Analytical Chemistry

\* Not to be given, 1968-1969.

**Individual Study and Research****596A-596ZZ. Directed Individual Study or Research.**

(½ to 2 courses)

To be arranged with the member of the faculty who will direct the study or research. The member of the faculty directing the study or research will be identified by the same two-letter code used to identify his 599 research course. Prerequisite: consent of the Chemistry Graduate Adviser. With the consent of the Chemistry Graduate Adviser, courses of directed individual study, but not research courses may be used to fulfill the departmental requirement for the Master's degree of three courses selected from courses 115A, 115B, 123A, 123B, 143A, 143B, or any graduate level course. Graded on a satisfactory/unsatisfactory basis. The Staff

**597. Preparation for the Doctoral Qualifying Examination or the Master's Comprehensive Examination. (½ to 2 courses)**

Prerequisite: consent of the Chemistry Graduate Adviser. Course 597 may not be used to fulfill any of the course requirements for the Master's or Doctor's degrees. Graded on a satisfactory/unsatisfactory basis. The Chemistry Graduate Adviser

**598A-598ZZ. Research for and Preparation of the Master's Thesis. (½ to 4 courses)**

Each member of the faculty supervises research of master's students and holds research group meetings, seminars, and discussions with the students that take his master's research course which is identified by the same two-letter code used to identify his 599 research course. Research courses in the 596A-ZZ, 598A-ZZ, and 599A-ZZ series may be used to fulfill not more than six of the nine quarter courses required for the M.S. Degree. The Staff

**599A-599ZZ. Research for and Preparation of the Doctoral Thesis. (½ to 4 courses)**

Each member of the faculty supervises research of doctoral students and holds research group meetings, seminars, and discussion with the students that take his doctoral research course. Each faculty member has his own doctoral research course identified by a two-letter code as follows:

F. A. K. Anet, 599FA; D. E. Atkinson, 599DA; A. L. Balch, 599AB; M. E. Baur, 599MB; K. D. Bayes, 599KB; J. Birely, 599JB; P. D. Boyer, 599PB; D. J. Cram, 599DC; C. W. Deutsche, 599CD; M. A. El-Sayed, 599ME; D. A. Evans, 599DE; D. E. Fahrney, 599DF; P. S. Farrington, 599PF; C. S. Foote, 599CF; C. S. Garner, 599CG; T. A. Geissman, 599TG; E. W. Graham, 599EG; E. R. Hardwick, 599RH; T. L. Jacobs, 599TJ; H. D. Kaesz, 599HK; J. V. V. Kasper, 599JK; D. Kivelson, 599DK; C. M. Knobler, 599CK; M. W. Konrad, 599MK; W. F. Libby, 599WL; D. A. Lightner, 599DL; J. D. McCullough, 599JM; W. G. McMillan, 599WM; M. F. Nicol, 599MN; R. L. Pecsok, 599RP; H. Reiss, 599HR; V. N. Schumaker, 599VS; R. L. Scott, 599RS; R. A. Smith, 599AS; J. L. Sudmeier, 599JS; K. N. Trueblood, 599KT; J. T. Wasson, 599JW; C. A. West, 599CW; S. Winstein, 599SW; W. G. Young, 599WY.

## ■ CLASSICS

(Department Office, 7347 Social Sciences)

Milton V. Anastos, Ph.D., *Professor of Byzantine Greek.*

Paul A. Clement, Ph.D., *Professor of Classics and Classical Archaeology.*

Philip Levine, Ph.D., *Professor of Classics.*

Jaán Puhvel, Ph.D., *Professor of Indo-European Studies (Vice-Chairman, Section of Indo-European Studies).*

Albert H. Travis, Ph.D., *Professor of Classics.*

Frederick M. Carey, Ph.D., *Emeritus Professor of Classics.*

Paul Friedlander, Ph.D., *Emeritus Professor of Latin and Greek.*

Herbert B. Hoffleit, Ph.D., *Associate Professor of Classics.*

Bengt T. M. Löfstedt, Ph.D., *Associate Professor of Mediaeval Latin.*

J. Norman H. Austin, Ph.D., *Assistant Professor of Classics.*

———, *Assistant Professor of Classics.*

———, *Assistant Professor of Classics.*

———, *Assistant Professor of Classics.*



Helen F. Caldwell, M.A., *Senior Lecturer in Classics.*

Daniel E. Gershenson, Ph.D., *Acting Associate Professor of Classics.*

Steven Lattimore, M.A., *Acting Assistant Professor of Classical Archaeology.*

Frank A. Lewis, M.A., *Acting Assistant Professor of Classics.*

Evelyn V. Mohr, M.A., *Lecturer in Classics.*

Evangelas B. Petrounias, Ph.D., *Acting Assistant Professor of Ancient and Modern Greek.*

Barbara E. Smith, M.A., *Lecturer in Classics.*

Jan Waszink, Ph.D., *Visiting Professor of Classics.*

## INDO-EUROPEAN STUDIES

(Section Office, 11359 Social Sciences)

Marija Gimbutas, Ph.D., *Professor of Indo-European Studies.*

Jaán Puhvel, Ph.D., *Professor of Indo-European Studies (Vice-Chairman, Section of Indo-European Studies).*

Hartmut E. F. Scharfe, Ph.D., *Associate Professor of Indo-European Studies.*

Raimo A. Anttila, Ph.D., *Assistant Professor of Indo-European Studies.*

Hanns-Peter Schmidt, Ph.D., *Assistant Professor of Indo-European Studies.*

———, *Assistant Professor of Indo-European Studies (Celtic).*



Marianna D. Birnbaum, Ph.D., *Lecturer in Finno-Ugric Studies.*

Inkeri A. Rank, M.A., M.Ed., B.L.S., *Lecturer in Finno-Ugric Studies.*

Juozas Tininis, M.A., *Lecturer in Indo-European Studies.*

———, *Visiting Professor of Indo-European Studies.*

### Major Fields

The student may take the major in Greek, in Latin, or in the Classics (i.e., Greek and Latin). Students considering a major in the Department should consult the adviser as soon as possible in their University career, but in no case later than the point at which they are about to take upper division courses.

### Preparation for the Major

Required: 10 language courses, five in Greek and five in Latin.

### The Major

**Greek.** Required: 7½ upper division language courses in Greek; three courses in the history of Graeco-Roman literature; two courses in Greek or in Roman history; three courses in one or several of the following areas: Classical archaeology, Byzantine civilization, Mediaeval Latin literature, Mediaeval history. Total required; 15½ courses.

**Latin.** Required: 7½ upper division language courses in Latin; three courses in the history of Graeco-Roman literature; two

courses in Greek or in Roman history; three courses in one or several of the following areas: Classical archaeology, Byzantine civilization, Mediaeval Latin literature, Mediaeval history. Total required: 15½ courses.

*The Classics (Greek and Latin).* Required: 11 upper division language courses, 5½ in Greek, 5½ in Latin; three courses in the history of Graeco-Roman literature; two courses in Greek or in Roman history. Recommended, but not required: three courses in one or several of the following areas: Classical archaeology, Byzantine civilization, Mediaeval Latin literature, Mediaeval history. Total required: 16 courses.

#### **Requirements for Admission to Graduate Status**

A candidate for admission to graduate status in the Department must meet, in addition to the general University requirements, the minimum requirements for a Bachelor of Arts degree from this University, or its equivalent, with a major in Greek or in Latin or in the Classics (Greek and Latin).

#### **Special Requirements for the Secondary Teaching Credential in Latin**

Students preparing for this credential are required to take Latin 100 and Latin 370.

#### **The Master's Degree**

The degree is offered in Greek, in Latin, and in the Classics (Greek and Latin). In order to qualify, the candidate must satisfy (1) the general University requirements, (2) the general departmental requirement, and (3) the special departmental requirements for the degree in one of the three fields. For the outline of departmental requirements, see below; for *complete* data, students must consult the department.

##### **General University Requirements for the Master's Degree**

See page 136. The Department follows the comprehensive examination plan.

##### **General Departmental Requirement**

In addition to fulfilling the general University requirements, the candidate will be expected to demonstrate a satisfactory reading knowledge of French or German by the end of his first year of residence. If he is unable to do so, he will not be permitted to take further courses in the Department until the requirement is met.

##### **Special Departmental Requirements for the Master of Arts Degree in Greek**

Nine courses of which at least four must be language courses in Greek and two must be language courses in Latin.

A comprehensive written examination to consist of translation from the Greek. Passages for translation into English prose will be set from Greek works presumed to be familiar as well as from those presumed to be unfamiliar to the student.

##### **Special Departmental Requirements for the Master of Arts Degree in Latin**

Nine courses of which at least four must be language courses in Latin and two must be language courses in Greek.

A comprehensive written examination to consist of translation from the Latin. Passages for translation into English prose will be set from Latin works presumed to be familiar as well as from those presumed to be unfamiliar to the student.

##### **Special Departmental Requirements for the Master of Arts Degree in the Classics**

Nine courses of which at least three must be language courses in Greek and three must be language courses in Latin.

A comprehensive written examination to consist of translation from the Greek and from the Latin. Passages for translation into English prose will be set from Greek works and from Latin works presumed to be familiar as well as from those presumed to be unfamiliar to the student.

#### **The Doctor's Degree**

The degree is offered in Classics with special emphasis in Classical literature or in Classical archaeology or in Byzantine studies or in Mediaeval Latin studies. In order to qualify, the candidate must satisfy the general University requirements and the special departmental requirements for the degree. For the general University requirements, see pages 140-142.

##### **Special Departmental Requirements for the Doctor's Degree**

Prerequisite for admission to the program is a bachelor's degree from this University or its equivalent, with a major in the Classics (Greek and Latin). The student will be expected to demonstrate a reading knowledge of French or German by the end of his first year of residence and a reading knowledge of the second of these languages by the end of his second year of residence. If he is unable to do so in either case, he will not be permitted to take further courses in the Department until the requirement is met.

The student will undertake a program of courses and reading intended to prepare him for qualifying examinations, written and

oral, which will demonstrate ability to translate from Greek and Latin, knowledge of the field of special emphasis, and competence in one of the following areas *not* part of the field of special emphasis: Greek and Roman literature, Ancient philosophy, Classical archaeology and epigraphy, Greek and Roman history, Byzantine studies, Mediaeval Latin studies, Classical linguistics, mythology and folklore. A dissertation and an oral defense of the dissertation complete the formal requirements for the degree.

Only those students who are judged by the department to have achieved distinction in the earlier phases of their graduate studies will be permitted to proceed with the advanced requirements of the doctoral program.

For *complete* information, students must consult the Department.

#### Courses Which Do Not Require a

##### Knowledge of Greek or Latin

Classics 141, 142, 143, 144, 145A, 145B, 145C, 146, 151A, 151B, 151C, 161, 162, 251A, 251B, 251C, 251D, 252, 253; Greek 40; Latin 40.

## Classics

#### Upper Division Courses

##### 141. A Survey of Greek Literature in English.

(Formerly numbered Greek 180.) A study of classical Greek literature, exclusive of the drama, with readings in English. Mr. Travis

##### 142. Ancient Drama.

(Formerly numbered 113.) Prerequisite: upper division standing or consent of the instructor. A study of the major Greek and Latin dramas in translation. Miss Caldwell, Mr. Travis

##### 143. A Survey of Latin Literature in English.

(Formerly numbered Latin 180.) A study of classical Latin literature, exclusive of the drama, with readings in English. Mr. Levine

##### 144. A Survey of Mediaeval Latin Literature in English.

(Formerly numbered Latin 181.) A study of the Latin literature of Europe from the end of antiquity to the beginning of the Renaissance, with readings in English.

##### 145A. Byzantine Civilization: Political Theory, Roman Law, and Conflicts with Paganism.

(Formerly numbered 181A-181B.) Mr. Anastos

##### 145B. Byzantine Civilization: Theology and Relations with Rome.

(Formerly numbered 181A-181B.) Mr. Anastos

##### 145C. Byzantine Civilization: Literature, Art, Science, and the Renaissance.

(Formerly numbered 181A-181B.) Mr. Anastos

##### 146. Ancient Greek Literary Criticism.

The following works will be read in translation: Plato, *Ion*, *Symposium*, and selections from *Phaedrus*, *Republic*, and *Laws*; Aristophanes, *Frogs*; Aristotle, *Poetics* and selections from *Rhetoric*.

##### 151A. Classical Archaeology: Graeco-Roman Architecture.

A general introduction to the study of Aegean, Greek, and Roman architecture.

Mr. Clement, Mr. Lattimore

##### 151B. Classical Archaeology: Graeco-Roman Sculpture.

A general introduction to the study of Aegean, Greek, and Roman sculpture.

Mr. Clement, Mr. Lattimore

##### 151C. Classical Archaeology: Graeco-Roman Painting.

A general introduction to the study of Aegean, Greek, and Roman painting.

Mr. Clement, Mr. Lattimore

##### 161. Introduction to Classical Mythology.

The origins of classical myth; the substance of divine myth and heroic saga; the place of myth in religion; a survey of the study of classical mythology.

Mr. Lattimore

##### 162. Classical Myth in Literature.

The use of myth in the principal authors and genres of Greek and Roman literature with examples of its influence in later literatures. Miss Caldwell

##### 199. Special Studies in Classics.

(½ to 2 courses)

Prerequisite: senior standing and consent of the instructor.

#### Graduate Courses

##### 251A. Seminar in Classical Archaeology.

The Aegean Bronze Age.

Mr. Clement, Mr. Lattimore

##### 251B. Seminar in Classical Archaeology.

Graeco-Roman architecture.

Mr. Clement, Mr. Lattimore

##### 251C. Seminar in Classical Archaeology.

Graeco-Roman sculpture.

Mr. Clement, Mr. Lattimore

##### 251D. Seminar in Classical Archaeology.

Graeco-Roman painting.

Mr. Clement, Mr. Lattimore

##### 252. Topography and Monuments of Athens.

(Formerly numbered 210.) Detailed studies in the topography and monuments of Athens combining the evidence of literature, inscriptions, and actual remains.

Mr. Clement, Mr. Lattimore

##### 253. Topography and Monuments of Rome.

(Formerly numbered 211.) Detailed studies in the topography and monuments of ancient Rome combining the evidence of literature, inscriptions, and actual remains.

Mr. Clement, Mr. Lattimore

## Individual Study and Research

**596. Directed Individual Study or Research.**

(½ to 2 courses)

The Staff

**597. Study for the M.A. Comprehensive Examination or the Ph.D. Qualifying Examination.**

(½ to 2 courses)

The Staff

**599. Research for the Doctoral Dissertation.**

(½ to 2 courses)

The Staff

**Greek**

## Lower Division Courses

**1. Elementary Greek.**

Lecture, four hours per week.

The Staff

**2. Elementary Greek.**

Lecture, four hours per week. Prerequisite: course 1.

The Staff

**3. Elementary Greek.**

Lecture, four hours per week. Prerequisite: course 2.

The Staff

**4. Selected Prose and Composition.**

Prerequisite: course 3.

The Staff

**5. Homer: Odyssey.**

Prerequisite: course 4.

Mrs. Mohr

**10. Introduction to Modern Greek.**

A study of forms, syntax, and vocabulary. A knowledge of Ancient Greek is desirable, but is not a prerequisite.

Mr. Petrounias

**11. Readings in Modern Greek.**

Prerequisite: course 10. Selected texts in prose and poetry with emphasis on the demotic language.

**12. Advanced Readings in Modern Greek.**

Prerequisite: course 11.

Mr. Petrounias

**13. Modern Greek Conversation and Composition.**

Prerequisite: course 11.

Mr. Petrounias

**40. The Greek Element in English.**

(½ course)

A knowledge of Greek is not required. A study of the derivation and usage of English words of Greek origin: analysis into their component elements directed toward understanding of form and meaning.

Mrs. Mohr

## Upper Division Courses

Note: Greek 5 is a prerequisite to all 100-series language courses in Greek.

**100. Greek Prose Composition.**

(½ course)

(Formerly numbered 165A-165B.) A study of Greek prose style, with exercises in translation from English into Attic Greek.

Mr. Lewis

**101. Homer: Iliad.**

(Formerly numbered 102.)

Mrs. Mohr

**102. Lyric Poets.**

(Formerly numbered 107.) Selections from Archilochus to Bacchylides.

Mr. Hoffleit

**103. Aeschylus.**

(Formerly numbered 104.)

Mr. Hoffleit

**104. Sophocles.**

(Formerly numbered 104.)

Mr. Hoffleit

**105. Euripides.**

(Formerly numbered 105.)

Mrs. Mohr

**106. Aristophanes.**

(Formerly numbered 105.)

Mr. Travis

**107. Theocritus.**

Mr. Austin

**111. Herodotus.**

(Formerly numbered 103.)

**112. Thucydides.**

(Formerly numbered 103.)

Mr. Hoffleit

**113. Attic Orators.**

(Formerly numbered 108.)

Mr. Lattimore

**121. Plato.**

(Formerly numbered 101.)

Mr. Gershenson

**122. Plato: Republic.**

(Formerly numbered 106.)

Mr. Hoffleit

**123. Aristotle: Poetics and Rhetoric.**

(Formerly numbered 109.)

**124. Aristotle: Ethics.**

Prerequisite: three quarters of upper division Greek or consent of the instructor. Selected readings from *Nicomachean Ethics*.

Mr. Lewis

**190A-190B-190C. Readings in Greek Literature.**

Prerequisite: senior standing or consent of the instructor. An intensive reading course in Greek literature in the original, covering the principal authors and periods, with lectures on Greek literary history.

Mr. Lewis

**199. Special Studies in Greek. (½ to 2 courses)**

Prerequisite: senior standing and consent of the instructor.

The Staff

## Graduate Courses

The 200-series courses which are designated A and B (e.g., 201A-201B) are double courses. Course A is a preseminar and is normally prerequisite to course B, a seminar.

**201A-201B. Homer: The Iliad.**

(Formerly numbered 201A.)

**202A-202B. Homer: The Odyssey and the Epic Cycle.**

(Formerly numbered 201B.)

**203. Hesiod.****204. Homeric Hymns.****205. Seminar in Aeschylus.**

Mr. Petrounias

**206A-206B. Sophocles.**

(Formerly numbered 202.)

Mr. Hoffleit

**207A-207B. Euripides.**

(Formerly numbered 205.)

Mr. Travis

**208A-208B. Aristophanes.**

(Formerly numbered 204.)

Mr. Travis

**209. Seminar in Hellenistic Poetry.**

Mr. Gershenson

**210. Advanced Greek Prose Composition.**

Prerequisite: course 100 or the equivalent.

**211A-211B. Herodotus.****212A-212B. Thucydides.**

(Formerly numbered 203.)

Mr. Hoffleit

**213. Seminar in Greek Historiography.****221. Seminar in the Presecratic Philosophers.**

Studies in the reconstruction of the philosophies of the predecessors of Plato; emphasis is placed on reading and interpretation of texts. Mr. Gershenson

**222A-222B. Plato.**

(Formerly numbered 261.)

Mr. Lewis

**223A-223B. Aristotle.**

Mr. Gershenson

**224. Seminar in Post-Aristotelean Philosophy.****231A. Studies in Byzantine Literature.**

Prerequisite: a reading knowledge of Greek and Latin. Mr. Anastos

**231B. Seminar in Byzantine Literature.**

Prerequisite: course 231A or the equivalent.

Mr. Anastos

**232. Seminar in the History of Classical Scholarship of the Byzantine Period.**

Mr. Anastos

**241. Greek Epigraphy.**

(Formerly numbered 212.) A survey of Greek historical inscriptions, chiefly Attic. Mr. Clement

**242A-242B. Greek Dialects and Historical Grammar. (½ course each)**

(Formerly numbered 225 and same as Indo-European Studies 215A-215B.) Prerequisite: consent of the instructor. Credit is given only upon completion of both quarters. Readings in epigraphic Greek texts, both Mycenaean and Classical; the various literary dialects (e.g., Epic, Aeolic, Doric); Greek grammar in the context of Common Greek and Indo-European linguistics. Mr. Puhvel

**Individual Study and Research****596. Directed Individual Study or Research. (½ to 2 courses)**

The Staff

**597. Study for the M.A. Comprehensive Examination of the Ph.D. Qualifying Examination. (½ to 2 courses)**

The Staff

**599. Research for the Doctoral Dissertation. (½ to 2 courses)**

The Staff

**Latin****Lower Division Courses****1. Elementary Latin.**

Lecture, four hours per week.

The Staff

**2. Elementary Latin.**

Lecture, four hours per week. Prerequisite: course 1. The Staff

**3. Elementary Latin.**

Lecture, four hours per week. Prerequisite: course 2. The Staff

**4. Ovid.**

Prerequisite: course 3.

Miss Smith

**5. Selected Prose and Composition.**

Prerequisite: course 4.

Miss Caldwell

**10. Introduction to Mediaeval Latin.**

Prerequisite: course 3 or consent of the instructor. Reading of easy prose texts, with interest centered on basic language training. Mr. Löfstedt

**40. The Latin Element in English. (½ course)**

A knowledge of Latin is not required. A study of the derivation and usage of English words of Latin origin: analysis into their component elements directed toward understanding of form and meaning. Mrs. Mohr, Miss Smith

**Upper Division Courses**

Note: Latin 5 is prerequisite to all 100-series language courses in Latin.

**100. Latin Prose Composition. (½ course)**

(Formerly numbered 165A-165B.) A study of Latin prose style, with exercises in translation from English into Classical Latin. The Staff

**101. Plautus.**

(Formerly numbered 102.)

Miss Caldwell

**102. Terence.**

(Formerly numbered 102.)

Mr. Lewis

**103. Lucretius.**

Mr. Hoffleit

**104. Vergil: Georgics.**

(Formerly numbered 107.)

Mrs. Mohr

**105. Vergil: The Aeneid.**

Mrs. Mohr

**106. Catullus.**

(Formerly numbered 101.)

Mr. Levine

**107. Horace: Odes and Epodes.**

(Formerly numbered 101.)

Mr. Levine

**108. Roman Elegy.**

(Formerly numbered 105.) Selections from Catullus, Tibullus, and Propertius. Miss Caldwell

**109. Roman Satire.**

(Formerly numbered 106.) Selections from the *Epistles* of Horace, the *Satires* of Juvenal, and the *Epigrams* of Martial. Mr. Levine

**111. Livy.**

(Formerly numbered 104.) Mr. Hoffleit

**112. Tacitus.**

(Formerly numbered 104.) Miss Caldwell

**113. Cicero: The Orations.**

Mrs. Mohr

**114. Roman Epistolography: Cicero and Pliny.**

Mr. Hoffleit

**115. Caesar: The Civil War.**

Mr. Austin

**116. Petronius.**

Mr. Lewis

**117. Sallust.****131. Readings in Mediaeval Latin.**

(Formerly numbered 120.) Prerequisite: course 10 or consent of the instructor. Extensive reading of selected texts, mainly prose; interest is centered on the idiosyncrasies of Mediaeval Latin. Mr. Löfstedt

**133. Mediaeval Latin Poetry.**

(Formerly numbered 123.) Prerequisite: one upper division language course in Latin or consent of the instructor. Emphasis varies from year to year between Christian and secular poetry. Mr. Löfstedt

**190A-190B-190C. Readings in Latin Literature.**

Prerequisite: senior standing or consent of the instructor. An intensive reading course in Latin literature in the original, covering the principal authors and periods, with lectures on Latin literary history. The Staff

**199. Special Studies in Latin. (½ to 2 courses)**

Prerequisite: senior standing and consent of the instructor. The Staff

**Graduate Courses**

The 200-series courses which are designated A and B (e.g., 203A and 203B) are double courses. Course A is a preseminar and is normally prerequisite to course B, a seminar.

**201. Seminar in the Roman Epic: Ennius to Silius Italicus.**

(Formerly numbered 206.) The fragments of Ennius and selected readings from the minor epic poets (Lucan, Valerius Flaccus, Statius, Silius Italicus). Mr. Hoffleit

**202. Seminar in Catullus.**

(Formerly numbered 207.) A detailed consideration of the entire Catullan corpus. Mr. Levine

**203A. Elegiac Poetry.**

(Formerly numbered 255.) Mr. Levine

**203B. Propertius.**

(Formerly numbered 255.) Mr. Levine

**204A. Vergil's Aeneid.**

(Formerly numbered 210.) Mr. Travis

**204B. The Aeneid.**

(Formerly numbered 210.) Mr. Travis

**205. Seminar in Virgil's *Bucolics*.**

Mr. Gershenson

**206. Horace.**

Mr. Austin

**210. Advanced Latin Prose Composition.**

Prerequisite: course 100 or the equivalent.

**211. Seminar in the Roman Historians.**

(Formerly numbered 203.) Study of considerable parts of the writings of Sallust, Livy, and Tacitus. Mr. Gershenson

**215. Apuleius: The *Metamorphoses*.****221A. Cicero's Philosophical Works.**

(Formerly numbered 202.) Mr. Levine

**221B. Cicero: *De Natura Deorum*.**

(Formerly numbered 202.) Mr. Levine

**222. Seminar in Roman Stoicism.**

Prerequisite: a reading knowledge of Greek and Latin.

**231. Seminar in Mediaeval Latin.**

(Formerly numbered 221.) Prerequisite: at least one upper division course in Latin or consent of the instructor. Studies in various areas of the language and literature of Mediaeval Latin. Mr. Löfstedt

**232. Vulgar Latin.**

(Formerly numbered 220.) Prerequisite: consent of the instructor. History and characteristics of popular Latin; its development into the early forms of the Romance languages. Mr. Löfstedt

**240. History of the Latin Language.**

Prerequisite: consent of the instructor. The development of Latin from the earliest monuments until its emergence in the Romance languages. Mr. Löfstedt

**242A-242B. Italic Dialects and Latin Historical****Grammar. (½ course each)**

(Formerly numbered 225 and same as Indo-European Studies 218A-218B.) Prerequisite: consent of the instructor. Credit is given only upon completion of both quarters. The linguistic situation in early Italy; readings in Oscan, Umbrian, and early Latin texts; Latin grammar in the context of Italic and Indo-European linguistics. Mr. Puhvel

**243. Seminar in Latin Palaeography.**

(Formerly numbered 253.) Studies in the development of the book hand in Latin manuscripts earlier than the invention of printing. Mr. Levine

**244. Seminar in Textual Criticism.**

(Formerly numbered 257.) Studies in the preparation of a critical edition of a Latin author. Mr. Travis

**Professional Course in Method****370. The Teaching of Latin.**

Prerequisite: graduate standing or consent of the instructor. Techniques for teaching; organization of courses; review of the content of the curriculum offered in junior and senior high schools. Miss Smith

## Individual Study and Research

**596. Directed Individual Study or Research.**

(1/2 to 2 courses)

The Staff

**597. Study for the M.A. Comprehensive Examination or the Ph.D. Qualifying Examination. (1/2 to 2 courses)**

The Staff

**599. Research for the Doctoral Dissertation.**

(1/2 to 2 courses)

The Staff

## Related Courses in Other Departments

**History 111A-111B-111C. History of the Ancient Mediterranean World.**

112A-112B. History of Ancient Greece.

113A-113B. History of Rome.

250A-250B. Seminar in Ancient History.

252A-252B-252C. Seminar in Byzantine History.

**Indo-European Studies****Preparation for the Major**

Required: three courses of Latin; three courses of Greek; three courses of German or Russian.

**The Major**

Required: (1) Indo-European Studies 131, 132, 140, 150, 160, 161; (2) one course chosen from Indo-European Studies 170, 180, 185; (3) two courses chosen from Indo-European Studies 168, 171, 178, 181, 186, 188; (4) Greek 5 and one upper division course in Greek; (5) one course chosen from Indo-European Studies 133, 134, Anthropology 130A, 130B, 131A, 131B, Linguistics 100; (6) one course chosen from Indo-European Studies 149, 179, 189, Linguistics 120.

**Admission to Graduate Status**

Students admitted to graduate status must have an A.B. degree with a major in Indo-European Studies from UCLA, or a major in an Indo-European language field (e.g., German, Slavic, Latin, Greek, Romance Languages), or a major in Linguistics (with emphasis on historical linguistics), or a major in Anthropology (with concentration on Europe and Asia). If deficiencies exist in prerequisites to specific work at the graduate level, a student may be admitted conditionally and will be expected to remove these deficiencies as soon as possible upon enrollment.

**Requirements for the Doctor's Degree**

*General Requirements.* See page 140.

*Foreign Language.* During the first year of graduate study, the student is expected

to absolve the standard reading examinations set by the Graduate Division in any two of German, French, and Russian. During the second year a similar test is to be passed in the remaining language, unless the Section of Indo-European Studies is satisfied beforehand with the candidate's facility in its research use.

*Program of Study.* The doctorate in Indo-European Studies is offered with two alternative major emphases: linguistic or archaeological. In preparation for the qualifying examinations it is normally necessary to devote at least two years of full-time graduate study to a systematic program of courses and seminars chosen in consultation with the student's guidance committee. The linguistic emphasis requires a concentration in ancient Indo-European languages and comparative grammar, with some work in most of the comparatively significant ancient dialects and special attention to a number of them. The student must also possess a basic knowledge of phonetics, structural linguistics, and general historical linguistics. Minor fields include European archaeology and Indo-European mythology, with participation in the relevant seminars. The archaeological emphasis requires a concentration in European and related (Near Eastern, Western Siberian, Central Asian) archaeology, with particular attention to the problems of Indo-European origins and prehistory. In addition to work offered by the Section of Indo-European Studies, the student is expected to avail himself of archaeological offerings of the Department of Anthropology and to gain some experience in archaeological field work. Minor fields include Indo-European linguistics and Indo-European mythology. In the former, basic competence is expected in comparative grammar, Vedic Sanskrit, Hittite, Homeric Greek, and one other ancient Indo-European language.

*Qualifying Examinations.* Before admission to candidacy, a student must pass a series of qualifying examinations, both written and oral. The written examination covers the major and minor fields and includes translation and analysis of passages from prescribed texts in ancient Indo-European languages. The oral examination, conducted by the doctoral committee, probes the student's grasp of the entire program.

*Dissertation.* A dissertation must be submitted, on a subject approved by the candidate's doctoral committee, dealing with a segment of the major field or combining the major and minor fields. The dissertation

must be the result of original research and constitute a significant contribution to knowledge.

**Final Examination.** This oral examination, administered by the doctoral committee, covers the dissertation and its place both within the candidate's field of emphasis and the discipline as a whole.

#### Upper Division Courses

### 130. Introduction to European Archaeology.

(½ course)

Geography, principles, strategy of research, and bibliography of European archaeology.

### 131. European Archaeology: The Neolithic Period.

(Formerly numbered 140.) A survey of European cultures from the beginning of the food-producing economy in the 7th millennium B.C. to the beginning of the Bronze Age in the 3rd millennium B.C.

Mrs. Gimbutas

### 132. European Archaeology: The Bronze Age.

(Formerly numbered 142.) Prerequisite: course 131 or consent of the instructor. A survey of European cultures from around 3000 B.C. to the period of the destruction of the Mycenaean culture about 1200 B.C. The course covers the Aegean area and the rest of Europe.

Mrs. Gimbutas

### 133. European Archaeology: The Early Iron Age.

(Formerly numbered 143.) Prerequisite: course 132 or consent of the instructor. A survey of Early Iron Age cultures, with emphasis on Hallstatt, La Tène, and Scythian cultures and art.

Mrs. Gimbutas

### 134. Eastern Mediterranean and Anatolian Archaeology.

(Formerly numbered 144.) A survey of Eastern Mediterranean and Anatolian archaeology, with emphasis on Neolithic and Bronze Age cultures.

### 135. History of European and Near Eastern Archaeology. (½ course)

A systematic survey of the development of archaeology as a scientific field, with emphasis on the nuclear zones of Old World civilization.

### 136. European Paleodemography.

Populations of Europe from Paleolithic to early historical times; skeletal material, statistical methods, bio-demography; the role of paleodemography in tracing the prehistorical movements of peoples.

### 140. Introduction to Indo-European Mythology.

(Formerly numbered 145.) Recommended preparation: Classics 161. A basic comparative survey of the mythic and religious traditions of ancient India, Iran, Anatolia, and the early Baltic, Slavic, Germanic, Italic, and Celtic peoples.

Mr. Puhvel

### 149. Introduction to Historical Linguistics.

(Same as Linguistics 110 and Anthropology 113.) Prerequisite or corequisite: Linguistics 100 or equivalent. The methods and theories appropriate to the historical study of language, such as the comparative method and method of internal reconstruction. Sound change, grammatical change, semantic change.

Mr. Anttila, Mr. Hoijer

### 150. Introduction to Indo-European Linguistics.

(Same as Linguistics 150.) Prerequisite: one year of college-level study (course 3 or better, 8 units minimum) of either Greek or Latin and either German or Russian. A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics.

Mr. Anttila, Mr. Puhvel

### 160. Elementary Sanskrit.

Introduction to script and grammar, with reading exercises and attention to the significance of Sanskrit for the understanding of other Indo-European languages.

Mr. Scharfe

### 161. Intermediate Sanskrit.

Prerequisite: course 160 or equivalent. Advanced aspects of grammar and the reading of literary texts.

Mr. Scharfe

### 162. Advanced Sanskrit.

Prerequisite: course 161 or equivalent. In this course the entire Bhagavadgita or a comparable amount of other Sanskrit literature is read.

Mr. Scharfe

### 163. Readings in Sanskrit Literature.

Prerequisite: course 162 or equivalent. Extensive reading in such texts as best serve the students' needs.

Mr. Scharfe

### 167. Introduction to Indic Philosophy.

A survey of the main trends in Indian philosophy from ancient to modern times.

Mr. Scharfe

### 168. Survey of Sanskrit Literature in Translation.

A general course dealing with Sanskrit literature of India from Vedic times to the present. No knowledge of Sanskrit is required.

Mr. Scharfe

### 170. Elementary Lithuanian.

Introduction to pronunciation and grammar, with reading exercises.

Mr. Tinišis

### 171. Intermediate Lithuanian.

Prerequisite: course 170 or equivalent. Grammar and readings.

Mr. Tinišis

### 172. Advanced Lithuanian.

Prerequisite: course 171 or equivalent. Readings in Lithuanian texts, with grammatical and stylistic considerations.

Mr. Tinišis

### 177. Baltic Languages and Cultures. (½ course)

A general survey of the peoples speaking Old Prussian, Lithuanian, and Latvian; their linguistic, historical, and ethnic affiliations.

Mrs. Gimbutas

### 178. Survey of Lithuanian Literature in Translation.

A general course dealing with literature in Lithuania from the beginnings to the present. No knowledge of Lithuanian is required.

Mr. Tinišis

### 179. Introduction to Baltic and Slavic Folklore and Mythology.

(Same as Folklore 126.) A general course for students interested in folklore and mythology and for those interested in Indo-European mythic antiquities.

Mrs. Gimbutas

### 180. Elementary Modern Irish.

Introduction to script, pronunciation, and grammar, with reading exercises.

# 181. Intermediate Modern Irish.

Prerequisite: course 180 or equivalent. Grammar and readings.

# 182. Advanced Modern Irish.

Prerequisite: course 181 or equivalent. Readings in Irish texts, with grammatical and stylistic considerations.

# 185. Elementary Modern Welsh.

Introduction to pronunciation and grammar, with reading exercises.

# 186. Intermediate Modern Welsh.

Prerequisite: course 185 or equivalent. Grammar and readings.

# 187. Advanced Modern Welsh.

Prerequisite: course 186 or equivalent. Readings in Welsh texts, with grammatical and stylistic considerations.

# 188. Survey of Irish Literature.

A general course dealing with literature in Ireland from the earliest times to the present. No knowledge of Irish is required.

# 189. Introduction to Celtic Folklore and Mythology.

(Same as Folklore 122.) A general course for the student in folklore, with emphasis on the types of folklore research currently practiced in Eire and the mythic traditions of the Irish and Welsh.

# 199. Special Studies. (½ to 2 courses)

## Graduate Courses

## The Staff

# 209. Historical Linguistics.

(Same as Linguistics 202.) Prerequisite: course 149 or equivalent. Advanced study of the comparative method, historical and internal reconstruction, internal and external borrowing.

Mr. Anttila, Mr. Holjer

# 210. Indo-European Linguistics: Advanced Course.

Prerequisite: course 150 or equivalent. Comparative study of phonology, morphology, syntax, and lexicon. Problems in analysis and reconstruction.

Mr. Anttila, Mr. Puhvel

# 215A-215B. Greek Dialects and Historical

## Grammar. (½ course each)

(Same as Greek 242A-242B.) Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Readings in epigraphic Greek texts, both Mycenaean and classical; the various literary dialects (e.g., Epic, Aeolic, Doric); Greek grammar in the context of Common Greek and Indo-European linguistics.

Mr. Puhvel

# 218A-218B. Italic Dialects and Latin Historical

## Grammar. (½ course each)

(Same as Latin 242A-242B.) Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. The linguistic situation in early Italy; readings in Oscan, Umbrian, and early Latin texts; Latin grammar in the context of Italic and Indo-European linguistics.

Mr. Puhvel

# 220A-220B. Hittite. (½ course each)

Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Introduction to cuneiform Hittite script and gram-

mar, with practice in political, historical, legal, and literary texts; linguistic and other aspects of Anatolia in the 2nd millennium B.C. and survivals into Graeco-Roman times.

Mr. Puhvel

# 222A-222B. Vedic.

Prerequisite: a knowledge of Sanskrit equivalent to course 162, and consent of the instructor. Characteristics of the Vedic dialect and readings in the Rig-Vedic hymns.

Mr. Schmidt

# 223A-223B. Pali and Prakrits.

Prerequisite: a knowledge of Sanskrit equivalent to course 161, and consent of the instructor. Grammatical studies and reading of texts. Comparative considerations.

Mr. Scharfe

# 224. Old Irish.

Prerequisite: consent of the instructor. Studies in grammar. Readings in the glosses and other texts. Comparative considerations.

# 225. Mediaeval Welsh.

Prerequisite: consent of the instructor. Studies in grammar. Readings in the Mabinogi and other texts. Comparative considerations.

# 226. Celtic Linguistics.

(Formerly numbered 213.) Prerequisite: course 224, or 225, or consent of the instructor. A survey of salient features of the Celtic linguistic stock in its Gaelic and British branches, with reference to the position of Celtic within Indo-European languages.

# 230A-230B. Old Iranian.

(Formerly numbered 223.) Prerequisite: consent of the instructor. Studies in the grammars and texts of Old Persian and Avestan. Comparative considerations.

Mr. Schmidt

# 231A-231B. Middle Iranian.

Prerequisite: consent of the instructor. Studies in the grammars and texts of such Middle Iranian languages as best serve the students' needs (e.g., Pahlavi, Sogdian, Sakan).

Mr. Schmidt

# 250A-250B. Seminar in European Archaeology.

## (½ course each)

(Formerly numbered 255A-255B. Same as Anthropology 268A-268B.) Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Studies in ancient European archaeological materials, and their relationship to the Near East, Western Siberia, and Central Asia.

Mrs. Gimbutas

# 251. Seminar in Early Iron Age Archaeology.

(Formerly numbered 256.) Prerequisite: consent of the instructor. Studies in Villanovan, Hallstatt, La Tène, Early Germanic, Scythian, and other cultures and art.

# 252. Seminar in Eastern Mediterranean Archaeology.

(Formerly numbered 257.) Prerequisite: consent of the instructor. Studies in Eastern Mediterranean and Anatolian cultures, throughout the sixth, fifth, fourth, third, and second millennia B.C.

# 253. Seminar in European Paleodemography.

Prerequisite: consent of the instructor. Problems in prehistoric population movements, studied with

the aid of skeletal material, statistical methods, biodemography, and other recent techniques.

## 259. Field Work in Old World Archaeology.

Prerequisite: consent of the instructor. Participation in archaeological excavations or other archaeological research in Europe or the Near East under the auspices of the UCLA Museum or other institutions. Excavations in the Americas may be substituted with the consent of the instructor in charge. Minimum one month.

Mrs. Gimbutas in Charge

## 260A-260B. Seminar in Indo-European Mythology. (½ course each)

Credit is given only upon completion of both quarters. Prerequisite: consent of the instructor. Studies in ancient Indo-European mythic and religious traditions and their relationship to the myths of the Mediterranean, the Near East, and the Finno-Ugric area.

Mr. Puhvel

## 270A-270B. Seminar in Historical Linguistics.

(Same as Linguistics 270A-270B.) Prerequisite: course 209 or equivalent. Problems in the use of the comparative method in historical linguistics and in the internal reconstruction of the history of languages.

Mr. Anttila

## 280. Seminar in Indo-European Linguistics.

Prerequisite: course 210. Selected topics in Indo-European comparative grammar for advanced graduate students.

Mr. Puhvel

Individual Study and Research

## 596. Directed Individual Studies. (½ to 2 courses)

(Formerly numbered 297.)

The Staff

## 597. Preparation for Doctoral Qualifying Examination. (½ to 2 courses)

The Staff

## 599. Research for Dissertation. (½ to 2 courses)

(Formerly numbered 299.)

The Staff

## FINNO-UGRIC STUDIES

Upper Division Courses

### 130. Elementary Finnish.

(Formerly numbered 101.) Introduction to grammar and reading exercises.

Mrs. Rank

### 131. Intermediate Finnish.

(Formerly numbered 102.) Prerequisite: course 130 or equivalent. Grammatical exercises and reading of texts.

Mrs. Rank

### 132. Advanced Finnish.

(Formerly numbered 103.) Prerequisite: course 131 or equivalent. Readings in literary texts.

Mrs. Rank

### 133. Readings in Finnish Literature.

(Formerly numbered 104.) Prerequisite: course 132 or equivalent. Large selections of Finnish prose and poetry read in the original.

Mrs. Rank

### 138. Survey of Finnish Literature in Translation.

(Formerly numbered 110.) Intended for students in general and comparative literature as well as students interested in Finno-Ugric studies. Main trends and contacts with other literatures are surveyed. Special attention is paid to the Kalevala.

Mrs. Rank

## 139A. Introduction to Finnish Folklore and Mythology.

(Same as Folklore 124A.) The methods and results of Finnish Folklore studies and the mythic traditions of the Finns.

Mrs. Rank

## 139B. Folklore of Finnish Material Culture.

(Same as Folklore 124B.) Material manifestations of Finnish folk culture: village layout and architecture, folk technology, arts and crafts, textiles, costume and design, etc.

Mrs. Rank

## 150. Elementary Hungarian.

(Formerly numbered 105.) Introduction to grammar and reading exercises.

Mrs. Birnbaum

## 151. Intermediate Hungarian.

(Formerly numbered 106.) Prerequisite: course 150 or equivalent. Grammatical exercises and reading of texts.

Mrs. Birnbaum

## 152. Advanced Hungarian.

(Formerly numbered 107.) Prerequisite: course 151 or equivalent. Readings in literary texts.

Mrs. Birnbaum

## 153A-153B. Readings in Hungarian Literature.

(Formerly numbered 108.) Prerequisite: course 152 or equivalent. Large selections of Hungarian prose and poetry read in the original.

Mrs. Birnbaum

## 158A-158B. Survey of Hungarian Literature in Translation.

(Formerly numbered 111.) Intended for students in general and comparative literature as well as students interested in Finno-Ugric studies. Main trends and contacts with other literatures are surveyed.

Mrs. Birnbaum

## 159. Introduction to Hungarian Folklore and Mythology.

(Same as Folklore 128.) A general course for the student in folklore and mythology, with emphasis on types of folklore and varieties of folklore research.

Mrs. Birnbaum

## 169. Introduction to Finno-Ugric Folklore and Mythology.

(Same as Folklore 125.) Prerequisite: course 139A or consent of the instructor. Survey of the traditions of the smaller Finno-Ugric nationalities (Estonians, Lapps, Mordvins, Cheremis, Voguls, Ostyaks, etc.).

Mrs. Rank

## 199. Special Studies. (½ to 2 courses)

The Staff

Graduate Courses

## 210. Finno-Ugric Linguistics.

(Formerly numbered 217. Same as Linguistics 225L.) Prerequisite: consent of the instructor. Survey of the history and structure of the chief representatives of the Finno-Ugric language group.

## 251. Seminar in Finno-Ugric Folklore and Mythology.

(Same as Folklore 251.) Prerequisite: course 169 or consent of the instructor. Advanced studies in the folk traditions and mythologies of the Finno-Ugric speaking nations.

## Related Courses in Other Departments

**Anthropology 130A-130B.** Origins of Old World Civilization.

131A-131B. Old Stone Age Archeology.

138A-138B. The Strategy of Archeology.

139. Dating Techniques in Archeology.

163. History of Archeology.

181. Methods and Techniques of Field Archeology.

182. Methods and Techniques of Archeology.

230. Analytical Methods in Archeological Studies.

271. Historical Reconstruction and Archeology.

273. Problems in Old World Archeology.

**Armenian (Near Eastern Languages)**

130A-130B-130C. Elementary Classical Armenian.

131A-131B-131C. Intermediate Classical Armenian.

132A-132B-132C. Advanced Classical Armenian.

**Classics 161.** Introduction to Classical Mythology.

251A. Seminar in Classical Archaeology.

**English 210.** Readings in Old English literature.**German 230.** Survey of Germanic Philology.  
231. Gothic.

232. Old High German.

233. Old Saxon.

245. Germanic Mythology.

**Linguistics 100.** Introduction to Linguistics.

120. Linguistic Analysis.

160. History of Linguistics.

200A. Phonology I.

225A. Linguistic Structures: Indo-European.

225E. Linguistic Structures: Indo-Aryan.

**Scandinavian 151.** Elementary Old Icelandic.

152. Intermediate Old Icelandic.

**Semitic (Near Eastern Languages)**

160A-160B. Introduction to Near Eastern Archaeology.

161A-161B-161C. The Archaeology of Mesopotamia.

250. Seminar in Ancient Near Eastern Archaeology.

**Slavic 201.** Introduction to Old Church Slavic.

202. Introduction to Comparative Slavic Linguistics.

241A-241B. Advanced Old Church Slavic.

242A-242B. Comparative Slavic Linguistics.

**Urdu (Near Eastern Languages)**

101A-101B-101C. Elementary Urdu.

**■ COMMITTEE FOR THE STUDY OF EDUCATION AND SOCIETY**

The Committee for the Study of Education and Society initiates experimental courses for which neither departmental nor college support is appropriate or feasible. Each course in the following listing has the credit value of a full course unless otherwise noted.

**100. Corruption.**

Corruption and a set of related terms indicating perversion and deterioration of vital energies. Relationship of physical and moral connotations and connections between ordinary language and academic usage.

Mr. Rapoport (Political Science)

**101. Alienation in Modern Society.**

The historical significance of the concept of alienation, and the applicability of these ideas to contemporary social problems. Special attention will be devoted to the interdisciplinary character of the interest in alienation.

Mr. Seeman (Sociology)

**102. The Black Man in a Changing American Context.**

The course will be interdisciplinary and will cover the Black Man in America in terms of history, psy-

chology, sociology, literature, creative arts, law, economics, education and politics.

Mr. Kinsman (English)

**103. The Japanese American.**

This will be an exploratory seminar into the art, religion, and problems of the Japanese American. The class will feature intra-group dialogue as well as dialogue with guest speakers.

Mr. Wilson (History)

**104. Selected Problems in Collective Bargaining.**

Prerequisite: prior labor related courses. Students will be assigned to given unions or industries with an upcoming labor problem. They will then research that problem and present their conclusion to be used in collective bargaining sessions based on their own particular disciplines.

Mr. Carstens (Institute of Industrial Relations)

**105. The Fate of Innocence.**

An interdisciplinary seminar for freshmen dealing with the subject of innocence as represented in poetry, prose, and drama. Among the authors to be studied are Shakespeare, Milton, Blake, Melville, and James.

Mr. Goldberg (English)

## ■ COMPUTER SCIENCES

Studies related to computer science are possible in several academic departments. Detailed information is given in the announcements of the individual departments that are listed below.

### **Biomathematics**

Course work in mathematical modeling, simulation and other computer techniques in the health sciences, including computer graphics.

### **Business Administration**

Master of Science, and Ph.D. degree programs with specialization in information systems.

### **Engineering**

Master of Science and Ph.D. degree programs with specialization in control systems, communication theory, computer applications, computer languages, and computer systems.

## ■ DANCE

(Department Office, 205 Women's Gym)

Alma M. Hawkins, Ed.D., *Professor of Dance (Chairman of the Department)*.

Pia Gilbert, *Associate Professor of Dance*.

Juana de Laban, Ph.D., *Associate Professor of Dance*.

Carol Scothorn, M.A., *Associate Professor of Dance*.

———, *Assistant Professor of Dance*.

———, *Assistant Professor of Dance*.

———, *Assistant Professor of Dance*.

———, *Assistant Professor of Dance*.



Elsie Dunin, M.A., *Lecturer in Dance*.

Elizabeth Greenhut, M.A., *Lecturer in Dance*.

Hazel Hood, *Lecturer in Dance*.

Al Huang, M.A., *Lecturer in Dance*.

Penelope Leavitt, M.A., *Lecturer in Dance*.

Margalit Oved Marshall, *Lecturer in Dance*.

John Martin, *Lecturer in Dance*.

Emilio Pulido-Huizar, *Lecturer in Dance*.

Doris Siegel, *Lecturer in Dance*.

Allegra Snyder, M.A., *Lecturer in Dance*.

Mary Whitehouse, *Lecturer in Dance*.

The dance major offered in the College of Fine Arts leads to the Bachelor of Arts degree. For requirements of the College of Fine Arts, see page 97.

### **Library Service**

Master of Science degree in Information Science (Documentation).

### **Linguistics**

Course work in mathematical linguistics and computational linguistics.

### **Mathematics**

Course work in numerical analysis, logical design, and programming.

### **Psychology**

Course work in mathematical psychology, factor analysis and multivariate analysis, and in computer techniques in the behavioral sciences.

### **Public Health**

Master of Science and Ph.D. degree programs in Biostatistics with specializations in data processing and computer assisted statistical analysis.

### **Preparation for the Major**

Dance 35, 36A-36B-36C, 37A-37B-37C, 38 and 70A; Psychology 10, Physical Education 111A-111B, and two courses (including

at least one course with an asterisk) chosen from Art 1A-1B-1C, 10A\*-10B,\* 25,\* 30A, Humanities 1A-1B, Music 2A-2B, and Theater Arts 5B.

### The Major

A total of 14% courses including Dance 150A-150B-150C, 151A-151B, 152A-152B, 153A-153B-153C, 154, 158A-158B, and 159; Physical Education 111A-111B, three courses chosen from Art 110A-110B-110C, 112A-112B, 118A-118B-118C, Dance 140A-140B-140C, English 103, 104, Folklore 101, 105, Music 140A-140B, 135A-135B, Philosophy 160, Theater Arts 102A-102B, 118A-118B, 122, 145.

### Admission to Graduate Status

In addition to meeting the requirements of the Graduate Division as stated in the announcement of the Graduate Division, the student must have an undergraduate major in dance or equivalent preparation with a minimum of 9 upper division courses in the dance concentration. Students whose preparation is deficient, as determined by Graduate Admissions, will be required to make up such deficiencies in addition to the degree program. For more detailed information, write to the Chairman of the Department of Dance and enclose a transcript or summary of academic record.

### Requirements for the Master's Degree

Graduate students may follow the thesis plan or the comprehensive examination plan (see page 138). The candidate's course of study will be planned under the guidance of the graduate adviser. Emphasis may be placed on dance history and philosophy, choreography, ethnic forms or dance education.

**Thesis Plan.** A minimum of nine courses and a thesis. Choreography of major proportion is acceptable as a thesis.

**Comprehensive Examination Plan.** A minimum of 10 courses, including an independent study project and a final comprehensive examination.

#### Lower Division Courses

### 10A-10B-10C. Fundamentals of Creative Dance.

(½ course each)

For non-dance majors. Courses must be taken in sequence. Study of dance through varied experience in movement including historical and contemporary forms with emphasis on increasing ability to use movement creatively and to relate to dance the principles and elements of other arts.

The Staff

### 11A-11B-11C. Creative Dance. (½ course each)

Prerequisite: course 10C or consent of the instructor. For non-dance majors. A continuing study of dance with emphasis on movement principles and composition.

Mr. Huang

### 20. Movement for the Stage. (½ course)

(Formerly numbered 34.) Three hours lecture and laboratory. Movement for the theater specifically designed to extend the actor's creation of a role.

Miss Laban

### 35. Music Analysis for Dance. (½ course)

Study of the elements of music, music structures, and their relationship to dance, with emphasis on rhythmic analysis, dance accompaniment and teacher-accompanist roles.

Mrs. Gilbert

### 36A-36B-36C. Fundamentals of Creative Dance.

(½ course each)

Open only to dance majors and minors. Courses must be taken in sequence. Study of dance through varied experience in movement including historical and contemporary forms with emphasis on increasing ability to use movement creatively and to relate to dance the principles and elements of other arts.

Miss Leavitt

### 37A-37B-37C. Creative Dance. (½ course each)

Prerequisite: course 36C. A continuing study of dance with emphasis on movement principles and choreography.

Mr. Huang

### 38. Dance Notation. (½ course)

Prerequisite: courses 35 and 36C. Study of Labanotation with experiences in recording and interpreting dance scores.

Mrs. Scothorn

### 70A-70B. Introduction to Performance in Ethnic Dance. (½ course each)

Study of basic movement in ethnic dance forms.

Mrs. Dunlap

### 71A-71P. Performance Courses in Ethnic Dance.

(½ course each)

Each course may be repeated for a maximum of four units. (A) Dance of Bali; (B) Dance of Ghana; (C) Dance of Greece; (D) Dance of Hawaii; (E) Dance of India; (F) Dance of Israel; (G) Dance of Japan; (H) Dance of Java; (I) Dance of Mexico; (K) Dance of Philippines; (L) Dance of Scotland; (M) Dance of Spain; (N) Dance of Thailand; (P) Dance of Yugoslavia.

The Staff

#### Upper Division Courses

### 112A-112B. Advanced Dance. (½ course each)

For non-dance majors. Prerequisite: course 11C. Synthesis of previous dance experience, advanced technique, and individual and group choreography.

Mr. Huang

### 121. Movement for the Stage. (½ course)

Prerequisite: course 20. Styles and forms of period movement and their media of expression.

Miss Laban

### 140A-140B-140C. Dance Cultures of the World.

(Formerly numbered 170.) A survey of dance in selected cultures, the role of dance in society; consideration of style, rhythmic structure, historical background and related folklore. Lectures illustrated with demonstrations, film, slides and recordings: (A)

Asia and Oceanic (art, folk and tribal traditions);  
(B) Africa and America (tribal and folk traditions);  
(C) Europe and America (art, and folk traditions).  
Mrs. Snyder and the Staff

#### 141. Dance of Africa.

An introduction to the dance of Africa, factors influencing its development and social functions, consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group.

#### 142. Dance in the Balkans.

An introduction to dance of the Balkans, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group. Mrs. Dunin

#### 143. Dance in India.

An introduction to the dance of India, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group.

#### 144. Dance in Indonesia.

An introduction to the dance of Indonesia, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group. Mrs. Hood

#### 145. Dance in Japan.

An introduction to the dance of Japan, including factors influencing development and social functions, and consideration of relationship of dance to other art forms. Concurrent enrollment in a performing group.

#### 146. Dance in Latin America.

An introduction to the dance of Latin America, including factors influencing its development and social functions and consideration of the relationship of dance to other art forms. Concurrent enrollment in a performing group. Miss Laban

#### 147. Dance in Indian Cultures of Americas.

An introduction to the dance of the Indian cultures of the Americas, including factors influencing development and social functions and consideration of the relationship of dance to other art forms. Concurrent enrollment in a performing group.

#### 148. Dance in the United States and Canada.

An introduction to the dance of the United States and Canada, including factors influencing the development and social functions and consideration of the relationship of dance to other art forms. Concurrent enrollment in a performing group.

#### 150A-150B-150C. Advanced Dance.

(½ course each)

Prerequisite: course 37C. Choreography with emphasis on the use of composed music, the group composition, and the theatrical environment; synthesis of previous dance experience, theories and technique of outstanding dance artists; principles of human movement related to dance. Mrs. Scothorn

#### 151A. History of Dance—Primitive to Renaissance.

The involvement of the dance as an art form and its cultural implications from the primitive through the Renaissance periods. Miss Laban

#### 151B. History of Dance—Baroque to 20th Century.

A study of changing concepts in the styles and forms of dance from the Baroque to the 20th Century. Miss Laban

#### 152A-152B. Organization of Dance Performances. (½ course each)

Prerequisite: senior standing or consent of the instructor. Consideration of purpose and materials for dance productions. Mrs. Scothorn

#### 153A-153B-153C. Dance Composition. (½ course each)

Prerequisite: course 150C. Choreographic problems in historical styles and contemporary trends. Independent work in solo and group composition.

#### 154. Music as Dance Accompaniment.

Prerequisite: course 35 or consent of the instructor. Piano and percussion improvisation for dance. Choreographer-composer relationships. History of music for the dance with emphasis on contemporary trends. Music for the dance performance. Mrs. Gilbert

#### 158A-158B. Philosophical Bases and Trends in Dance. (1, ½ course)

Prerequisite: course 150C. Critical analysis of dance as a creative experience and the role of professional and educational dance in our society. Study of selected approaches to current development in dance. Miss Hawkins

#### 159. Advanced Dance Notation.

Prerequisite: course 38. Study of advanced Labanotation, history of various other systems, and survey of notated literature. Mrs. Scothorn

#### 160. Creative Dance for Children.

Prerequisite: consent of the instructor. Study of dance as an expressive medium for children with emphasis on concepts and principles.

#### 170A-170B. Introduction to Performance in Ethnic Dance. (½ course each)

Study of basic movement in ethnic dance forms. The Staff

#### 171A-171P. Performance Courses in Ethnic Dance. (½ course each)

Each course may be repeated for a maximum of four units. (A) Dance of Bali; (B) Dance of Ghana; (C) Dance of Greece; (D) Dance of Hawaii; (E) Dance of India; (F) Dance of Israel; (G) Dance of Japan; (H) Dance of Java; (I) Dance of Mexico; (K) Dance of Philippines; (L) Dance of Scotland; (M) Dance of Spain; (N) Dance of Thailand; (P) Dance of Yugoslavia. The Staff

#### 190. Advanced Dance Performance. (½ to 1 course)

Prerequisite: consent of the instructor. The study of performance of major choreography. Mrs. Scothorn

#### 197A-197B. Proseminar: Dance Perspectives. (½ course each)

Prerequisite: upper division standing or consent of the instructor. Consideration of the aesthetic evolving from the work of the great artists of our time. Mr. Martin

**198A-198B-198C. Special Courses in Dance.**  
(½ to 1 course)

Prerequisite: consent of the instructor.

**199. Special Studies in Dance.** (½ to 1 course)

Prerequisite: senior standing and consent of the instructor. Miss Hawkins

**Graduate Courses****200. Dance Notation.** (½ course)

Prerequisite: course 159. Advanced study of dance notation. Mrs. Scothorn

**202. Research Methods and Bibliography in Dance.**

Miss Laban

**204A-204B-204C. Advanced Choreography.**  
(½, 1, ½ course)

Prerequisite: course 159C or the equivalent. Theoretical and creative aspects of advanced choreography. Mrs. Scothorn

**206. Music for Dance.**

Prerequisite: course 154. Theory of the aesthetic and functional relationship of music to dance. Mrs. Gilbert

**208. Principles of Dance Theater.**

Prerequisite: course 152A-152B. Principles which serve the presentation of dance. Mrs. Scothorn

**210. Aesthetics of Dance.**

Prerequisite: course 158B. A critical analysis of aesthetic concepts related to dance. Miss Laban

**220. Dance in the 20th Century.**

Prerequisite: courses 151A-151B. Concepts, styles and forms of dance in the 20th century. Miss Laban

**221. The History of Ballet.**

Prerequisite: courses 151A, 151B. The development of ballet in its various stages: Renaissance,

Baroque, Romantic Period; stylistic differences in Italy, France, Spain, and England; influence of the other arts; and problems of ballet as an art form. Miss Laban

**226. Dance Expressions in Selected Cultures.**

Prerequisite: consent of instructor. Dance as a social and cultural experience in the life of man.

**227. Advanced Studies in Dance Education.**

Prerequisite: consent of the instructor. Concepts relating to the development of creativity and artistic integrity in dance. Miss Hawkins

**251A-251B-251C. Dance in Rehabilitation.**

Prerequisite: consent of the instructor. Dance in the therapeutic setting. A year course including a study of related research and literature, theoretical foundations for movement therapy, and individual research projects. Miss Hawkins, Mrs. Whitehouse

**Professional Courses****327A-327B. Principles of Teaching Dance.**  
(½ course each)

Prerequisite: senior standing or consent of the instructor. A study of methods, curricular materials, and evaluation procedures as related to the teaching of dance in the secondary schools. Mrs. Dunin, Miss Leavitt

**Individual Study and Research****596. Directed Individual Study or Research.**  
(½ to 1 course)**597. Preparation for the Comprehensive Examination for the Master's Degree.**  
(No credit)**598. Research for and Preparation of the Master's Thesis.** (½ to 1 course)**ECONOMICS**

(Department Office, 2263 Social Science Building)

† Armen A. Alchian, Ph.D., *Professor of Economics.*William R. Allen, Ph.D., *Professor of Economics.*† George W. Hilton, Ph.D., *Professor of Economics.*|| Werner Z. Hirsch, Ph.D., *Professor of Economics and Director, Institute of Government and Public Affairs.*Jack Hirshleifer, Ph.D., *Professor of Economics.*Warren C. Scoville, Ph.D., *Professor of Economics.*\* Harold M. Somers, Ph.D., LL.B., *Professor of Economics.*Paul A. Dodd, Ph.D., LL.D., *Emeritus Professor of Economics.*Paul T. Homan, Ph.D., *Emeritus Professor of Economics.*§ Jacob Marschak, Ph.D., *Emeritus Professor of Economics and Business Administration.*Earl J. Miller, Ph.D., LL.D., *Emeritus Professor of Economics.*§ Dudley F. Pegrum, Ph.D., *Emeritus Professor of Economics.*

† Absent on leave, 1968-1969.

\* Absent on leave, fall quarter, 1968-1969.

§ Recalled to active service.

|| Absent on leave, winter and spring quarters, 1969.

John F. Barron, Ph.D., *Associate Professor of Economics.*  
 H. Robert Heller, Ph.D., *Associate Professor of Economics.*  
 ‡ Michael D. Intriligator, Ph.D., *Associate Professor of Economics.*  
 J. Clayburn LaForce, Jr., Ph.D., *Associate Professor of Economics.*  
 Axel Leijonhufvud, Ph.D., *Associate Professor of Economics.*  
 George G. S. Murphy, Ph.D., *Associate Professor of Economics.*  
 Sven W. Arndt, Ph.D., *Assistant Professor of Economics.*  
 †Yung-Ping Chen, Ph.D., *Assistant Professor of Economics.*  
 Barry R. Chiswick, Ph.D., *Assistant Professor of Economics.*  
 William Gibson, Ph.D., *Assistant Professor of Economics.*  
 Bruce H. Herrick, Ph.D., *Assistant Professor of Economics.*  
 Charles T. Nisbet, Ph.D., *Assistant Professor of Economics.*  
 †Sam Peltzman, Ph.D., *Assistant Professor of Economics.*  
 David L. Shapiro, Ph.D., LL.B., *Assistant Professor of Economics.*  
 Earl A. Thompson, Ph.D., *Assistant Professor of Economics.*



Larry J. Kimbell, B.A., *Lecturer in Economics.*  
 Alice John Vandermeulen, Ph.D., *Senior Lecturer in Economics.*

### Objective of the Major in Economics

The requirements for and offerings in the major are intended not only to provide a well-rounded education based on a broad foundation of economics and related subjects, but also to supply basic training for students who plan to enter the professional fields of high school and junior college teaching in the social sciences or business education, law, social work, or government service. The major provides the basic training for professional graduate studies in economics and in business administration.

Economics majors wishing also to obtain a business teacher's credential should see "Business Education," page 196.

Upper division programs are worked out for each student in consultation with a departmental adviser.

### Preparation for the Major

Required: Economics 1-2; one course in calculus (e.g., Mathematics 2B, 3A, or 11A); and four lower or upper division courses in the social sciences other than economics. (Upon petition, a student in upper division standing may be permitted to substitute Economics 100 for Economics 1-2.) Those who wish additional work in economics or in closely related fields while still in lower division standing can take Economics 10 and Business Administration 1A.

### The Major

Nine upper division courses in economics which must include (1) Economics 101A-101B, 102,\* (2) Economics 140 or its equivalent;

and (3) at least one course in each of three fields in economics listed below other than Economics 101A, 101B, 102, and 140. Economics 100 may not be included among the nine upper division courses. One or two of the nine courses may be chosen from the following courses in the department of Business Administration: 115A, 120A, 120B, 120M and 130. A 2.0 average is required in all economics and major courses, including business administration.

### Fields

Economic Theory (courses 101A-101B, 102, 105, 107); Economic Development (courses 108, 110, 111, 112); Regional Economics (courses 120, 121, 122); Public Finance (courses 130, 132, 133); Statistics, Mathematical Economics, and Econometrics (courses 140, 141, 142, 145, 146, 147); Labor Economics (courses 150, 151, 152); Money and Banking (courses 160, 161, 162); Government, Industry and Natural Resources (courses 170, 171, 175, 178); Economic Institutions (courses 180, 181, 182); International Economics (courses 190, 191, 192).

### Requirements for the M.A. Degree

Candidates for the degree of Master of Arts in economics are normally required to have completed the equivalent of an undergraduate major in economics. In addition to

\* Those students who attained upper division status and began their major prior to the fall quarter of 1966 should consult with their departmental adviser concerning this requirement.

† Absent on leave, 1968-69.

‡ Absent on leave, fall and winter quarters, 1968-1969.

the general University requirements (see page 136), the departmental requirements are nine upper division and graduate level courses. These must include, if not taken previously, Economics 101A-101B, 102 (or their equivalent) which must be taken (or retaken) with grade B or better, effective for new admission as of Fall 1966; and Economics 107 (or its equivalent) passed with a grade of at least C. At least five of the nine courses must be strictly graduate courses in economics, spread over at least two "subject" fields (see above). If the student elects to follow the examination plan rather than the thesis plan, he will be given a single four-hour written examination in his field of concentration.

With the consent of the graduate adviser, candidates may offer a maximum of two courses of acceptable upper division and/or graduate courses in other social sciences, in history, in business administration, in mathematics, in psychology, in education, or in philosophy in partial satisfaction of the requirements for the degree. This will not, however, relieve the student from taking five graduate courses in the Department of Economics.

Students entering graduate work beginning with Fall Quarter 1966 will be required to complete three courses in mathematics and statistics: at least one course in calculus, at least one course in statistics, and a third in either mathematics or statistics. The mathematics courses may be Economics 145 or 146 or any appropriate lower or upper division courses offered by the Department of Mathematics. Economics 140 or an equivalent introductory course in statistics should be one of the statistics courses chosen. Work in the student's prior record will be counted toward this requirement.

### Requirements for the Ph.D Degree

**Basic Requirements.** See general University regulations, pages 140-142.

**Accounting, Mathematics, Statistics, Economic History, and History of Theory.** A quarter course or its equivalent in (a) accounting, (b) American economic history, (c) European economic history, (d) History of Economic Theory. In addition, each student must have completed work in mathematics and statistics, equivalent to three quarter courses, distributed as follows: at least one in calculus, at least one in statistics, and a third in either mathematics or statistics. The mathematics courses may be Economics 145 or 146 or any appropriate lower or upper

division courses offered by the Department of Mathematics. Economics 140 or an equivalent introductory course in statistics should be one of the statistics courses chosen. Work in the student's prior record will be counted toward all the above requirements. In any case, they must be completed at the earliest possible date and prior to admission to candidacy.

**Language.** The student will either (a) pass examinations in two foreign languages or (b) pass one language examination and submit a mathematics substitution for the second language. The substitution will consist of three appropriate courses taken in the Department of Mathematics in addition to the courses which are used to satisfy the mathematics requirement for all candidates.

**General Qualifying Examination.** In order to gain admission to candidacy, graduate students shall pass written and oral examinations. The written examinations will cover the fields of micro and macro economic theory, and three additional fields to be selected from those listed in the field offerings of the department. A student, upon petition, may be allowed to substitute a field outside the Department of Economics for one of his three elective fields.

A student has three options for taking the written examinations: 1) all four examinations may be taken simultaneously, or 2) two examinations (one being theory) may be taken at one time and the remaining two taken at some subsequent examination time, or 3) the theory examination may be taken separately and the remaining three taken at some subsequent examination time. The oral examination will cover the student's preparation in economics in general and can be taken only after all the written examinations have been passed.

### Lower Division Courses

#### 1. Principles of Economics.

(Numbered 1A in 1966-67.) Lecture, three hours; discussion, one hour. Not open to students with credit for Economics 100. An introduction to the principles of economic analysis, economic institutions, and issues of economic policy. Emphasis on allocation of resources and distribution of income through the price system. **The Staff**

#### 2. Principles of Economics.

(Numbered 1B in 1966-67.) Lecture 3 hours; discussion 1 hour. Not open to students with credit for Economics 100. An introduction to the principles of economic analysis, economic institutions, and issues of economic policy. Emphasis on aggregative economics, including national income, monetary and fiscal policy, and international trade. **The Staff**

**10. Evolution of Economic Institutions in America.**

(Numbered 13 in 1966-67.) The historical development of the present American economic system and its performance over time, especially as revealed by the quantitative data of modern research.

Mr. LaForce, Mr. Murphy

**Upper Division Courses**

Courses 1 and 2 or 100 are prerequisite to all upper division courses in economics.

**100. Economic Principles and Problems.**

(Numbered 101 in 1966-67.) Not open to students with credit for 1 and 2. Designed for non-economics majors. Under special circumstances an economics major in upper division standing may be permitted to substitute 100 for 1 and 2 by petition. A one-quarter course presenting the principles of economics with applications to current economic problems.

The Staff

**101A-101B. Micro Economic Theory.**

101A. (Numbered 100A in 1966-67.) The laws of demand, supply, returns and costs; price and output determination in different market situations.

Mr. Hirschleifer, Mr. Thompson

101B. (Numbered 100B in 1966-67.) Theory of factor pricing and income distribution; general equilibrium; implications of the pricing process for the optimum allocation of resources; interest and capital.

Mr. Hirschleifer, Mr. Thompson

**102. Macro Economic Theory.**

(Numbered 100C in 1966-67.) Theory of income and employment. Introduction to fiscal and monetary policy.

Mr. Arndt

**105. Introduction to Macrodynamics.**

(Numbered 105 and 106 in 1966-67.) Prerequisites: courses 101B, 102. A study of the problem of maintaining equilibrium in systems relying on automatic market forces. Sources of malfunctions, with emphasis on oscillatory behavior. Implications for theory of economic fluctuations. Economic applications of information theory and cybernetics.

Mr. Leijonhufvud

**107. History of Economic Theory.**

(Numbered 103 in 1966-67.) A survey of economic analysis from Grecian antiquity to the early 20th century, concentrating on the 18th and 19th centuries; special attention to selected writers, including Aristotle, the Mercantilists, the Physiocrats, Hume, Smith, Malthus, Ricardo, Marx, the Marginalists, and Marshall.

Mr. Allen, Mr. Hilton, Mr. Peltzman

**108. Economic Demography.**

(Numbered 111 in 1966-67.) Theories of population growth and historical evidence. Secular, cyclical and cross sectional analysis of fertility. Economic analyses of migration and labor force participation. Population, human capital and economic growth.

Mr. Chiswick

**110. Economic Problems of Underdeveloped Countries.**

A survey of the major issues of development economics. Economic structure of low income countries and primary causes for their limited economic growth. Economic goals and policy alternatives open to their leaders. Possible roles of developed countries. Selected case studies.

Mr. Herrick, Mr. Nisbet

**111. Theories of Economic Growth and Development.**

(Numbered 109 in 1966-67.) Prerequisite: course 101B. Growth models, theory of production under constraints, relative factor prices and their impact on choice of technology, investment criteria, role of the market, economic planning in less developed areas.

Mr. Herrick, Mr. Nisbet

**112. Policies for Economic Development.**

(Numbered 110 in 1966-67.) Prerequisite: course 111 or 102. Suggested strategies for economic development: inflation, balanced growth, industry vs. agriculture, import substitution, export oriented expansion, foreign aid, and others will be considered. Selected case studies.

Mr. Herrick, Mr. Nisbet

**120. Regional and Urban Economics: Survey.**

Economic analysis as applied to significant, current regional and urban problems and policy.

Mr. Hirsch, Mr. Shapiro

**121. Regional and Urban Economics: Resources and Location.**

(Formerly numbered 120.) Prerequisite: course 120 or 101B. Demand and supply of urban public services; transportation and location decisions and urban human resources analysis.

Mr. Hirsch, Mr. Shapiro

**122. Regional and Urban Economics: Income and Growth.**

(Formerly numbered 121.) Prerequisite: course 120 or 102. Income determination, impact analysis, growth decision, and regional information systems.

Mr. Hirsch, Mr. Shapiro

**130. Public Finance.**

(Formerly numbered 131.) A survey of the development and economic effects of public expenditures, revenues, and indebtedness, with reference to selected tax and budgetary problems.

Mr. Chen, Mr. Somers

**132. Financing Social Security and Transfer Expenditures.**

(Numbered 133 in 1966-67.) In the context of the economic behavior of the household and the performance of the economy, this course is designed to study the theories, practices, and economic effects of, and the alternatives to, such programs as OASDHI, unemployment insurance, public assistance and others.

Mr. Chen

**133. State and Local Finance.**

(Numbered 132 in 1966-67.) Prerequisite: course 130. The division of functions and revenues between state and local governments; the revenues, expenditures, and indebtedness of these governments. Analyses of state and local tax systems.

Mrs. Vandermeulen

**140. Introduction to Statistical Methods.**

The elements of statistical analysis. Presentation and interpretation of data; descriptive statistics; theory of probability and basic sampling distributions; statistical inference, including principles of estimation and tests of hypotheses; introduction to regression and correlation. Not open for credit to students who have completed Business Administration 115A.

Mr. Arndt, Mr. Hirschleifer

**141. Principles of Statistical Decision.**

Prerequisite: course 140 or equivalent. Errors of the first and second kind; economic loss functions; prior probabilities and Bayes' Theorem. Analysis of classical and Bayesian approaches. Application to inventory and production problems. The value of information, and implications for sampling design.

Mr. Hirschleifer, Mr. Kimbell

**142. Quantitative Economic Analysis.**

Prerequisite: course 140 or equivalent. Advanced regression and correlation analysis, and analysis of variance; study of time series and index numbers. Emphasis on applications of statistical tools in quantitative economic analysis and on implications of quantitative knowledge on the validity of economic theory.

Mr. Intriligator, Mr. Kimbell

**145. Introduction to Mathematical Economics.**

(Numbered 143 in 1966-67.) Prerequisite: a course in calculus. A review of calculus and differential equations, with applications to economics, specifically the theory of the household and the firm, capital theory, macroeconomic systems, and cycles and growth.

Mr. Intriligator, Mr. Kimbell

**146. Linear Models in Economics.**

(Numbered 144 in 1966-67.) Prerequisite: a course in calculus. An introduction to matrices and matrix algebra, with applications to economics, specifically input-output, Markov chains and linear models of econometrics.

Mr. Intriligator, Mr. Kimbell

**147. Introduction to Econometrics.**

(Numbered 145 in 1966-67.) Prerequisites: courses 145 and 146 or equivalents. An introduction to econometrics, including model building, data collection, estimation and hypothesis testing, and the use of econometric models for economic analysis and policy.

Mr. Intriligator, Mr. Kimbell

**150. Wage Theory.**

The supply and demand for labor. Analysis of government, union and other constraints on the competitive system of wage determination. Wage level and structure. Wages and human capital theory.

Mr. Chiswick

**151. Labor, Wages, and the Economy.**

Prerequisite: course 150. Changes in real wages. Inflation, unemployment, distribution of income. Manpower planning. Economic security.

Mr. Chiswick

**152. Economics of Trade Unions.**

(Formerly numbered 151.) Prerequisite: course 150. Economic analysis of strikes, boycotts, lock-outs, right to work, seniority, work-rules, pensions, fringe benefits. The evolution of trade unions and the legislative framework within which they operate are also considered.

Mr. Chiswick

**160. Money and Banking.**

(Numbered 135 in 1966-67.) The principles and history of money and banking with principal reference to the experience and problems of the United States.

The Staff

**161. Monetary Theory.**

(Numbered 136 in 1966-67.) Prerequisite: course 102 or 160. The real sector of the economy in a theory of finance with emphasis on innovations in finance (including the development of money and

commercial banks), the costs of finance, and economic growth and development.

Mr. Burns, Mr. Gibson, Mr. Thompson

**162. Monetary Policy.**

Prerequisite: course 161. Techniques of monetary control; the efficacy and equity of the techniques; monetary policies in the interwar and postwar periods; proposals for improving monetary controls, in terms of both techniques employed and policies adopted.

Mr. Burns, Mr. Gibson

**170. Economics of Industrial Control.**

Economic and institutional foundations of public regulation; the pricing process and public policy; public control of competition, monopoly, transportation, and public utilities; the rationale of a private enterprise economy.

Mr. Barron

**171. Public Utilities.**

The economics of public service corporations; the economic problems of regulation; state and national problems arising from the development of public utilities; public ownership.

Mr. Barron, Mr. Hilton

**175. Economics of Transportation.**

(Numbered 173 in 1966-67.) The economic characteristics of transport; the functions of the different agencies; pricing and resource allocation in transport; public regulation of transport; urban transport; the modern transport problem.

Mr. Hilton

**178. Economics of Natural Resources.**

(Numbered 176 and 177 in 1966-67.) Prerequisite: course 101B. Economic principles in the utilization of resources including water, minerals, petroleum, and land; private and social costs; cost benefit analysis; analysis of government resource policies.

**180. Comparative Economic Systems.**

(Numbered 107 in 1966-67.) An analysis of capitalist and planned economies as exemplified by the United States, Soviet Union, Great Britain, etc. Alternative systems are compared with respect to the economic goals, theories of economic organization, institutions, and developmental processes. Problems of economic planning are emphasized.

Mr. LaForce, Mr. Murphy, Mr. Scoville

**181. Development of Economic Institutions.**

(Numbered 108 in 1966-67.) Rise of capitalism, especially in Western Europe, with emphasis on its basic institutions, such as private property, profit motive, price system; comparative rates of growth of different countries; protestantism and capitalism; critical evaluation of the concept of the Industrial Revolution.

Mr. Scoville

**182. Economic Problems of the U.S.S.R.**

(Numbered 112 in 1966-67.) An introduction to the organization and policies of the economy of the U.S.S.R.

Mr. Murphy

**190. International Economics.**

(Numbered 195 in 1966-67.) A general introduction to international economics, based upon an examination of the theory of trade and the means and significance of balance of payments adjustments, with analysis of major issues of international commercial and monetary policy confronting national and international agencies.

Mr. Allen, Mr. Arndt, Mr. Heller

**191. International Trade Theory.**

Prerequisite: course 101B. The theory of international trade. Determination of the direction of trade, international prices, and quantities of commodities traded. The effects of tariffs, quotas, customs unions, and common markets. The effects of free and restricted trade on economic welfare.

Mr. Allen, Mr. Arndt, Mr. Heller

**192. International Finance.**

(Numbered 196 in 1966-67.) Prerequisite: course 102. Emphasis on interpretation of the balance of payments and the adjustment to national and international equilibria, through changes in price levels, exchange rates, and national income. Other topics include: making international payments, determination of exchange rates under various monetary standards, capital movements, exchange controls, and international monetary organization.

Mr. Allen, Mr. Arndt, Mr. Heller

**199. Special Studies in Economics. (½ to 1 course)**

Prerequisite: senior standing and consent of the instructor. A student may count this course only once in satisfying his major in economics; he may take it a second time to meet University graduation requirements.

**Graduate Courses****201A. Theory of Consumption and Exchange.**

Mr. Alchian, Mr. Hirschleifer

**201B. Theory of Production and Distribution.**

Mr. Alchian, Mr. Hirschleifer

**201C. Theory of Interest and Capital.**

Mr. Alchian, Mr. Hirschleifer

**202A-202B. Income, Employment, and Monetary Theory.**

(Formerly numbered 201C and 202.)

Mr. Leijonhufvud, Mr. Thompson

**203A. Economics of Decision.**

(Same as Business Administration 203A.) Prerequisite: Economics 101B, 102, 140 and calculus.

Mr. Marschak

**203B. Economics of Information.**

(Same as Business Administration 203B.) Prerequisite: Economics 101B, 102, 140 and calculus.

Mr. Marschak

**203C. Economics of Organization.**

(Same as Business Administration 203C.) Prerequisite: Economics 203A-B.

Mr. Marschak

**204. Applications of Economic Theory.**

(Numbered 253 in 1966-67.)

Mr. Alchian

**205. Fluctuations and Growth: Measurement and Theory.**

(Numbered 254A in 1966-67.)

Mr. Thompson

**206. Fluctuations and Growth: Analysis of the U. S. Record.**

(Numbered 254B in 1966-67.)

Mr. Thompson

**207. History of Economic Theory.**

(Numbered 250 in 1966-67.)

Mr. Allen

**211. Economic Growth of Underdeveloped Areas: Theory and Structure.**

(Numbered 268A in 1966-67.)

Mr. Herrick, Mr. Nisbet

**212. Economic Growth of Underdeveloped Areas: Models and Policy.**

(Numbered 268B in 1966-67.)

Mr. Herrick, Mr. Nisbet

**213A-213E. Selected Problems of Economic Development.**

213A. Selected Problems of Underdeveloped Areas.

213B. Selected Problems of Underdeveloped Areas: Economic and Political Change.

213C. Selected Problems of Underdeveloped Areas: Africa.

213D. Selected Problems of Underdeveloped Areas: Latin America.

213E. Selected Problems of Underdeveloped Areas: Demography and Economic Development.

Mr. Herrick, Mr. Nisbet

**221. Urban and Regional Economic Analysis I.**

(Numbered 220A in 1966-67.)

Mr. Hirsch

**222. Urban and Regional Economic Analysis II.**

(Numbered 220B in 1966-67.)

Mr. Hirsch

**231. Public Finance.**

(Numbered 261 in 1966-67.)

Mr. Chen, Mr. Somers

**232. Economics of Government Expenditures.****245. Mathematical Economics.**

(Numbered 243 in 1966-67.)

Mr. Intriligator, Mr. Kimbell

**247. Econometrics I.**

(Numbered 242A in 1966-67.)

Mr. Intriligator, Mr. Kimbell

**248. Econometrics II.**

(Numbered 242B in 1966-67.)

Mr. Intriligator, Mr. Kimbell

**249. Econometrics III.**

(Numbered 242C in 1966-67.)

Mr. Intriligator, Mr. Kimbell

**251. Labor Economics I. Seminar.**

(Numbered 270A in 1966-67.)

Mr. Chiswick, Mr. Herrick

**252. Labor Economics II.**

(Numbered 270B in 1966-67.)

Mr. Chiswick, Mr. Herrick

**253. Labor Problems.**

(Numbered 271 and 272 in 1966-67.)

Mr. Herrick

**261. Monetary Economics I.**

Mr. Burns, Mr. Gibson, Mr. Thompson

**262. Monetary Economics II.**

Mr. Burns, Mr. Gibson, Mr. Thompson

**271. Industrial Organization, Price Policies, and Regulation: Theory.**

(Numbered 260A in 1966-67.)

Mr. Barron, Mr. Pegrum, Mr. Peltzman

**272. Industrial Organization, Price Policies, and Regulation: Policy.**

(Numbered 260B in 1966-67.)

Mr. Barron, Mr. Pegrum, Mr. Peltzman

**275. National Transport Policy.**

(Numbered 265 in 1966-67.)

Mr. Hilton

**276. Urban Transportation.**

Mr. Hilton

**281. Evolution of Economic Institutions in Western Europe.**

(Numbered 263 in 1966-67.)

Mr. LaForce, Mr. Scoville

**282. Soviet Economic Theory and Organization.**

(Numbered 212 in 1966-67.)

Mr. Murphy

**283. Evolution of Economic Institutions in the United States.**

(Numbered 262 in 1966-67.)

Mr. Scoville

**291. International Trade Theory.**

(Numbered 266A in 1966-67.)

Mr. Allen, Mr. Arndt, Mr. Heller

**292. International Finance.**

(Numbered 266B in 1966-67.)

Mr. Allen, Mr. Arndt, Mr. Heller

**293. International Economics: Selected Topics.**

(Numbered 267 in 1966-67.)

Mr. Allen, Mr. Arndt, Mr. Heller

**Individual Study and Research****596. Individual Study. (½ to 2 courses)**

Directed individual study or research. The Staff

**597. Individual Study: Graduate Examinations.**

(½ to 2 courses)

Directed individual study in preparation for the M.A. comprehensive examination or the Ph.D. qualifying examination. The Staff

**598. Individual Research: M.A. Thesis.**

(½ to 2 courses)

Directed individual research in preparation of M.A. thesis. The Staff

**599. Individual Research: Ph.D. Dissertation.**

(½ to 2 courses)

Directed individual research in preparation of Ph.D. dissertation. The Staff

**■ EDUCATION**

(Department Office, 325 Moore Hall)

Melvin L. Barlow, Ed.D., *Professor of Education and Director of the Division of Vocational Education.*James C. Coleman, Ph.D., *Professor of Education and Psychology.*Wilbur H. Dutton, Ed.D., *Professor of Education.*Claude W. Fawcett, Ph.D., *Professor of Education.*Clarence Fielstra, Ph.D., *Professor of Education.*John I. Goodlad, Ph.D., L.H.D., *Professor of Education and Director of University Elementary School (Chairman of the Department).*C. Wayne Gordon, Ph.D., *Professor of Education and Sociology.*B. Lamar Johnson, Ph.D., *Professor of Education.*Evan R. Keislar, Ph.D., *Professor of Education.*George F. Kneller, Ph.D., Litt.D., LL.D., *Professor of Education.*Erick L. Lindman, Ph.D., *Professor of Education.*William H. Lucio, Ph.D., *Professor of Education.*John D. McNeil, Ed.D., *Professor of Education and Head of Supervised Teaching.*Lynne C. Monroe, Ed.D., *Professor of Education.*C. Robert Pace, Ph.D., *Professor of Education.*Rosemary Park, Ph.D., *Professor of Education.*May V. Seagoe, Ph.D., *Professor of Education.*Paul H. Sheats, Ph.D., LL.D., *Professor of Education.*Lawrence E. Vredevoe, Ph.D., *Professor of Education.*Samuel J. Wanous, Ph.D., *Professor of Education.*Merlin C. Wittrock, Ph.D., *Professor of Education.*Jesse A. Bond, Ed.D., *Emeritus Professor of Education.*William S. Briscoe, Ed.D., *Emeritus Professor of Education.*

Watson Dickerman, Ph.D., *Emeritus Professor of Education.*  
 John A. Hockett, Ph.D., *Emeritus Professor of Education.*  
 David F. Jackey, Ph.D., *Emeritus Professor of Education.*  
 Dorothy M. Leahy, Ed.D., *Emeritus Professor of Education.*  
 Malcolm S. MacLean, Ph.D., *Emeritus Professor of Education.*  
 F. Dean McClusky, Ph.D., *Emeritus Professor of Education.*  
 Lloyd N. Morrisett, Ph.D., *Emeritus Professor of Education.*  
 Francis M. Obst, Ed.D., *Emeritus Professor of Education.*  
 Corrinne A. Seeds, M.A., *Emeritus Professor of Education.*  
 Lorraine M. Sherer, Ed.D., *Emeritus Professor of Education.*  
 J. Harold Williams, Ph.D., *Emeritus Professor of Education.*  
 Frederic P. Woellner, Ph.D., Litt.D., LL.D., *Emeritus Professor of Education.*  
 Charlotte Crabtree, Ph.D., *Associate Professor of Education.*  
 Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*  
 Frank M. Hewett, Ph.D., *Associate Professor of Education and Psychiatry.*  
 Theodore R. Husek, Ph.D., *Associate Professor of Education.*  
 Wendell P. Jones, Ph.D., *Associate Professor of Education.*  
 Frederick C. Kintzer, Ed.D., *Associate Professor of Education.*  
 W. James Popham, Ed.D., *Associate Professor of Education.*  
 A. Garth Sorenson, Ph.D., *Associate Professor of Education.*  
 Louise L. Tyler, Ph.D., *Associate Professor of Education.*  
 Marvin C. Alkin, Ed.D., *Assistant Professor of Education.*  
 Webster R. Callaway, Ph.D., *Assistant Professor of Education.*  
 Arthur M. Cohen, Ph.D., *Assistant Professor of Education.*  
 Sol Cohen, Ph.D., *Assistant Professor of Education.*  
 Liv Helena Eklund, Ph.D., *Assistant Professor of Education.*  
 Norma J. Feshbach, Ph.D., *Assistant Professor of Education.*  
 James T. Fleming, Ed.D., *Assistant Professor of Education.*  
 Barbara K. Keogh, Ph.D., *Assistant Professor of Education.*  
 Carol H. Kipps, Ed.D., *Assistant Professor of Education.*  
 James R. Liesch, Ph.D., *Assistant Professor of Education.*  
 Edythe Margolin, Ed.D., *Assistant Professor of Education.*  
 † Jay D. Scribner, Ed.D., *Assistant Professor of Education.*  
 Merron S. Seron, Ph.D., *Assistant Professor of Education.*  
 Rodney W. Skager, Ph.D., *Assistant Professor of Education.*  
 Cornelius J. Troost, Ed.D., *Assistant Professor of Education.*  
 Dolores W. Warner, Ph.D., *Assistant Professor of Education.*  
 Carl Weinberg, Ed.D., *Assistant Professor of Education.*  
 Richard C. Williams, Ph.D., *Assistant Professor of Education.*



David Allen, Ed.D., *Lecturer in Education.*  
 Byron H. Atkinson, Ed.D., *Lecturer in Education.*  
 Herbert W. Hendricks, Ph.D., *Acting Assistant Professor of Education.*  
 Allen Hogle, Ph.D., *Lecturer in Education.*  
 Robert Kindred, Ed.D., *Lecturer in Education.*  
 Marilyn L. Kourilsky, M.A., *Acting Instructor in Education.*  
 Donald Myers, Ph.D., *Lecturer in Education.*  
 Jerrold Novotney, Ed.D., *Lecturer in Education.*  
 James Yelvington, M.A., *Acting Assistant Professor of Education.*

† Absent on leave, 1968-1969.

**Representatives of Other Departments on the Faculty of the School of Education**

- Arnold J. Band, Ph.D., *Associate Professor of Hebrew.*  
 E. Beckenbach, Ph.D., *Professor of Mathematics.*  
 Margherita Cottino-Jones, Ph.D., *Assistant Professor of Italian.*  
 David G. Farrelly, Ph.D., *Associate Professor of Political Science.*  
 Archine Fetty, M.A., *Professor of Art.*  
 Waldo H. Furgason, Ph.D., *Professor of Zoology.*  
 Maurice Gerow, Ph.D., *Associate Professor of Music.*  
 Donald T. Handy, Ed.D., *Associate Professor of Physical Education.*  
 Peter C. L. Hodgson, M.A., *Acting Assistant Professor of Slavic Languages.*  
 Andrew H. Horn, Ph.D., *Professor of Library Service.*  
 Gregory J. Jann, Ph.D., *Associate Professor of Bacteriology.*  
 Wendell E. Jeffrey, Ph.D., *Professor of Psychology.*  
 Edward B. Johns, Ed.D., *Professor of Public Health.*  
 David Kaplan, Ph.D., *Associate Professor of Philosophy.*  
 Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*  
 Walter Kingdon, Ed.D., *Professor of Theater Arts.*  
 N. Gary Lane, Ph.D., *Associate Professor of Geology.*  
 Richard F. Logan, Ph.D., *Professor of Geography.*  
 Stephanie O. Lombardi, Ph.D., *Lecturer in Germanic Languages.*  
 Jack Lyle, Ph.D., *Associate Professor of Journalism.*  
 Philip Newman, Ph.D., *Professor of Anthropology.*  
 Charles T. Nisbet, Ph.D., *Assistant Professor of Economics.*  
 Waldo Phelps, Ph.D., *Professor of Speech.*  
 James E. Phillips, Jr., Ph.D., *Professor of English.*  
 Bernard O. Phinney, Ph.D., *Professor of Botany.*  
 Daniel M. Popper, Ph.D., *Professor of Astronomy.*  
 Oreste F. Pucciani, Ph.D., *Professor of French.*  
 Allen B. Rosenstein, Ph.D., *Professor of Engineering.*  
 Barbara E. Smith, M.A., *Lecturer in Classics.*  
 Muriel Uprichard, Ph.D., *Lecturer in Nursing and Associate Research Psychologist.*  
 Norman A. Watson, Ph.D., *Professor of Physics.*  
 Robert A. Wilson, Ph.D., *Associate Professor of History.*

**Upper Division Courses†**

Junior standing is prerequisite to all courses in Education except course 100, which is open to high sophomores.

**100. Cultural Foundations of Education.**

(Formerly numbered 100A-100B-100C.) Treats the place of education and teaching in America, synthesizing the contributions of historical, philosophical, sociological, and comparative studies; not limited to those interested in teaching, it provides students with knowledge fundamental to an understanding of education as a force in national life.

Mr. Kneller, Mr. Liesch, and Staff

**108. Sociology of Education.**

(Same as Sociology 143.) Prerequisite: Sociology 1A or 101. Study of social processes and interaction patterns in educational organizations; the relationship of such organizations to aspects of society, social class and power; social relations within the school, college and university; formal and informal groups, subcultures in educational systems; roles of teachers, students and administrators.

Mr. Gordon, Mr. Weinberg

**112. Psychological Foundations of Education.**

(Formerly numbered 110A-110B.) Prerequisite: Psychology 10 and 12 or 101. The learning process in school situations, the evaluation of learning, the development of motor and intellectual abilities, and social and personal development of children in relation to the school; educational measurement and the interpretation of research. Mr. Keislar, Mr. Wittrock

**116. The Education of Exceptional Children.**

Two class hours, four hours field work. Prerequisite: Psychology 10 and 12 or 101; limited to graduate students and qualified seniors. The characteristics of educational provisions for exceptional children, including the mentally and physically handicapped, the gifted, the emotionally disturbed, and the socially disadvantaged. Mrs. Eklund

**124A-124B-124C. Curriculum in Elementary Schools.**

124A. The Elementary Curriculum: Social Studies. Prerequisite or concurrent: courses 100 and 112.

† All courses four class hours except where otherwise indicated.

Critical examination of the elementary school curriculum; principles and methods in developing instructional programs in social studies; participation in schools; two hour laboratory by arrangement. Miss Crabtree, Mrs. Margolin

#### 124B. The Elementary Curriculum: Language Arts and Reading.

Prerequisite: course 124A. Principles and methods in developing instructional programs in language arts and reading; participation in schools; two hour laboratory by arrangement.

Mr. Fleming, Miss Warner

#### 124C. The Elementary Curriculum: Mathematics and Science.

(Formerly numbered 124B.) Prerequisite: Mathematics 38 or equivalent. Principles and methods in developing instructional programs in mathematics and science; participation in schools; two hour laboratory by arrangement.

Mr. Dutton, Mrs. Kipps, Mr. Troost

### 125A-128E. Programs for the Education of Exceptional Children.

#### 128A. The Mentally Retarded in School and Community.

Prerequisite: course 116; limited to graduates and qualified seniors. Etiology of mental retardation; identification; sociological implications; social-vocational adjustment; counseling; community resources; educational and legal provisions.

#### 128B. Programs for the Educable Mentally Retarded.

Prerequisite: course 128A; limited to graduates and qualified seniors. Developmental and learning needs of the educable mentally retarded; curriculum, procedures and materials; observation and participation in programs.

Mrs. Eklund

#### 128C. Programs for the Severely Mentally Retarded.

Prerequisite: course 128A; limited to graduates and qualified seniors. Developmental and learning needs of the severely mentally retarded; curriculum, procedures and materials; observation and participation in programs.

Mrs. Eklund

#### 128D. Programs for the Educationally Handicapped.

Two class hours, four hours field work. Prerequisite: course 116; limited to graduates and qualified seniors. Developmental and learning needs of emotionally disturbed and minimally neurologically impaired children; curriculum, procedures and materials; observation and participation at the Neuropsychiatric Institute School.

Mr. Hewett, Mrs. Keogh

#### 128E. Programs for the Gifted.

Prerequisite: course 116; limited to graduates and qualified seniors. Developmental and learning needs of gifted children; curriculum, procedures and materials; observation and participation in programs.

Mr. Callaway

### 130. Curriculum and Instruction in Secondary Schools.

Analysis of curricular and instructional procedures, observation, and participation in secondary schools.

Mr. Popham

### 137A-137B-137C. Business Education.

#### 137A. The Curriculum in Business Education.

(Formerly numbered 137.) The curriculum in business education in secondary schools, including

instructional techniques, course content, prognosis of achievement, standards, error analyses, transfer of training, remedial techniques, and evaluation.

Mr. Erickson

#### 137B. The Teaching of Secretarial Subjects.

(Formerly numbered 370A and 370D.) A survey and evaluation of procedures and materials used in teaching typewriting, secretarial subjects, office practice and business machines.

Mr. Erickson

#### 137C. The Teaching of Bookkeeping, General Business, and Economics.

(Formerly numbered 370B-370C.) A survey and evaluation of the procedures and materials used in teaching bookkeeping, general business, and economics in secondary schools.

Mr. Erickson

### 199. Special Studies. (½ to 2 courses)

Prerequisite: senior standing and consent of the instructor. Independent study of individual problems.

The Staff

#### Graduate Courses†

### 200A-200B-200C. Research Method in the Cultural Foundations of Education.

#### 200A. Historical Research and Reporting.

Technique of historical research, independent investigation, and writing on selected topics. For all students planning to pursue nonstatistical research.

Mr. S. Cohen

#### 200B. Survey Research Methods in Education.

(Formerly numbered 200A.) Prerequisite: course 210A or the equivalent. Problems of conceptualization, organization and gathering non-experimental and quasi-experimental quantitative data.

Mr. Weinberg

#### 200C. Analysis of Survey Data in Education.

Three class hours, two hours laboratory. Prerequisite: course 200B. Introduction to techniques of processing and analyzing non-experimental and quasi-experimental quantitative data.

### 201A-201B-201C. History of Education.

#### 201A. History of Western Education.

The rise of the Western educational tradition; major ideas, institutions, personalities. From the world of the Greeks to that of the Twentieth Century.

Mr. S. Cohen

#### 201B. History of American Education to 1860.

Development of American education from the 17th Century to the Civil War. The emergence of the public school system in the context of social, intellectual and political change.

Mr. S. Cohen

#### 201C. History of American Education, 1860 to Present.

Emphasis on problems of urbanization, industrialization, immigration and public school reform; contemporary school reform movements in context of social change.

Mr. S. Cohen

### 204A-204D. Comparative Education.

#### 204A. Comparative Education.

(Formerly numbered 104 and 204A-204B.) Analysis of the educational systems of representative developed and emerging nations in relation to

† Open only to students in graduate status. Consent of the instructor is required. All courses four class hours except where otherwise indicated.

national cultures and characteristics; consideration of the problems of educational borrowing and adaptation among nations. Mr. W. Jones

#### 204B. African Education.

(Formerly numbered 253C-253D.) Prerequisite: course 204A. Historical development and comparative analysis of educational policies and practices in sub-Saharan Africa with special attention to the impact of social, political, and economic factors. Mr. W. Jones

#### 204C. Asian Education.

(Formerly numbered 253F.) Prerequisite: course 204A. Analysis of recent developments in education in South and East Asia as they are influenced by political, economic and cultural changes. Mr. Liesch

#### 204D. Latin American Education.

Formerly numbered 253E.) Prerequisite: course 204A. Status of education in relation to historical, social, political and economic factors; the educational programs of the Organization of American States and UNESCO in Latin America.

### 206A-206D. Philosophy of Education.

A comprehensive introduction to the entire field: systematic philosophy, including theories of knowledge, value, and ethics; existentialism; and analytic philosophy, including the logic and language of educational thought and practice. Though conceived as a unit, the course is divisible. Mr. Kneller and Staff

### 207. Economics and Education.

Analysis of the relationship between investment in education and the development of human resources.

### 208A-208B. Sociology of Education.

#### 208A. The Organization of Education.

Prerequisite: course 108. Analysis of the social and cultural systems of education; emphasis on the classroom and its environment; large organizational units and their relationships to societies. Mr. Gordon

#### 208B. Sociological Paradigms in Education.

Prerequisite: course 108 or equivalent. The adaptation of sociological paradigms to the analysis of educational systems. Models, typologies and conceptual systems on the subject of formal and informal organization, social disorganization, system functions, social change, role conflict, and the interaction of institutions are considered. Mr. Weinberg

### 209A-209B. Junior College and Higher Education.

#### 209A. The Junior College.

Study of the history and role of the junior college, and of problems and issues in junior college education. Mr. Yelvington

#### 209B. Higher Education in the United States.

An examination and appraisal of the scope and diversity of higher education; varieties of students, institutions, purposes, and programs; trends and current issues. Mr. Pace

### 210A-210B-210C. Educational Research and Experimental Design.

#### 210A. Analysis of Educational Research Data.

(Formerly numbered 114 and 200A-200B.) Basic inferential and descriptive statistics; design of simple educational experiments. Mr. Husek, Mr. Skager

#### 210B. Experimental Design in Educational Research.

(Formerly numbered 200A-200B.) Prerequisite: course 210A or placement examination. Analysis of variance and least square regression analysis in educational research; use of factorial designs, Latin squares, and multiple comparisons in educational experiments. Mr. Skager

#### 210C. Experimental Design: Advanced Topics.

(Formerly numbered 200A-200B.) Prerequisite: course 210B. Basic matrix algebra, orthogonality, confounding, fractional replication, incomplete block designs and introduction to multivariate analysis; emphasis on implications for educational research. Mr. Skager

### 211A-211B-211C. Measurement in Education.

#### 211A. The Measurement of Educational Achievement and Aptitude.

(Formerly numbered 119.) Two class hours, 4 hours laboratory. Prerequisite: course 210A. A critical study of tests of achievement and aptitude with an emphasis on group tests; the relation of achievement to aptitude and personality; elements of validity and reliability.

#### 211B. Measurement in Education: Underlying Theory.

(Formerly numbered 214A-214B.) Prerequisite: course 211A. Measurement theory as applied to testing, including classical test theory and other approaches to the nature of testing; implications of theories for test construction and selection; current status of validity and reliability theory. Mr. Husek, Mr. Skager

#### 211C. Measurement in Education: Special Problems and Techniques.

(Formerly numbered 214A-214B.) Two class hours, four hours laboratory. Prerequisite: course 211B. Introduction to special techniques and problems in measurement, including Q-methodology, the semantic differential, Cloze procedure, cross-cultural measurement problems, item analysis, pattern analysis, Guttman scaling and response sets. Mr. Husek, Mr. Skager

### 212A-212B-212C. Learning and Education.

#### 212A. Learning and Education.

(Formerly numbered 210, 211 and 212.) A review of the literature on school learning, and the development of intellectual abilities in relation to instructional procedures. Mr. Keislar

#### 212B. The Teaching of Concepts.

(Numbered 212C in 1966-1967.) Prerequisite: course 210A and Psychology 112C. A critical review of the literature on the learning of concepts and of hierarchically ordered subject matter with emphasis on the stimulus variables involved in teaching. Mr. Wittrock

#### 212C. The Teaching of Problem Solving Abilities.

(Numbered 212D in 1966-1967.) Prerequisite: course 212B. A critical review of the literature on the cultivation of problem solving abilities, including learning how to learn, remote transfer, savings and creativity. Mr. Skager, Mr. Wittrock

### 213A-213B-213C. Pupil Personnel Services.

#### 213A. Fundamentals of Student Personnel Work.

(Formerly numbered 215A.) The formulation of objectives, analysis of ways of implementing guidance programs, and evaluation of the outcomes; emphasis on congruence between objectives, implementation, and evaluation. Mr. Seron

**213B. Legal and Ethical Bases of Student Personnel Work.**

(Formerly numbered 215B.) Prerequisite: course 213A. Ethical and legal codes relevant to pupil personnel services; relation of value systems and personality; case studies in the implications of personal values in counseling situations.

Mr. Seron

**213C. Group Process in Education.**

(Formerly numbered 258C.) Group productivity, leadership, social perception and attitude formation, decision-making, determination of group interaction variables and the effect of behavior changes in individuals and groups.

**214A-214B. Counseling Theory and Practice.**

(Formerly numbered 258A-258B.) Prerequisite: limited to candidates for advanced degrees whose major interest is counseling, and to selected high school and college counselors. Counseling procedures, educational planning, and methods for helping students handle personal problems that interfere with school progress; critical evaluation of procedures.

Mr. Sorenson

**214C. Principles of Career Planning.**

(Formerly numbered 217.) Prerequisite: courses 112, 211A and 415A. The use of tests and occupational information in helping students in educational and vocational planning.

Mr. Barlow

**217A-217B-217C. Development and Personality in the Educational Process.****217A. Child Development and the Educational Process.**

Prerequisite: 212A or equivalent. Biological and familial, school, and other cultural influences on the child; development of the child in the context of current research and theoretical models; relationship between personality factors and cognitive functions in school settings. Mrs. Feshbach

217B. Intellectual Development and School Performance. Prerequisite: 210A or equivalent; 211B recommended. Individual differences including birth order, sensory stimulation and deprivation, sex, race and social class in relation to intellectual functioning, school achievement and aptitudes.

Mrs. Feshbach

**217C. Personality Development and Motivation in Education.**

(Numbered 212B 1966-1967) Personality development and environmental conditions which form motivational patterns; anxiety, dependency, perception, creativity, attitude formation and the self; research and personality theory bearing on motivational problems in school settings.

**228A-228D. Research on the Education of Exceptional Children.****228A. Research on the Education of Exceptional Children.**

Prerequisite: course 116. Historical-social origins and current social trends affecting the education of the exceptional; analysis of major research on educational programs, with emphasis on the physically handicapped.

Mr. Callaway, Mrs. Keogh

**228B. Research on the Education of the Mentally Retarded.**

(Formerly numbered 228.) Prerequisite: course 116; 128A recommended. Intensive study of current research in biology, psychology and sociology

related to mental retardation; experimental programs; parent and community problems.

Mrs. Eklund

**228C. Research on the Education of the Educationally Handicapped.**

Prerequisite: course 116; 128D recommended. Intensive study of current research on the emotionally disturbed and minimally neurologically impaired; experimental programs; parent and community problems. Mr. Hewett, Mrs. Keogh

**228D. Research on the Education of the Gifted.**

Prerequisite: course 116; 128E recommended. Intensive study of current research on the gifted, the talented and the creative; experimental programs; parent and community problems.

Mr. Callaway

**229A-229B-229C. Problems in the Education of the Exceptional.****229A. Problems in the Education of the Mentally Retarded.**

Two class hours, four hours laboratory. Prerequisite: course 228B. Individual research and participation in school programs for the mentally retarded.

Mrs. Eklund

**229B. Problems in the Education of the Educationally Handicapped.**

Two class hours, four hours laboratory. Prerequisite: course 228C. Individual research and participation in school programs for the emotionally disturbed and minimally neurologically impaired.

Mr. Hewett

**229C. Problems in the Education of the Gifted.**

Two class hours, four hours laboratory. Prerequisite: course 228D. Individual research and participation in school programs for the gifted.

Mr. Callaway

**232A-232B. Adult Education.**

Overview of the field, historical development, agencies and clientele, current problems and issues, including impact of new federal subsidies on adult education policies and programming.

Mr. Sheats

**240A-240E. Administration Core.****240A. Basic Theory and Inquiry.**

Two class hours, four hours extensive individual reading. Principles of administration applied to the organization and management of schools including systematic approaches to executive training. Emphasis placed on: (a) individualized readings, exercises, and examination in cognate fields, and (b) theoretical aspects of administration.

Mr. Lucio, Mr. Scribner

**240B. School Government.**

(Formerly numbered 240B-240C.) Prerequisite: course 240A or consent of instructor. Analysis of the organization of public education in the United States; legal and public policies supporting the system of public education.

Mr. Alkin, Mr. Scribner

**240C. School Personnel Administration.**

(Formerly numbered 244A-244B.) Prerequisite: course 240A or consent of instructor. The formulation and execution of personnel policies from both the organizational and individual basis.

Mr. Fawcett

**240D. School Finance.**

Prerequisite: course 240A or consent of the instructor. Historical and theoretical background of educational finance; considers principles related to federal and state participation in educational

finance; considers other economic factors related to the provision and utilization of financial resources in schools. Mr. Alkin, Mr. Lindman

**240E. Instructional Design and Supervision.**

(Formerly numbered 241A-241B-241C.) Prerequisite: course 240A or consent of instructor. Administrative-supervisory aspects of curriculum design and planning; school learning; program evaluation; and in-service training. Mr. Fielstra

**250. Seminar: History of Education.**

(Formerly numbered 250A-250B.) Mr. S. Cohen

**251A-251D. Seminar: Philosophy of Education.**

Mr. Kneller and Staff

**252A-252B. Seminars: Sociology of Education.**

252A. Educational Organizations. Mr. Gordon

252B. Education and Social Change.

Mr. Weinberg

**253A-253D. Seminars: Comparative Education.**

253A. Current Problems in Comparative Education.

(Formerly numbered 253A-253B.) Prerequisite: course 204A. Mr. W. Jones

253B. African Education.

(Formerly numbered 253C-253D.) Prerequisite: course 204B. Mr. W. Jones

253C. Asian Education.

(Formerly numbered 253F.) Prerequisite: course 204C. Mr. Liesch

253D. Latin American Education.

(Formerly numbered 253E.) Prerequisite: course 204D.

**255. Seminar: Special Topics in Measurement and Research Design.**

(Formerly numbered 256A-256B.) Prerequisites: courses 210C and 211C or consent of the instructor. Mr. Husek, Mr. Skager

**256. Seminar: Special Topics in School Learning and Development.**

(Formerly numbered 255A-255B.) Prerequisite: consent of the instructor.

Mrs. Feshbach, Mr. Keislar, Mr. Wittrock

**257. Seminar: Pupil Personnel Services.**

(Formerly numbered 258A-258B.) Mr. Sorenson

**258A-258B. Seminars: Instructional Research and Development.**

258A. Problems in Instructional Research.

(Formerly numbered 257A-257B.) Mr. Keislar

258B. Problems in Programmed Instruction.

(Formerly numbered 257C-257D.) Mr. Keislar

**259. Seminar: Social Psychological Research in Higher Education.**

(Formerly numbered 259B-259C.) Mr. Pace

**260. Seminar: Principles of Curriculum and Instruction.**

Mr. Goodlad, Mr. McNeil, Mrs. Tyler

**261A-261F. Seminars: Levels of Education.**

261A. Early Childhood Education.

(Formerly numbered 261A-261B.) Prerequisite: courses 421A-421B. Mrs. Margolin

261B. Elementary Education.

(Formerly numbered 262A-262B.) Mr. Dutton

261C. Secondary Education.

Mr. Vredevoe

(Formerly numbered 263 and 280A-280B.)

261D. The Junior College Curriculum.

(Formerly numbered 264A-264B.)

Mr. Johnson, Mr. Yelvington

261E. Technical Education in the Junior College.

(Formerly numbered 264C-264D.) Mr. Barlow

261F. Higher Education.

(Formerly numbered 254A.) Mr. Pace

**262A-262I. Seminars: Teaching Fields.**

262A. The Social Studies. Miss Crabtree

(Formerly numbered 262A-262B.)

262B. Reading.

Miss Warner

(Formerly numbered 262A-262B.)

262C. Mathematics.

Mr. Dutton, Mrs. Kipps

(Formerly numbered 262A-262B.)

262D. Language Arts and English.

Mr. Fleming

(Formerly numbered 262A-262B.)

262E. Science.

(Formerly numbered 262A-262B.) Mr. Troost

262G. Business Education.

(Formerly numbered 267A-267B.) Mr. Wanous

262H. Industrial Arts.

Mr. Monroe

262I. Vocational Education and Guidance.

(Formerly numbered 268A-268B.) Mr. Barlow

**263A-263B-263C. Seminars: Education of Exceptional Children.**

263A. Education of Exceptional Children.

Mr. Hewett, Mrs. Keogh, Mrs. Seagoe

263B-263C. Learning Disorders.

(Same as Psychology 276A-276B.)

Mr. Coleman

**267. Seminar: Educational Technology.**

(Formerly numbered 269B.) Prerequisite: course 433A; 418A, 419A and 433B recommended.

**269A-269B. Seminar: Inquiry into American Schooling.**

(Formerly numbered 254B.) Mr. Goodlad

**270A-270E. Seminars: Administration.**

270A. School Government.

(Formerly numbered 271.) Prerequisite: course 240B.

Mr. Scribner

270B. Personnel Management.

(Formerly numbered 272.) Prerequisite: course 240C.

Mr. Fawcett

270C. Educational Finance.

(Formerly numbered 271.) Prerequisite: course 240D.

Mr. Alkin, Mr. Lindman

270D. Instructional Design and Supervision.

(Formerly numbered 273.) Prerequisite: course 240E.

Mr. Fielstra

270E. Organizational Research.

(Numbered 270H in 1966-1967.)

Mr. Williams

## Professional Courses

**3324A-324B-324C. Supervised Teaching:****Elementary.**

Mr. McNeill and Staff

**334A. Supervised Teaching: Elementary. (1½ courses)**

(Formerly numbered 322C and 324A.)

**334B. Supervised Teaching: Elementary. (1½ courses)**

Prerequisite: course 324A.

**334C. Supervised Teaching: Supplementary Teaching in the Elementary School. (¼ to 1½ courses)****3328ER. Supervised Teaching: Educable Mentally Retarded. (1½ courses)**

Prerequisite: courses 128A and 128B.

Mr. McNeill and Staff

**3328SR. Supervised Teaching: Severely Mentally Retarded. (1½ courses)**

Prerequisite: courses 128A and 128C.

Mr. McNeill and Staff

**3329. Supervised Library Service. (½ to 1 course)**

(Formerly numbered 328L.) Prerequisite: limited to students or alumni of the UCLA School of Library Service.

Mr. McNeill and Staff

**3330A-330B-330C. Supervised Teaching:****Secondary.**

Mr. McNeill and Staff

**330A. Supervised Teaching: Secondary.****330B. Supervised Teaching: Secondary.**

Prerequisite: course 330A.

**330C. Supervised Teaching: Supplementary Teaching in Secondary School.**

(Formerly numbered 330E.)

**3334A-334B. Supervised Teaching: Junior College.**

Mr. A. Cohen and Staff

**334A. Supervised Teaching: Junior College.**

Prerequisite: course 431, or 130 and 209A.

**334B. Supervised Teaching: Junior College. (½ course)**

Extension of scheduling for 334A to permit articulation with semester system in participating junior colleges.

**413A-413B-413C. Participation in Pupil Personnel Work.****413A. School Participation in Pupil Personnel Work. (½ to 1½ courses)**

(Formerly numbered 413 and 415.) Two class hours, four to eight hours field work. Prerequisite: limited to majors in pupil personnel services. Laboratory experience in counseling students in public schools.

**413B. School Psychology in Pupil Personnel Services.**

(Formerly numbered 418.) Two class hours, four hours field work. Prerequisite: limited to majors in pupil personnel services. Laboratory experience in working with problems of students and schools as a school psychologist.

Mrs. Feshbach

**413C. Clinic Participation in Pupil Personnel Work.**

(Formerly numbered 416.) Two class hours, four hours field work. Prerequisite: limited to majors in pupil personnel services. Laboratory experience in diagnostics and treatment of problems of students in a clinic setting.

Mr. Seron

**415A-415B. Appraisal of Individuals in Schools.****415A. The Appraisal of Intelligence.**

(Numbered 215A in 1966-67.) Prerequisite: courses 210A and 211A. The development of cognitive functioning in relation to intelligence testing; laboratory experience in individual testing.

Mrs. Feshbach

**415B. The Appraisal of Personality.**

(Numbered 215B in 1966-67.) Prerequisite: course 415A. The role of biological and cultural determinants in the development of personality structures; personality, interest and attitude testing; analysis of case studies.

Mrs. Feshbach

**416A-416B. The Appraisal and Guidance of the Handicapped.****416A. The Appraisal of Exceptional Children.**

(Numbered 216A in 1966-67.) Prerequisite: courses 116 and 415A. Individual appraisal of exceptional children with emphasis on the physically handicapped, mentally retarded, emotionally disturbed, neurologically handicapped and gifted; analysis of tests and diagnostic procedures; case studies.

Mr. Hewett, Mrs. Keogh

**416B. Guidance of the Handicapped.**

(Numbered 216B in 1966-67.) Two class hours, four hours field work. Prerequisite: course 116. Educational, vocational and personal guidance of the exceptional; parent counseling; career and training opportunities; community referrals.

Mrs. Keogh

**418A-418B. Programmed Instruction.****418A. Fundamentals of Programmed Instruction.**

(Numbered 218A in 1966-67.) Prerequisite: course 112. Survey of rationale and techniques in the field of programmed instruction including the development and empirical try-out of short programs, utilizing data on responses of typical learners; elements of program assessment.

**418B. Theory and Practice in Programmed Instruction.**

(Numbered 218B in 1966-67.) Prerequisite: courses 211A, 212A and 418A; 212C, 212D or 421C recommended. An advanced course in programmed learning; analysis of complex behaviors and instructional systems; interrelations between psychological theory and the design of instructional programs.

**419A-419B. Experimental Study of Educational Programs.****419A. Experimentation on Media of Communication and Instruction.**

(Formerly numbered 219A.) Prerequisite: course 210A. Analysis of basic methods used and results obtained in experiments on the development of

§ All candidates must (1) secure the approval of the Office of Student Services at least one quarter prior to assignment, including formal recommendation of the University Physician and evidence of suitable scholastic averages; and (2) apply to the Director of Supervised Teaching by the middle of the quarter preceding the assignment. All courses four class hours except where otherwise indicated.

knowledge, skills and attitudes through audio-visual communication media and other instructional programs.

#### 419B. Experimental Analysis of Instructional Program Variables.

(Formerly numbered 219B.) Two class hours, four hours laboratory. Prerequisite: courses 210A, 212A, 419A; 210B and 212B or 212C recommended. Advanced problems of methodology and rationale in the planning and conduct of experiments on the effects of psychologically defined variables in instructional programs; theory and techniques of laboratory and field experiments on instructional media.

### 420A-420B. Curriculum Inquiry.

#### 420A. Principles of Curriculum and Instruction.

(Numbered 220A in 1966-67.) Critical examination of the basic concepts underlying the determination of objectives, the selection and organization of learning experiences, and the evaluation process.

Mr. Popham, Mrs. Tyler

#### 420B. Evaluation of Curriculum and Instruction.

(Numbered 220B in 1966-67.) Prerequisite: course 420A. Ways of evaluating the effectiveness of curriculum and instruction, including assessment and improvement of teacher behavior and accomplishment.

Mrs. Tyler

### 421A-421B-421C. Early Childhood Education.

#### 421A. Curriculum Development in Early Childhood Education.

(Numbered 221A in 1966-67.) Critical study of early childhood education with implications for the curriculum in nursery school, kindergarten and primary grades.

Mrs. Margolin

#### 421B. Environmental Factors in Early Childhood Education.

(Numbered 221B in 1966-67.) Development of culturally significant school programs derived from an examination of preschool and nonschool experiences of young children.

Mrs. Margolin

#### 421C. Cognitive Education of the Young Child.

(Numbered 221C in 1966-67.) Prerequisite: courses 210A, 212A and 421A. A critical review of the experimental literature on the cultivation of intellectual abilities in the young child; the teaching of discrimination skills and the use of language; research methods in cognitive education including the use of instructional materials.

Mr. Keislar

### 424A-424E. The Curriculum.

#### 424A. The Social Studies in the Curriculum.

(Numbered 224A in 1966-67.) Advanced study in social studies curriculum development; problems in defining objectives and organizing single- and multidisciplinary programs; critical review of literature on children's cognitive and affective learning in social science, with emphasis on experimental study of instructional programs.

Miss Crabtree

#### 424B. Reading in the Curriculum.

(Numbered 224B in 1966-67.) Prerequisite: courses 124B and 210A. Study of reading curricula and instructional procedures, with emphasis on the rationale and research underlying their development and the research comparing their effectiveness.

Miss Warner

#### 424C. Language in the Curriculum.

(Numbered 224C in 1966-67.) Advanced study in the school language curriculum; application to the improvement of the curriculum in the field.

Mr. Fleming

#### 424D. Mathematics in the Curriculum.

(Numbered 224D in 1966-67.) Prerequisite: courses 124C and Mathematics 38. Study of the school mathematics curriculum; the new mathematics; evaluation procedures.

Mr. Dutton, Mrs. Kippes

#### 424E. Science in the Curriculum.

(Numbered 224E in 1966-67.) Prerequisite: courses 124C and 210A. Study of current research problems, findings, methodology and design in school science with emphasis on application to and improvement of instruction; new types of courses; curriculum development; instructional techniques.

Mr. Troost

### 428. Internship in the Education of Exceptional Children.

Two class hours, six hours field work. Prerequisite: courses 228A-228B-228C-228D, 416A and one course from 229A through 229C.

### 430. The Secondary School Curriculum.

(Numbered 230A in 1966-67.) Prerequisite: course 420A. Development of newer curriculum offerings in the light of the purposes of secondary education; analysis of philosophical, psychological and sociological bases for selection of learning experiences.

Mr. McNeill

### 431. The Junior College Curriculum.

(Numbered 231 in 1966-67.) Trends, practices, problems, and issues in the development and implementation of junior college curricula and instructional procedures as they relate to the functions of the two-year college and the characteristics of junior college students.

Mr. A. Cohen

### 433A-433B. Educational Technology.

#### 433A. Instructional Product Research.

Prerequisite: course 112 or 130. An examination of the procedures employed in the systematic development of instructional products. Students acquire competencies associated with those procedures.

Mr. Popham

#### 433B. Technological Development in Educational Media.

(Numbered 233B in 1966-67.) Two class hours, four hours laboratory. Prerequisite: courses 112 and 433A; 210A and 212A recommended. Theory, current problems, and anticipated trends in instrumentation and systems development for instructional applications and research; including computer-aided instruction, communication satellites, and other advanced systems; theory and laboratory practice with instrumentation in educational research.

### 436A-436E. Business Education.

#### 436A. Principles and Problems of Business Education.

(Numbered 236A in 1966-67.) Historical development and principles, practices, and problems in business education in secondary schools and colleges.

Mr. Erickson

#### 436B. Business Education in Secondary and Higher Education: Advanced.

(Numbered 236B in 1966-67.) Advanced study in business education with a critical analysis of significant research applicable to curriculum and teaching practices.

Mr. Erickson

#### 436C-436D. Education in Family Finance.

Prerequisite: credit toward advanced degrees by petition only. Theories, principles, concepts and

research relating to sound personal and family financial management. Mr. Erickson

436E. Evaluation and Field Research in Family Finance Education.

Concepts and principles relating to family finance education and their application to teaching situations. Mr. Erickson

#### 437A-437B-437C. Technological Change and Business Education.

437A. Educational Principles Relating to Business and the Economy.

(Numbered 237A in 1966-67.) Theories, principles and concepts relating to an understanding of the business and economic system; their application to teaching in the secondary school.

Mr. Erickson, Mrs. Kourilsky

437B. Corporate Educational Programs.

(Numbered 237B in 1966-67.) History and scope of corporate training programs; current educational problems in training programs within industry as they are affected by automation and technological change.

437C. Curriculum in Electronic Computers.

This course deals with courses of study, instructional materials, methods of presentation and evaluation of a number of programs in automated information processing for high schools and junior colleges. Mr. Wanous

#### 438A-438B. Vocational Education.

(Formerly numbered 238A-238B.) Prerequisite: course 100 or the equivalent. An advanced course in the principles of vocational education from the point of view of supervisory and administrative personnel. Mr. Barlow

#### 439A-439B. Industrial Arts Education.

439A. Industrial Arts Education: Principles and Programs.

(Formerly numbered 239A.) Prerequisite: baccalaureate degree with background of industrial arts instruction. The purposes and processes in industrial arts in the secondary school with their implications in a technological society. Mr. Monroe

439B. The Industrial Arts Curriculum in Secondary Schools.

(Formerly numbered 239B.) Objectives, organization and presentation of subject matter in industrial arts; adaptation to individual interest. Mr. Monroe

#### 440. Internship in Administration.

(Formerly numbered 441, 442, 446 and 447.) Two class hours, six hours field work. Prerequisite: approval of the Area of Administrative Studies.

Mr. Williams, Mr. Yelvington

#### 441A-441D. Administration Specializations.

441A. Elementary School Administration.

(Numbered 241A in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of elementary school administration and supervision in varied organizational structures. Mr. Lucio

441B. Secondary School Administration.

(Numbered 241B in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of secondary school administration and supervision in varied organizational structures. Mr. Vredevoe, Mr. Williams

441C. School District Administration.

(Numbered 241C in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of school district administration and supervision in varied organizational structures. Mr. Fawcett

441D. Junior College Administration.

(Numbered 241D in 1966-67.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of junior college administration and supervision in varied organizational structures. Mr. Kintzer

#### 448. Internship in Junior College Administration.

(½ to 1 course)

May be repeated twice for credit.

#### 461A-461B. Seminar: Adult Education.

(Numbered 261G in 1966-67.) Prerequisite: course 232A-232B. Mr. Sheats

#### 470A-470B-470C. Seminars: Administration.

470A. Elementary School Administration.

(Numbered 270E in 1966-67.) Prerequisite: course 441A. Mr. Lucio

470B. Secondary School Administration.

(Numbered 270F in 1966-67.) Prerequisite: course 441B. Mr. Vredevoe

470C. Administration of Higher Education.

(Numbered 270G in 1966-67.) Prerequisite: course 441D. Mr. Johnson, Mr. Kintzer

#### Individual Study and Research

##### 596. Directed Independent Study.

(½ to 2 courses)

(Formerly numbered 297.) Individual study or research for graduate students. Maximum credit, three courses. The Staff

##### 597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination.

Individual study for master's degree comprehensive examinations or for qualifying examinations on the Ph.D. or Ed.D. Maximum credit, two courses. The Staff

##### 598. Thesis Research.

Research for and preparation of the master's thesis. Maximum credit, two courses. The Staff

##### 599. Dissertation Research.

(Formerly numbered 299A-299B.) Research for and preparation of the doctoral dissertation. Maximum credit, no limit. The Staff

## ENGINEERING

(Department Office, 7400 Boelter Hall)

Morris Asimow, Ph.D., Professor of Engineering.

Roy Bainer, M.S., Professor of Engineering and Professor of Agricultural Engineering, Resident at Davis.

- A. V. Balakrishnan, Ph.D., *Professor of Engineering and Mathematics.*  
 John L. Barnes, Ph.D., *Professor of Engineering.*  
 Joseph S. Beggs, D.Eng., *Professor of Engineering.*  
 Alexander W. Boldyreff, Ph.D., *Professor of Engineering.*  
 Albert F. Bush, M.S., *Professor of Engineering and Public Health.*  
 Harry W. Case, Ph.D., *Professor of Engineering and Psychology.*  
 Andrew Charwat, Ph.D., *Professor of Engineering.*  
 Reno R. Cole, M.S., *Professor of Engineering.*  
 Edward P. Coleman, Ph.D., *Professor of Engineering.*  
 C. Martin Duke, M.S., *Professor of Engineering.*  
 Robert S. Elliott, Ph.D., *Professor of Engineering.*  
 J. Morley English, Ph.D., *Professor of Engineering.*  
 Gerald Estrin, Ph.D., *Professor of Engineering.*  
 Alan E. Flanigan, Ph.D., *Professor of Engineering.*  
 A. Theodore Forrester, Ph.D., *Professor of Engineering and Physics.*  
 Kurt Forster, Ph.D., *Professor of Engineering.*  
 Louis L. Grandi, M.S., *Professor of Engineering.*  
 Warren A. Hall, Ph.D., *Professor of Engineering, Resident at Riverside.*  
 John C. Harper, D.Sc., *Professor of Engineering and Agricultural Engineering, Resident at Davis.*  
 Samuel Herrick, Ph.D., *Professor of Engineering and Astronomy.*  
 W. D. Hershberger, Ph.D., *Professor of Engineering.*  
 Thomas E. Hicks, Ph.D., *Professor of Engineering.*  
 W. C. Hurty, M.S., *Professor of Engineering.*  
 Walter J. Karplus, Ph.D., *Professor of Engineering.*  
 W. Julian King, M.E., *Professor of Engineering.*  
 William J. Knapp, Sc.D., *Professor of Engineering.*  
 Eldon L. Knuth, Ph.D., *Professor of Engineering.*  
 Cornelius T. Leondes, Ph.D., *Professor of Engineering.*  
 Tung Hua Lin, D.Sc., *Professor of Engineering.*  
 John H. Lyman, Ph.D., *Professor of Engineering and Psychology.*  
 Joseph W. McCutchan, M.S., *Professor of Engineering.*  
 William C. Meecham, Ph.D., *Professor of Engineering.*  
 Michel Melkanoff, Ph.D., *Professor of Engineering.*  
 Antony J. A. Morgan, Ph.D., *Professor of Engineering.*  
 Ken Nobe, Ph.D., *Professor of Engineering.*  
 Herbert B. Nottage, Ph.D., *Professor of Engineering.*  
 Russell R. O'Neill, Ph.D., *Professor of Engineering.*  
 Wesley L. Orr, C. E., *Professor of Engineering.*  
 Richard L. Perrine, Ph.D., *Professor of Engineering.*  
 Russell L. Perry, M.E., *Professor of Engineering and Agricultural Engineering, Resident at Riverside.*  
 Arthur F. Pillsbury, Engr., *Professor of Engineering.*  
 Louis A. Pipes, Ph.D., *Professor of Engineering.*  
 Lawrence B. Robinson, Ph.D., *Professor of Engineering.*  
 Thomas A. Rogers, Ph.D., *Professor of Engineering.*  
 Allen B. Rosenstein, Ph.D., *Professor of Engineering.*  
 Nicholas Rott, Ph.D., *Professor of Engineering.*  
 Francis R. Shanley, B.S., *Professor of Engineering.*  
 George H. Sines, Ph.D., *Professor of Engineering.*  
 Chauncey Starr, Ph.D., *Professor of Engineering.*  
 Antonin Svoboda, D.Tech.Sci., *Professor of Engineering in Residence.*

- Edward H. Taylor, M.S., *Professor of Engineering.*  
 William T. Thomson, Ph.D., *Professor of Engineering, Resident at Santa Barbara.*  
 Ralph M. Barnes, Ph.D., *Emeritus Professor of Engineering and Production Management.*  
 Charles T. Boehnlein, Ph.D., *Emeritus Professor of Engineering.*  
 Wendell E. Mason, M.S., M.E., *Emeritus Professor of Engineering.*  
 Daniel Rosenthal, Ph.D., *Emeritus Professor of Engineering.*  
 William F. Seyer, Ph.D., *Emeritus Professor of Engineering.*  
 Masanao Aoki, Ph.D., *Associate Professor of Engineering.*  
 Harry Buchberg, M.S., *Associate Professor of Engineering.*  
 Bertram Bussell, Ph.D., *Associate Professor of Engineering.*  
 Bonham Campbell, A.B., E.E., *Associate Professor of Engineering.*  
 Jack W. Carlyle, Ph.D., *Associate Professor of Engineering.*  
 Donald K. Edwards, Ph.D., *Associate Professor of Engineering.*  
 Traugott H. K. Frederking, Ph.D., *Associate Professor of Engineering.*  
 Ellis F. King, M.S., E.E., *Associate Professor of Engineering.*  
 Leonard Kleinrock, Ph.D., *Associate Professor of Engineering.*  
 William Klement, Jr., Ph.D., *Associate Professor of Engineering.*  
 Richard C. Mackey, M.S., *Associate Professor of Engineering.*  
 Ralph B. Matthiesen, Ph.D., *Associate Professor of Engineering.*  
 Rokuro Muki, Ph.D., *Associate Professor of Engineering.*  
 Philip F. O'Brien, M.S., *Associate Professor of Engineering.*  
 Moshe F. Rubinstein, Ph.D., *Associate Professor of Engineering.*  
 Frederick W. Schott, Ph.D., *Associate Professor of Engineering.*  
 Allen R. Stubberud, Ph.D., *Associate Professor of Engineering.*  
 William D. Van Vorst, Ph.D., *Associate Professor of Engineering.*  
 Jacques J. Vidal, Ph.D., *Associate Professor of Engineering.*  
 Andrew J. Viterbi, Ph.D., *Associate Professor of Engineering.*  
 Paul K. C. Wang, Ph.D., *Associate Professor of Engineering.*  
 Jack Willis, B.Sci., *Associate Professor of Engineering.*  
 Cavour W. Yeh, Ph.D., *Associate Professor of Engineering.*  
 Algirdas A. Avizienis, Ph.D., *Assistant Professor of Engineering.*  
 Ronald F. Bauer, Ph.D., *Assistant Professor of Engineering.*  
 Douglas N. Bennion, Ph.D., *Assistant Professor of Engineering.*  
 Ivan Catton, Ph.D., *Assistant Professor of Engineering.*  
 Chieh Chu, Ph.D., *Assistant Professor of Engineering.*  
 Richard Collins, Ph.D., *Assistant Professor of Engineering.*  
 Vernon E. Denny, Ph.D., *Assistant Professor of Engineering.*  
 Joseph J. DiStefano, Ph.D., *Assistant Professor of Engineering.*  
 Stanley B. Dong, Ph.D., *Assistant Professor of Engineering.*  
 John A. Dracup, Ph.D., *Assistant Professor of Engineering.*  
 Richard I. Emori, Ph.D., *Assistant Professor of Engineering.*  
 Robert C. Erdmann, Ph.D., *Assistant Professor of Engineering.*  
 Lewis P. Felton, Ph.D., *Assistant Professor of Engineering.*  
 William C. L. Hu, Ph.D., *Assistant Professor of Engineering.*  
 David Isaacs, Ph.D., *Assistant Professor of Engineering, Resident at Irvine.*  
 Dah-teng Jeng, Ph.D., *Assistant Professor of Engineering.*  
 William E. Kastenbergh, Ph.D., *Assistant Professor of Engineering.*  
 Robert E. Kelly, Sc.D., *Assistant Professor of Engineering.*  
 Allen Klinger, Ph.D., *Assistant Professor of Engineering.*  
 Peter Kurtz, Ph.D., *Assistant Professor of Engineering.*

Kenneth L. Lee, Ph.D., *Assistant Professor of Engineering.*  
 Nhan Levan, Ph.D., *Assistant Professor of Engineering.*  
 Panos A. Ligomenides, Ph.D., *Assistant Professor of Engineering.*  
 Peter W. Likins, Ph.D., *Assistant Professor of Engineering.*  
 Chung-Yen Liu, Ph.D., *Assistant Professor of Engineering.*  
 Ajit K. Mal, Ph.D., *Assistant Professor of Engineering.*  
 David F. Martin, Ph.D., *Assistant Professor of Engineering.*  
 Lawrence P. McNamee, Ph.D., *Assistant Professor of Engineering.*  
 Anthony F. Mills, Ph.D., *Assistant Professor of Engineering.*  
 Richard E. Mortensen, Ph.D., *Assistant Professor of Engineering.*  
 Joachim P. Neumann, Ph.D., *Assistant Professor of Engineering.*  
 Kanji Ono, Ph.D., *Assistant Professor of Engineering.*  
 Robert B. Parente, Ph.D., *Assistant Professor of Engineering.*  
 Neville W. Rees, Ph.D., *Assistant Professor of Engineering.*  
 Sanford B. Roberts, Ph.D., *Assistant Professor of Engineering.*  
 John A. Seeger, Ph.D., *Assistant Professor of Engineering.*  
 Lawrence C. Selna, Ph.D., *Assistant Professor of Engineering.*  
 Awtar Singh, Ph.D., *Assistant Professor of Engineering.*  
 Craig B. Smith, Ph.D., *Assistant Professor of Engineering.*  
 Frank W. Spaid, Ph.D., *Assistant Professor of Engineering.*  
 Oscar M. Stafsudd, Jr., Ph.D., *Assistant Professor of Engineering.*  
 Edwin B. Stear, Ph.D., *Assistant Professor of Engineering.*  
 Richard Stern, Ph.D., *Assistant Professor of Engineering.*  
 Tien-Fan Tao, Ph.D., *Assistant Professor of Engineering.*  
 Cadambangudi R. Viswanathan, Ph.D., *Assistant Professor of Engineering.*  
 Ahmed R. Wazzan, Ph.D., *Assistant Professor of Engineering.*  
 Gershon Weltman, Ph.D., *Assistant Professor of Engineering.*  
 Russell A. Westmann, Ph.D., *Assistant Professor of Engineering.*  
 Donald M. Wiberg, Ph.D., *Assistant Professor of Engineering.*  
 David A. Wismer, Ph.D., *Assistant Professor of Engineering.*  
 Joseph A. Wolf, Jr., Sc.D., *Assistant Professor of Engineering.*  
 Kung Yao, Ph.D., *Assistant Professor of Engineering.*



Robert M. L. Baker, Jr., Ph.D., *Lecturer in Engineering.*  
 Charles R. Boyd, Jr., Ph.D., *Acting Associate Professor of Engineering.*  
 John F. Brahtz, Ph.D., *Lecturer in Engineering.*  
 John C. Dillon, B.S., *Lecturer in Engineering.*  
 Julian S. Hatcher, Ph.D., *Lecturer in Engineering.*  
 Winfield B. Heinz, B.S., *Lecturer in Engineering.*  
 Julia B. Kessler, M.S., *Lecturer in Engineering.*  
 Melvin B. Kline, Ph.D., *Lecturer in Engineering.*  
 George J. Klir, Ph.D., *Lecturer in Engineering.*  
 Levi J. Knight, Jr., M.S., *Associate in Engineering.*  
 Leon Levine, M.S., *Lecturer in Engineering.*  
 Melvin W. Lifson, Ph.D., *Lecturer in Engineering.*  
 Fereidoun Mobasher, M.S., *Acting Assistant Professor of Engineering.*  
 Patricia M. Rubins, M.A., *Lecturer in Engineering.*  
 Yoshiyuki Sakawa, D.Eng., *Visiting Associate Professor of Engineering.*  
 Johanna E. Tallman, A.B., Cert. in Lib., *Lecturer in Engineering Bibliography.*  
 George J. Tauxe, M.S., *Lecturer in Engineering.*

Enrollment in engineering courses is permitted to students from other colleges who are undertaking curricula in which engineering courses are prescribed or recommended.

#### Lower Division Courses

### 6A. Use of Digital Computers in Engineering.

(½ course)

Lecture, two hours; laboratory, two hours. Prerequisite: Mathematics 11A (may be taken concurrently). Description, programming, and utilization of digital computers, with emphasis on the solution of engineering problems. Students will prepare, code, and run problems on a digital computer.

Mr. Melkanoff in charge

### 6B. Engineering Probability. (½ course)

Prerequisite: Mathematics 11C (may be taken concurrently). An introduction to discrete and continuous probability models, distribution functions, and their parameters, within the context provided by examples of random phenomena in engineering; some elementary concepts of parameter estimation from experimental data in engineering.

Mr. Carlyle in charge

### 9A-9B. Introduction to Humanities, the Arts, and Social Science.

(Formerly numbered 96A-96B.) Prerequisite: Subject A requirement satisfied. An introduction to humanities, the arts, social sciences and technology in the framework of lectures and discussions of human problems and the roots of our culture. Guest lecturers from the colleges of Fine Arts, Letters and Science, and Engineering. Mr. Weltman in charge

### 15A. Elementary Mechanics.

Prerequisite: Physics 1A; Mathematics 11A. Composition and resolution of force systems; equilibrium of rigid bodies; distributed forces; forces in trusses, frames, and cables; shear and bending moments in beams; moments of areas; friction; stress, strain, and deflection in axially loaded members; energy; virtual work.

Mr. Shanley in charge

### 15B. Elementary Mechanics.

Prerequisite: course 15A. States of stress and strain; stress-strain-temperature-time relationships; analysis and design of structural elements (pressure vessels, beams, torsion bars, springs, columns, joints); inelastic behavior; energy methods; strength under combined loading; stress concentration; fatigue.

Mr. Shanley in charge

### 16A. Introduction to Properties of Materials.

(Formerly numbered 4C.) Lecture, three hours; laboratory, three hours. Prerequisite: courses 6A-6B, Chemistry 1C, Mathematics 11C. Concurrent or prerequisite: Physics 1C. Importance of materials in engineering. Internal structure and general properties of metals, ceramics, and polymers. Experimental demonstration of important properties and illustration of their application in engineering design.

Mr. Neumann in charge

### 16B. Introduction to Design.

(Formerly numbered 4B.) Lecture, two hours; laboratory, four hours. Prerequisite: courses 6A-6B, Physics 1A. Introduction to elementary design, including experimental design, of a structure, machine, circuit, or process. Graphical computations and analyses and preparation of working drawings. In-

troduction to the general method of engineering design. Case studies of engineering designs, including possible field trips. Mr. McCutchan in charge

### 16C. Principles of Measurement and Instrumentation.

(Formerly numbered 4A.) Lecture, one hour; laboratory, seven hours. Prerequisite: courses 6A-6B; course 20A to be taken concurrently. Analysis of experimental data; basic standards and accuracy of measurements; error detection, compensation, and correction; input and output devices, transducers, instrumentation systems; static, steady state and dynamic signals; application to engineering systems.

Mr. Grandi in charge

### 20A. Circuit Analysis.

(Formerly numbered 100A.) Prerequisite: Physics 1C; Mathematics 13C (may be taken concurrently). Elements of electrical circuit analysis, with emphasis on solutions of passive linear lumped parameter circuit problems; analogues and duals; applications of steady state and transient analysis to linear electrical, mechanical, acoustic and thermal systems.

Mr. Mackey in charge

#### Upper Division Courses

Admission to junior status in the College of Engineering is determined on the basis of lower division grades and completion of the minimum subject requirements specified on page 86. Students who will have completed the first two years in the College of Engineering must present a C average in all work undertaken in order to be advanced to the upper division. Transfer students who have met the minimum subject requirements and are otherwise admissible to the University will be classified as juniors. For all students enrolled in the College of Engineering junior status is prerequisite to all upper division courses.

Students entering junior status with a course in statics should take Engineering 108A. A course in statics is not equivalent to either course 15A or course 15B. Students who have not had the equivalent of course 20A should take Engineering 100A.

### 100A. Circuit Analysis.

Prerequisite: Physics 1C; Mathematics 13C (may be taken concurrently). Primarily for transfer students. Not open to students who have had Engineering 20A. Elements of electrical circuit analysis, with emphasis on solutions of passive linear lumped parameter circuit problems; analogues and duals; applications of steady state and transient analysis to linear electrical, mechanical, acoustic and thermal systems.

Mr. Mackey in charge

### 100B. Field Theory and Energy Flow.

Prerequisite: courses 20A or 100A. A study of electrostatic and electromagnetic fields, of the interaction of fields and matter, and of fields in areas other than electrical. Energy in fields will be studied.

Mr. Rogers in charge

**100C. Systems, Signals and Noise.**

Prerequisite: courses 6A-6B, 20A or 100A, Mathematics 13C. Continuation of course 20A or 100A; application of transform methods to systems analysis; linear system input-output relations; signals and spectra; modulated signals; introduction to random signals, noise, and modern communication systems concepts. Applications to various contemporary engineering systems problems.

Mr. Kleinrock in charge

**100D. Information Processing Systems.**

Prerequisite: course 100C; Physics 1C. Concepts in analysis, design and utilization of information processing systems; representation of information; processing of information; formal representation of digital systems; components, building blocks, internal algorithms, programming systems; analogue processing systems.

Mr. Avizienis in charge

**101. Engineering, Its Role and Function in Human Society.**

Prerequisite: junior standing or consent of the instructor. Engineers and engineering technology as seen by both humanists and engineers, particularly as regards past accomplishments and future responsibilities and problems.

Mr. Rosenthal in charge

**102A. Dynamics.**

(Formerly numbered 102B.) Prerequisite: course 15B; Mathematics 13C. Fundamental concepts of dynamics; kinematics and kinetics of particles and rigid bodies in plane motion; motion relative to moving reference frames; work-energy and impulse-momentum relationships. Subjects are treated in terms of modern vector techniques.

Mr. Forster in charge

**102B. Intermediate Dynamics. (½ course)**

Prerequisite: course 102A. Potential theory and motion in potential fields; introduction to analytical dynamics; Lagrange's equations; general motion of rigid bodies in three dimensions.

Mr. Likins in charge

**103A. Elementary Fluid Mechanics.**

Prerequisite: course 105A. An introductory course dealing with the application of the principles of mechanics to the flow of compressible and incompressible fluids. Includes hydraulic problems of flow in closed and open conduits. Occasional field trips may be scheduled.

Mr. E. H. Taylor in charge

**104A. Experimental Engineering.**

Lecture, one hour; laboratory, seven hours. Prerequisite: completion of all required lower division engineering courses. Extension of theoretical analysis, research and design by experimental methods. Problems and projects involving materials and circuits in electrical, mechanical, thermal, structural, acoustical and fluid systems with primary emphasis on lumped parameters. Occasional field trips.

Mr. E. F. King in charge

**104B. Experimental Engineering.**

Lecture, one hour; laboratory, seven hours. Prerequisite: course 104A. Continuation of course 104A with problems and projects involving energy conversion and engineering systems but with emphasis on distributed parameters. Initiative, judgment and economy in design of experimental methods,

instrumentation selection, and use of computer facilities. Occasional field trips.

Mr. E. F. King in charge

**104C-104D. Experimental Engineering.**

Laboratory, eight hours. Prerequisite: completion of all required junior year engineering courses. The course will be organized into group projects of a design nature. Each project will be conducted by a group of eight students to carry it forward from the initial concept to its final construction and testing.

Mr. Bussell in charge

**105A. Engineering Thermodynamics.**

Prerequisite: upper division standing. Introduction to energy, heat, work, entropy, temperature, and states of matter. Zeroth, first, and second laws of thermodynamics. Processes involving closed systems. Graphical representation of thermodynamic processes. Ideal gases. Equations of state. Carnot theorem. Properties of pure substances. State diagrams.

Mr. Nobe in charge

**105B. Engineering Thermodynamics.**

Prerequisite: course 105A. Statistical thermodynamics. Calculations of thermodynamic functions for the perfect diatomic gas, perfect monatomic crystal, perfect electron gas, and photon gas. Thermionic emission. Fluctuations. Chemical equilibrium. Phase rule. Adiabatic reaction temperatures.

Mr. Nobe in charge

**105C. Transport Phenomena. (½ course)**

Prerequisite: courses 103A, 105B. Transport properties, viscosity, conductivity, and diffusivity. Formulation of transport rates for mass, momentum, energy, and molecular species. Engineering applications.

Mr. Edwards in charge

**106A. Principles of Engineering Economy.**

Prerequisite: upper division standing. Economic analysis of engineering projects; value systems; economic decisions on capital investment and choice of engineering alternatives; new projects, replacement and abandonment policies; risky decisions including make/buy policies and research investment; corporate financial practices and accounting.

Mr. English in charge

**106B. Theory and Methods of Engineering Design.**

Prerequisite: senior standing in engineering. Engineering design fundamentals; methodology and the design process; decision theory as applied to design; optimization processes and techniques; special analytical tools; student design projects. Students selecting group projects for 104C-D subsequently may integrate these with their 106B design projects.

Mr. Asimow, Mr. Brahtz in charge

**107A. Principles of Biotechnology.**

Prerequisite: junior standing in engineering or consent of the instructor. The principles of biological science are developed in an engineering context. An emphasis is placed on how physiological, psychological, and sociological factors affect the integration of man into environmental, informational and managerial systems by engineering means.

Mr. Lyman in charge

**108A. Strength of Materials.**

Prerequisite: a course in analytical mechanics—statics, and junior standing in engineering. Primarily for transfer students. Not open to students who have completed course 15A-15B. Force-deflection rela-

tionships; energy; states of stress and strain; stress-strain-temperature-time relationships; analysis and design of structural elements (pressure vessels, beams, torsion bars, springs, columns, joints); inelastic behavior; energy methods; strength under combined loading; stress concentration; fatigue.

Mr. Shanley in charge

### 109A. The Engineer and His Professional Duties.

(½ course)

Prerequisite: senior standing in engineering. Discussion and oral and written reports on subjects within sociohumanistic content of engineering. Foundations of engineering. Responsibility of the engineer. Professional ethics, codes and attitudes. Emphasis is on the development of concepts and communication of these concepts to others.

Mr. O'Neill in charge

### 110A. Passive Network Synthesis.

(Formerly numbered 119B.) Prerequisite: course 100C. Review of Laplace transforms and pole-zero representation. A comprehensive survey of modern techniques of driving point and transfer function synthesis. Introduction to active network synthesis and to approximation methods. Mr. Willis in charge

### 111A. Basic Magnetics.

Prerequisite: course 20A or 100A. Fundamentals of modern magneto theory and materials; the magnetic circuit; energy, force and circuit relations; characteristics of magnetic and permanent magnet materials; analysis of static electromagnetic systems—transformers and magnetic amplifiers, emphasizing the static magnetic amplifier.

Mr. Rosenstein in charge

### 111B. Electrical Power Operation and Distribution.

(Formerly numbered 118A.) Prerequisite: course 20A or 100A. Electrical power generation and distribution systems from the viewpoint of equipment, operations, transmission, distribution and system economics. Occasional field trips will be scheduled.

Mr. Grandi in charge

### 115A. Semiconductor Electronics.

Prerequisite: course 140A. Semiconductor theory, intrinsic and extrinsic semiconductors, transport of excess carriers, recombination processes. Semiconductor materials. Semiconductor electronics: p-n junction, transistors, small and large signal models, equivalent circuits. Secondary ionization, tunneling, semiconductor surfaces, inhomogeneous media.

Mr. Tao in charge

### 116A. Active Electronic Circuits I.

(Formerly numbered 115B.) Prerequisite: course 20A or 100A. Equivalent circuit modeling of electron devices. Device-circuit-environment interactions. Design of single-stage amplifiers. Introduction to cascaded stages, coupling problems and frequency response.

Mr. E. F. King in charge

### 116B. Active Electronic Circuits II.

(Formerly numbered 115C.) Prerequisite: course 116A. Electron device-circuit-environment interactions with emphasis on multistage amplifiers. Tuned amplifier considerations. Nonlinear situations requiring graphical method of solution. Emphasis on design techniques including economics, reliability and realization of performance specifications.

Mr. Bauer in charge

### 116C. Pulse and Digital Methods.

(Formerly numbered 115D.) Prerequisite: course 116A. Analysis and design of switching-mode electronic circuits and systems including pulse generation, logic operations, timing and frequency counting.

Mr. E. F. King in charge

### 117A. Electromagnetics I.

Prerequisite: course 100B or equivalent. Special relativity, static electric fields, potential theory, and boundary-value problems.

Mr. Elliott in charge

### 117B. Electromagnetics II.

Prerequisite: course 117A or equivalent. Continuation of Engineering 117A. Lorentz transformation of Coulomb's law to yield static magnetic fields. Magnetostatics. Transformation to yield Maxwell's equations. Integral solutions. Plane, cylindrical, and spherical waves. Poynting's theorem.

Mr. Elliott in charge

### 117C. Applications of Electromagnetic Theory.

(Formerly numbered 117B.) Courses 117A–117B or equivalent is recommended. Transmission lines, basic theorems concerning time harmonic fields and the behavior of electromagnetic radiation, particularly in the microwave range.

Mr. Schott in charge

### 117D. Applications of Electromagnetic Theory.

(Formerly numbered 117C.) Courses 117A–117B or equivalent is recommended. Behavior of fully and partially guided waves and cavity resonators, particularly in microwave range. Laboratory experiments and demonstrations.

Mr. Schott in charge

### 120A. Introduction to the Theory of Random Signals.

(Formerly numbered 184A.) Prerequisite: course 100C or equivalent. Basic methods of analysis for random variables and random signals encountered in communication, control, data processing, and analogous engineering fields.

Mr. Levan, Mr. Yao in charge

### 122A. Introduction to Linear Control and Systems.

(Formerly numbered 136A.) Prerequisite: Laplace Transform Theory. Introduction to the analysis and design of linear control and systems using techniques derived from transform theory; unified treatment of both continuous and sampled-data systems.

Mr. Leondes in charge

### 122B. State Space Theory of Control and Systems.

(Formerly numbered 136B.) Prerequisite: course 122A or consent of the instructor. Development of state space description of dynamic systems. Stability analysis and control system design using state space theory. Controllability and observability of systems. Reachable and recoverable regions for systems. Optimal control problems and the Pontryagin Maximum Principle. Final value controllers.

Mr. Aoki, Mr. Stabberud in charge

### 124A. Computer Applications: Ordinary Differential Equations.

(Formerly numbered 113A.) Prerequisite: senior standing in engineering; course 100C recommended. A comprehensive survey of the application of analog and digital computers to the solution of engineering problems governed by ordinary differential equations. Formulation of engineering problems, elements of analog and digital computer systems, numerical analysis, and sources of error.

Mr. Karplus, Mr. McNamee, Mr. Vidal in charge

**125A. The Logic Design of Digital Nets.**

(Formerly numbered 114B.) Prerequisite: course 100D. Application of Boolean algebra to the design of combinational logic nets; minimization procedures. Analysis and synthesis of sequential switching circuits; clocked and asynchronous operation. Effects of microelectronic technology on logic design optimization. Fault masking by redundancy techniques.

Mr. Bussell is in charge

**125B. Digital System Design.**

(Formerly numbered 114D.) Prerequisite: course 125A. Formal description of digital systems. Design of functional subsystems: arithmetic processors, storage systems, sequence generators. Organization and design of general-purpose digital computers and of special-purpose digital systems.

Mr. Avizienis, Mr. Bussell, Mr. Svoboda in charge

**125L. Programming Language and Translator Systems.**

Prerequisite: course 100D. Study and analysis of programming languages including assembly languages and some general-purpose compiler languages. Coding in Fortran, Algol, PL/I and a list processing language. Monitor systems. Basic translation techniques from compilers to machine languages.

Mr. Melkanoff in charge

**127A. Introduction to the Theory of Filtering and Detection.**

(Formerly numbered 186C.) Prerequisite: course 120A. An introduction to the modern theory of prediction and filtering of random signals, and some elements of the theory of detection of signals in noise; applications to communication, radar, and data processing.

Mr. Carlyle in charge

**127B. Introduction to the Theory of Information.**

(Formerly numbered 186B.) Prerequisite: course 120A or equivalent. An introduction to information measures and coding for sources and channels; Shannon's fundamental theorems on coding and channel capacity. Applications to communication systems and data processing.

Mr. Viterbi in charge

**130A. Intermediate Thermodynamics.**

(Formerly numbered 151A.) Prerequisite: course 105B. Review of fundamental principles and concepts of phenomenological thermodynamics with applications to chemical, physical and engineering systems. Principles and applications of statistical thermodynamics.

Mr. Nobe in charge

**131A. Intermediate Heat Transfer.**

Prerequisite: course 105C. Heat transfer by conduction in a stationary medium and by conduction and convection in a laminarily flowing fluid. Steady-state and transient conduction in solids. Heat transfer in laminar entrance flow in ducts and laminar boundary layer flows over surfaces.

Mr. Buchberg in charge

**131B. Intermediate Heat Transfer.**

Prerequisite: course 131A. Heat transfer by conduction and convection in turbulent flows. Convection involving changes of phase in boiling and condensation. Heat transfer by combined conduction, convection, and thermal radiation through nonabsorbing media.

Mr. Mills in charge

**131C. Radiative Transfer System Design.**

(Formerly numbered 150B.) Prerequisite: consent of the instructor. Analysis and synthesis of radiative transfer systems; radiant geometry among diffuse and specular surfaces; integral and finite-difference representations. Analog simulation; derivation of transfer functions and transfer matrices; analog and digital computers applied to design of thermal and luminous systems.

Mr. O'Brien in charge

**132A. Mass Transfer.**

Prerequisite: course 105C. The principles of mass transfer by diffusion. Mass transfer by convection in laminar and turbulent flows. Simultaneous heat and mass transfer. Applications including combustion of solids and volatile fuels, evaporation and condensation, ablation and transpiration cooling, gas absorption and catalysis.

Mr. Mills in charge

**133A. Propulsion.**

(Formerly numbered 153A.) Prerequisite: courses 103A, 105B. Thermodynamic properties of gases. Flows in channels, nozzles and rocket motors. Power plant cycle analysis. The turbojet engine and its variants. Ramjets and pulse jets. Combustion. Aerodynamic design elements of compressors and turbines. Elements of aircraft and rocket performance.

Mr. Spaid in charge

**134A. Direct Energy Conversion Systems.**

(Formerly numbered 154A.) Prerequisite: courses 100B, 103A, 105B. The physical basis, performance characteristics, and current engineering problems associated with direct energy conversion including thermoelectric, thermionic, photovoltaic, magnetohydrodynamic and electrochemical systems.

Mr. Buchberg in charge

**134B. Design of Solar Energy Utilization Systems.**

(Formerly numbered 150C.) Prerequisite: course 105B; 131A or 131C recommended. Nature and availability of solar energy; spectral radiation properties of materials; calculation techniques for irradiation of surfaces and net energy exchange; methods of solar energy collection, conversion, and storage; design of solar energy conversion systems for terrestrial and space needs.

Mr. Buchberg in charge

**135A. Nuclear Reactor Analysis and Design.**

(Formerly numbered 155A.) Prerequisite: Mathematics 13C. Introduction to nuclear reactor engineering design. Basic physics, neutron diffusion, slowing down, and elementary thermalization in homogeneous reactor cores. Multi-region reactors and multi-group diffusion theory.

Mr. Hicks in charge

**135B. Nuclear Reactor Analysis and Design.**

(Formerly numbered 155B.) Prerequisite: course 135A. Further basic nuclear reactor engineering design, emphasizing special physical phenomena in a power reactor. Includes time-dependent diffusion theory and effects of heterogeneity, control rods, temperature, poisoning, and long-term reactivity.

Mr. Hicks in charge

**137A. Chemical Equilibrium.**

Prerequisite: course 105B. Calculation of chemical potentials and activities, chemical reaction equilibrium constants, and phase equilibrium for ideal and real systems. Dynamic interpretation of equilibrium and introduction to chemical reaction rate expressions.

Mr. Bennion in charge

### \*137B. Chemical Engineering Separation Operations.

Prerequisite: course 137A. Principles of separation operations of particular importance in the chemical industry. Emphasis on repetitive (multistage) operations: distillation, absorption, extraction, etc.; isothermal and nonisothermal operations. Design principles. Mr. Denny in charge

### 137C. Applied Chemical Kinetics.

Prerequisite: course 137A. Mechanisms of chemical reactions that are of importance to industrial systems. Measurement of reaction rates and interpretation of kinetic data. Interaction between transport phenomena and chemical kinetics. Introduction to chemical reactor design and control. Mr. Bennion in charge

### 137D. Thermo-Chemical Processes.

Prerequisite: consent of the instructor. Application of the basic principles, of heat, mass, and momentum transport to the design, operation, and control of thermo-chemical systems. Typical systems include heat exchangers, chemical reactors, high pressure vessels, high vacuum systems, distillation and chromatographic columns. Mr. Denny in charge

### 138A. Cryogenics.

(Formerly numbered 158A.) Prerequisite: course 105B. Gas liquifaction; cooling methods; cryogenic techniques and associated transport phenomena, changes of state and phase; superfluids. Mr. Frederking in charge

### 140A. Solid State Fundamentals.

Prerequisite: junior standing in engineering. Introductory atomic concepts, quantum mechanical principles, energy levels in complex atoms, quantum statistics, crystal structure, energy levels in solids, band theory, transport phenomena. Mr. Viswanathan in charge

### 140B. Dielectric, Magnetic and Conductive Properties.

Prerequisite: course 140A. Course 117A or equivalent recommended. Dielectric polarization; ferroelectric and piezoelectric materials; magnetization density. Diamagnetism, paramagnetism, ferromagnetism, antiferromagnetism, ferrimagnetism. Para- and ferromagnetic resonance. Tensor permeability. Statistical derivation of Ohm's and Joule's Laws for metallic conductors. Fermi energy. Debye theory of specific heat. Weidmann-Franz Law. Time-harmonic conductivity. Mr. Elliott in charge

### 141. Structure, Phase Relations and Thermodynamics of Condensed Matter.

Prerequisite: course 105A-105B. Structure and stability of solids, liquids and glasses; phase diagrams; thermodynamics of phase transformations, multicomponent systems, crystal imperfections and interfaces. Mr. Klement in charge

### 143A. Mechanical Behavior of Solids.

Lecture, three hours; laboratory, three hours. Prerequisite: junior standing in engineering. Elastic and plastic properties of solids, microstructural effects, dislocations, strengthening mechanisms and fracture mechanics. Mr. Ono in charge

### 145A. Crystal Structure and X-Ray Diffraction.

Lecture, three hours; laboratory, three hours. Pre-

\* Not to be given, 1968-1969.

requisite: junior standing in engineering. Fundamentals of crystallography; stereographic projection; X-rays; diffraction of X-rays by crystals; determination of a cubic lattice by powder method; determination of crystal orientation by back reflection Laue method; structural and phase changes; electron and neutron diffraction.

Mr. Neumann in charge

### 146A. Processing and Structure of Ceramics.

Prerequisite: course 105B. The nature of typical ceramic raw materials, and unit operations involved in processing ceramics. Bonding in ceramics and relation to crystal structure. Structure of ionic crystals, the silicates, and glasses. Structural defects, surfaces and interfaces. Mr. Kurtz in charge

### 146B. Properties of Ceramics.

Prerequisite: course 146A or consent of the instructor. Physical and chemical bases for studying the properties of ceramics. The relationship of crystal structure, microstructure and defects to properties including elastic, strength, deformation under load, thermal and electrical. Some applications of thermodynamics to systems of ceramic materials.

Mr. Knapp in charge

### 146C. Properties of Art Ceramic Materials.

(Formerly numbered 146B.) Prerequisite: Art 190. Composition of art ceramic materials and products. Properties of ceramic bodies and glazes, and calculation methods used in expressing composition. Occasional field trips will be scheduled. (For students in Fine Arts.) Mr. Knapp in charge

### 147A. Introduction to Physical Metallurgy.

Lecture, three hours; laboratory, three hours. Prerequisite: upper division standing in engineering, physics, or chemistry and an introductory course in thermodynamics. Structures and properties of metals and alloys. Influences of mechanical and thermal treatments. Plastic deformation, work hardening, and recrystallization. Grain growth. Distribution of phases in alloys. Alloy diagrams. Solution hardening. Diffusion hardening. Precipitation hardening. The iron-carbon system. Mr. Flanagan in charge

### 147B. Materials and Processes for Design.

Prerequisite: senior standing in engineering. Introduction to principles of materials science and processes required to convert ideas into engineering designs and designs into products, machines and structures. Subjects covered are alloys, mechanical properties, heat treatment, casting, metal forming, metal removal, powder metallurgy and welding.

Mr. Cole in charge

### 150A. Intermediate Fluid Mechanics I.

Prerequisite: course 103A. Equations of motion for inviscid incompressible flow. Vorticity equation, Kelvin's Theorem. Introduction to complex variable theory. Equations of motion for viscous incompressible flow. Navier-Stokes equations. Exact asymptotic and similarity solutions. Approximate methods of solution. Lubrication theory. Introduction to turbulent flow. Mr. Meecham in charge

### 150B. Intermediate Fluid Mechanics II.

Prerequisite: course 103A. Inviscid compressible flow. Concepts from thermodynamics. One-dimensional gas dynamics. Normal and oblique shock waves. Prandtl-Meyer flow. Shock-expansion theory. Flow in ducts and wind-tunnels. Unsteady one-dimensional characteristics. Small perturbation theory in supersonic flow. Similarity rules of high

speed flow. General method of characteristics for steady supersonic flow. Introduction to kinetic theory of gases. Maxwell-Boltzmann equation of motion.

Mr. Charwat in charge

### 153A. Engineering Acoustics.

(Replaces 124A.) Prerequisite: senior standing. General acoustics—wave equation, solutions, reflection, transmission, sources, radiation. Propagation in fluids—viscosity, acoustics as fluid motion, characteristics, aeroacoustics, pulse jet, jet noise, boundary layer noise. Propagation in solids—elasticity, crystal lattices, dislocations, superconductivity. Selected topics—liquid helium, cavitation, etc.

Mr. Stern in charge

### 155A. Introduction to Mechanical Vibrations.

(Formerly numbered 160A.) Prerequisite: course 102A. Fundamentals of vibration theory and applications. Study of forced and transient vibrations. Two and multidegree of freedom systems. Matrix and iteration techniques. Lagrange's equations for small oscillations. Vibration and wave propagation in continuous systems.

Mr. Hurty in charge

### 158A. Elasticity and Plasticity.

(Formerly numbered 163A.) Prerequisite: Mathematics 13C (may be taken concurrently). Three-dimensional stress and strain. Criteria for prediction of mechanical failure. Differential equations in three dimensions; analytical, numerical, and experimental solutions of plane state and torsion problems. (Stress function, iteration, strain gages, photoelasticity.) Homogeneous plastic flow, fast fracture, elastic tensile instability.

Mr. Sines in charge

### 159A. Introduction to Continuum Mechanics.

Prerequisite: course 158A, senior standing in engineering or consent of the instructor. Elementary tensor analysis, the stress vector and the stress tensor, kinematics of deformation, material derivative, fundamental laws of continuum mechanics, conservation theorems, constitutive laws, and representative applications.

Mr. Mal, Mr. Morgan, Mr. Westmann

### 160A. Astrodynamics and Rocket Navigation.

(Formerly numbered 191A.) Prerequisite: Mathematics 18A. The practical application of celestial mechanics and allied fields to the navigation, guidance, and control of space vehicles and to related classical problems in astronomy.

Mr. Herrick in charge

### 160B. The Determination of Orbits.

(Formerly numbered 192B.) Prerequisite: course 160A or consent of the instructor. The theory, calculation, and differential correction of the preliminary orbits of space vehicles, comets, minor planets, and satellites. The Laplacian first approximation. The Leuschner differential correction.

Mr. Herrick in charge

### 161A. The Reduction of Observations.

(Formerly numbered 192A.) Prerequisite: Mathematics 13A; course 160A recommended. Astronomical photogrammetry, reduction of radar observations, and other techniques employed in the handling of astrodynamical observational data. The theory of space range system, Baker-Nunn cameras, range equipment, and anomalous luminous phenomena.

Mr. Baker, Mr. Herrick in charge

### 165A. Structures I.

Prerequisite: course 15B or 108A. Introduction to

basic structural systems: elementary trussed, flexural, and shell systems. Force-deflection properties. Energy methods, stability analysis. Design assignments.

Mr. Hurty in charge

### 165B. Structures II.

Prerequisite: course 165A. Extension of material in Structures I. Generalization of energy principles. General formulation of linear equations in structural analysis. Solution by relaxation and iteration. Introduction to matrix methods. Application to frames, rings, arches, cables.

Mr. Rubinstein in charge

### 166. Structures III.

Prerequisite: course 165B. Elements of stress and strain. Fundamentals of theory of elasticity and relation to mechanics of materials. Applications to plates, thick-walled cylinders, tapered beams, torsion. Unsymmetrical bending, shear analysis of stiffened thin-walled beams. Stability of columns, beam-column effects. Membrane theory of shells.

Mr. Rubinstein in charge

### 167. Design of Civil Structures.

Prerequisite: course 165B (may be taken concurrently with consent of the instructor). Design of structural systems such as bridges, buildings, etc. Introduction to optimization principles for components and for complete systems. An individual or group project to design a complete structural system.

Mr. Matthiesen in charge

### 166. Design of Aerospace Structural Systems.

Prerequisite: course 165B. Design of aircraft, helicopter, and space structures. External loadings and environment factors of safety; internal stresses; allowable stresses; applied theory of thin-walled structures; design for prevention of fatigue; selection of materials; optimization of configuration.

Mr. Shanley in charge

### 170C. Introduction to Optimization Techniques.

Prerequisite: knowledge of some programming and linear algebra. Concept of strategies, unconstrained optimization techniques, constrained optimization techniques, elementary topics in linear dynamic, integer and geometric programming, regression analysis. Students will solve problems on digital computers.

Mr. Aoki in charge

### 174A. Dynamic Programming.

(Formerly numbered 185B.) Prerequisite: Mathematics 13C. Introduction to mathematical analysis of multistage decision processes occurring in mathematical theory of control, in operations research and system analysis, and in mathematical economics; analytic formulation and numerical computation stressed; examples.

Mr. Wismer in charge

### 175A. Quality Engineering.

Lecture, four hours; laboratory, one hour. Prerequisite: courses 193A–193B or consent of the instructor. Statistical design of sampling plans and control procedures for attributes and variables data in accepting products, systems, processes; sample sizes, operating characteristics, other measures of effectiveness are derived and studied; national and international specifications and standards of quality; applications, reports.

Mr. Coleman in charge

### 175B. Reliability Engineering.

(Formerly numbered 183D.) Lecture, four hours; laboratory, one hour. Prerequisite: courses 193A–

193B or consent of the instructor. Probability, statistics, engineering in measuring, apportioning, estimating, predicting reliability; practical reliability applications of binomial, Poisson, exponential, gamma, chi-square, Gaussian and Weibull distributions; life testing, redundancy, design reviews; wear-out, failure rates, maintainability, availability, dependability, derating, stress-strength relations; RISK, confidence, applications, reports.

Mr. Coleman in charge

#### 176A. Engineering Organization and Administration.

(Formerly numbered 171A.) Prerequisite: senior standing in engineering. Principles of organization and administration are applied to engineering. The use of organization charts, the assignment of administrative responsibility, the use of job descriptions, job evaluation, and job analysis, and the selection, training, and supervision of technical employees will be discussed.

Mr. Case, Mr. Kline in charge

#### 177A. Economic Analysis of Engineering Investment.

Prerequisite: courses 106A and 193A. Extension of course 106A to include more advanced topics. Analysis of risk in engineering ventures, new project studies, economic feasibility analysis, research project selection. Elementary macro-economic principles.

Mr. English in charge

#### 178A. Kinematics of Mechanisms.

(Formerly numbered 161A.) Prerequisite: course 102A. The analysis and synthesis of plane and space mechanisms by means of vectors and geometry. Both graphical and analytical methods are used. The applications of fundamental mechanical movements to a wide variety of problems are considered.

Mr. Beggs in charge

#### 178B. Machine Design.

(Formerly numbered 162A.) Lecture, two hours; laboratory, six hours. Prerequisite: course 102A. Problems in the design of machine elements such as gears, shafts, and bearings, for rigidity, strength, wear, and fatigue life. Each student chooses a machine to be designed. The final design is defended in an oral examination before the class.

Mr. Beggs in charge

#### 179A. Systems Engineering.

(Formerly numbered 185A.) Prerequisite: Mathematics 13C (or former courses 110AB or 110C.) Mathematical bases for decision and programming in industry; models, methods, and objectives of systems engineering; specific methods and problems; emphasis placed upon practical validity and use of common-sense and empirical methods.

Mr. Boldyreff in charge

#### 179B. Operations Research—Problems and Methods.

(Formerly numbered 185C.) Prerequisite: course 179A. A continuation of course 179A, with emphasis on problem solving in operations research and including a number of research-type reports to be prepared by the students during the quarter.

Mr. Stubberud in charge

#### 180A. Environmental Biotechnology.

(Formerly numbered 130A.) Prerequisite: course 107A or consent of the instructor. Physical, physiological, and psychological aspects of the interaction between man and thermal, atmospheric, radiant, and mechanical agents and energies in the environment. Biological and physical requirements for engineering

control of the environment; applications to complex systems.

Mr. Weltman in charge

#### 180B. Machine and Systems Biotechnology.

(Formerly numbered 180B.) Prerequisite: course 180A or consent of the instructor. Quantitative and qualitative methods for assessing man as a component in engineering design applications. Limits and optima of human psychophysiological capabilities applied to display-control design, decision-making problems, and task definition; problems of man-machine interactions in large-scale systems.

Mr. Lyman in charge

#### 181A. Air Pollution Control.

(Formerly numbered 181A.) Prerequisite: senior standing or consent of the instructor. Quantitative consideration of the air resource and its management. Air quality measurements and standards. Systems for pollution removal. Industrial, commercial and community air pollution problems. Data analyses and interpretations. Lectures, occasional laboratory, and field trips.

Mr. Bush in charge

#### 182A. Air Conditioning and Refrigeration Principles.

(Formerly numbered 132A.) Prerequisite: senior standing or equivalent. Basic scientific principles applied to creating inhabited thermodynamic environments for life support and well-being. Breathing atmosphere properties and processes. Energy transfer and conversion networks. Refrigerant properties and processes. Man as a metabolic reactor. Introduction to confined ecologies. Selected case analyses.

Mr. Nottage in charge

#### 182B. Architectural Engineering Systems.

Prerequisite: senior standing or consent of the instructor. Scientific principles of value optimizations for the interrelated systems of inhabited complexes. Community and site; layout and functional integrations, handling of people, vehicles, and materials; utilities and communications; the inhabited environment; safety and disaster provisions. Case evaluations.

Mr. Nottage in charge

#### 182C. Luminous Environmental Control.

Lecture, three hours; laboratory, one hour. Prerequisite: consent of the instructor. Optimum design of components and systems for control of visible-range flux; daylighting and luminaire lighting in buildings and mobile structures; illumination and color distributions, interreflections, shadows, specular reflection, psychophysics and economics; radiant simulators and town planning. Field trips.

Mr. O'Brien in charge

#### 183A. Engineering of Underground Reservoirs.

(Formerly numbered 143A.) Prerequisite: Geology 111 or consent of the instructor. Oil and gas production mechanisms, aquifer behavior; thermodynamic relations, reservoir forces, fundamental equations; secondary recovery of oil.

Mr. Perrine in charge

#### 184A. Engineering Hydrology.

(Formerly numbered 175A.) Prerequisite: senior standing or consent of the instructor; elementary probability recommended. Study of the hydrologic cycle in its relationship to the development of water resources. Climate, storms, evapo-transpiration, river basin mechanics. Runoff, yield, flood analysis and forecasting, soil erosion and sediment transport, quality degradation. Possible field trips.

Mr. Dracup in charge

**184B. Hydraulics.**

(Formerly numbered 175B.) Prerequisite: course 103A. Principles of the flow of water in open and closed conduits. Steady and unsteady flow. Analysis and design of conveyance and distribution systems. Sediment transport. Hydraulic machinery.

Mr. E. H. Taylor in charge

**184C. Physical and Chemical Properties of Soils.**

(Formerly numbered 175C.) Prerequisite: consent of the instructor. The nature of soils; the weathering process and clay mineralogy; soil physics and chemistry; morphology and development; soil-plant-water relationships and interactions of management. One or two field trips included.

Mr. Pillsbury in charge

**184D. Water Resource Quality Control Systems.**

Prerequisite: senior standing in engineering or consent of the instructor. Water as a resource; the physical, chemical, and biological bases of pollution and degradation. Potability and chemical aspects of quality control and reclamation; analytical, economic, and performance aspects of systems design for prevention and treatment. Field trips.

Mr. Bush in charge

**184E. Water Resources Engineering.**

Prerequisite: senior standing in engineering or course 103A or consent of the instructor. Introduction to the hydrology of surface and groundwater supplies; floods, sediment transport, and their regulation; works for water storage, energy conversion, conveyance and distribution; utilization for agricultural and urban purposes; quality management; water law, planning, economics, and institutions.

Mr. Pillsbury in charge

**185A. Principles of Soil Mechanics.**

(Formerly numbered 164A.) Prerequisite: courses 15A-15B or 108A or Geology 108A. Soil as a foundation for structures and as a material of construction. Soil formation, classification, physical and mechanical properties, compaction, bearing capacity, earth pressures, consolidation and shear strength.

Mr. Duke in charge

**185B. Soil Mechanics—Laboratory Practices.**

(½ course)

Lecture, one hour; laboratory, three hours. Prerequisite: course 185A may be taken concurrently. Laboratory experiments to be performed by the students to get basic data required for assigned design problems. Soil classification, Atterburg limits, permeability, compaction, shear strength and specific gravity determination.

Mr. Lee in charge

**186A. Elements of Construction.**

(Formerly numbered 142A.) Lecture, two hours; laboratory, four hours. Prerequisite: senior standing in engineering. Anatomy of the industry, bidding and purchasing strategies, contracts, costs and economics, operations research in construction, planning and scheduling, equipment and materials, construction methods, field engineering techniques, observation and engineering analysis of current construction projects in the vicinity. Field trips.

Mr. Singh in charge

**187A. Urban Transportation Systems.**

(Formerly numbered 137A.) Lecture, three hours; laboratory, two hours. Prerequisite: junior standing in engineering. Functional analysis of rural and urban transportation needs and modes of accomplishment including private vehicles, trucks, busses, rail

rapid transit, helicopter and other aircraft; interrelationships among the various transportation modes and land-use planning.

Mr. Case in charge

**187B. Street and Highway Design.**

(Formerly numbered 137B.) Lecture, two hours; laboratory, four hours. Prerequisite: course 187A (may be taken concurrently). Design of street and highway systems and components including tangent sections, curves, interchanges, access facilities, traffic controls, parking facilities; suboptimizations on utility, safety, cost, properties of materials, maintainability, present needs, future needs; individual and group design assignments.

Mr. Case in charge

**187C. Traffic Engineering.**

Lecture, two hours; laboratory, four hours. Prerequisite: course 187A (may be taken concurrently). Elements of modern traffic engineering practice, including design, installation, and maintenance of uniform traffic control devices; channelization; parking, surface and multi-level parking structures; traffic flow theory; highway capacity; pedestrian traffic; traffic department management.

Mr. Case in charge

**187D. Human Factors in Transportation.**

Prerequisite: course 180A or consent of the instructor. Interaction of human and machine factors in land, air, sea, and space transportation; physical, physiological, and psychological performance demands upon human operators; trauma-producing forces, psychological and other stresses upon humans; mitigation by engineering design of these harmful effects upon humans.

Mr. Case in charge

**188A. Principles of Industrial Safety.**

(Formerly numbered 172A.) Prerequisite: junior standing in engineering. Delineation of the industrial accident prevention problem: statistical methods, plant layout, machine and process safeguards, applicable laws and codes, noise and other occupational health hazards, engineering and medical controls, explosion and fire prevention and protection, industrial traffic and safety organization.

Mr. Case in charge

**191A. Linear Systems Solutions By Transform Methods.**

(Formerly numbered 181A.) Prerequisite: courses 20A or 100A, 102A; Mathematics 18C. Formulation of equations for linear electrical and mechanical systems; application of the Laplace transform for their solution; introduction to the theory of a complex variable and contour integration; the inversion formula and application to partial differential equations.

Mr. Forster in charge

**192A. Mathematics of Engineering.**

(Formerly numbered 182A.) Prerequisite: junior standing in engineering; course 191A recommended. Applications of mathematical methods to engineering problems are considered involving systems whose mathematical formulation leads to the solution of ordinary differential equations. Topics include infinite series, matrix calculus, ordinary differential equations, and special functions.

Mr. Likins, Mr. Liu in charge

**192B. Mathematics of Engineering.**

(Formerly numbered 182B.) Prerequisite: course 192A. Applications of mathematical methods to engineering problems are considered. Elementary theories and methods of linear partial differential equations are presented. Basic techniques in solving

boundary value problems involving potential, heat and wave equations are emphasized.

Mr. Likins, Mr. Liu in charge

## 192C. Mathematics of Engineering.

(Formerly numbered 182E.) Prerequisite: course 192B. Practical introduction to nonlinear differential equations; representative applications; presentation of various analytical methods employed in solution of technical problems taken from fields of electrical, mechanical, and civil engineering. Topological, operational, Poincare, van der Pol, and Kryloff-Bogoliuboff methods; technical problems.

Mr. Pipes in charge

## 193A. Engineering Probabilities and Stochastics.

(Formerly numbered 183A.) Prerequisite: junior standing in engineering. Sets and set algebra; sample spaces; combinatorics; absolute and conditional probability; discrete and continuous random variables; probability distribution, increment, and density functions; Chebychev's inequality; Laplace-Fourier transforms; law of large numbers; central limit theorems; discrete and continuous stochastic processes.

Mr. J. L. Barnes in charge

## 193B. Engineering Statistics.

(Formerly numbered 183B.) Lecture, four hours; laboratory, one hour. Prerequisite: course 193A or consent of the instructor. Fundamental statistical concepts, population (system), sample parameter, statistics; significance tests, confidence limits, efficient computational procedures; risk, power functions, operating characteristic curves; simple and multiple regression, bivariate normal distribution; analysis of variance, applications in engineering and industry.

Mr. Coleman in charge

## 198. Special Courses. (½ to 1 course)

Prerequisite: senior standing in engineering; enrollment subject to approval of instructor in charge. May be repeated for credit toward the Bachelor's degree provided no duplication exists. Group study of selected topics. Study groups may be organized in advanced engineering subjects upon approval of instructor in charge. Occasional field trips may be arranged.

Mr. Rogers in charge

## 199. Special Studies. (½ to 1 course)

Prerequisite: senior standing, superior achievement, and consent of the instructor. May be repeated for credit toward the Bachelor's degree. Application forms for requesting enrollment may be obtained from the Assistant Dean, Undergraduate Studies. Occasional field trips may be arranged.

The Staff in charge

### Graduate Courses

## 210A. Advanced Circuit Theory.

Prerequisite: course 110A. General theory of two terminal pair networks; advanced techniques of transfer function synthesis; approximation in frequency domain; topological concepts; Fourier series techniques; time domain approximations; introduction to active network synthesis. Recent advances in circuit theory.

Mr. Bauer, Mr. Levan in charge

## 215A. Solid-State Electronics I: Quantum Techniques.

Prerequisite: course 140A. Quantum mechanical methods applied to the study of processes within solids. Interaction of radiation and matter, lattice vibrations (phonons), energy levels and bands in solids.

The Staff, Electronics and Electromagnetics Division

## 215B. Solid-State Electronics II: Metals, Semiconductors and Superconductors.

Prerequisite: course 115A and Physics 121. Basic theory of conductivity. Properties of semiconductors. Electronic processes within semiconductors; transport and optical phenomena. Applications. Superconductors: thermodynamic, electric, and magnetic properties.

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## 215C. Solid-State Electronics III: Quantum Electronics.

Prerequisite: course 140B and Physics 121. Paramagnetic materials. Masers. Lasers. Ferromagnetic materials. Ferrites. Optical effects in solids; nonlinear phenomena.

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## 216A. Network Theory in Solid-State Electronics.

Prerequisite: course 116B. Active network theory with particular reference to solid-state electronics. Design of multistage solid-state amplifiers for video, RF and IF; filter networks including negative impedance devices. Optimal system performance and device utilization. Integrated circuits, distributed networks and statistical network theory. Sensitivity considerations.

Mr. Willis in charge

## 216B. Electronic Device Seminar.

Prerequisite: course 116B. The critical examination of various electron devices with respect to their behavior and performance in system usage.

Mr. Mackey in charge

## 216C. Electronic Systems.

(Formerly numbered 215C.) Prerequisite: courses 116C, 216A, 216B. Analysis and synthesis of electronic systems. System design as influenced by signal spectra, modulation forms and characteristics of the propagating media.

Mr. Mackey in charge

## 217A. Electromagnetic Applications: Antennas.

Prerequisite: course 117C. Theory of antennas. Radiation integrals. Array theory. Self and mutual impedance. Aperture antennas. Pattern synthesis. Waveguide radiators.

Mr. Elliott, Mr. Schott in charge

## 217B. Electromagnetic Applications: Microwave Networks.

Prerequisite: course 117D. General waveguide theory. Variational solutions. Obstacles. Small aperture coupling. Matrix theory of junctions. Periodic structures.

Mr. Schott in charge

## 217C. Electromagnetic Applications: Wave-Particle Interactions.

Prerequisite: course 217B. Electron ballistics; space-charge waves on electron beams; behavior of traveling-wave tubes, backward-wave oscillators, klystrons; crossed-field devices. Waves in plasmas. Gyromagnetic phenomena.

Mr. Elliott in charge

## 218A. Electromagnetics Seminar: Antennas.

Prerequisite: course 217A. Advanced topics in antenna theory and practice.

Mr. Elliott in charge

## 218B. Electromagnetics Seminar: Microwave Circuits.

Prerequisite: course 217B. Advanced topics in guided wave structures.

Mr. Schott in charge

**218C. Electromagnetics Seminar: Plasmas.**

Prerequisite: course 217A. Description of motions of electrons and ions in fields. Boltzmann equation and transport equation. Ionization phenomena in gases. Plasma waves and resonances; the infinite medium and the bounded medium. Microwave plasma physics; diagnostic techniques. Applications. Current literature. Mr. Hershberger in charge

**218D. Electromagnetics Seminar: Microwave Tubes.**

Prerequisite: course 217C. A study of current problems in microwave tube design. Beam formation and maintenance. Bunching. Coupling. Noise. Band width and efficiency. Velocity distribution and nonlinear effects. Mr. Seeger in charge

**218E. Electromagnetics Seminar: Propagation.**

Prerequisite: course 217A. Advanced topics in electromagnetic wave propagation and in applied geophysics of interest to radio engineers. Propagation over a spherical earth. Mode theory of VLF and UHF propagation. Magnetotonic theory. Propagation of waves in random media. Current literature. Mr. Hershberger in charge

**220A. Queueing Systems: Theory and Applications.**

Prerequisite: course 120A. Analysis of queueing (waiting line) systems. Discrete- and continuous-time Markov processes; birth and death processes; renewal theory; single and multiple server queues. Priority queueing systems. Applications to communication systems, data-processing systems, time-shared processors, networks of computer and communication systems. Mr. Kleinrock in charge

**222A. Nonlinear Control and Systems.**

(Formerly numbered 186C.) Prerequisite: course 122B or consent of the instructor. Analysis and design of nonlinear continuous and sampled-data control systems using linearization and perturbation techniques, describing function techniques, phase plane techniques, Lyapunov's direct method and its extensions, applications to current problems. Mr. Stear, Mr. Wang in charge

**222B. Random Processes in Control and Systems.**

(Formerly numbered 236A.) Prerequisite: courses 120A and 122B or consent of the instructor. Second order theory of random processes and calculus in the mean; estimation of correlation functions and spectra; error analysis; classical Wiener filters; sequential estimation and filter theory; stochastic optimal control. Application to system analysis and design problems involving random processes. Mr. Rees, Mr. Stubberud in charge

**222C. Theory and Computational Aspects of Systems Optimization.**

(Formerly numbered 236B.) Prerequisite: course 122B or consent of the instructor. Variational theory of systems optimization, steepest descent in function spaces and Newton-Raphson computational techniques, linear and nonlinear programming, use of second variation to develop optimal feedback control laws. Discussion of actual computational experience with various algorithms. Mr. Leonides, Mr. Mortensen in charge

**222D. Advanced Topics in Control and Systems Theory.**

(Formerly numbered 236C.) Prerequisite: course 222C or consent of the instructor. Advanced topics in nonlinear control and systems theory based on

nonlinear functional analysis; nonlinear filtering and estimation, stochastic optimal control, adaptive and self-organizing systems, multilevel control systems, results of current research in control and systems theory. Mr. Aoki, Mr. Leonides in charge

**222E. Advanced Applications of Control and Systems Theory.**

Prerequisite: course 222C or consent of the instructor. In-depth treatment of selected areas of current interest in control and systems applications using advanced theory. Includes formulation of such problems through development of realistic and efficient mathematical models of underlying physical processes and effective, physically realizable solution of problems formulated. Mr. Stear, Mr. Wiberg in charge

**224A. Computer Applications Seminar.**

(Formerly numbered 218A.) Prerequisite: course 124A, graduate status in engineering. A discussion of the application of analog and digital computer techniques to complex engineering problems. Content to change from year to year. Mr. Karplus, Mr. Vidal in charge

**224B. Computer Applications: Partial Differential Equations.**

(Formerly numbered 218B.) Prerequisite: course 124A. A comprehensive survey of the solution of field problems governed by partial differential equations by means of automatic computers. Formulation of engineering problems as partial differential equations, analog simulation methods, digital simulation methods. Mr. Karplus, Mr. McNamee in charge

**225A. Computer System Design: Arithmetic Processors.**

(Formerly numbered 214B.) Prerequisite: course 125B. Concepts of number systems, digital numbers, algorithms; logic and organization of digital arithmetic processors; conventional arithmetic; algorithm acceleration; floating-point and significance arithmetic; redundant, signed-digit, residue number systems; error detection in digital arithmetic; algorithm evaluation by analysis and simulation. Mr. Avizienis, Mr. Svoboda in charge

**225B. Digital Computer Seminar.**

(Formerly numbered 214A.) Prerequisite: course 225A. Advanced topics in the field of digital computer systems. Program analysis, system synthesis, performance measures, formal description of complex systems. Mr. Bussell, Mr. Estrin in charge

**225L. Advanced Topics in Programming Systems.**

Prerequisite: course 125L. Detailed and comparative analysis of algebraic languages, commercial languages, simulation languages and list processing languages. Compiler theory and application to certain general purpose languages. Compiler design. Mr. Martin in charge

**225M. Special Topics in Computer Languages and Applications.**

Prerequisite: course 225L. Seminar in advanced topics of current interest in non-numerical applications of computers. Topics will include simulation, pattern recognition, advanced compiler theory, on-line time-sharing systems and utilization, multi-processing and processing control. Mr. Estrin, Mr. Melkanoff in charge

**227A. Advanced Theory of Detection.**

(Formerly numbered 286A.) Prerequisite: course 187A or equivalent. Statistical theory of detection as applied to communications, radar and data processing.

Mr. Yao in charge

**227B. Advanced Theory of Information.**

(Formerly numbered 286B.) Prerequisite: courses 127B, 227A. (Course 227A may be taken concurrently.) Advanced topics in the theory of information, including mutual information and channel capacity for discrete and continuous systems, coding methods and error bounds.

Mr. Kleinrock in charge

**227C. Mean Square Optimization Methods.**

(Formerly numbered 286C.) Prerequisite: course 187A; course 291A or equivalent recommended. Linear and non-linear optimization methods for single and multiple random processes in communication systems.

Mr. Viterbi in charge

**227D. Special Topics in Communication Systems Engineering.**

Prerequisite: courses 227A and 227B. Advanced topics in one or more special fields of current research interest, such as phase-coherent communication systems, optical channels, time-varying channels, feedback channels, algebraic coding, etc. Content of the course varies from quarter to quarter.

Mr. Balakrishnan in charge

**228A. Foundations of System Theory and State Space.**

Prerequisite: course 120A and Mathematics 131A; or course 122B or equivalent. Conceptual framework for discrete and continuous system theory in which the central notion is that of state space. Application to optimization problems in information systems.

Mr. Balakrishnan in charge

**228B. Theory of Discrete-State Systems.**

Prerequisite: courses 100D and 120A. Recommended: one of the courses 125A, 127B and 228A. Canonical models for discrete-time finite-state deterministic and stochastic systems. General relationships between internal structure and external behavior; topics in analysis, synthesis, and identification. Application to information systems problems.

Mr. Carlyle in charge

**230A. Advanced Topics in Thermodynamics.**

(Formerly numbered 251A.) Prerequisite: course 180A and consent of the instructor. A review of the fundamental notions of statistical and irreversible thermodynamics; applications to quantum phenomena by way of density matrix; calculation of Onsager phenomenological coefficients; student reports on current topics in thermodynamics.

Mr. Knuth in charge

**231A. Advanced Heat Transfer.**

Prerequisite: course 131B. Advanced topics on heat transfer from the current literature. Advanced methods for predicting transfer rates in turbulent or hydrodynamically unstable flows. Cellular convection, boiling, heat transfer in two-phase flow. Emphasis will change from year to year.

Mr. Catton in charge

**231B. Advanced Heat Transfer.**

Prerequisite: course 131B. Advanced topics on heat transfer from current literature. Advanced

methods for predicting transfer rates in thermal radiation emitting, absorbing, and scattering media. Radiation transport properties of walls, gases, and clouds of particles. Simultaneous radiation, conduction, and convection in absorbing media.

Mr. Edwards in charge

**231C. Advanced Thermal and Luminous Radiation.**

(Formerly numbered 254A.) Prerequisite: course 131C or equivalent. Radiative transfer in geometrically complex spaces; non-uniform radiant excitation and properties; spatial distribution of net transfer and radiance; non-gray spectral distributions; emphasis on matrix formulation; problems from current literature of space technology, heat transfer, illumination, colorimetry and photometry.

Mr. O'Brien in charge

**231D. Application of Numerical Methods to Transport Phenomena.**

Prerequisite: consent of the instructor. Numerical techniques for solving selected problems in heat and mass transfer. Applications include free convection, boundary layer flow, two-phase flow, separated flow, flow in porous media. Effects of concentration and temperature gradients, chemical reactions, radiation, electric and magnetic fields.

Mr. Denny in charge

**232A. Aerothermochemistry.**

(Formerly numbered 225A.) Prerequisite: courses 130A and 131B. Fundamentals: change equations for multicomponent reactive mixtures; rate laws; dimensionless parameters and characteristic times. Relaxation phenomena: dynamic equation of state; sound absorption and dispersion; bulk viscosity; relaxation times and reaction-rate constants. Applications: flows with reactions. Macroscopic descriptions are emphasized.

Mr. Knuth in charge

**232B. Advanced Mass Transfer.**

Prerequisites courses 131A, 132A. The formulation of the general convective heat and mass transfer problem including equilibrium and nonequilibrium chemistry. Similar and nonsimilar solutions for laminar flows; solution procedures for turbulent flows. Multicomponent diffusion. Application to the hypersonic boundary layer, ablation and transpiration cooling, combustion.

Mr. Mills in charge

**232C. Kinetic Theory and Molecular Flow.**

(Formerly numbered 223A.) Prerequisite: graduate standing. The molecular structure of gases; kinetic foundations of thermodynamics and gas-dynamics; physics of the upper atmosphere; aerodynamics in highly rarefied gases; gas-surface interactions; the Boltzmann equation; methods of analysis; experimental and theoretical results pertaining to the transitional flow regime; experimental techniques for research in rarefied gas dynamics.

Mr. Charwat in charge

**232D. Molecular Kinetics.**

(Formerly numbered 232B.) Prerequisite: consent of the instructor. Introduction to molecular kinetics; transport and reaction rates; particle-surface collisions. Introduction to quantum mechanics: molecular structure; elastic collisions. Advanced topics: bond energies; inelastic collisions; relaxations of internal degrees of freedom; absolute reaction rates; molecular-beam techniques. Molecular descriptions are emphasized.

Mr. Knuth in charge

**233A. Advanced Propulsion.**

Prerequisite: course 133A. Lagrange's ballistic problem. Propulsion analysis of the turbojet and ramjet engines. Rocket propulsion and stability of combustion processes in rocket engines. The selection of a propulsion device for accomplishing a specific mission. Mr. Knuth in charge

**235A. Nuclear Reactor Analysis.**

Prerequisite: course 135B. The analysis of nuclear reactor systems by analytical methods. Spatial and angularly dependent neutron transport theory in various approximations;  $P_n$ ,  $B_n$ ,  $S_n$ , and diffusion theory; the use of variational, Case, and Weiner Hopf methods. Mr. Erdmann in charge

**235B. Nuclear Reactor Analysis.**

Prerequisite: course 235A. The analysis of nuclear reactor systems by analytical methods. Energy dependent neutron transport theory, slowing down, resonance and thermalization theory by analytical and numerical techniques. Perturbation theory. Mr. Erdmann in charge

**235C. Nuclear Reactor Kinetics and Control.**

(Formerly numbered 236C.) Prerequisite: course 235A. Time dependent behavior of nuclear reactor systems. Analysis of the reactor as a lumped and distributed parameter system by modern methods of control theory. Analysis of neutron waves and pulses. Optimal control. Mr. Kastenbergs in charge

**236A. Nuclear Reactor Materials.**

Prerequisite: course 135B. The interaction of charged, uncharged and electromagnetic radiations with matter. Mechanisms and results of radiation damage in materials. Shielding. Mr. Smith in charge

**236B. Nuclear Reactor Systems.**

Prerequisite: course 135B. The major nuclear reactor systems, including nuclear power plants. Topics include thermal reactors, fast reactors, choice of materials for nuclear applications, energy removal in nuclear environments, fuel cycles and economics. Mr. Hicks in charge

**236C. Nuclear Reactor Design.**

Prerequisite: consent of the instructor. The design of nuclear reactors by analytical, experimental, and numerical methods. Study of nuclear reactor codes and handling of nuclear data. Numerical analogs of the differential equations governing reactor design. Mr. Smith in charge

**237A. Chemical Reactor Analysis.**

Prerequisite: course 137C. Principles of chemical kinetics, adsorption and catalysis for application to reactor design. Transport phenomena in reactor media. Mr. Perrine in charge

**237B. Chemical Reactor Design.**

Course 237A recommended. Optimal design of chemical reactors using dynamic programming, maximum principle and other optimization techniques. Transient behavior, stability analysis and optimal control of chemical reactors. Mr. Chu in charge

**238A. Cryogenics.**

Prerequisite: course 138A or transport phenomena or quantum physics or thermodynamics. The study of basic phenomena in low temperature systems including the third law, various cooling methods and superfluid systems. Emphasis will be placed on low-temperature research and current developments. Mr. Frederking in charge

**238B. Fundamentals of Electrochemical Kinetics.**

Prerequisite: one year physical chemistry or equivalent. Study of principles of electrode kinetics and other phenomena associated with metal-electrolyte interfaces. Some applications to engineering processes of current interest such as electrochemical energy conversion (i.e., fuel cells and batteries) and corrosion processes. Mr. Nobe in charge

**238C. Principles of Electrochemical Engineering.**

Prerequisite: one year physical chemistry or equivalent. Seminar on transport phenomena in electrochemical systems: relationships between molecular transport, convection, and electrode kinetics will be discussed along with applications to industrial electrochemistry, fuel cell design, and modern battery technology. Mr. Bennion in charge

**238D. Molecular Theory of Fluids.**

(Formerly numbered 259A.) Prerequisite: Chemistry 130A or Physics 121. Application of quantum mechanics, statistical mechanics, and kinetic theory to problems in modern engineering. Emphasis will vary from year to year. Mr. Robinson in charge

**239A. Seminar: Current Topics in Thermodynamics.**

Prerequisite: consent of the instructor. Review of current literature in an area of thermodynamics in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics. Mr. Robinson in charge

**239B. Seminar: Current Topics in Transport Phenomena.**

Prerequisite: consent of the instructor. Review of current literature in an area of transport phenomena in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics.

The Staff, Chemical, Nuclear, Thermal Division

**239C. Seminar: Current Topics in Energy Utilization.**

Prerequisite: consent of the instructor. Review of current literature in an area of energy utilization in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics.

The Staff, Chemical, Nuclear, Thermal Division

**239D. Seminar: Current Topics in Nuclear Engineering.**

Prerequisite: consent of the instructor. In odd-numbered years, reactor design will be discussed. In even-numbered years, current literature in an area of nuclear engineering in which the instructor has developed special proficiency as a consequence of research interests will be reviewed.

The Staff, Chemical, Nuclear, Thermal Division

**239E. Seminar: Current Topics in Chemical Engineering.**

Prerequisite: consent of the instructor. Review of current literature in an area of chemical engineering in which the instructor has developed special proficiency as a consequence of research interests. Student reports on selected topics.

The Staff, Chemical, Nuclear, Thermal Division

**245A. Lattice Imperfections and Mechanical Properties of Solids.**

Prerequisite: course 143A and introductory course

in elasticity such as course 158A. Nature and origin of lattice imperfections. Their role and effect on mechanical properties such as elasticity, plasticity, fatigue, brittleness and creep. Mr. Sines in charge

#### 245B. Electrons in Metals.

Prerequisite: an introductory course in atomic physics and wave mechanics course 140A, Physics 121 or 115. A study of the thermal, electrical and thermo-electrical properties of metals which are based on the energies of electrons. The prediction of alloy phases. Mr. Sines in charge

#### 245C. Cohesive and Elastic Properties of Matter.

Prerequisite: an introductory course in elasticity such as course 158A and an introductory course in atomic physics and wave mechanics, such as course 140A, Physics 121 or 115. Classical and quantum mechanical description of cohesion in molecules and solids. The effect of various interatomic forces in determining the structural properties, including elastic constants, vibrational spectra and phase stability. Mr. Sines in charge

#### 245D. Magnetic Interactions in Solids.

Prerequisite: course 245C or consent of the instructor. The characteristic properties of magnetically ordered solids. Origin of magnetism in atoms and ions. The molecular-field models of ordered magnetic solids. Exchange interactions between two electrons. Exchange interactions in solids. The excited states and statistical mechanics of ordered magnetic solids. Mr. Robinson, Mr. Wazzan in charge

#### 246A. Thermodynamics of Ceramics and Metals.

Prerequisite: a course in intermediate thermodynamics. Thermodynamic applications for systems of inorganic materials at elevated temperatures. Relation between thermodynamic and physical properties of solids. Phase changes and chemical reactions. Properties of solutions. Free energy of binary systems; construction of phase diagrams. Interfaces and defects. Mr. Knapp, Mr. Robinson in charge

#### 247A. Mechanisms and Kinetics in Physical Metallurgy.

Prerequisite: bachelor's degree in engineering, physics, or chemistry and at least one prior course in physical metallurgy (e.g., course 147A). A study of the mechanisms and rate-controlling factors associated with important processes and transformations in physical metallurgy. Diffusion, grain growth, recrystallization after cold work, solidification, precipitation from supersaturated solid solution. Decomposition of austenite. Mr. Flanagan in charge

#### 250A. Theoretical Hydrodynamics.

(Formerly numbered 220A.) Prerequisite: course 103A or equivalent; vector algebra, complex variables; partial differential equations. Vector calculus; complex variables. Equations of motion. Irrotational incompressible flow. Plane motion: complex potential, singularities, conformal mapping. Free streamline problems. Axisymmetric flow: Stokes stream-function vortex motion. Mr. Meecham in charge

#### 250B. Real Fluids.

(Formerly numbered 222A.) Prerequisite: course 103A or equivalent or consent of the instructor. Theoretical treatment of laminar and turbulent, incompressible and compressible viscous flow; approx-

imate solutions and important empirical work; fundamental aspects of several related problems such as heat transfer, statistical theories of turbulence, the analytical framework for treatment of "real" fluid dynamics. Mr. Charwat in charge

#### 250C. Hydrodynamic Stability and Wave Motion.

Prerequisite: course 250A or consent of the instructor. Discussion of wave propagation in fluids, illustrated especially by the dynamics of gravity waves. Free and forced motion; nonlinear effects. Survey of mechanisms through which waves grow spontaneously, with special emphasis placed on conversion of energy from a mean flow. Mr. Kelly in charge

#### 251A. Gas Dynamics.

(Formerly numbered 221A.) Prerequisite: course 103A or equivalent or consent of the instructor. Review of thermodynamics, wave and shock motion in unsteady one-dimensional and steady two- and three-dimensional flows, small perturbation theory for wings and bodies, similarity rules, characteristics theory. Mr. Liu in charge

#### 251B. Hypersonic Aerodynamics.

(Formerly numbered 221B.) Prerequisite: course 251A. The hypersonic limit for particle and for continuum flow is discussed. Analytical approximations and numerical methods. Viscous effects. The re-entry problem. Mr. Charwat in charge

#### 251C. Aerodynamics of Airplanes and Missiles.

Prerequisite: courses 250A, 251A or consent of the instructor. The fundamental laws and methods of incompressible and compressible flow are applied to configurations important for aircraft and missile applications. Preparation for stability and control problems of the flight inside the atmosphere. Mr. Spaid in charge

#### 252A. Engineering Magnetohydrodynamics.

(Formerly numbered 226A.) Prerequisite: courses 117B and 250A or consent of the instructor. Continuum theory of the motion of a conducting fluid in a magnetic field; typical solutions for incompressible and compressible flow; elements of the theory of conductivity in a plasma; propulsion and power generation applications. Mr. Meecham in charge

#### 252B. Theory of Turbulence.

Prerequisite: courses 150A-150B or 250A or 250B or consent of the instructor. Correlation tensors. Karman-Howarth equations. Major theories of turbulence: Heisenberg, zero-fourth-cumulant, Kolmogoroff; modern theories. Mixing-length theories. Mr. Meecham in charge

#### 253A. Fundamentals of Aeroacoustics.

(Formerly numbered 224A.) Prerequisite: course 150A or consent of the instructor. Detailed discussion of plane waves, point sources. Nonlinearity, layered and moving media, multiple reflections. Inhomogeneous wave equation. Monopole, dipole, quadrupole source fields from scattering inhomogeneities and turbulence; Lighthill's theory. Moving sources. Similarity methods. Selected detailed applications. Mr. Meecham in charge

#### 253B. Advanced Topics in Aeroacoustics.

(Formerly numbered 224B.) Prerequisite: course 253A. Further developments to treat selected items such as noise generation by turbulent or supersonic

jets, rockets, subsonic and supersonic boundary layers, shockwave interactions, whistles, atmospheric and underwater aspects, sonic "boom," structural response to random fluid pressures, introduction to aerothermoacoustics. Mr. Meecham in charge

## 254A. Experimental Techniques in Aerodynamics.

Prerequisite: course 251A. Theoretical foundations of experimental equipment and instruments used in aerodynamic research. Subsonic, supersonic and hypersonic wind tunnel design and practice. Hot-shot, shock-tube and gun-tunnel—the course will include laboratory practice—evaluation of data and design of experiments. Mr. Spaid in charge

## 255A. Advanced Dynamics.

(Formerly numbered 260A.) Prerequisite: courses 102B and 155A. Kinematics and dynamics of rigid bodies in general motion. Precession and nutation of spinning bodies. Nine and four parameter transformation for body attitude. Lagrangian and Hamiltonian formulation in generalized coordinates. Variational methods and optimization. Mr. Forster in charge

## 256A. Mechanics of Deformable Solids I.

(Formerly numbered 263A.) Prerequisite: course 158A or consent of the instructor. Stress and strain tensors, indicial notation, compatibility conditions, equations of motion. Work and energy, uniqueness of solution and extremum principles. Constitutive laws of isotropic elastic solids, thermoelasticity, linear viscoelasticity and incremental plasticity. Mr. Lin, Mr. Muki, Mr. Westmann in charge

## 256B. Mechanics of Deformable Solids II.

(Formerly numbered 263B.) Prerequisite: course 256A or consent of the instructor. Systematic solution of three-dimensional isotropic problems; analysis of anisotropic solids and effects of large strains. Typical applications. Mr. Dong in charge

## 256D. Theory of Disks and Plates.

(Formerly numbered 263E.) Prerequisite: course 256A or consent of the instructor. Reversible and irreversible deformation of disks; small and large deflections of elastic plates; thick plates; anisotropic plates; sandwich plates; irreversible deflections of plates; stable and unstable deformations to be considered; typical applications. Mr. Hu, Mr. Roberts in charge

## 256E. Theory of Shells.

(Formerly numbered 263F.) Prerequisite: course 256A or consent of the instructor. Elements of differential geometry of surfaces; membrane and bending theory of shells; application to cylindrical, spherical, conical shells, and other shells with rotational symmetry; large deflection of shells; irreversible deflection of shells; stable and unstable deformations to be considered; typical applications. Mr. Hu, Mr. Roberts in charge

## 257A. Elasticity.

(Formerly numbered 263C.) Prerequisite: course 256A or consent of the instructor. Solution of two dimensional problems in electrostatics, flexure, torsion, plane stress and plane strain, by complex variable method, integral transform. Approximate solution methods will also be considered. Thermoelasticity, linear viscosity problems will be discussed. Mr. Muki in charge

## 257B. Plasticity.

(Formerly numbered 263D.) Prerequisite: course 256A or consent of the instructor. Mathematical and physical theories of plasticity and their limitations, analogy between inelastic strain gradient and body force in a continuous medium, simple inelastic structures as inelastic beams, shafts, spherical shells, thick cylinders, rotating disks and cylinders, plastic hinges in rigid frames and visco-elastic bodies. Mr. Lin in charge

## 258A. Mechanics of Continuous Media I.

(Formerly numbered 263G.) Prerequisite: course 256A or 257A, Mathematics 247A, or consent of the instructor. Development of exact non-linear theories of solid and fluid mechanics. Geometry and thermodynamics of large deformations. Natural state, Cauchy's, and Jaumann-Murnaghan rate-of-deformation theories in elasticity. Rivlin's exact (large-deformation) solutions in the natural state theory. Mr. Morgan in charge

## 258B. Mechanics of Continuous Media II.

(Formerly numbered 263H.) Prerequisite: course 258A. Various approximations to the exact elasticity theories, e.g., the Mooney-Rivlin theory for rubber. Exact theories for fluids: the Stokesian fluid, the Reiner-Rivlin fluid with a natural time, the Maxwellian fluid. Super-position theories: visco-elastic continua. Mr. Morgan in charge

## 258C. Wave Propagation in Solids I.

(Same as Planetary and Space Sciences 224A.) Prerequisite: course 256A or 258A, or consent of the instructor. Elastic wave equation and elementary solutions; wave motions in elastic half-spaces; reflection and refraction of elastic waves; surface waves; vibrations of rods and plates. Mr. Mal in charge

## 258D. Wave Propagation in Solids II.

(Same as Planetary and Space Sciences 224B.) Prerequisite: consent of the instructor. Wave propagation in layered media; Green's functions for various geometries; diffraction and scattering of elastic waves; attenuation; inversion problems. Mr. Mal in charge

## 259A. Seminar on Advanced Topics in Fluid Mechanics.

Prerequisite: consent of the instructor. To study advanced topics in fluid mechanics with intensive student participation, involving assignments in research problems leading to a term paper or an oral presentation and possible help from guest lecturers. Mr. Charwat in charge

## 259B. Seminar on Advanced Topics in Solid Mechanics.

Prerequisite: consent of the instructor. Advanced study in various fields of solid mechanics on topics which may vary from term to term. Topics cover dynamics, elasticity, plasticity and stability of solids. Mr. Lin, Mr. Morgan, Mr. Westmann in charge

## 260A. Celestial Mechanics.

(Formerly numbered 292A.) Prerequisite: course 160A or consent of the instructor. Perturbation theory, the n-body problem; numerical integration; special perturbations; the methods of variation of parameters and perturbative differentiation; conservative forces: the potential function and the methods of Hamiltonian mechanics. Mr. Herrick in charge

**260B. Celestial Mechanics.**

(Formerly numbered 292B.) Prerequisite: course 260A. The attraction of a spheroid; the gravitational field of the earth and the geodetic constants; the theory and development of general perturbations; the small-divisor problem.

Mr. Herrick in charge

**260C. Non-gravitational Astro dynamics.**

(Formerly numbered 291A.) Prerequisite: course 160A. Advanced problems in celestial mechanics emphasizing non-gravitational and relativistic effects.

Mr. Baker, Mr. Herrick in charge

**261A. Advanced Orbit Theory.**

(Formerly 292C.) Prerequisite: course 160B. Preliminary orbits based on the Lagrange-Gauss-Gibbs first approximation; interception orbits; partial differential coefficients by analytical and by numerical methods; selection of parameters, variables, and formulae to suit the requirements of various space-orbit determinations.

Mr. Herrick in charge

**\*262A. Stability and Control for Atmospheric Flight.**

(Formerly numbered 160B-160C.) Prerequisite: courses 122A, 155A, 251C. Basic stability and control concepts for flight within the atmosphere, static stability and control, application to aircraft and missiles of rigid body dynamical equations, stability derivatives, stability of uncontrolled motion, response to control actuation.

Mr. Forster in charge

**\*262B. Advanced Problems in Aerospace Vehicle Dynamics and Control.**

Prerequisite: consent of the instructor. Advanced problems of current interest in aerospace vehicle dynamics, navigation and guidance, rotational stability and control. Seminar format with student participation in review of current literature and consideration of possible new problem solutions and system concepts.

Mr. Forster in charge

**263A. Space Vehicle Dynamics.**

(Formerly numbered 260B.) Prerequisite: courses 160A, 255A. Advanced rotational dynamics of systems of rigid bodies typical of space vehicles; disturbance torques on extra-atmospheric vehicles; methods of stability analysis and Lyapounov techniques; spin stabilization; introduction to passive attitude stabilization.

Mr. Likins in charge

**263B. Space Vehicle Attitude Stability and Control.**

Prerequisite: courses 122A, 263A. Passive attitude stabilization concepts and stability analysis; active control of spacecraft orientation; inertial and celestial sensors; reaction wheel, gyro and jet actuators; spin axis control; discontinuous and continuous active three-axis control techniques.

Mr. Likins in charge

**\*264A. Navigation and Guidance Systems.**

Prerequisite: courses 122A, 160A, 255A. Basic concepts of navigation and guidance, automatic terrestrial guidance cruise vehicles, short and long range missiles, spacecraft, inertial guidance concepts and instrumentation, guidance error analysis techniques.

Mr. Beggs in charge

**\*264B. Aerospace Vehicle Navigation and Guidance Systems.**

Prerequisite: course 264A. Conceptual and practical methods for the navigation and guidance of

\* Not to be given, 1968-1969.

aerospace vehicles, with emphasis on error sources and error propagation, within the framework of special mission segments and corresponding guidance operations, e.g., boost and injection, rendezvous, planetary approach, etc.

Mr. Forster in charge

**265A. Advanced Structural Analysis I.**

(Formerly numbered 166B.) Prerequisite: course 165B. Analysis of structural systems by energy methods; relaxation and iteration methods. Matrix methods as applied to beams and frames; analysis by substructures. Effects of thermal expansion, lack of fit, settling.

Mr. Rubinstein in charge

**265B. Advanced Structural Analysis II.**

(Formerly numbered 265A.) Prerequisites: courses 166, 265A or consent of the instructor. Matrix methods applied to analysis of frames, plates, shells. Finite elements in two and three dimensions. Applications to stress, deflection, stability analysis. Dynamic behavior of structures.

Mr. Hurty in charge

**266A. Stability of Structures I.**

Prerequisite: courses 165B, 166 or equivalent. Elastic buckling of bars. Different approaches to stability problems. Inelastic buckling of columns and beam columns. Columns and beam columns with linear, nonlinear creep. Combined torsional and flexural buckling of columns. Buckling of plates.

Mr. Roberts in charge

**266B. Stability of Structures II.**

Prerequisite: course 266A. Continuation of the structural stability theory of course 266A, applied to rings, plates, and shells, dynamic stability of elements subject to transient and periodic forces.

Mr. Dong in charge

**267A. Optimum Structural Design.**

Prerequisite: course 165B. Principles of structural design for minimum weight or cost; relationship between material properties and structural configuration; prediction of weight of structure; relative merits of different materials; analysis of nonoptimum factors; application to aerospace and civil structures.

Mr. Shanley in charge

**267B. Advanced Structural Design.**

(Formerly numbered 267A.) Prerequisite: courses 165B, 167. Design of steel frames by linear programming; probability and statistics related to the study of reliability of structural systems. Economic considerations in design. Application of optimization principles in structural design.

Mr. Felton, Mr. Rubinstein in charge

**268A. Experimental Structural Analysis.**

Lecture, two hours; laboratory, four hours. Prerequisite: course 166. Study of the principal experimental methods of structural analysis including model analysis and similitude, mechanical and electrical strain measurements, dynamic response measurements, photoelastic and photostress measurements, Moiré method.

Mr. Matthiesen in charge

**268B. Failure of Structural Systems.**

Prerequisite: course 165B. Philosophy of structural safety. Principles of design for prevention of failure (other than buckling). Fatigue, brittle failure, delayed cracking, creep, design of efficient joints, environmental effects. Emphasis on current problems in actual structures.

Mr. Shanley in charge

**269A. Dynamics of Structures I.**

Prerequisites: courses 155A, 165B or consent of

instructor. Consideration of properties of structures and advanced principles of dynamics. Determination of normal modes and frequencies by differential and integral equation solutions. Approximation methods and interaction techniques. Transient response to impulsive loads. Structural damping. Emphasis on matrix formulation and solution. Mr. Hurty in charge

### 269B. Dynamics of Structures II.

Prerequisite: course 268A. Response to random excitations including a development of relevant concepts in probability and statistics. Random vibrations in analysis and design. Topics in nonlinear vibrations. Mr. Hurty in charge

### 270A. Synthesis of Engineering Systems.

Prerequisite: course 179B; graduate standing in engineering. The logic and quantitative tools of synthesizing engineering systems. Needs and environment analysis leading to constraints, specifications, design concepts and design criteria. Physical realizability, economic justification, and financial feasibility. System stability, sensitivity and subsystem compatibility. Mr. Asimow in charge

### 270B. Dynamic Elements of Operational Systems.

Prerequisite: course 193A, functional transform and network theory, linear algebra or consent of the instructor. Basic theoretical models applicable to general large-scale stochastic systems. Linear-system approximations. Applications to a wide range of system types. Mr. J. L. Barnes, Mr. Wismer in charge

### 270C. Techniques of System Optimization.

Prerequisite: course 170C. Theory, evaluation and computer applications of mathematical techniques for optimization with and without constraints. Advanced linear, quadratic and nonlinear programming, and stochastic processes. Applications to systems optimization problems. Mr. Wismer in charge

### 270D. System Simulation and Synthesis.

Prerequisite: courses 270B and 270C, or consent of the instructor. Theory and methods applicable to the simulation and synthesis of a wide range of systems characterized by deterministic and inherent stochastic elements. Microscopic simulations, macroscopic simulations. Simulation languages. System identification techniques. Applications to simulation and synthesis of representative systems.

Mr. Leondes, Mr. Wismer in charge

### 275A. Statistical Design of Engineering Experiments.

(Formerly numbered 283B. Same as Business Administration 215F.) Prerequisite: courses 193A, 193B. Matrix treatment of linear hypotheses in engineering experimentation. Statistical estimation, tests of hypotheses, analysis of variance, regression models. Randomized blocks, factorial, Latin square, multiple factor and level experiments. Principles of orthogonality, confounding, fractional replication, incomplete block designs with engineering applications. Mr. Klingner in charge

### 275B. Selected Topics in Engineering Statistics.

(Formerly numbered 283A.) Prerequisite: courses 193A, 193B or equivalent. Fundamentals of probability measures, sets. Topics vary from year to year from sequential analysis of statistical data, stochastic service functions, queueing theory, work sampling, mathematical simulation studies, multidimensional Gaussian, associated measurements. Evolutionary

operations and response surface methodology. Applications and reports. Mr. Coleman in charge

### 275C. Stochastic Processes in Linear Systems.

(Formerly numbered 287B.) Prerequisite: course 193A, functional transforms in linear systems, and B. S. degree in engineering, physics, or mathematics, or consent of the instructor. Formulation and solution of equations of behavior of lumped and distributed linear electrical, rigid- and fluid-mechanical, and thermal systems with stochastic (i.e., chance) excitation, or system change, and response. Emphasis on functional transform methods, and on duality. Mr. J. L. Barnes in charge

### 277A. Economic Evaluation of Engineering Systems.

Prerequisite: courses 106B, 177A. Evaluation of economic feasibility of large scale engineering systems. Projections of future economic environment, growth of demand, planned expansion of the system. Techniques establishing profitability. Risk evaluation. Methods of financing. Term project.

Mr. Kline, Mr. Orr in charge

### 277B. Economics of the Engineering Function.

Prerequisite: graduate standing. Economics of engineering tasks. Organization of the engineering of a system, costs of analytical evaluations for establishing levels of confidence in the results. Use of resources. Engineering time accounting and relationship to capital investment. New concepts of engineering economic analysis.

Mr. English, Mr. Lifson in charge

### 278A. Advanced Kinematics.

(Formerly numbered 261A.) Prerequisite: course 178A. Analysis and synthesis of mechanisms with special emphasis on space mechanisms. Both graphical (vector) and analytical (matrix) methods are used. The dynamics of mechanisms in a space vehicle are discussed. The kinematics of geometrical optics are treated using matrices.

Mr. Beggs in charge

### 280A. Advanced Biotechnology.

(Formerly numbered 230A.) Prerequisite: course 180A or 180B or consent of the instructor. Review and analysis of contemporary bioscience research which bears on problems of engineering component and system design. Emphasis is on methodological and scientific factors underlying man-machine-environment interactions.

Mr. Lyman in charge

### 280B. Advanced Biotechnology.

(Formerly numbered 230B.) Prerequisite: course 180A or 180B or consent of the instructor. Specialized coverage of "human factors" and "human engineering" with orientation toward obtaining design optimization of the functions of humans in relation to engineering parameters of environment, communication and control.

Mr. Lyman in charge

### 282A. Seminar in Environmental Systems.

Prerequisite: graduate standing in engineering, architecture or public health. Open to other non-engineering students by consent of the instructor. Advanced topics in air conditioning, natural environments, and ecologies. Value analyses and designs for earth, ocean, and outer space. Processes and systems for life support, equipment protection, resources utilization, pollution control, waste reclamation, energy conversion. Selected problems differing each year.

Mr. Nottage in charge

**263A. Theory of Flow Through Porous Media.**

(Formerly numbered 243A.) Prerequisite: course 183A or consent of the instructor. Theory of miscible and immiscible fluid displacement processes within porous media; derivation and solution methods for equations describing flow; appropriate linearization of flow equations, representation as a hyperbolic system, numerical solutions, problems in stability or fingering, statistical hydrodynamics, capillarity. Mr. Perrine in charge

**264A. Surface Water Hydrology.**

Prerequisite: course 184A or consent of the instructor. Theory of the movement and occurrence of water over the surface of the earth. Analysis of hydrologic systems, frequency analysis of rainfall and runoff, flood hydrographs and flood routing, legal aspects of surface water, computer applications. Mr. Dracup in charge

**264B. Ground Water Hydrology.**

Prerequisite: course 184A or consent of the instructor. Theory of the movement and occurrence of water in subterranean aquifers, hydrodynamics of flow through porous materials, quality of ground water, legal aspects of ground water, and computer applications. Conjunctive management of ground water basins. Mr. Dracup in charge

**264C. Water Resources Systems Engineering.**

Prerequisite: course 179A or consent of the instructor. Deterministic and probabilistic analysis of hydrologic, water supply and waste water treatment systems using mathematical techniques such as simulation, linear and dynamic programming and queueing theory. Conjunctive utilization of surface water and ground water systems. Mr. Dracup in charge

**264E. Saline Water Conversion.**

Prerequisite: course 137A and Chemistry 110AB or equivalent. Current research and development in saline water conversion, in the fields of distillation, electrodialysis, freezing, reverse osmosis and chemical extraction. A study of process optimization and economics of combined water power systems. Mr. McCutchan in charge

**264F. Selected Topics in Water Resources.**

(½ course)

Prerequisite: graduate status; consent of the instructor. In successive quarters course will deal with topics such as: water supply systems, hydraulic and structural problems, water quality management, and water law and institutions. May be repeated twice for credit. Mr. Pillsbury in charge

**265A. Analytical Soil Mechanics.**

Prerequisite: course 185A. Advanced concepts in the following soil mechanics areas: physical chemical properties, shear strength, seepage, stability of slopes, earth dam design and soil-earthquake problems. Mr. Lee in charge

**265B. Foundation Engineering.**

(Formerly numbered 264A.) Prerequisite: course 185A; course 265A recommended. Principles of foundation design; theory of consolidation; impeded drainage; stress distribution; settlement analysis; allowable building settlements; methods of minimizing settlements; lateral earth pressures; allowable bearing capacity for shallow and deep foundations; design of anchored bulkheads. Mr. Singh in charge

**265C. Soil Dynamics.**

Prerequisite: course 185A; graduate standing. The basic concepts of the behavior of soil under dynamic loads is presented with special application to the problems of design of soil structures and foundations to resist earthquake loading conditions. Mr. Lee in charge

**265D. Earth Pressures and Earth Retaining Structures.**

Prerequisite: course 185A; graduate standing. The basic concepts of the theory of earth pressures behind retaining structures is presented with special application to the design of retaining walls, bulkheads and excavation bracing; the effects of flexibility of bulkheads, creep in soils and construction techniques are also discussed in detail. Mr. Singh in charge

**266A. Earthquake Engineering.**

Prerequisites: courses 256A, 265A, 285A, or 155A. Engineering seismology: strong earthquake motion, microtremors, wave velocity and damping, induced vibrations, spectral analysis. Risk of earthquakes and fault breaks. Site evaluation. Structure-earth system response. Introduction to earthquake resistive design of buildings, bridges and dams. Theory and field experiments. Mr. Duke in charge

**267A. The Theory of Road Traffic Flow.**

Prerequisite: courses 192AB, 193A. Study of various mathematical theories of road traffic; fundamental diagram of traffic; dynamical theories of traffic; follow-the-leader models of traffic flow; hydrodynamic models of traffic, shock waves; Boltzmann-like theory of traffic flow; traffic cybernetics; simulation of traffic problems; accident statistics. Mr. Pipes in charge

**291A. Analytical Methods of Engineering I.**

(Formerly numbered 281A.) Prerequisite: Mathematics 131A or Engineering 192A, or consent of the instructor. Application of modern mathematical methods to engineering problems. Linear vector spaces and operators. Eigenvalue problems—spectral theory of operators. Applications to Sturm-Liouville problems, integral equations and systems of difference and differential equations. Mr. Levan in charge

**291B. Analytical Methods of Engineering II.**

(Formerly numbered 281B.) Prerequisite: course 291A or consent of the instructor. Application of modern mathematical methods to engineering problems. Green's functions and eigenvalue problems for second order ordinary differential equations and their adjoints. Discrete and continuous spectra for ordinary and partial differential equations. Initial and boundary value problems. Mr. Morgan in charge

**291C. Integral Equations in Engineering.**

Prerequisite: Mathematics 250B. Introduction to generalized function theory and Green's functions. Conversion of partial equations to integral equations and classification of integral equations. Solution to integral equations with degenerate kernels; discussions of successive approximations and Fredholm and Hilbert-Schmidt theory. Mr. Westmann in charge

**298. Seminar in Engineering. (½ to 1 course)**

Prerequisite: graduate status in engineering; consent of the instructor. Seminars may be organized in advanced technical fields. Course may be repeated

provided no duplication exists. If appropriate, field trips may be arranged. Mr. Rogers in charge

#### †470A-470D. The Engineer in the Technical Environment.

(Formerly numbered 270A-270B-270C.) Prerequisite: acceptance in the Engineering Executive Program. Theory and application of quantitative methods in the analysis and synthesis of engineering systems for the purpose of making management decisions. Optimization of outputs with respect to dollar costs, time, material, energy, information and manpower. Includes case studies and individual projects. Mr. O'Neill in charge

#### †471A-471B-471C. The Engineer in the General Environment. (1, ½, 1 course)

(Formerly numbered 271A-271B.) Prerequisite: acceptance in the Engineering Executive Program. Influences of human relations, laws, social sciences, humanities and fine arts on the development and utilization of natural and human resources. The interaction of technology and society—past, present and future. Change agents and resistance to change. Mr. Campbell in charge

#### †472A-472B-472C-472D. The Engineer in the Business Environment. (1, 1, ½, 1 course)

(Formerly numbered 272A-272B.) Prerequisite: acceptance in the Engineering Executive Program. The language of business for the engineering executive. Accounting, finance, business economics, business law, and marketing. Laboratory in organization and management problem-solving. Analysis of actual business problems of the firm, the community, and the nation, provided through cooperation and participation with California business corporations and government agencies. Mr. Orr in charge

#### †473A-473B. Analysis and Synthesis of a Large-Scale System. (½, 1 course)

(Formerly numbered 297.) Prerequisite: accept-

† Open only to Engineering Executive Program students. See page 95 of this bulletin.

ance in the Engineering Executive Program. Credit to be given only upon completion of 473B. A problem area of modern industry or government is selected as a class project and its solution is synthesized using quantitative tools and methods. The project also serves as a laboratory in organization for a goal oriented technical group. Mr. Asimow in charge

#### 596. Directed Individual or Tutorial Studies. (½ to 2 courses)

Prerequisite: graduate status in engineering; consent of the instructor. Application forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Supervised investigation of advanced technical problems. The Staff in charge

#### 596X. Directed Individual Preparation for Ph.D. Foreign Language Examinations.

Prerequisites: graduate status in engineering; consent of the instructor. Application forms to request enrollment may be obtained from the Assistant Dean, Graduate Studies. Preparation for Ph.D. foreign language examination. The Staff in charge

#### 597A. Preparation for M.S. Comprehensive Examination. (½ to 2 courses)

Reading and preparation for M.S. comprehensive examination. The Staff in charge

#### 597B. Preparation for Ph.D. Qualifying Examination. (½ to 2 courses)

Reading and preparation for Ph.D. qualifying examination. The Staff in charge

#### 598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)

Supervised independent research for M.S. candidates, including thesis prospectus. The Staff in charge

#### 599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

Supervised independent research for Ph.D. candidates, including dissertation prospectus. The Staff in charge

## ■ ENGLISH

(Department Office, 2225 Humanities Building)

Robert Martin Adams, Ph.D., *Professor of English.*

Bradford Allen Booth, Ph.D., Litt.D., *Professor of English (Chairman of the Department).*

J. Donald Bowen, Ph.D., *Professor of English.*

Vinton Adams Dearing, Ph.D., *Professor of English.*

Robert William Dent, Ph.D., *Professor of English.*

Hugh Gilchrist Dick, Ph.D., *Professor of English.*

Philip Calvin Durham, Ph.D., *Professor of English.*

John Jenkins Espey, B.Litt., M.A., (Oxon), *Professor of English.*

Robert Paul Falk, Ph.D., *Professor of English.*

Leon Howard, Ph.D., L.H.D., *Professor of English.*

Paul Alfred Jorgensen, Ph.D., *Professor of English.*

Robert Starr Kinsman, Ph.D., *Professor of English.*

William Matthews, Ph.D., Litt.D., *Professor of English.*

- Earl Roy Miner, Ph.D., *Professor of English (Vice-Chairman of the Department)*.  
 Blake Reynolds Nevius, Ph.D., *Professor of English*.  
 Ada Blanche Nisbet, Ph.D., *Professor of English*.  
 James Emerson Phillips, Jr., Ph.D., *Professor of English*.  
 Clifford Holmes Prator, Ph.D., *Professor of English (Vice-Chairman of the Department)*.  
 Franklin Prescott Rolfe, Ph.D., *Professor of English*.  
 Hugh Thomas Swedenberg, Jr., Ph.D., *Professor of English*.  
 D. K. Wilgus, Ph.D., *Professor of English and Anglo-American Folksong*.  
 Claude Jones, Ph.D., *Emeritus Professor of English*.  
 Alfred Edwin Longueil, Ph.D., *Emeritus Professor of English*.  
 Russell Norman Campbell, Ph.D., *Associate Professor of English*.  
 Ronald E. Freeman, Ph.D., *Associate Professor of English*.  
 Charles Bennett Gullans, Ph.D., *Associate Professor of English*.  
 Charles Vincent Hartung, Ph.D., *Associate Professor of English*.  
 Jascha Kessler, Ph.D., *Associate Professor of English*.  
 Richard D. Lehan, Ph.D., *Associate Professor of English (Vice-Chairman of the Department)*.  
 Lois McIntosh, Ph.D., *Associate Professor of English*.  
 Maximilian Erwin Novak, Ph.D., D.Phil., *Associate Professor of English*.  
 John Frederick Povey, Ph.D., *Associate Professor of English*.  
 Florence Ridley, Ph.D., *Associate Professor of English*.  
 William David Schaefer, Ph.D., *Associate Professor of English*.  
 Georg Bernhard Tennyson, Ph.D., *Associate Professor of English*.  
 Peter Larsen Thorslev, Ph.D., *Associate Professor of English*.  
 Llewellyn Morgan Buell, Ph.D., *Emeritus Associate Professor of English*.  
 H. Bradford Arthur, Ph.D., *Assistant Professor of English*.  
 Calvin Bernard Bedient, Ph.D., *Assistant Professor of English*.  
 Charles Ashton Berst, Ph.D., *Assistant Professor of English*.  
 Frederick Lorrain Burwick, Ph.D., *Assistant Professor of English*.  
 Allen Conrad Christensen, Ph.D., *Assistant Professor of English*.  
 Richard Keith Cross, Ph.D., *Assistant Professor of English*.  
 C. F. William Forssberg, Ph.D., *Assistant Professor of English*.  
 Robert A. Georges, Ph.D., *Assistant Professor of English*.  
 Gerald Jay Goldberg, Ph.D., *Assistant Professor of English*.  
 Christopher Waldo Grose, Ph.D., *Assistant Professor of English*.  
 George Robert Guffey, Ph.D., *Assistant Professor of English*.  
 Robert Glenn Jacobs, Ph.D., *Assistant Professor of English*.  
 Henry Ansgar Kelly, Ph.D., *Assistant Professor of English*.  
 Richard Alan Lanham, Ph.D., *Assistant Professor of English*.  
 J. A. Leo Lemay, Ph.D., *Assistant Professor of English*.  
 Robert M. Maniquis, Ph.D., *Assistant Professor of English*.  
 John David Margolis, Ph.D., *Assistant Professor of English*.  
 Kenneth Bernard Newell, Ph.D., *Assistant Professor of English*.  
 Morriss Henry Partee, Ph.D., *Assistant Professor of English*.  
 Earl James Rand, Ph.D., *Assistant Professor of English*.  
 Robert Alvin Rees, Ph.D., *Assistant Professor of English*.  
 Alan Henry Roper, Ph.D., *Assistant Professor of English*.  
 George S. Rousseau, Ph.D., *Assistant Professor of English*.  
 Alan Francis Sandy, Jr., Ph.D., *Assistant Professor of English*.  
 Paul Roland Sellin, Ph.D., *Assistant Professor of English*.  
 Paul Douglas Sheats, Ph.D., *Assistant Professor of English*.

William Eaton Stephenson, Ph.D., *Assistant Professor of English.*

Patrick Lee Story, Ph.D., *Assistant Professor of English.*

Ben Merchant Vorpahl, Ph.D., *Assistant Professor of English.*

Robert D. Wilson, Ph.D., *Assistant Professor of English in Residence.*

Carey Gail Wall, Ph.D., *Assistant Professor of English.*



Walter Eldon Anderson, M.A., *Acting Assistant Professor of English.*

Joseph John Arpad, M.A., *Acting Assistant Professor of English.*

Edward Ignatius Condren, M.A., *Acting Assistant Professor of English.*

Jerome Cushman, A.B., B.S.L.S., *Lecturer in English and Library Service.*

William Carter Edinger, M.A., *Acting Assistant Professor of English.*

Loyce Randel Helms, M.A., *Acting Assistant Professor of English.*

Alan Albert Jabbour, M.A., *Acting Assistant Professor of English.*

Ralph Charles La Rosa, M.A., *Acting Assistant Professor of English.*

Harriet Ramras Miller, M.A., *Lecturer in English.*

John Loudon Reid, M.A., *Acting Assistant Professor of English.*

David Stuart Rodes, M.A., *Acting Assistant Professor of English.*

Bernard Wolfe, B.A., *Lecturer in English.*

Stephen Irwin Yenser, M.A., *Acting Assistant Professor of English.*



Barbara Hall Partee, Ph.D., *Assistant Professor of Linguistics.*

Peter Ladefoged, Ph.D., *Professor of Phonetics.*

Robert Paul Stockwell, Ph.D., *Professor of Linguistics.*

Students must have passed Subject A (either examination or course) before taking any course in English. Regulations concerning Subject A will be found on page 38 of this bulletin.

#### **Preparation for the Major**

English 1, 2, 10A, 10B, 10C taken in sequence, each course being a prerequisite for the next course; History 5A-5B or Humanities 1A-1B or two courses chosen from Classics 141, 142, 143.

#### **The Major**

English 140 (Criticism), 141 (Chaucer), 142A and 142B (Shakespeare), 143 (Milton), and a minimum of seven additional upper division English courses, with the provision that (1) at least six of the seven courses must be chosen from the 150-180 series; (2) at least three of the seven must be in courses other than in the novel or drama; (3) at least one must be in English literature prior to 1800 (the 150 series); (4) at least one must be in English literature of the nineteenth or twentieth centuries (the 160 Series); (5) at least one must be from the 170-172 series of American literature.

Recommended: All majors are encouraged to elect additional courses from the 150-170

series, and to take at least one "Specialized Study" course from the 180 series. Students planning to do graduate work in English are urged to pursue the study of at least one foreign language; a reading knowledge of French, German, Italian, or Latin is required for the M.A. degree, and, for the Ph.D. degree, a reading knowledge of two of these languages is required.

#### **Major for Foreign Students**

The Department offers a special major in English open optionally to bona fide foreign students whose mother tongue was a language other than English. As preparation for this major, the requirements are: English 1, 2, 10A, 10B, 10C in sequence; two one-quarter courses in either English or American history; and Speech 1. The following 13 courses are required for the major itself: English 103J; 106J; 109J; one course chosen from 111, 112, or 114; one from 115, 116, or 117; 122; 140; 142A and 142B; one from the 150 series; one from the 160 series; two electives from 141, 143, or courses numbered between 150 and 189. Students who complete this major and wish to go on to an M.A. degree in English at UCLA must first take all courses included in the regular English major that have not already been taken.

### Teaching Credential Candidates

Students planning to obtain an elementary or secondary teaching credential should arrange their programs so as to elect English 120 and 130 in their senior year. Also strongly recommended are Speech 111 (or 112A or 112B), English 110, 111, and 112. English 300 and additional courses as prescribed by the Graduate School of Education will be taken in the graduate year. For additional information on courses leading to the teaching credential, consult the Graduate School of Education (Moore Hall 201) and the Department of English (Humanities Building 2225).

### Honors Seminars in English 1 and 2

Entering students with a score of 700 on the CEEB English Achievement Test and a verbal score of 650 on the CEEB Scholastic Aptitude Test are eligible to enroll in an English 1 honors seminar. Interested students should bring their scores to the department offices before enrollment day. At the invitation of the department honors committee, students who have received a grade of A in English 1 may enroll in an English 2 honors seminar (winter and spring quarters only). A list of eligible students will be available in the department office prior to enrollment day.

### The Honors Course in English

Majors with a 3.25 overall grade-point average and a 3.4 grade-point average in English courses are encouraged to enter the senior honors program in English. This program consists of two courses from the 180 series of Specialized Study courses and one Special Study tutorial (English 199H). Students must register for the program and be interviewed by the honors chairman during the final quarter of their junior year. Departmental honors will be awarded only to students who follow this procedure in entering the program, and who achieve at graduation at least 3.25 overall and 3.6 in upper division English courses, at least 10 of which must be completed at UCLA.

### Requirements for Admission to Graduate Courses

The requirement is ordinarily the undergraduate major in English (or its equivalent) in which a superior and clearly promising record has been achieved. Prospective students are required to take the Graduate Record Examination (Advanced Test) in literature and to have their scores reported to the Department of English. A graduate student in another department who wishes to

take a graduate course in English must secure the permission of the professor teaching the course.

### Requirements for the Master's Degree

1. For the general requirements, see page 137. The Department follows the Comprehensive Examination Plan, as described on page 138. The comprehensive examinations for the M.A. and the qualifying examinations for the Ph.D. are given twice a year.

2. Under the comprehensive examination plan, the Department offers two programs leading to the M.A. degree. Of these, Plan A is designed primarily for students intending to teach in high schools and junior colleges. Plan B constitutes the first phase of the program leading to the Ph.D. degree for students intending to teach in colleges and universities. Students who take the M.A. degree under Plan A may, if recommended by the Department, transfer to the Ph.D. program, but they will not be eligible for the qualifying examinations until they have completed the course requirements listed under Plan B. For both Plan A and Plan B, a reading knowledge of French or German or Italian or Latin is required. Students should take the reading test in one of these languages at the beginning of the first quarter of residence, but in any event no later than the mid-term of the quarter in which all degree requirements are to be completed.

*Plan A.* Students must complete at least nine courses in English, including the following: course 120 or 121; course 201; two courses chosen from the sequence 220 through 228. In accordance with University requirements, at least five courses must be at the graduate level, that is, in the 200 series. Four courses may be in the 100 series of courses applicable to the undergraduate major, with the exception of courses in writing. Upon the completion of all requirements, the student will be given a comprehensive oral examination of no less than one hour designed to test his intellectual grasp of the major literary documents presented to him during his graduate study.

*Plan B.* (See Requirements for the Doctor's Degree, below.)

### Requirements for the Doctor's Degree

1. For the general requirements, see page 140.

2. Departmental requirements: (a) On entering the Department the candidate is expected to take the reading test in one of

the two required foreign languages. The test in the second language should be taken as soon as possible. (b) In the first year (normally three quarters) of graduate study, the candidate will follow the *Plan B* program leading to the master's degree. This includes: course 200, course 210, and seven courses chosen from the sequence 220 through 237. In the 220-237 sequence the candidate must take courses in three fields other than those he elects to offer for the Part I qualifying examination. This requirement is designed to insure that every candidate will have a breadth of knowledge sufficient for general college teaching. Upon successful completion of the nine courses and one of the examinations in foreign language, the candidate will take Part I of the qualifying examinations. This consists of a three-hour written examination on each of four of the following fields: the Middle Ages, the Renaissance, the Seventeenth century, the Eighteenth century, the Romantic period, the Victorian period, American literature to 1900, and either Twentieth-century American literature or Twentieth-century British literature.

Qualified students holding a master's degree from another institution may enter the program for the doctor's degree, but they are required to take and pass the Part I qualifying examination.

(c) In the second part of the program, the candidate completes the requirement in philology (courses 211 and 212, in that order) and devotes himself to seminars in English (he must take at least two advanced seminars) and suitable courses in other departments. When through course work and independent study he is deemed sufficiently well prepared, and after he has passed the test in a second language, he takes the Part II qualifying examination. This consists of six hours of written examination and a two-hour oral. Both examinations are upon the candidate's field of specialization chosen from one of the following: the Middle Ages, the Sixteenth century, the Seventeenth century, the Eighteenth century, the Nineteenth century, American literature to 1900, English and American Folklore, and British and American literature of the Twentieth century.

(d) When a candidate has passed the Part II qualifying examination, he is officially advanced to candidacy and proceeds with the writing of his dissertation. His final examination for the degree is a defense of the dissertation before a University committee.

## Statute of Limitations for Doctoral Candidates

Students must conform to the following schedule in proceeding toward the Ph.D.:

1. A maximum of two calendar years from time of entrance to taking the Part I qualifying examination.

2. A maximum of two calendar years between Part I and Part II qualifying examinations.

3. A maximum of three calendar years from advancement to candidacy to completion of the degree.

### Lower Division Courses

#### 1. English Composition.

Prerequisite: completion of the Subject A requirement. Principles and methods of expository writing with readings and analysis of expository prose. Class discussion, three hours; individual and group conferences, one hour. The Staff

#### 2. Intermediate English Composition.

Prerequisite: course 1. Expository writing continued, with introduction to the types of literature: the novel, the short story, drama, and poetry. Class discussion, three hours; individual and group conferences, one hour. The Staff

#### 10A. English Literature to 1660.

Prerequisite: courses 1, 2. A survey of the work of major writers of the period, including Chaucer, Spenser, Bacon, Donne, and Milton. The Staff

#### 10B. English Literature, 1660-1832.

Prerequisite: course 10A. A survey of the work of major writers of this period, including Dryden, Swift, Johnson, Wordsworth, Coleridge, Byron, Shelley, and Keats. The Staff

#### 10C. English Literature, 1832 to the Present.

Prerequisite: course 10B. A survey of the work of such writers as Tennyson, Browning, Arnold, Carlyle, Mill, Hopkins, Yeats, Joyce, and Eliot. The Staff

### Upper Division Courses

Courses 1, 2, 10A-10B-10C are prerequisite to all other courses in English except 100 through 122, for which course 1 is prerequisite, and courses 130 through 135, for which courses 1 and 2 are prerequisite. Consent of the instructor is required for enrollment in courses 133 through 135.

#### 100. Major British Authors before 1800.

Not open for credit to English majors or students who have had 10A or 10B. A study of selected masterpieces of English literature before 1800, including the works of such writers as Chaucer, Shakespeare, Milton, Swift, Pope, Johnson, and Fielding. The Staff

#### 101. Major British Authors, 1800 to the Present.

Not open for credit to English majors or students who have had 10B or 10C. A study of selected masterpieces of English literature, 1800 to the present, including such writers as Wordsworth, Coleridge, Keats, Dickens, Tennyson, Browning, Arnold, Yeats, and T. S. Eliot. The Staff

## 102. Major American Authors.

Not open for credit to English majors or students who have had any courses in the 170 series (formerly numbered 156, 157, 158). An introduction to the chief American men of letters, with emphasis upon the poetry, nonnarrative prose, and short fiction of such writers as Poe, Emerson, Whitman, Twain, Frost, and Hemingway. The Staff

## 103. Shakespeare.

Not open for credit to English majors or students who have had 142A or 142B (formerly numbered 170). A survey of Shakespeare's plays, including comedies, histories, and tragedies selected to represent Shakespeare's breadth, artistic progress, and total dramatic achievement. The Staff

## 104. The American Novel.

(Formerly numbered 108.) Not open for credit to English majors. The development, with emphasis on form, of the American novel from its beginning to the present day. Included are works of such novelists as Hawthorne, James, Fitzgerald, and Faulkner. Mr. Durham, Mr. Goldberg

## 110. Introduction to Poetry.

(Formerly numbered 109.) A study of critical issues (metrics, diction, figurative language, symbolism, irony and ambiguity, form and structure) and aesthetic issues, including evaluative criteria; followed by the close critical analysis of a selection of representative poems. This course is particularly recommended for teaching credential candidates. Mr. Sheets, Mr. Thorslev

## 111. The Literature of Myth and Oral Tradition.

(Formerly numbered 104 and same as Folklore 104.) A study of myth, dramatic origins, oral epic, folklore and ballad, emphasizing Indo-European and Semitic examples. Mr. Wilgus

## 112. Children's Literature.

(Formerly numbered 106.) A study of the historical backgrounds and development of types of children's literature, folklore and oral tradition, levels of interest, criticism and evaluation, illustration and bibliography. Mr. Cushman

## 113. The English Bible as Literature.

(Formerly numbered 105.) The principal literary monuments of the Old and New Testaments in the King James version. Mr. Dearing, Mr. Jacobs

## 114. Survey of African Literature in English.

(Formerly numbered 112.) A survey of contemporary literature from English-speaking Africa, reviewing the major genres from several countries and making cross-comparisons with other literatures. Generalizations concerning the nature of the English used by such writers will be examined. Mr. Povey

## 115. American Popular Literature.

(Formerly numbered 107.) A study of the main currents of popular and cultural taste as reflected in such genres as dime novels, detective fiction, and Western stories. Mr. Durham, Mr. Vorpahl

## 116. Recent British and American Literature.

British and American literature since the mid-century: a survey of recent trends and developments in poetry, fiction, and criticism. Mr. Espey, Mr. Nevius

## 117. The Short Story in England and America.

A historical survey of the short story as a genre from the eighteenth century to the present day. Mr. Goldberg

## 120. English Language Study for Teachers.

A survey of those areas of theoretical and applied English linguistics that are of special interest and importance for primary and secondary school English teachers. Subjects covered include: approaches to the description of English grammar; regional and social dialects of American English; contributions of English language study to the teaching of reading, spelling, composition and literature. Mr. Arthur, Mr. Matthews

## 121. The History of the English Language.

A study directed toward English majors of the main features in the grammatical, lexical and phonetic condition of the English language from Indo-European up to the present time. Mr. Arthur, Mr. Matthews

## 122. The Structure of Modern American English.

Prerequisite: course 120 or Linguistics 100. A general description of the English language as it is currently used in North America, and study of the developments which have led to distinctive American characteristics. Mr. Arthur, Mr. Campbell

## 130. Composition for Teachers.

Preparation for future teachers of English composition in the writing and criticism of the kinds of prose discourse usually taught in the secondary schools. The Staff

## 131. Exposition.

Weekly assignments designed to cover the standard patterns of expository writing: enumeration, classification, cause and effect, narrative exposition, etc. The Staff

## 133. Creative Writing: Poetry.

Weekly exercises in the writing of poetry, with practice in the standard forms and metres and the study of techniques. Classroom discussion based on student work. Mr. Gullans, Mr. Kessler

## 134A-134B-134C. Creative Writing: The Short Story.

The completion of three stories of average length during each quarter. Some of these may, with the instructor's permission and the student's wish, be a substantial revision of one of the other stories presented. Classroom discussion based on student stories. Mr. Goldberg, Mr. Kessler

## 135A-135B-135C. Creative Writing: Drama.

An exploration of the capacity of each student to write for the theater. Class discussion of student writing, individual conferences, rehearsed readings, and laboratory productions. Mr. Savage

## 140. Criticism.

(Formerly numbered 171.) An introduction to the types of literary criticism and their methods of analysis and evaluation. The Staff

## 141. Chaucer.

(Formerly numbered 172.) A study of selected items from Chaucer's major works with emphasis upon *The Canterbury Tales*. Mr. Matthews, Miss Ridley

**142A. Shakespeare: The Poems and Early Plays.**

For English majors (and non-majors who have completed 10A-10B-10C). Not open to students who have taken the course formerly numbered 170. An intensive study of selected poems and representative comedies, histories, and tragedies through *Hamlet* The Staff

**142B. Shakespeare: The Later Plays.**

Prerequisite: course 142A. Not open to students who have taken the course formerly numbered 170. For English majors (and non-majors who have completed 10A-10B-10C). An intensive study of representative problem plays, major tragedies, Roman plays and romances. The Staff

**143. Milton.**

(Formerly numbered 173). A study of the major works of Milton with emphasis on *Paradise Lost*. The Staff

**150. Later Medieval Literature.**

Reading and historical explication of the major writers of the fourteenth and fifteenth centuries (excluding Chaucer); e.g., the Gawain-poet, Langland, Gower, Malory, miracle and morality plays, prose, and short poems. The more difficult texts will be read in modernized form. Mr. Matthews, Miss Ridley

**151. Elizabethan Literature.**

A study of English literature of the sixteenth century, with special emphasis on the development and interrelationships of poetry, prose, fiction, and literary theory and criticism during the reign of Elizabeth I. Mr. Dick, Mr. Phillips

**152. The Drama to 1642.**

(Formerly numbered 145.) A study of the English drama, excluding Shakespeare, from the beginning to the closing of the theaters, with special emphasis on plays of the Elizabethan and Jacobean periods. Mr. Dent, Mr. Kelly

**153. Literature of the Early Seventeenth Century (1600-1660).**

Not open to students who have taken the course formerly numbered 152. A study of the major works as literary documents and as products of seventeenth-century thought. The work of Milton is excluded. Mr. Guffey

**154. Literature of the Restoration and Earlier Eighteenth Century (1680-1730).**

Not open to students who have taken either of the courses formerly numbered 152 or 153. A study of major works as literary documents and as products of Restoration and earlier eighteenth-century thought. Mr. Miner, Mr. Swedenberg

**155. Literature of the Later Eighteenth Century (1730-1788).**

Not open to students who have taken the course formerly numbered 153. A study of major works as literary documents and as products of later eighteenth-century thought. Mr. Dearing, Mr. Novak

**156. The Drama, 1660-1842.**

(Formerly numbered 146.) A survey of the English drama from the Restoration to the Licensing Act. Mr. Novak, Mr. Stephenson

**157. The Novel to 1832.**

(Formerly numbered 140.) A survey of the major English novelists from Defoe through Scott. Mr. Novak, Mr. Stephenson

**160. Earlier Romantic Poetry and Prose.**

Not open to students who have taken the course formerly numbered 154. An intensive study of the poetry and prose of Blake, Wordsworth, and Coleridge, with collateral readings from such authors as Godwin, Burke, Paine, Burns, Southey, Lamb, DeQuincy, and Scott. Mr. Burwick, Mr. Sheats

**161. Later Romantic Poetry and Prose.**

Not open to students who have taken the course formerly numbered 154. An intensive study of the poetry and prose of Keats, Shelley, and Byron, with collateral readings from such authors as Hazlitt, Hunt, Landor, Clare, Moore, and Peacock. Mr. Maniquis, Mr. Thorslev

**162. Victorian Poetry.**

Not open to students who have taken the course formerly numbered 155. A study of major and minor Victorian poets, with special emphasis on Tennyson, Browning, Arnold, and Hopkins. Mr. Freeman, Mr. Schaefer, Mr. Tennyson

**163. Victorian Prose.**

Not open to students who have taken the course formerly numbered 155. A study of major prose writers of the Victorian period, including Carlyle, Ruskin, Arnold, Mill, Newman, Pater, and Wilde. Mr. Schaefer, Mr. Tennyson

**164. The Novel, 1832-1900.**

(Formerly numbered 141.) A survey of the major English novelists from Dickens through Hardy. Mr. Christensen, Mr. Jacobs

**165. Twentieth-Century British Poetry and Prose.**

(Formerly numbered 159.) A study of the dominant trends of the twentieth century, with emphasis on experimental work in short fiction, poetry, and the contemporary critical sensibility. Mr. Espey, Mr. Newell

**166. The Novel, 1900 to the Present.**

(Formerly numbered 142.) A survey of the major English novelists from Conrad to the present. Mr. Jacobs, Mr. Newell

**167. The Drama, 1842 to the Present.**

(Formerly numbered 147.) A survey of British and American drama with its principal continental influences. For Theater Arts majors the prerequisite of courses 10A-10B-10C is waived. Mr. Best

**170. American Literature to 1800.**

Not open to students who have taken the course formerly numbered 156. A historical survey of American literature through the Colonial and Early National Periods. Mr. Lemay

**171. American Literature, 1801-1865.**

Not open to students who have taken the course formerly numbered 157. A historical survey of American literature, including fiction, from the beginning of the nineteenth century to the end of the Civil War. Mr. Howard, Mr. Roes

**172. American Literature, 1866-1912.**

Not open to students who have taken the course

formerly numbered 157. A historical survey from Whitman to the founding of *Poetry* magazine.

Mr. Nevius, Mr. Vorpahl

### 173. Twentieth Century American Poetry.

Not open to students who have taken the course formerly numbered 158. The development of American poetry since 1912, including Frost, Eliot, Pound, and Stevens.

Mr. Gullans

### 174. Twentieth Century American Fiction.

Not open to students who have taken the course formerly numbered 158. The development of the American novel and short story since 1912, including Hemingway, Fitzgerald, and Faulkner.

Mr. Lehan, Miss Wall

**Specialized Studies.** These courses (180 through 189) are designed to permit a small group of students (limit: 15) to specialize in a period which they find attractive, and in which they have taken adequate upper division background courses. For the author, group or genre to be studied, see the Schedule of Classes for any given quarter. Enrollments for each course are handled in the department office (Humanities Building 2225) at the time of pre-enrollment in the quarter preceding that in which the course is offered.

### 180. Specialized Studies in Medieval Literature.

The Staff

### 181. Specialized Studies in Renaissance Literature.

The Staff

### 182. Specialized Studies in Seventeenth-Century Literature.

The Staff

### 183. Specialized Studies in Eighteenth-Century Literature.

The Staff

### 184. Specialized Studies in Romantic Literature.

The Staff

### 185. Specialized Studies in Victorian Literature.

The Staff

### 186. Specialized Studies in Twentieth-Century British Literature.

The Staff

### 187. Specialized Studies in Colonial American Literature.

The Staff

### 188. Specialized Studies in Nineteenth-Century American Literature.

The Staff

### 189. Specialized Studies in Twentieth-Century American Literature.

The Staff

### 189. Special Studies in English. (½ to 1 course)

Open to graduate students by petition only.

The Staff

### 199H. Honors Tutorial.

A tutorial course for students enrolled in the Honors Program. Each student will be expected to prepare a long paper of a critical or research nature.

The Staff

### Graduate Courses

### 200. Bibliography.

Mr. Dearing, Mr. Dick, Mr. Gullans

### 201. The Functions of Literary Criticism.

Mr. Lehan

### 210. Readings in Old English Literature.

Mr. Condren, Mr. Matthews

### 211. Readings in Middle English Literature.

Prerequisite: course 210.

Mr. Matthews, Miss Ridley

### 212. History of the English Language.

Prerequisite: course 211.

Mr. Matthews, Mr. Stockwell

### 213. The Development of Modern English.

Course 122, or course 212, or Linguistics 205A.

Mr. Bowen, Mr. Wilson

### Graduate Surveys

These courses are designed primarily for students whose undergraduate training has not included the study of literature in terms of ages or periods.

### 220. Medievalism.

Mr. Matthews, Miss Ridley

### 221. The Renaissance.

Mr. Dick, Mr. Jorgensen, Mr. Phillips

### 222. Jacobean and Caroline Literature.

Mr. Guffey, Mr. Miner, Mr. Swedenberg

### 223. Neo-Classicism.

Mr. Dearing, Mr. Novak

### 224. Romanticism.

Mr. Burwick, Mr. Thorslev

### 225. Victorianism.

Mr. Booth, Miss Nisbet, Mr. Schaefer

### 226. American Literature.

Mr. Falk, Mr. Howard, Mr. Nevius

### 227. Twentieth Century Literature: American.

Mr. Durham, Mr. Lehan, Mr. Nevius

### 228. Twentieth Century Literature: British.

Mr. Espey, Mr. Nevius

### Graduate Preseminars

These courses should be elected only by students who have had the corresponding graduate survey or its equivalent.

### 230. Problems in Literary Scholarship and Criticism. Medieval Literature.

### 231. Problems in Literary Scholarship and Criticism. Renaissance Literature.

### 232. Problems in Literary Scholarship and Criticism. Jacobean and Carolinian Literature.

### 233. Problems in Literary Scholarship and Criticism. Neo-classic Literature.

234. Problems in Literary Scholarship and Criticism. Romanticism.
235. Problems in Literary Scholarship and Criticism. Victorian Literature.
236. Problems in Literary Scholarship and Criticism. American Literature.
237. Problems in Literary Scholarship and Criticism. Contemporary Literature.
- Graduate Seminars
240. Phonological Structures and Dialectology.  
Mr. Matthews, Mr. Stockwell
241. Grammatical and Lexical Structure.  
Mrs. Partee, Mr. Stockwell
242. Beowulf. Mr. Matthews
243. The Ballad.  
(Same as Folklore 243.) Mr. Wilgus
244. Old English Literature. Mr. Matthews
245. Medieval English Literature.  
Mr. Matthews, Miss Ridley
246. Chaucer and His Contemporaries.  
Mr. Matthews, Miss Ridley
247. Studies in Early Tudor Literature.  
Mr. Kinsman, Miss Ridley
248. Middle English Dialects. Mr. Matthews
249. Shakespeare.  
Mr. Dent, Mr. Jorgensen, Mr. Phillips
250. Spenser. Mr. Dick, Mr. Phillips
251. Studies in Elizabethan and Jacobean Drama.  
Mr. Dent, Mr. Dick, Mr. Jorgensen
252. Elizabethan Poetry. Mr. Dick, Mr. Phillips
253. Themes in Renaissance Literature.  
Mr. Dick, Mr. Jorgensen
254. Trends in Seventeenth Century Prose.  
Mr. Miner, Mr. Swedenberg
255. Trends in Seventeenth Century Poetry.  
Mr. Miner, Mr. Swedenberg
256. Studies in Drama, 1680-1790. Mr. Novak
257. Dryden and His Contemporaries.  
Mr. Dearing, Mr. Miner, Mr. Swedenberg
258. Pope and His Contemporaries.  
Mr. Dearing, Mr. Novak
259. Johnson and His Contemporaries. Mr. Dearing
260. Studies in the Romantic Writers. Mr. Thorpe
261. Studies in Victorian Prose.  
Miss Nisbet, Mr. Tennyson
262. Studies in Victorian Poetry.  
Mr. Booth, Miss Nisbet, Mr. Schaefer
263. Studies in the Nineteenth Century Novel.  
Mr. Booth, Miss Nisbet
264. Contemporary American Literature.  
Mr. Durham, Mr. Nevins
265. Contemporary British Literature.  
Mr. Espey, Mr. Nevins
266. Early American Literature.  
Mr. Howard, Mr. Lemay
267. Major American Writers.  
Mr. Falk, Mr. Howard, Mr. Nevins
268. Studies in American Literature.  
Mr. Falk, Mr. Howard
269. Descriptive Bibliography. Mr. Dearing
270. Teaching of College English Composition.  
Mr. Freeman
- Professional Course in Method
300. The Teaching of English.  
Required of candidates for the general secondary credential with the field major in English and speech.  
Mr. Freeman, Mr. Hartung
- Individual Study and Research
596. Directed Individual Study.  
Independent study, including preparation for the foreign language examination. This course may not be used to satisfy any course requirement for a degree.  
The Staff
597. Directed Studies.  
Restricted to those who have passed Part I of the qualifying examinations for the doctor's degree.  
The Staff
599. Research on Dissertation.  
Restricted to those who have passed Part II of the qualifying examinations for the doctor's degree.  
The Staff
- Courses in English as a Second Language
- Courses 33A-33B-33C, 103J, 106J, and 109J are only for students whose first language was other than English. Courses 33A-33B-33C are not open to those who have received a satisfactory grade in English 1 at the University of California. Permission to enroll in these three courses is given on the basis of the Entrance Examination in English as a Second Language which students

whose mother tongue is not English must take instead of the Subject A examination (see page 38 of this bulletin). Depending on the result of this examination, entering students are: (1) exempted from any special English requirement; (2) required to take course 33C; (3) required to take course 33B followed by course 33C; (4) required to take course 33A followed by courses 33B and 33C; or (5) required to spend a quarter studying elementary English exclusively.

#### **Certificate in the Teaching of English as a Second Language**

To qualify for this certificate students must meet the following requirements: (1) All students, those educated in the United States, as well as those educated in other countries, must have an educational background sufficient to qualify them as teachers in their home state or country. They will normally be admitted to the University as graduate students. With the approval of the Dean of the Graduate Division and the Chairman of the Department of English, graduate admission may be granted to students solely for the purpose of pursuing the courses leading to this certificate, provided they meet general graduate admission requirements. Students who do not meet these requirements may, upon recommendation of the Chairman of the Department of English, be admitted to limited status to pursue the course of study leading to the certificate. (2) Courses to be taken in the fall quarter are English 370K, Linguistics 100 and a nondepartmental elective (appropriate courses in education, folklore, speech, and the structure of the student's mother tongue are especially recommended). Depending on the results of the Entrance Examination in English as a Second Language, nonnative speakers of English may be required to take English 33C in lieu of this elective. Courses to be completed in the winter quarter are English 250K, English 122, and a departmental elective (English 109K, English 371K, or an appropriate course in English or American literature are recommended). Courses for the spring quarter are English 380K, English 103K (native and some nonnative speakers will be allowed to substitute Linguistics 103 or Linguistics 200A for this), and English 106K. By passing a proficiency examination in English composition, students may be exempted from course 106K, in which case they may choose any program-connected elective approved by their adviser (English 109K, English 112, English 280K, and English 270K are recommended).

One section of English 103K will be offered in the fall quarter for students who find it convenient to postpone their electives to the winter and spring quarters. (3) Certificate candidates in graduate status must maintain a grade average equivalent to that required of candidates for a University-recommended standard secondary teaching credential.

#### **Special Language Requirement for Native Speakers of English**

Students whose mother tongue is English will not be held for the first two electives (nondepartmental and departmental) mentioned in the previous paragraph. Instead they will be required to take two courses designed to acquire or perfect a knowledge of the native language of the pupils to whom they expect to teach English. Courses which deal with the linguistic structure of the language in question should be chosen whenever possible, and such courses must be taken after the work leading to the certificate is begun. In case there is doubt as to which foreign language will be most appropriate, a non-European language should be chosen. One course from the series Linguistics 220 and 225 may be counted toward the fulfillment of this requirement.

#### **Combination of the Certificate with an Advanced Degree**

Students specializing in the Teaching of English as a Second Language are encouraged to combine the Certificate Program with an appropriate advanced degree. The certificate work can be so planned that upon completing it (in graduate status), a student has also fulfilled nearly half of the requirements for any of several M.A. degrees: in English, linguistics, education, or African studies. It is thus possible in many cases to obtain both the certificate and the M.A. in less than two academic years. Teaching English as a Second Language may also be chosen as a field of specialization by candidates for the doctorate in Linguistics or Education.

#### **Lower Division Courses**

#### **33A. Intermediate English as a Second Language. (2 courses)**

Meets ten hours weekly. Intensive drill in pronunciation, structural patterns, vocabulary, conversation, and composition. The Staff

#### **33B. Intermediate English as a Second Language.**

Meets five hours weekly. Continuation of 33A. The Staff

**33C. Intermediate English as a Second Language.**

Meets five hours weekly. Continuation of 33B with emphasis on composition. The Staff

**Upper Division Courses****103J. Phonetics for Foreign Students.**

Prerequisite: course 33C or the equivalent. A detailed and systematic study of the sounds of American English and the way in which they are put together in connected speech, applied to the improvement of the student's own accent. Language laboratory. The Staff

**103K. Phonetics for Teachers of English as a Second Language.**

Prerequisite: consent of the instructor. Analysis of the phonological structure of contemporary English, with attention to the differences between British and American speech. Laboratory drill directed toward individual needs.

Mr. Campbell, Mr. Wilson

**106J. Advanced Composition for Foreign Students.**

Prerequisite: course 33C or the equivalent. Exercises in writing based on literature dealing with American life and thought, with the aim of developing control of idiomatic expression.

Miss McIntosh, Mr. Povey

**106K. Advanced Composition for Teachers of English as a Second Language.**

Prerequisite: consent of the instructor. Elements of English grammar as related to classroom instruction. Compositions based on the contrastive analysis of American and other cultures.

Miss McIntosh, Mr. Povey

**109J. Introduction to Literature (for Foreign Students).**

Prerequisite: course 33C or the equivalent. Selections from English and American literature presented so as to make full allowance for the students' linguistic and cultural problems and to contribute to an increasing mastery of the English language.

Mr. Povey

**109K. The Teaching of Literature in a Second-Language Situation.**

Prerequisite: consent of the instructor. Special problems involved in teaching English literature to students whose mother tongue is a language other than English. Choice and preparation of teaching materials. Relationship of advanced reading and composition to literature.

Miss McIntosh, Mr. Povey

**Graduate Courses****250K. Contrastive Analysis of English and Other Languages. Seminar.**

Prerequisites: Linguistics 100, course 370K. Theory and techniques of contrasting the phonological, grammatical, and lexical structures of English with those of other languages.

Mr. Campbell, Miss McIntosh, Mr. Wilson

**251K. Bilingual Comparative Studies. Seminar.**

(Same as Linguistics 261K.) Prerequisite: course 250K. The relationship of two languages in an incipient bilingual speaker. Further study of the techniques of contrastive analysis as a means of predicting interference between linguistic systems, with application to original research projects. Mr. Wilson

**260K. Psycholinguistics and Language Teaching. Seminar.**

(Same as Linguistics 260K.) Prerequisite: courses 370K and 103K and Linguistics 100, or consent of the instructor. An exploration of those areas of psycholinguistics covering foreign language acquisition; types and theories of bilingualism; learning theories underlying the current methods of teaching foreign languages; basic experimental designs to test existing assumptions about learning and teaching foreign languages. The Staff

**270K. The Social and Educational Role of English as a Second Language. Seminar.**

Prerequisite: consent of the instructor. Use of and need for English as correlated with social structure of countries such as Nigeria and the Philippines; factors affecting language policy in their school systems; applicability of research techniques of socio- and psycholinguistics to problems of language policy. Mr. Prator

**271. Studies in African Literature in English.**

Prerequisite: English 114 or consent of the instructor. Continuation of English 114. Special problems and trends in African literature in English. Mr. Povey

**Professional Courses in Method****370K. The Teaching of English as a Second Language.**

Meets five hours weekly. Prerequisite: consent of the instructor. Bibliography, survey, and evaluation of methods and materials. The nature of language learning. Analysis of the differences between two languages as a basis of instruction.

Mr. Campbell, Miss McIntosh, Mr. Prator

**371K. Language Testing for Teachers of English as a Second Language.**

Prerequisites: Linguistics 100, course 370K. Theory of testing language competence and performance. Elementary statistical concepts. Functions of a testing program. Construction of various tests. The Staff

**375K. The Teaching of Standard English as a Second Dialect.**

Prerequisite: consent of the instructor. Survey and evaluation of methods and bibliography of materials appropriate to subject. The nature of language learning, contrastive analysis, and dialect distribution and comparison. Mr. Arthur

**380K. Supervised Teaching: English as a Second Language.**

Prerequisite: course 370K. Team teaching at the elementary, secondary, or adult level under the supervision of a senior staff member.

Mr. Campbell, Miss McIntosh, Mr. Prator

## ■ FOLKLORE AND MYTHOLOGY GROUP

(Department Office, 11-380 Social Sciences Building)

- Marija Gimbutas, Ph.D., *Professor of Indo-European Studies.*  
 Wayland D. Hand, Ph.D., *Professor of German and Folklore and Director, Center for the Study of Comparative Folklore and Mythology.*  
 Vladimir Markov, Ph.D., *Professor of Slavic Languages.*  
 Jaan Puhvel, Ph.D., *Professor of Indo-European Studies.*  
 Stanley L. Robe, Ph.D., *Professor of Spanish.*  
 Charles Speroni, Ph.D., *Professor of Italian.*  
 Walter Starkie, M.A., Litt.D., *Professor of Spanish in Residence.*  
 D. K. Wilgus, Ph.D., *Professor of English and Anglo-American Folksong.*  
 Robert A. Georges, Ph.D., *Assistant Professor of English and Folklore and Chairman, Folklore and Mythology Group.*  
 ———, *Assistant Professor of Music and Folklore.*  
 ———, *Assistant Professor of Indo-European Studies (Celtic).*



- Marianna D. Birnbaum, M.A., *Lecturer in Finno-Ugric Studies.*  
 Alan Jabbour, M.A., *Acting Assistant Professor of English.*  
 Michael Owen Jones, M.A., *Acting Assistant Professor of History and Folklore.*  
 Inkeri Rank, M.A., *Lecturer in Finno-Ugric Studies.*



- Alexander Badawy, Ph.D., *Associate Professor of Art.*  
 Helen Florence Caldwell, M.A., *Senior Lecturer in Classics.*  
 John A. Crow, *Professor of Spanish.*  
 Jerome Cushman, Ph.D., *Lecturer in English and Library Service.*  
 Elsie Dunin, M.A., *Lecturer in Dance.*  
 Thomas Eekman, Ph.D., *Professor of Slavic Languages.*  
 Alma Hawkins, Ph.D., *Professor of Dance.*  
 Melvyn Helstien, Ph.D., *Associate Professor of Theater Arts.*  
 Hazel Chung Hood, B.A., *Lecturer in Dance.*  
 Mantle Hood, Ph.D., *Professor of Music.*  
 Boris A. Kremenliev, Ph.D., *Professor of Music.*  
 Daniel P. Kunene, Ph.D., *Assistant Professor of African Languages.*  
 Juana de Laban, Ph.D., *Associate Professor of Dance.*  
 Steven Lattimore, M.A., *Acting Assistant Professor of Classical Archaeology.*  
 Wolf Leslau, Ph.D., *Professor of Hebrew and Semitic Linguistics.*  
 William A. Lessa, Ph.D., *Professor of Anthropology.*  
 William Matthews, Ph.D., *Professor of English.*  
 David Morton, Ph.D., *Assistant Professor of Music.*  
 Phillip Newman, Ph.D., *Assistant Professor of Anthropology.*  
 Wendell H. Oswalt, Ph.D., *Associate Professor of Anthropology.*  
 Florence H. Ridley, Ph.D., *Associate Professor of English.*  
 Charles Seeger, A.B., *Research Musicologist in Music (Ethnomusicology and Folk Music).*  
 Allegra Snyder, M.A., *Lecturer in Dance.*  
 Eli Sobel, Ph.D., *Professor of German.*

Paul O. W. Tanner, M.A., *Lecturer in Music.*

Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*

Donald J. Ward, Ph.D., *Associate Professor of German.*

Lora S. Weinroth, Ph.D., *Assistant Professor of French.*

Johannes Wilbert, Ph.D., *Professor of Anthropology.*

Jules Zentner, Ph.D., *Assistant Professor of Scandinavian Languages.*

———, *Visiting Assistant Professor of Finno-Ugric Studies.*

Although no undergraduate major in folklore is offered, a wide variety of course work is available in the three following general areas: (1) languages and literatures (English and foreign languages); (2) social sciences (anthropology, sociology); (3) folk arts (art, dance, music, theater arts). Students with undergraduate preparation in folklore may continue their work on the graduate level. For planning course work, students should consult departmental advisers and the Chairman of the Folklore and Mythology Group.

#### **M.A. in Folklore and Mythology.**

The program leading to the degree of Master of Arts in Folklore and Mythology is administered by the Committee on Folklore and Mythology. It is open to students desiring a knowledge of the materials of folklore and the techniques of research. Students completing the degree may continue folklore study in conjunction with a program leading to a degree in a related field.

**Admission to the Program.** In addition to meeting the requirements of the Graduate Division, the students should have (1) an A.B. degree preferably in a field of the humanities or social sciences and (2) Folklore 101 and 105 or their equivalents. Upon admission to graduate status the student should consult the Chairman of the Folklore and Mythology Group.

#### **Requirements for the Master's Degree.**

**General Requirements.** As throughout the Graduate Division, see page 136.

**Language Requirements.** A reading knowledge of a foreign language (French or German unless another language is approved by the Chairman).

**Program.** All candidates, whether electing the Thesis Plan or the Comprehensive Examination Plan, must complete the following: Folklore 200, 201A–201B, 216; Classics 161 or Indo-European Studies 140; one course chosen from each of the following groups:

Group 1. Folklore 106, 144, 146; Music 140A–140B, 142, 143A–143B, 144, 145, 146, 190A.

Group 2. Folklore 120, 122, 124A–124B, 125, 126, 128, 145, 149, 150, 221, 230A–230B, 241, 249; African Languages 150A–150B; Anthropology 102; French 115A–115B–115C, 215A–215E; German 134, 240, 245; Italian 230A–230B; Near Eastern Languages 241; Scandinavian 152, 245; Russian 150; Spanish 149, 249.

Group 3. Folklore 243, 251, 258, 259, 286; English 220, 243; Indo-European Studies 260A–260B; Music 255, 258, 280; Russian 240C; Spanish 262B, 286.

Also required is a comprehensive written examination requiring (1) a grasp of the major documents and basic techniques of folklore study, (2) a general knowledge of the major genres of folklore, and (3) an extensive knowledge of a single genre or culture area.

**Thesis Plan.** An acceptable thesis written under the direction of a member of the Folklore and Mythology Group and an oral examination in the field of the thesis; a total of nine courses chosen from courses in the Folklore and Mythology Group (including course 598), at least five of which must be in the 200 series.

**Comprehensive Examination Plan.** At least nine courses chosen from the courses in the Folklore and Mythology Group, at least five of which must be in the 200 series; an oral examination covering the field of the written comprehensive examination.

Through its member departments the Folklore and Mythology Group also offers a variety of course work leading to the M.A. and Ph.D. degrees. Financial aid and research opportunities are available to qualified graduate students in the form of fellowships, research assistantships, teaching assistantships, and collecting stipendia. For further information, students should consult the Director of the Center for the Study of Comparative Folklore and Mythology, Mr. Hand.

#### **Upper Division Courses**

##### **101. Introduction to Folklore.**

Prerequisite: junior standing. A reading knowledge of a foreign language is desirable, but not pre-

requisite to the course. The various fields of folklore, their literature and problems.

Mr. Georges, Mr. Hand, Mr. Jones

#### 104. The Literature of Myth and Oral Tradition.

(Same as English 111.) A study of myth, dramatic origins, oral epic, folktale and ballad, emphasizing Indo-European and Semitic examples.

Mr. Jabbour, Mr. Wilgus

#### 105. American Folklore.

Prerequisite: junior standing. A survey of American folklore with illustrative materials from the genres of folktales, legends, superstitions, proverbs, folk speech, etc.

Mr. Georges, Mr. Jones, Mr. Wilgus

#### 106. Anglo-American Folk Song.

Lecture and discussion, three hours; demonstration period, two hours. Prerequisite: junior standing. A survey of Anglo-American balladry and folk song, with attention to historical development, ethnic background, and poetic and musical values.

Mr. Jabbour, Mr. Wilgus

#### 118. The Folklore of Material Culture.

Prerequisite: course 101 or 105. A study of the physical manifestations of folk culture: village layout and architecture, folk technology, arts and crafts, costume and design, etc.

Mr. Jones

#### 120. Historical Survey of the Gypsies.

Prerequisite: junior standing. Study of the history, ethnic origins, and linguistics of the Gypsies.

Mr. Starkie

#### 122. Introduction to Celtic Folklore and Mythology.

(Same as Indo-European Studies 189.) Prerequisite: course 101 or consent of the instructor. A general course for the student in folklore, with emphasis on the types of folklore research currently practiced in Eire and the mythic traditions of the Irish and Welsh.

#### 124A. Introduction to Finnish Folklore and Mythology.

(Same as Finno-Ugric Studies 139A.) Prerequisite: course 101 or permission of the instructor. The methods and results of Finnish folklore studies and the mythic traditions of the Finns.

Mrs. Rank

#### 124B. Folklore of Finnish Material Culture.

(Same as Finno-Ugric Studies 139B.) Prerequisite: course 124A. Material manifestations of Finnish folk culture: village layout and architecture, folk technology, arts and crafts, textiles, costume and design, etc.

Mrs. Rank

#### 125. Introduction to Finno-Ugric Folklore and Mythology.

(Same as Indo-European Studies 169.) Prerequisite: course 124A or permission of the instructor. A survey of the traditions of the smaller Finno-Ugric nationalities.

Mrs. Rank

#### 126. Introduction to Baltic and Slavic Folklore and Mythology.

(Same as Indo-European Studies 179.) Prerequisite: course 101 or consent of the instructor. A general course for students interested in folklore and mythology and for those interested in Indo-European mythic antiquities.

Mrs. Gimbutas

#### 128. Introduction to Hungarian Folklore and Mythology.

(Same as Finno-Ugric Studies 159.) Prerequisite: course 101 or consent of the instructor. A general course for the student in folklore and mythology, with emphasis on types of folklore and varieties of folklore research.

Mrs. Birnbaum

#### 144. American Folk and Popular Music.

(Same as Music 144.) A survey of the history and characteristics of the music developed in or for general American culture and various subcultures.

Mr. Wilgus

#### 145. Oral Art and Drama of Non-Western Peoples.

(Same as Anthropology 145.) Various genres of oral art found among non-Western peoples including myth, legend, proverb, riddle, song text and ritual drama; social function of oral art; role of the innovator; dynamics of stability and change in oral art; various classical theories of folklore.

#### 146. Musical Arts of Non-Western Peoples.

(Same as Anthropology 146.) Music as an aspect of culture in various non-Western societies. Native ideas about music and systems of criticism. The social functions of music. Music in relation to anthropological theories of symbolic behavior, enculturation, innovation, unconscious patterning, and culture history.

#### 148. The Theory of Oral Literature.

(Same as Anthropology 148.) The historical development of the study of oral literature among pre-literate people; theoretical bases for the analysis of oral traditions.

#### 149. Folk Literature of the Hispanic World.

(Same as Spanish 149.) A study of the history and present dissemination of the principal forms of folk literature throughout the Hispanic countries.

Mr. Robe

#### 150. Russian Folk Literature.

(Same as Russian 150.) Prerequisite: Russian 16.

Mr. Markov

#### 181. Decorative Textiles in Folk Cultures.

Studies in ethnic origins and historical background of Eastern and Western cultures; illustrated by fabrics and costumes from the traditions.

#### 180. Transcription, Analysis and Classification of Folk Music.

(Same as Music 180.) An intensive study of methods and techniques necessary to the understanding of folk music.

#### 199. Special Studies in Folklore. (½ to 1 course)

Prerequisite: senior standing and the consent of the instructor.

The Staff

#### Graduate Courses

#### 200. Folklore Bibliography, Theory and Research Methods.

Prerequisite: course 101 and any one of the following courses: course 104, 105, 106, 117, 122, 124A, 125, 126, 145, 149, 150, 230A-230B; Anthropology 102, 124, 145; English 111; German 134; Italian 230A-230B; Music 140A-140B, 141, 142, 143A-143B, 144, 145, 146; Russian 150; Spanish 149.

Mr. Georges, Mr. Hand

**201A-201B. Field Collecting. (½ course each)**

One quarter of lecture-demonstration covering the principles and techniques of folklore collection, followed by a quarter of field work under supervision. Prerequisite: course 200.

Mr. Jones, Mr. Wilgus

**202A-202B. Folklore Archiving. (½ course each)**

Prerequisite: course 200. One quarter of lecture-demonstration in the principles and techniques of the classification and preservation of folklore collectanea; followed by one quarter of directed experience in archiving.

**213. Folk Belief and Custom.**

Prerequisites: course 101 and any one of the following courses: course 105, 118, 122, 124A, 124B, 125, 128, 128, 145; Anthropology 102, 124, 145; Italian 230A-230B; German 134, 240; Russian 150; Spanish 149.

Mr. Hand

**216. The Folk Tale.**

Prerequisites: course 101 and any one of the following courses: course 104, 105, 122, 124, 126, 128, 145; Anthropology 124, 145; Classics 161; English 111, 243; German 134, 240; Indo-European Studies 140; Italian 230A-230B; Spanish 149, 249.

Mr. Georges, Mr. Hand

**217. Folk Speech.**

Prerequisites: courses 101 and 104, 105, or 106; also recommended: Anthropology 110, 112, English 120, or Linguistics 100. A study of the ethnography of communication and its relevance to the study of social and regional dialects, proverbs, riddles, onomastics, folk poetry and verse, and traditional humor.

Mr. Georges

**221. Historical Survey of the Gypsies.**

A survey of Gypsy folklore with attention to the special role of the Romany people as transmitters of folklore over wide geographical continua.

Mr. Starkie

**223. Folklore of the British Isles.**

Prerequisites: courses 101; and 105, or 106. An examination of the lore of the peoples of Britain, with attention to history, function, and regional differences.

Mr. Georges

**230A-230B. Folk Tradition in Italian Literature.**

(Same as Italian 230A-230B.)

Mr. Speroni, Mr. Starkie

**241. Folklore and Mythology of the Near East.**

(Same as Near Eastern Languages 241.)

**243. The Ballad.**

(Same as English 243.)

Mr. Wilgus

**249. Hispanic Folk Literature.**

(Same as Spanish 249.)

Mr. Robe

**251. Seminar in Finno-Ugric Folklore and Mythology.**

(Same as Finno-Ugric Studies 251.)

**258. Seminar in Anglo-American Folk Music.**

(Same as Music 258.)

Mr. Wilgus

**259. Seminar in Folklore.**

Prerequisite: course 200 and consent of the instructor.

Mr. Georges, Mr. Hand, Mr. Wilgus

**286. Studies in Hispanic Folk Literature.**

(Same as Spanish 286.)

Mr. Robe

Individual Study and Research

**596. Directed Studies in Folklore. (½ to 1½ courses)**

The Staff

**597. Preparation for Comprehensive Examinations. (½ to 1½ courses)**

This course may not be used in fulfillment of minimum course requirements for the M.A. degree.

The Staff

**598. Thesis Preparation. (½ to 1 course)**

The Staff

Related Courses in Other Departments

Upper Division Courses

**African Languages 150A-150B. African Literature in English Translation.**

**Anthropology 102. World Ethnography.**

124. Comparative Religion.

127. Primitive Art.

146. Musical Arts of Non-Western Peoples.

**Art 104. Art of the Ancient Near East.**

118A. The Arts of Oceania.

118B. The Arts of Pre-Columbian America.

118C. The Arts of Sub-Saharan Africa.

119A. The Arts of Africa: Western Sudan.

119B. The Arts of Africa: The Guinea Coast.

119C. The Arts of Africa: The Congo.

**Classics 161. Introduction to Classical Mythology.**

162. Classical Myth in Literature.

**Dance 140A-140B-140C. Dance Cultures of the World.**

151A-151B. History of Dance.

**English 112. Children's Literature.**

**French 115A-115B-115C. Old French Language and Medieval Literature.**

**German 134. German Folklore.**

**Greek 101. Homer: *Iliad*.**

**Indo-European Studies 140. Introduction to Indo-European Mythology.**

**Music 132. Development of Jazz.**

140A-140B. Musical Cultures of the World.

141. Music of Indonesia.

142. Music of the Balkans.

143A-143B. Music of Africa.

145. History and Theory of Persian Music.

146. Music of Thailand.

190A. Proseminar in Ethnomusicology.

**Scandinavian** 141. Medieval Scandinavian Literature.

152. Intermediate Old Icelandic.

**Spanish** 151. The Folk Song in Spain and Spanish America.

**Theater Arts** 117A–117B–117C. The Puppet Theater.

#### Graduate Courses

**Anthropology** 202. Ethnography.

203. Cultures of Asia.

204. Pacific Island Cultures.

205. North American Indians.

207. Indians of South America.

208. African Cultures.

209. Cultures of the Soviet Union.

261. Myth and Ritual.

**Art** 220. The Arts of Africa, Oceania and Pre-Columbian America.

**Dance** 226. Dance Expressions in Selected Cultures.

227. Advanced Studies in Dance Education.

**English** 220. Medievalism.

**French** 215A–215E. The Medieval Language and Literature.

**German** 240. Folklore of the Germanic Peoples.

245. Germanic Mythology.

**Greek** 201A–201B. Homer: *The Iliad*.

202A–202B. Homer: *The Odyssey* and the *Epic Cycle*.

**Indo-European Studies** 260A–260B. Seminar in Indo-European Mythology.

**Music** 253. Seminar in Notation and Transcription in Ethnomusicology.

254. Seminar in Field and Laboratory Methods in Ethnomusicology.

255. Seminar in Musical Instruments of the Non-Western World.

280. Seminar in Ethnomusicology.

**Russian** 240C. Seminar in Old Russian Literature.

**Scandinavian** 245. Scandinavian Mythology.

**Spanish** 262B. Epic Poetry.

## ■ FOREIGN LITERATURE IN TRANSLATION

The following courses offered in the departments of language and literature do not require a reading knowledge of any foreign language:

**African Languages** 150A–150B. African Literature in English Translation.

**Arabic** 150A–150B. Survey of Arabic Literature in English.

**Armenian** 150A–150B. Survey of Armenian Literature in English.

**Classics** 141. Survey of Greek Literature in English.

142. Ancient Drama.

143. Survey of Latin Literature in English.

144. Survey of Medieval Latin Literature in English.

**Czech** 155A–155B. Survey of Czech Literature.

**Finno-Ugric** 138. Survey of Finnish Literature in Translation.

158A–158B. Survey of Hungarian Literature in Translation.

**French** 145A–145B–145C. Masterpieces of French Literature.

145A. The Middle Ages and Renaissance.

145B. The 17th and 18th Centuries.

145C. The 19th and 20th Centuries.

146. The Novel of the 19th Century.

147. The Novel of the 20th Century.

**German** 121A–121B. German Literature in Translation.

**Hebrew** 150A–150B. Survey of Hebrew Literature in English.

**Humanities** 1A–1G. World Literature.

**Indo-European Studies** 168. Survey of Sanskrit Literature in Translation.

178. Survey of Lithuanian Literature in Translation.

188. Survey of Irish Literature.

**Italian** 100A–100B–100C. Italian Literature in Translation.

110A–110B–110C. The Divine Comedy in English.

140. Readings in the Italian Theater in Translation.

150. Modern Italian Fiction in Translation.

Near Eastern Languages 150A-150B. Survey of Ancient Near Eastern Literatures in English.

Oriental Languages 140A-140B. Far Eastern Literature in Translation.

140A. Japanese Literature in Translation.

140B. Chinese Literature in Translation.

Persian 150A-150B. Survey of Persian Literature in English.

Polish 152A-152B. Survey of Polish Literature.

Russian 120A-120B. Survey of Russian Literature.

124. Dostoyevsky.

125. Tolstoy.

Scandinavian 141. Medieval Scandinavian Literature.

142. Scandinavian Literature of the 18th and 19th Centuries.

143. Modern Scandinavian Literature.

144. Ibsen.

145. Strindberg.

Serbocroatian 154A-154B. Survey of Yugoslav Literature.

Spanish 160A-160B. Hispanic Literatures in Translation.

162. Cervantes in Translation.

Turkic Languages 150A-150B. Survey of Turkish Literature in English.

## ■ FRENCH

(Department Office, 160 Haines Hall)

Francis J. Crowley, Ph.D., *Professor of French.*

Milan S. La Du, Ph.D., *Professor of French (Chairman of the Department).*

Hassan el Nouty, Docteur-ès-Lettres, *Professor of French.*

Oreste F. Pucciani, Ph.D., *Professor of French.*

§Gabriel Bonno, Docteur-ès-Lettres, *Emeritus Professor of French.*

§Clinton C. Humiston, Ph.D., *Emeritus Professor of French.*

L. Gardner Miller, Docteur de l'Université de Strasbourg, *Emeritus Professor of French.*

Marc Bensimon, Ph.D., *Associate Professor of French.*

Anne Fabre-Luce, Ph.D., *Associate Professor of French.*

Jean Decock, Ph.D., *Assistant Professor of French.*

Jeanne Perkins, Ph.D., *Assistant Professor of French.*

Jacques Prévot, Agrégé des Lettres, *Assistant Professor of French.*

Lora Weinroth, Ph.D., *Assistant Professor of French.*

Stephen D. Werner, Ph.D., *Assistant Professor of French.*

Marius Ignace Biencourt, Docteur de l'Université de Paris, *Assistant Professor of French, Emeritus.*



Nelly Bérardi, Licenciée-ès Lettres, *Associate in French.*

Colette Brichant, Docteur de l'Université de Paris, *Lecturer in French.*

Claude Cristin, Agrégé des Lettres, *Lecturer in French.*

Judith Gollub, Ph.D., *Lecturer in French.*

Claudine Guégan, Licenciée-ès-Lettres, *Associate in French.*

Marie-Claire Hackstaff, M.A., *Lecturer in French.*

Jacqueline Hamel, Licenciée-ès-Lettres, *Lecturer in French.*

Madeleine Korol, Ph.D., *Lecturer in French.*

Yvone Lenard, M.A., *Lecturer in French.*

Annie Lowitz, M.A., *Associate in French.*

Padoue de Martini, B.A., *Lecturer in French.*

Liliane Saphier, Licenciée-ès-Lettres, *Associate in French.*

§ Recalled to active service 1967-1968.

Ronnie Gale Scheib, M.A., *Acting Assistant Professor of French.*

Sylvia Walker, M.A., *Lecturer in French.*

———, *Associate in French.*

———, *Associate in French.*

### Preparation for the Major

Required: French 1, 2, 3, 4, 5, 6 (or 7), or their equivalents. Students receiving less than a grade of B in French 6 will take French 7 before proceeding with upper division work.

### The Major

Two majors are offered by the Department.

Plan A: Leading to the Bachelor of Arts in French and subsequently to the master's degree, Plan A, or to the standard secondary credential. Required: at least 15 courses of upper division French including (a) 101A-101B-101C, 102A-102B, 103A-103B-103C, 114A-114B-114C, 132A-132B; (b) and six courses covering two periods of literary history to be selected after consultation with the major adviser. Suggested: three courses in Latin, Italian, Spanish or German.

Plan B: With emphasis on literature, leading to the Bachelor of Arts in French and subsequently to the master's degree, Plan B. Required: at least 15 courses of upper division French including (a) 101A-101B-101C, 102A-102B, 103A-103B-103C, 114A-114B-114C; (b) and eight courses in French literature selected from the list of upper division offerings in French literature. Of these courses, six must be chosen in two out of six fields. The two remaining courses may be chosen as free electives in any field of French literature. Suggested: Three courses in Latin, Italian, Spanish or German.

Students who fail to maintain a C average or better in all work undertaken in upper division courses in the Department of French will, upon approval of the Dean of the College of Letters and Science, be excluded from the major in French.

Students intending to major in French must consult the appropriate major adviser before registering for French courses in the upper division.

Major Advisers: Mr. Decock and staff.

### The Honors Programs in French

Majors with a 3.0 grade-point average and a 3.0 overall average will be eligible to apply for the Honors Program in French. Students will be informed of their eligibility near the end of their junior year and should make application at that time if they wish

to enter the program. Applications should include: (1) a letter in French describing the student's field of interest in French literature and culture; (2) the student's final examination in French 101A or 114A or a term paper from another French course. If these materials meet with the Committee's approval, the student will be called for an interview. Students admitted to the program will enroll in French 140A-140B-140C. In 140A and 140B the student will devote his time to the study of some special aspect of French literature and will select a topic for his senior essay. The third quarter (140C) will be devoted to the writing of the essay under the tutorial guidance of the instructor. No regular class meetings will be scheduled for the Honors Course except the first meeting.

### Requirements for the Standard Elementary and for the Standard Secondary Teaching Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION. At the discretion of the Department an examination will be given preparatory to recommendation for the certificate of completion for the Standard Elementary, or the Standard Secondary Teaching Credential. Should the Department direct that these examinations be given, they will be held on the first Thursday after January 1 and the third Thursday in May. They must be passed before the Department will recommend that the student take his practice teaching.

### Requirements for the Master's Degree

The Department offers two alternative programs: Plan A designed for teachers of French at the secondary and junior college levels, and Plan B leading to the Ph.D. in French.

*Department requirements.* (1) Language: For all candidates for the M.A. in French, the foreign language requirement will be fulfilled by passing a course of at least level 3 in either German, Spanish, Italian or Latin or by passing the University reading examination in one of these languages. In special cases, substitution of another foreign language will be accepted, if approved by the Chairman of the Department. Students are

required to pass the reading requirement in one of the foreign languages before taking the M.A. examination. All candidates for the M.A. must satisfy the Department as to their proficiency in spoken French. (2) Course requirements: Plan A: At least 12 courses in French including the following courses: 201A-201B, 202, 370A-370B. In addition the student will take seven courses in literature in three out of five fields (16th-20th centuries). To meet general University requirements, at least six courses must be of graduate level. The comprehensive examination will consist of a written examination in the three fields prepared, a sight translation from English to French (from French to English in the case of students whose native language is French), a literary composition in French (in the modern field only) of not less than two hours, an *explication de textes* and an oral examination in French covering a topic previously prepared by the candidate. At the discretion of the Department a candidate may be permitted to take this examination a second time, but under no circumstances is a third trial allowed. Plan B: At least 12 courses in French including the following courses: 201A-201B, 202. In addition the student will take nine courses in literature in three out of six fields defined as follows: Middle Ages, Renaissance and Baroque, Classicism, 18th century, 19th century, 20th century. For students specializing in French-African literature, the 20th century and French-African literature will constitute a single field. (To meet general University requirements, at least six courses must be on the graduate level.)

The comprehensive examination for Plan B will consist of a written examination in three out of six fields (medieval-twentieth century), each two hours long, an *explication de texte*, and an oral examination on three fields. Passing this examination will be equivalent to passing Part I of the qualifying examination. At the discretion of the Department a candidate may be permitted to take this examination a second time; but under no circumstances is a third trial allowed.

#### Requirements for the Ph.D.

**Departmental requirements.** (1) Language requirements: Students normally will pass this requirement by passing courses through at least level 5 in German, level 3 in Latin and either Spanish or Italian. Students may also pass a reading examination in German, Latin and either Italian or Span-

ish. In special cases, substitution of another foreign language will be accepted, if approved by the Chairman of the Department. At least one of these examinations must be passed prior to taking the qualifying examination, Part I. The remaining examinations must be passed prior to taking Part II of the Qualifying Examination. All candidates for the Ph.D. must satisfy the Department as to their proficiency in spoken French. (2) Required: French 201A-201B, 202, 203A-203B-203C, 205A-205B-205C (unless previously completed). In addition the student will take such required courses as his guidance committee will prescribe in preparation for the qualifying examination, Part II. These courses shall include at least four seminars, two of which must be in the candidate's chosen area. In the case of students who already have the *Licence-ès-Lettres* or the M.A., the work taken will be evaluated by the Department and appropriate credit given toward the course and examination requirements. All students will, however, take Part I of the qualifying examination, which in this case will serve as a guidance examination for the use of the Department. (3) Part I of the qualifying examination will consist of a written examination in 3 out of 6 fields (medieval-twentieth century), each two hours long, an *explication de texte*, and an oral examination. If the student does well on these examinations, he will be encouraged to proceed further with graduate study toward the Ph.D. in either French or Romance Languages. The passing grade for Part I is an average grade of B (3.0). (4) After completion of the language requirements and the required courses, the student will take Part II of the written and oral qualifying examinations and, if successful, will be advanced to candidacy. Part II will consist of: (a) four written examinations: a five-hour examination in the candidate's chosen area to consist of a three-hour essay question and a two-hour question on literary history; three four-hour examinations in the other areas, each consisting of a two-hour essay question and a two-hour question on literary history. For the purpose of this examination, the four areas will be defined as follows: I. Medieval; II. Renaissance and Baroque; III. Classicism and the Enlightenment; IV. Modern (Two options: French literature; Franco-African literature). (b) An oral examination of two hours' duration bearing on the four areas. The passing grade for Part II is an average grade of B (3.0). (5) After completion of the disser-

tation, the candidate will take an oral examination in its defense. The thesis subject and outline should be approved by the student's doctoral committee no later than October 1 of the year in which it is to be submitted. (6) If seven years have elapsed since any of the requirements have been taken, these requirements must be revalidated by the Department. Inquire at departmental office for further clarification.

#### Lower Division Courses

The ordinary prerequisites for each of the lower division courses are listed under the description of these courses. Students who have had special advantages in preparation may, upon examination or by recommendation of the instructor, be permitted a more advanced program. No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

#### 1. Elementary French.

Sections meet five hours weekly.

Miss Hamel in charge

#### 16. Elementary French for Graduate Students.

(No credit)

Sections meet three hours weekly.

Mrs. Brichant in charge

#### 2. Elementary French.

Sections meet five hours weekly. Prerequisite: course 1 or advanced placement standing.

Miss Hamel in charge

#### 26. Elementary French for Graduate Students.

(No credit)

Sections meet three hours weekly. Prerequisite: course 1G or the equivalent. Mrs. Brichant in charge

#### 3. Elementary French.

Sections meet five hours weekly. Prerequisite: course 2 or two years of high school French or advanced placement standing. Miss Hamel in charge

#### 4. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 3 or three years of high school French or advanced placement standing. Miss Hamel in charge

#### 46. Conversational French for Graduate Students.

(No credit)

Classes meet three hours weekly. Mrs. Hackstaff

#### 5. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 4 or four years of high school French or advanced placement standing. Miss Hamel in charge

#### 6. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 5 or advanced placement standing.

Miss Hamel in charge

#### 7. Advanced French.

Sections meet five hours weekly. Prerequisite: course 6 or advanced placement standing.

Mrs. Lowitz in charge

#### 8. Advanced French.

Sections meet five hours weekly. Prerequisite: course 7 or advanced placement standing.

Mrs. Lowitz in charge

#### 9. Advanced French.

Sections meet five hours weekly. Prerequisite: course 8 or advanced placement standing.

Mrs. Lowitz in charge

#### 10A-10D. French Conversation. (½ course each)

(Formerly numbered 8A-8D.) Sections meet three hours weekly. Prerequisite: course 3 with grade A or B or by permission of the Department.

Mrs. Hackstaff in charge

#### Upper Division Courses

The prerequisite to all upper division courses except those in translation is six courses of lower division French including course 6 with a grade of B or higher or course 7 with a grade of C or higher.

All upper division courses are conducted in French. Course 114A is prerequisite to all other upper division courses in literature. No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

#### 101A-101B-101C. Grammar, Composition and Oral Expression. (½ course each)

Classes meet three hours weekly.

Miss Hamel in charge

#### 102A-102B. French Phonetics; Theory and Correction of Diction. (½ course each)

Classes meet three hours weekly. French pronunciation, diction, intonation in theory and practice; phonetic transcription, phonetic evolution of the modern language; remedial exercises; recordings.

Miss Korol in charge

#### 103A-103B-103C. Advanced Grammar and Composition. (½ course each)

Classes meet three hours weekly. Prerequisite: course 101A-101B-101C or the equivalent. Note: A placement examination will be administered in French 103A and qualified students will be advanced to French 103B or 103C. At all events 103C will be required of all majors. This course is required of all candidates for the Standard Credential in Secondary or Elementary Teaching.

Mrs. Brichant in charge

#### 114A-114B-114C. Introduction to the Study of French Literature.

Classes meet four hours weekly. The fourth hour will be conducted as a quiz section and will deal exclusively with *explication de textes*. Sections limited to 15 students. Not open to students who have taken or are taking courses 145A-145B-145C.

114A. The Middle Ages and Renaissance.

114B. The 17th and 18th Centuries.

114C. The 19th and 20th Centuries.

Mrs. Perkins in charge

### 115A-115B-115C. Old French Language and Medieval Literature.

Mrs. Weinroth

115A. Old French Language and Reading of texts. Classes meet three hours weekly. French 115A is prerequisite to all upper division courses in medieval literature.

115B. Medieval Literature (Part I). Classes meet two hours weekly.

115C. Medieval Literature (Part II). Classes meet two hours weekly.

### 116A-116B-116C. The Renaissance.

All classes meet two hours weekly. Mr. Bensimon

116A. Rabelais and His Time.

116B. Ronsard and His Time.

116C. Montaigne and His Time.

### 117A-117B-117C. The Seventeenth Century.

All classes meet two hours weekly. Mr. Prévot

117A. From Malherbe to Corneille.

117B. From Pascal to Bossuet.

117C. From Racine to Fénelon.

### 118A-118B-118C. The Eighteenth Century.

All classes meet two hours weekly. Mr. Crowley

118A. Precursors of the Enlightenment (1680-1734).

118B. Confrontation (1734-1759).

118C. Advent of a New Order (1759-1789).

### 119A-119D. The Nineteenth Century.

All classes meet two hours weekly.

Mr. Nouty and Staff

119A. From Chateaubriand to Hugo.

119B. From Balzac to Flaubert.

119C. From Verlaine to Huysmans.

119D. The Turn of the Century.

### 120A-120B-120C. The Twentieth Century.

All classes meet two hours weekly.

Mr. Decock and Staff

120A. Introduction to the Twentieth Century.

120B. French Literature from 1918 to 1940.

120C. French Literature from 1940 to the Present.

### 132A-132B. Survey of French Culture and Institutions.

All classes meet three hours weekly. A fourth hour may be required for the viewing of films and other laboratory activities.

Mrs. Brichant

132A. French Culture and Institutions from the Beginning to 1789.

132B. French Culture and Institutions from 1789 to the present.

### 140A-140B-140C. Honors Course in French.

The Staff

140A. Prerequisite: junior or senior standing in French with 3.0 grade-point average in the major, a 3.0 overall average and consent of the department Honors Committee. Intensive study of a special topic

in French literature chosen from a list proposed by the instructor in charge. Readings, oral and written reports, discussion. Consult Department for class meetings.

140B. Prerequisite: course 140A. The work of 140B will be similar to that of 140A, but with increasing emphasis on individual study. The student will select the topic for his senior essay in this course. Consult instructor for class meetings.

140C. Supervised preparation of an Honors Essay. The student will be expected to work individually, to consult with the instructor frequently, but there will be no regularly scheduled class meetings. Consult instructor for class meetings.

### 199. Special Studies in French. (½ to 2 courses)

Prerequisite: senior standing and consent of the instructor.

The Staff

Courses in Which No Knowledge of French is Required

May not be taken for major or graduate credit.

### 145A-145B-145C. Masterpieces of French Literature.

(Formerly numbered 114M-114N and 115M-115N.) Classes will meet three hours weekly.

Mr. Humiston

145A. The Middle Ages and Renaissance.

145B. The 17th and 18th Centuries.

145C. The 19th and 20th Centuries.

### 146. The Novel of the Nineteenth Century.

Classes will meet two hours weekly. Mr. Humiston

### 147. The Novel of the Twentieth Century.

Classes will meet two hours weekly. Mrs. Gollub

### 148. Cinema and Literature in Contemporary France.

Classes will meet two hours weekly. Additional hours may be required for the viewing of films and other laboratory activities.

Mrs. Gollub

### Graduate Courses

Concerning conditions for admission to graduate courses, see page 143 of this bulletin.

### 201A-201B. Composition and Style.

201A. Thème et Version. Course meets three times weekly. Required for the M.A. and Ph.D. degrees.

Mr. Prévot

201B. La Dissertation Française. Course meets three times weekly. Required for the M.A. and Ph.D. degrees.

Mr. Prévot

### 202. Explication de Textes.

(Formerly numbered 230.) Course meets three times weekly. Required for the M.A. and Ph.D. degrees.

Mr. Bonno

### 203A-203B-203C. French Literary Criticism.

(Formerly numbered 231.)

Miss Fabre-Luce

203A. The History of Literary Criticism from Aristotle to Sainte-Beuve. Course meets twice weekly. Required for the Ph.D. degree.

**203B. Modern Theories of Criticism.** Course meets twice weekly. Required for the Ph.D., degree.

**203C. The Techniques of Literary Criticism.** Course meets twice weekly. Required for the Ph.D. degree.

#### **204A. Phonology and Morphology from Vulgar Latin to French Classicism.**

The evolution of the French language. Required of candidates for the Ph.D. in Romance Languages and Literatures who emphasize philology.

Mr. La Du

#### **204B. Syntax and Semantics from Vulgar Latin to French Classicism.**

The evolution of the French language. Required of candidates for the Ph.D. in Romance Languages and Literatures who emphasize philology.

Mr. La Du

#### **205A-205B-205C. The Intellectual Background of French Literature.**

Mr. Pucciani

**205A. Scholasticism** (with ancient sources); Humanism. Required for the Ph.D. degree.

**205B. Rationalism, Empiricism, Positivism.** Required for the Ph.D. degree.

**205C. Idealism, Phenomenology, Existentialism.** Required for the Ph.D. degree.

#### **215A-215E. The Medieval Language and Literature.**

(Formerly numbered 203A-203B and 215A-215B.)

**215A. Old and Middle French.** Classes meet three times weekly. This course is prerequisite to courses 215B-215E. Core course. Phonology and morphology of the language. Introduction to Old French texts.

Mrs. Weinroth

**215B. The Chansons de geste.** Classes will meet twice weekly. Core course.

Mrs. Weinroth

**215C. The Romance.** Classes will meet twice weekly. Core course.

Mr. La Du

**215D. Medieval Theater.** Classes will meet twice weekly.

Mrs. Weinroth

**215E. Provençal Poetry.** Classes will meet three times weekly.

Mr. La Du

#### **216A-216H. The Renaissance.**

**216A. The Generation of 1530.** Two hours weekly. Core course.

Mr. Bensimon

**216B. The Generation of 1550.** Two hours weekly. Core course.

Mr. Bensimon

**216C. The Generation of 1580.** Two hours weekly. Core course.

Mr. Bensimon

**216D. Rabelais and Prose Writers.** Two hours weekly.

Mr. Bensimon

**216E. Baroque Poetry.** Two hours weekly.

Mr. Bensimon

**216F. Montaigne.** Two hours weekly.

Mr. Bensimon

**216G. Theater.** Two hours weekly.

Mrs. Perkins

**216H. Intellectual Trends of the Renaissance.** Two hours weekly.

Mr. Bensimon

#### **217A-217I. The Seventeenth Century.**

**217A. Classic Theater.** Two hours weekly. Core course.

Mr. Bonno

**217B. Non-Dramatic Literature.** Two hours weekly. Core course.

Mr. Bonno

**217C. Classic Prose.** Two hours weekly. Core course.

Mr. Bonno

**217D. Molière.** Two hours weekly.

Mr. Prévot

**217E. Corneille.** Two hours weekly.

Mrs. Perkins

**217F. Racine.** Two hours weekly.

Mr. Bonno

**217G. The Novel.** Two hours weekly.

Mr. Prévot

**217H. Moralists.** Two hours weekly.

Mr. Bonno

**217I. Religious thought.** Two hours weekly.

Mr. Bonno

#### **218A-218D. The Eighteenth Century.**

**218A. Fontenelle, Bayle, Montesquieu, Prévost.** Two hours weekly. Core course.

Mr. Crowley

**218B. Diderot and the Encyclopedia.** Two hours weekly. Core course.

Mr. Crowley

**218C. Voltaire and J. J. Rousseau.** Two hours weekly. Core course.

Mr. Crowley

**218D. The Theater and the Novel.** Two hours weekly.

Mr. Crowley

#### **219A-219K. The Nineteenth Century.**

Mr. Nouty

**219A. Romanticism.** Two hours weekly. Core course.

**219B. Realism and Naturalism.** Two hours weekly. Core course.

**219C. Symbolism.** Two hours weekly. Core course.

**219D. Poetry.** Two hours weekly.

**219E. The Novel.** Two hours weekly.

**219F. The Theater.** Two hours weekly.

**219G. Historians and Critics.** Two hours weekly.

**219H. Victor Hugo.** Two hours weekly.

**219I. Balzac.** Two hours weekly.

**219J. Independent Novelists.** Two hours weekly.

**219K. Intellectual Trends.** Two hours weekly.

#### **220A-220P. The Twentieth Century.**

**220A. From Symbolism to Surrealism.** Two hours weekly. Core course.

Mr. Decock

**220B. From Surrealism to Existentialism.** Two hours weekly. Core course.

Mr. Decock

**220C. From Existentialism to the Present.** Two hours weekly. Core course.

Mr. Decock

**220D. Paul Valéry.** Two hours weekly.

Miss Fabre-Luce

**220E. Marcel Proust.** Two hours weekly.

Miss Fabre-Luce

**220F. André Gide.** Two hours weekly.

Mr. Decock

**220G. André Malraux.** Two hours weekly.

Miss Fabre-Luce

**220H. The Theater.** Two hours weekly.

Mr. Decock

**220I. The Anti-Theater.** Two hours weekly.

Mr. Decock

**220J. The Novel.** Two hours weekly.

Miss Fabre-Luce

**220K. The Anti-Novel.** Two hours weekly.

Miss Fabre-Luce

**220L. Surrealism.** Two hours weekly.

Mr. Decock

**220M. Existentialism.** Two hours weekly.

Miss Fabre-Luce, Mr. Pucciani

**220O. Poetry.** Two hours weekly.

Miss Fabre-Luce

**220P. Cinema and Literature.** Two hours weekly.

Mr. Decock

**221A-221B-221C. French-African Literature.**

**221A.** Introduction to the Study of the French-African Literatures. Two hours weekly. Core course. Mr. Nouty

**221B.** French-African Literature of Madagascar and Bantu Africa. Two hours weekly. Core course.

**221C.** French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa. Two hours weekly. Core course.

**Seminars****250A-250B. Studies in Medieval Literature.**

Mr. La Du and the Staff

**251A-251B. Studies in the Renaissance.**

Mr. Bensimon and the Staff

**252A-252B. Studies in the Baroque.**

Mr. Bensimon and the Staff

**253A-253B. Studies in the Seventeenth Century.**

Mr. Bonno and the Staff

**254A-254B. Studies in the Eighteenth Century.**

Mr. Crowley and the Staff

**255A-255B. Studies in the Nineteenth Century.**

Mr. Nouty and the Staff

**256A-256B. Studies in Contemporary Literature.**

Mr. Pucciani and the Staff

**257A-257B. Studies in the French African Literature.**

Mr. Nouty and the Staff

**258A-258B. Studies in Literary Criticism. The Staff****259A-259B. Studies in Philosophy and Literature.**

The Staff

**260A-260B. Studies in the History of Ideas.**

Seminars will meet as announced. Only the first meeting will be scheduled. Candidates for the Ph.D. will be required to take 4 seminars, 2 of which must be in their field of special interest. The Staff

**Professional Courses****310A-310B. The Teaching of French in the Elementary School.**

Mrs. Walker

**310A.** Prerequisite: consent of the instructor. Theory of French Teaching in the Elementary School. Classes meet three hours weekly. Required for the Standard Elementary Credential. Mrs. Walker

**310B.** Observation of Language Teaching in the Elementary School. Classes will meet as announced. Required for the Standard Elementary Credential. Mrs. Walker

**370A-370B. The Teaching of French in the Secondary School and at the College Level.**

**370A.** Prerequisite: 101A-101B-101C; 102A-102B; 103A-103B-103C. Theory of Language Teaching. Three hours weekly. Required for the Standard Secondary Credential. Mr. Pucciani

**370B.** Prerequisite: 370A. Observation of Language Teaching in the Secondary School and at the College Level. Classes will meet as announced. Required for the Standard Secondary Credential. Miss Hamel

**372. The Language Laboratory. (½ course)**

Two hours weekly. Prerequisite: consent of the instructor. New electronic techniques for language instruction. Pedagogical and practical problems of making tapes, installing and organizing a laboratory; control procedures. Mr. de Martini

**Individual Study and Research****596. Directed Individual Studies or Research.**

(½ to 1 course)

The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.**

(½ to 2 courses)

The Staff

**599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)**

The Staff

**GENETICS**

For courses in genetics, see under departments of Bacteriology, Botanical Sciences, and Zoology.

**GEOCHEMISTRY**

Interdepartmental Committee for Graduate Study in Geochemistry. D. Carlisle, Geology; W. G. Ernst, Geology and Geophysics; I. R. Kaplan, Geology and Geophysics; C. C. Kennedy, Geophysics and Geology; W. F. Libby, Chemistry and Geophysics; W. W. Rubey, Geology and Geophysics; R. L. Scott, Chemistry; J. T. Wasson, Chemistry and Geophysics; G. W. Wetherill, Geophysics and Geology (chairman and graduate adviser).

**Undergraduate Study**

Undergraduate students who wish to prepare for graduate work in geochemistry are advised to complete an undergraduate major in chemistry or in geology with a strong preparation in chemistry. It is recommended that such students consult with the appropriate undergraduate adviser in the Department of Geology.

**Graduate Study**

A program of graduate study leading to the degrees of M.S. and Ph.D. in Geochem-

istry is offered under the sponsorship of the interdepartmental committee. The curriculum is open to students having an outstanding undergraduate record in the basic sciences, physics, chemistry and mathematics. The bachelor's degree may be in chemistry, geology, physics or in some other field. Because of the diverse backgrounds of students entering this interdepartmental curriculum, individual programs of instruction and examinations will be arranged. Course offerings from the Departments of Chemistry, Geology and Planetary and Space Science will form a major portion of these recommended programs of study.

Research facilities in the Departments of

Chemistry and Geology and the Institute of Geophysics and Planetary Physics are available to students in this curriculum. Among these facilities are high pressure laboratories, mass spectrometric equipment, facilities for radiocarbon dating and measurement of natural tritium, X-ray fluorescence and diffraction apparatus, electron microprobe, and apparatus for mineral synthesis and the study of phase equilibria.

A program leading to the Ph.D. in Geology, with emphasis in Geochemistry, is also offered by the Department of Geology.

For further information regarding admission, financial support, and programs of study, consult the graduate adviser.

## ■ GEOGRAPHY

(Department Office, 1255 Social Sciences Building)

\*Henry J. Bruman, Ph.D., *Professor of Geography.*

Robert M. Glendinning, Ph.D., *Professor of Geography.*

Huey L. Kostanick, Ph.D., *Professor of Geography.*

\*\*Richard F. Logan, Ph.D., *Professor of Geography.*

Clifford H. MacFadden, Ph.D., *Professor of Geography.*

Tom L. McKnight, Ph.D., *Professor of Geography.*

Howard J. Nelson, Ph.D., *Professor of Geography (Chairman of the Department).*

Jonathan D. Sauer, Ph.D., *Professor of Geography.*

Joseph E. Spencer, Ph.D., *Professor of Geography.*

Benjamin E. Thomas, Ph.D., *Professor of Geography.*

Norman J. W. Thrower, Ph.D., *Professor of Geography.*

Ruth Emily Baugh, Ph.D., *Emeritus Professor of Geography.*

George McCutchen McBride, Ph.D., LL.D., *Emeritus Professor of Geography.*

Clifford M. Zierer, Ph.D., *Emeritus Professor of Geography.*

Charles F. Bennett, Ph.D., *Associate Professor of Geography.*

Gary S. Dunbar, Ph.D., *Associate Professor of Geography.*

Gerry A. Hale, Ph.D., *Assistant Professor of Geography.*

Werner H. Terjung, Ph.D., *Assistant Professor of Geography.*

\_\_\_\_\_, *Assistant Professor of Geography.*

\_\_\_\_\_, *Assistant Professor of Geography.*

\_\_\_\_\_, *Assistant Professor of Geography.*

\_\_\_\_\_, *Assistant Professor of Geography.*

Christopher Salter, M.A., *Acting Assistant Professor of Geography.*

### Preparation for the Major

Geography 1A-1B-1C are required of all majors. Transfer students must consult a departmental adviser prior to arranging a program. All prospective majors must consult a departmental adviser to plan a lower division program which will enable them to take advanced work in one or more fields of concentration which are allied to geography.

A mathematics sequence such as Mathematics 2A-2B-2C or 3A-3B-3C or 11A-11B-11C or an acceptable sequence in statistics is also recommended.

Three general objectives may be recognized for those who select geography as a major. These are: 1) a broad understanding of the world, its conditions, and its peoples, leading to a liberal education, 2) preparation

\* Absent on leave, fall quarter, 1968-1969.

\*\* Absent on leave, summer and fall quarters, 1968-1969.

for graduate study in the subject leading to advanced degrees and professional occupation as a geographer, and 3) preparation for the student who desires a teaching credential with a specialty in geography and the physical or social sciences. Students majoring in geography must consult a departmental adviser for the planning of a program suitable to the desired objective.

### The Major

The minimum requirement for the major is ten upper division courses in geography chosen in consultation with a departmental adviser. All majors must take the three required courses in Group I—Geography 110, 120 and 170. In addition, *one* course chosen from Group II—Geography 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190; and *two* courses chosen from Group III—Geography 112, 114, 116, 134, 160, 162, 166, 172, 176; and *two* courses chosen from Group IV—Geography 122, 124, 130, 132, 140, 150, 152, 164, 198; and *two* courses chosen from Group V—Geography 110 through 198 (excluding 191). Students planning to do graduate work in specialized careers in geography should aim to take, when possible, appropriate courses in departments outside the major field.

**Allied Fields.** Every geography major shall develop some competence in one or two allied fields. This program consists of a group of at least four upper division courses chosen from not more than two departments in such subjects as will provide a concentration allied to the field of specialization within the major.

### Admission to Graduate Status

For admission to graduate status in the Geography Department a student should normally have completed the undergraduate major or its equivalent; have received a bachelor's degree or its equivalent from an acceptable college or university; and have maintained at least a B average in all courses taken in the junior and senior years. Prospective students are required to take the Graduate Record Aptitude Test and the Advanced Test in Geography, and in addition, to provide the Department with three letters of evaluation from previous instructors. Students not meeting the grade average requirements may be admitted in exceptional cases if their letters of evaluation and their Graduate Record Examination scores or other evidence indicate that they have unusual promise. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up.

Information and applications for the Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or Box 955, Princeton, New Jersey 08540.

### Requirements for the General Secondary Teaching Credential

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### Requirements for the Master's Degree

The general requirements of the Graduate Division are listed on page 136, and the specific requirements of the Department of Geography follow.

The M.A. degree may be obtained either by the Thesis Plan or the Comprehensive Examination Plan; the Thesis Plan is normally required by the Department.

**Diagnostic Examination.** Required under both the Thesis Plan or the Comprehensive Examination Plan. The examination will be given by the candidate's informal guidance committee in the course of the first quarter in residence, to assess the candidate's general competence in the field of geography up to the graduate level.

**Review.** During the third quarter of residence the graduate advisory committee will review the progress of each student. The results of this review will determine whether or not the student shall be permitted to proceed toward the M.A. degree.

**Foreign Language.** Required under both the Thesis Plan and the Comprehensive Examination Plan is a reading knowledge of a foreign language appropriate to the candidate's field of specialization and approved by the chairman of his guidance committee and the graduate adviser.

**Thesis Plan.** 1. The work in residence must include at least nine courses, including a minimum of six courses at the graduate level, of which Geography 200 (Growth of Geographic Thought), and at least one seminar, are required. In addition, a student who has not had an acceptable field course will be required to take Geography 270 (Advanced Field Analysis). The balance of each program must be worked out in consultation with the graduate adviser.

2. Each student must present a thesis, based in whole or in part on original investigation, and preferably a field study. Selection of a thesis topic, conduct of the investigation, and final organization, proceeds initi-

ally under the supervision of an informal guidance committee (two members of the Department staff) and, later, under an official Graduate Division committee (two members of the Department staff, plus one member from another University department).

**Comprehensive Examination Plan.** 1. The work in residence must include a minimum of eleven courses, at least eight of which must be at the graduate level, of which Geography 200 (Growth of Geographic Thought) and at least one seminar, are required. The balance of each program must be worked out in consultation with the graduate adviser.

2. The comprehensive examination normally is given in the final two-week period of the quarter in which the candidate completes his work for the degree. It may consist of two or three half-day written examinations covering the broad divisions of history of geography, systematic geography, regional geography, and functional applications of systematic geography. The examination is designed to test for broad grasp of subject, as well as the more specialized abilities of the candidate.

### Requirements for the Doctor's Degree

General requirements of the Graduate Division are stated on page 140, and specific requirements of the Department of Geography follow.

1. An M.A. or M.S. degree, with a geography specialty is recommended of all students undertaking work toward the Ph.D. degree.

2. Each student must satisfactorily complete Geography 200 (Growth of Geographic Thought), and 278 (Regional Field Investigations). In Geography 278 approximately six weeks out of the quarter will be spent in the field.

3. During the third quarter of residence the graduate advisory committee will review the progress of each student. The results of this review will determine whether or not the student shall be permitted to proceed toward the Ph.D. degree.

4. Preliminary examinations may consist of oral or written examinations, at the discretion of the guidance committee. At the minimum, there shall be a written examination covering both general and specific aspects of the geographical field, as well as the student's particular fields of specialization. This examination also shall include a field problem in local geography.

5. Foreign Language Requirement. A candidate may satisfy the department's lan-

guage-research tool requirement by one of three methods. The method chosen shall be the one most appropriate to the candidate's field of specialization and must be approved by the chairman of his guidance committee and the graduate adviser: (a) A reading knowledge of two foreign languages; or (b) A reading knowledge of one foreign language plus proficiency in conversation in that language; or (c) A reading knowledge of one foreign language plus the mastery of an alternate research tool as approved by the department.

6. The qualifying examination is an oral examination conducted by the candidate's official Ph.D. committee. This examination stresses particularly those segments of geography in which the candidate has specialized.

7. Each candidate is required to select a dissertation topic approved by his doctoral committee and the department. A topic entailing field, as well as library study, normally is required.

8. The final examination is an oral defense of the dissertation conducted by the candidate's official Ph.D. committee which will be held just prior to the preparation of the final official typescript of the dissertation.

### Lower Division Courses

#### 1A. Introduction to Geography: Physical Elements.

(Formerly numbered 1.) Lecture, three hours; laboratory-discussion, one hour. A study of the basic physical elements of geography (especially climate, landforms, soils, and natural vegetation), and their integrated patterns of world distribution. **The Staff**

#### 1B. Introduction to Geography: Cultural Elements.

(Formerly numbered 2.) Lecture, three hours; reading period, one hour. A study of the basic cultural elements of geography (population distribution, general land-use patterns, and trade) and their correlation with the physical elements. Delimitation of the major geographic regions of the world. **The Staff**

#### 1C. Introduction to Geography: Geographic Analysis.

Lecture, one hour; laboratory-discussion, three hours. Prerequisites: courses 1A, 1B, or equivalent, or consent of the instructor. A study of the relationships and integration of the fundamental physical and cultural elements of geography into major world geographic regions. **The Staff**

#### 5. Man and the Earth Ecosystem.

Lecture, three hours; reading period, one hour. An examination of the historical and contemporary roles of man as a major agent of biological change in the earth ecosystem. **Mr. Bennett**

#### 10A. World Regional Geography: The Americas.

Lecture, three hours; reading period, one hour. Analysis of the physical and cultural features that characterize and differentiate the geographical landscapes and regions of the Americas. **The Staff**

**108. World Regional Geography: Eurasia (excluding Middle East).**

Lecture, three hours; reading period, one hour. Analysis of the physical and cultural features that characterize and differentiate the geographical landscapes and regions of Eurasia. **The Staff**

**109. World Regional Geography: Africa and the Middle East.**

Lecture, three hours; reading period, one hour. Analysis of the physical and cultural features that characterize and differentiate the geographical landscapes and regions of Africa and the Middle East. **The Staff**

**Upper Division Courses**

Course 101 may not be counted toward the upper division requirement for the major.

**101. Principles of Geography.**

(Formerly numbered 100.) Lecture, three hours; reading period, one hour. For transfer students only, with at least junior standing, in lieu of courses 1A-1B-1C, and not to be counted on the major. A survey of the basic physical and cultural elements of geography and their integration on a world regional basis. **The Staff**

**110. Physical Bases of Geography.**

(Formerly numbered 115.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B-1C or equivalent, or upper division standing; or consent of the instructor. A study of the basic physical factors existing in each of the major geographic realms, with special emphasis on the interrelationships of climates, landforms, soils, drainage, and natural vegetation. **Mr. Glendinning**

**112. Geomorphology.**

(Formerly numbered 114.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent. Geology 1 or equivalent, or junior standing or consent of the instructor. A study of the landforms of the earth: their origins, structures, external expressions, spatial arrangements and climatic relationships. **Mr. Logan**

**114. Climatology.**

(Formerly numbered 113.) Lecture, three hours; reading period, one hour. Prerequisites: course 1A-1B-1C or equivalent; or Meteorology 4A-4B, or meteorology special science course; or junior standing or consent of the instructor. A study of the causes of climatic phenomena and of the larger features which characterize the climates of the earth. **Mr. Terjung**

**116. Soils.**

(Formerly numbered 116.) Lecture, three hours; reading period, one hour. Prerequisites: course 1B or equivalent, or junior standing; course 1A, and Chemistry 1A or 2A, or consent of the instructor. A study of the origins, evolution, properties and utilization of soils, with special emphasis on the world's major soil groups. **The Staff**

**120. Cultural Bases of Geography.**

(Formerly numbered 175.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The geographic aspects of cultural factors in the evolution of primitive cultures and advanced civilizations. **Mr. Spencer**

**122. Population and Settlement.**

(Formerly numbered 174.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. Past and present patterns of human population and of rural and urban settlement in selected areas involving theoretical considerations and analyses. **The Staff**

**124. Historical Geography of the United States.**

(Formerly numbered 171.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the evolution of the cultural landscapes of the area that is now the United States. Examination of past geographies and of geographical change through time. **Mr. Dunbar**

**130. Economic Bases of Geography.**

(Formerly numbered 141.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The principles of economic geography as developed through regional studies of economic phenomena, with special emphasis upon man's foodstuffs, minerals, and power resources. **Mr. MacFadden**

**132. Industry and Resources.**

(Formerly numbered 142.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. Analysis of the character and regionalization of industrial developments within the developed and developing countries of the world, and their relationships to the distribution of industrial resources, with special emphasis on minerals and power and fuel supplies. **Mr. MacFadden**

**134. Conservation of Resources.**

(Formerly numbered 161.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. An analysis of the basic principles of the conservation of the natural resources of the world. **Mr. Bennett**

**140. Political Geography.**

(Formerly numbered 181.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The principles of political geography as developed through regional studies of political phenomena throughout the world. Current problems in domestic and international affairs will be considered. **Mr. Kostanick**

**150. Urban Geography.**

(Formerly numbered 155.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the origin, development, distribution, and regional variation of the world's cities, with emphasis on an analysis of the functions and patterns of American cities. **Mr. Nelson**

**152. Urban Planning.**

(Formerly numbered 156.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of urban planning with special emphasis on the role of the geographer in the planning process. **The Staff**

**160. Plant Geography.**

(Formerly numbered 118.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-

1B, or equivalent, or upper division standing, and Biology 2A-2B, or equivalent, or consent of the instructor. Characteristics, distribution, environmental and cultural relationships of the principal vegetation patterns. Mr. Sauer

## 162. Animal Geography.

(Formerly numbered 117.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing, and Biology 1A-1B-1C, or equivalent, or consent of the instructor. A study of the physical and cultural factors of animal distribution and an examination of the role of animals in human societies. Mr. Bennett

## 164. Historical Geography of Crop Plants.

Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B and Biology 2A-2B, or equivalents, or consent of instructor. Geographic patterns of domestication and diffusion of useful plants from antiquity to the present, based on detailed case histories of selected species. Mr. Sauer

## 166. Plant Migration.

Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B and Biology 2A-2B, or equivalents, or consent of instructor. Mechanisms of geographic patterning of natural and artificially modified vegetation. Emphasis on range changes for which there is direct fossil or documentary evidence. Mr. Sauer

## 170. Field Analysis.

(Formerly numbered 101.) Saturday field trips, 8-5. Prerequisites: courses 1A-1B-1C, 110, 120, or equivalent, and consent of the instructor. The basic methods of geographic analysis of small areas, embracing both rural and urban types and physical, cultural and economic aspects. Training carried on chiefly in the field. The Staff

## 172. Cartography.

(Formerly numbered 105.) Laboratory, four hours; independent work, two hours. Prerequisites: courses 1A-1B, or equivalent, or upper division standing, and consent of the instructor. Survey of the field of cartography. Includes theory and construction of map projections, compilation procedures, principles of generalization, symbolization, terrain representation, lettering, drafting and scribing, and map reproduction methods. The Staff

## 176. Quantitative Analysis.

(Formerly numbered 109.) Lecture, three hours; laboratory, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. An introduction to the methods of measurement and interpretation of geographic distributions and associations. The Staff

## 180. Anglo-America.

(Formerly numbered 121.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. Delimitation and analysis of the principal geographic regions of the United States and Canada. Mr. McKnight, Mr. Nelson

## 181. Middle America.

(Formerly numbered 122A.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of Middle America and of the contem-

porary economic and cultural geography of Mexico and the countries of Central America and the West Indies. Mr. Bennett, Mr. Bruman

## 182. South America.

(Formerly numbered 122B.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of the geographic factors, physical and cultural, that are basic to an understanding of the historical development of South America and of the contemporary economic and cultural geography of the individual South American countries. Mr. Bruman

## 183. Europe.

(Formerly numbered 123A.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of geographic conditions and their relation to economic, social and political problems in Europe. Mr. Kostanick, Mr. Thrower

## 184. Soviet Union.

(Formerly numbered 123B.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A study of geographic conditions and their relation to economic, social, and political problems in the Soviet Union. Mr. Kostanick

## 185. Southern Asia.

(Formerly numbered 124A.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A regional survey of the physical and cultural features which characterize the economic, social, and political geography of southern Asia (India through the East Indies) during historic and modern times. Mr. MacFadden

## 186. Eastern Asia.

(Formerly numbered 124B.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A regional survey of the physical and cultural features which characterize the economic, social, and political geography of eastern Asia (China, Korea, and Japan). Mr. Spencer

## 187. Middle East.

(Formerly numbered 127.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A regional survey of the physical and cultural features which characterize the economic, social, and political geography of southwestern Asia during historic and modern times. Mr. Hale

## 188. Northern Africa.

Lecture, three hours; reading period, one hour. Prerequisite: courses 1A-1B, or equivalent, or upper division standing. The regions of north Africa, including the Sahara, in terms of physical features, human settlement, economic production, and political patterns. Mr. Hale, Mr. Thomas

## 189. Middle and Southern Africa.

(Formerly numbered 126.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The regions of Africa south of the Sahara (middle and south Africa) in terms of physical features, human settlement, economic production, and political patterns. Mr. Thomas

**190. Australasia.**

(Formerly numbered 125.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A regional synthesis of the physical and cultural features which characterize Australia, New Zealand, and the islands of the South Pacific. Mr. McKnight

**191. California.**

(Formerly numbered 131.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. A systematic and regional treatment of the geography of California including the physical, cultural, and economic aspects and detailed studies of the various regions. Mr. Logan, Mr. McKnight

**198. Proseminar in Geography.**

(Formerly numbered 190.) Staff-student discussions, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, and courses 110 and 120 and junior standing. Staff-student colloquium on the historical and modern conceptual principles of geographical theory, including schools of geographic thought and contributions of particular scholars. Mr. Spencer

**199. Special Study. (½ to 2 courses)**

Study schedule to be arranged individually with the instructor. Prerequisites: courses 1A-1B, or equivalent; senior standing and consent of the instructor. The Staff

**Graduate Courses****200. Growth of Geographic Thought.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisite: consent of the instructor. Lectures and discussions on the comparative development of the philosophy and operative thought of geographers in different countries, stressing the origins and foundations of American Geographic thought. Mr. Spencer, Mr. Thomas

**205. Seminar: Geographic Thought.**

(Formerly numbered 250.) Discussion session, three hours; reading period, two hours. Prerequisites: course 200, or equivalent, and consent of the instructor. Discussions and studies of particular themes and topics significant to the growth of the modern philosophy of geography. Mr. Spencer, Mr. Thomas

**212. Advanced Geomorphology.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 112, or equivalent, or consent of the instructor. The surficial features of the earth's crust, with special emphasis on the theories concerning their origins and development. Mr. Logan

**213. Seminar: Geomorphology.**

Discussion session, three hours; reading period, two hours. Prerequisites: course 212 or equivalent and consent of the instructor. Selected topics. May be repeated for credit. The Staff

**214. Advanced Climatology.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 114, or equivalent, or consent of the instructor. An interpretation of regional variations of world climatic patterns. Mr. Terjung

**215. Seminar: Climatology.**

Discussion session, three hours; reading period, two hours. Prerequisites: course 214 or equivalent and consent of the instructor. Selected topics. May be repeated for credit. The Staff

**220. Advanced Cultural Geography.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 120, or equivalent, or consent of the instructor. Lectures and discussions around specific aspects of the development of cultural landscapes in different geographic environments. Mr. Spencer

**222. Historical Geography of the United States.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 124 and consent of the instructor. Some major themes in American historical geography. Mr. Dunbar

**223. Seminar: Historical Geography.**

Discussion session, three hours; reading period, two hours. Prerequisites: course 222 and consent of the instructor. Theory and practice of historical geography in North America and Europe. Mr. Dunbar

**225. Seminar: Cultural Geography.**

(Formerly numbered 272.) Discussion session, three hours; reading period, two hours. Prerequisites: course 220 or 222, or equivalent and consent of the instructor. Discussions centered around particular topics in cultural geography; topics may vary from year to year. The Staff

**230. Advanced Economic Geography.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 130 or 132, or equivalent, or consent of the instructor. An analysis of the geographic problems of economic development in selected regions of the world. Mr. MacFadden

**232. Geographical Aspects of Land Planning.**

(Formerly numbered 165.) Lecture, two hours; discussion session, two hours. Prerequisites: courses 110, 120, or equivalent, and consent of the instructor. The role of the geographer and the geographic discipline in land planning activities. Mr. Glendinning

**235. Seminar: Economic Geography.**

(Formerly numbered 270.) Discussion session, three hours; reading period, two hours. Prerequisites: course 230 or 232, or equivalent, and consent of the instructor. Related research projects growing out of courses 230 and 232. The Staff

**240. Advanced Political Geography.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 140 or equivalent or consent of the instructor. Intensive study of the theories and principles of political geography and German geopolitics. Selected regions will be used as specific examples of differing techniques of study in geopolitics. Mr. Kostanick

**245. Seminar: Political Geography.**

(Formerly numbered 271.) Discussion session, three hours; reading period, two hours. Prerequisites: course 240, or equivalent and consent of the instructor. Related research projects growing out of course 240. The Staff

**250. Advanced Urban Geography.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 150 or 152, or equivalent, or consent of the instructor. Treatment of the evolution, morphology, and function of cities with emphasis on theory and methods of analysis. Mr. Nelson

**255. Seminar: Urban Geography.**

Discussion session, three hours; reading period, two hours. Prerequisites: course 250, or equivalent, and consent of the instructor. Related research projects growing out of course 250. The Staff

**260. Advanced Biogeography: Animals.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 160 or 162, or equivalent, or consent of the instructor. An intensive review and analysis of biophysical and cultural factors influencing animal distributions. Mr. Bennett

**262. Advanced Biogeography: Plants.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 160 or 162 or 166, or equivalent, or consent of the instructor. An intensive review and analysis of biophysical and cultural factors influencing plant distributions. Mr. Sauer

**265. Seminar: Biogeography.**

Discussion session, three hours; reading period, two hours. Prerequisites: course 260, 262 or equivalent and consent of the instructor. Research projects related to or growing out of course 260 or 262. The Staff

**270. Advanced Field Analysis.**

Saturday field trips, 8-5. Prerequisite: consent of the instructor. Training in the analysis and evaluation of the geographical characteristics of the physical environment and the human utilization thereof. Mr. Logan

**272. Advanced Cartography.**

Laboratory, three hours; independent work, two hours. Prerequisites: course 172 or equivalent, or consent of the instructor. Advanced work in the theory and practical application of modern cartographic principles. Special emphasis is placed on terrain representation, quantitative and computers' mapping, scribing, color separation, and reproduction of maps. Mr. Thrower

**274. Photo Interpretation and Remote Sensing.**

Laboratory, three hours; independent work, two hours. Prerequisites: course 172 or equivalent or consent of instructor. The study of aerial photographs and other remote sensing images as tools for geographical research. Particular attention is placed on the analysis of landscapes and the interpretation of interrelationships of individual features in their physical and cultural complex. Mr. Thrower

**278. Advanced Quantitative Analysis.**

Lecture, two hours; laboratory, two hours. Prerequisites: course 176 or equivalent or consent of the instructor. Advanced topics in the utilization of mathematical and statistical techniques for geographic research. Included in the course is a discussion of the geographic uses of various sampling procedures, multivariate analysis, nonparametric statistics, and other advanced research techniques. The Staff

**278. Regional Field Investigations. (2 courses)**

(Formerly numbered 275.) Field camp: normally involving about six weeks in the field. Prerequisites: course 170 or 270; doctoral status, and consent of the instructor. Advanced field study in several contrasting environments, utilizing both reconnaissance and intensive methods, in the investigation of significant physical and cultural features from both the systematic and regional viewpoints. Mr. Logan

**280. Anglo-America.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 180 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Anglo-America. Mr. McKnight, Mr. Nelson

**281. Latin America.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 181 or 182 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Latin America. Mr. Bennett, Mr. Bruman

**283. Europe.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 183 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Europe. Mr. Kostanick, Mr. Thrower

**284. Soviet Union.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 184 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in the Soviet Union. Mr. Kostanick

**285. Asia.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 185 or 186 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in non-Soviet Asia. Mr. MacFadden, Mr. Spencer

**288. Africa.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 187 or 188 or 189 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Africa. Mr. Hale, Mr. Thomas

**289. Australasia.**

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 190 or equivalent or consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions in Australia, New Zealand, and Oceania. Mr. McKnight

**290. Seminars in Regional Geography.**

Selected topics for each seminar. Each may be repeated for credit.

290A. Anglo-America. Prerequisites: course 280 and consent of the instructor. Mr. McKnight, Mr. Nelson

**290B. Middle America.** Prerequisites: course 281 and consent of the instructor.

Mr. Bennett, Mr. Bruman

**290C. South America.** Prerequisites: course 281 and consent of the instructor.

Mr. Bennett, Mr. Bruman

**290D. Europe.** Prerequisites: course 283 and consent of the instructor. Mr. Kostanick, Mr. Thrower

**290E. Soviet Union.** Prerequisites: course 284 and consent of the instructor. Mr. Kostanick

**290F. Southern Asia.** Prerequisites: course 285 and consent of the instructor. Mr. MacFadden

**290G. Eastern Asia.** Prerequisites: course 285 and consent of the instructor. Mr. Spencer

**290H. Middle East.** Prerequisites: course 288 and consent of the instructor. Mr. Hale

**290I. Northern Africa.** Prerequisites: course 288 and consent of the instructor. Mr. Hale, Mr. Thomas

**290J. Middle and Southern Africa.** Prerequisites: course 288 and consent of the instructor. Mr. Thomas

**290K. Australasia.** Prerequisites: course 289 and consent of the instructor. Mr. McKnight

## 291. Geography of the Arid Lands.

(Formerly numbered 119.) Lecture, three hours; reading period, one hour. Prerequisites: courses 110, 114, 120, 160, 170 or equivalent and consent of the instructor. An investigation of the physical and cultural complexes of the world's arid regions. Salient factors emphasized include climate, landforms, water, soils, natural vegetation and the various aspects of

human occupation, including future possibilities for human utilization. The Staff

## 292. Seminar: Humid Tropics.

Discussion session, three hours: reading period, two hours. Prerequisite: consent of the instructor. Selected topics. Biophysical and cultural complexes of the humid tropics with emphasis on problems related to human settlement and livelihood. May be repeated for credit. Mr. Bennett

### Individual Study and Research

## 596. Directed Individual Study or Research.

(½ to 2 courses)

Prerequisite: consent of the instructor. The Staff

## 597. Preparation for M.A. Comprehensive Examination or Ph.D. Qualifying Examination.

(½ to 2 courses)

Special individual study. Prerequisite: consent of the instructor. The Staff

## 598. Research for and Preparation of the Masters

Thesis. (½ to 2 courses)

Independent study. Prerequisite: consent of the instructor. The Staff

## 599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)

Independent study. Prerequisite: consent of the instructor. The Staff

## ■ GEOLOGY

(Department Office, 3806 Geology Building)

Donald Carlisle, Ph.D., *Professor of Geology.*

Preston E. Cloud, Jr., Ph.D., *Professor of Geology.*

\*\*George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*

Helen Tappan Loeblich, Ph.D., *Professor of Geology in Residence.*

Clemens A. Nelson, Ph.D., *Professor of Geology (Chairman of the Department).*

Gerhard Oertel, Dr. rer. nat., *Professor of Geology.*

Kenneth D. Watson, Ph.D., *Professor of Geology.*

\*\*George W. Wetherill, Ph.D., *Professor of Geophysics and Geology.*

U. S. Grant IV, Ph.D., *Emeritus Professor of Geology.*

Joseph Murdoch, Ph.D., *Emeritus Professor of Geology.*

Willis P. Popenoe, Ph.D., *Emeritus Professor of Geology.*

\*\*William W. Rubey, D.Sc., *Emeritus Professor of Geology and Geophysics.*

John M. Christie, Ph.D., *Associate Professor of Geology.*

\*\*W. Gary Ernst, Ph.D., *Associate Professor of Geology and Geophysics.*

Clarence A. Hall, Jr., Ph.D., *Associate Professor of Geology.*

\*\*Isaac R. Kaplan, Ph.D., *Associate Professor of Geology and Geophysics.*

N. Gary Lane, Ph.D., *Associate Professor of Geology (Vice-Chairman of the Department).*

John L. Rosenfeld, Ph.D., *Associate Professor of Geology.*

\*\*Ronald L. Shreve, Ph.D., *Associate Professor of Geology and Geophysics.*

Wayne A. Dollase, Ph.D., *Assistant Professor of Geology.*

\*\* Member of the Institute of Geophysics and Planetary Physics.

Ronald J. Gibbs, Ph.D., *Assistant Professor of Geology.*  
 Lincoln S. Hollister, Ph.D., *Assistant Professor of Geology.*  
 J. William Schopf, Ph.D., *Assistant Professor of Geology.*



Ted L. Bear, A.B., *Lecturer in Petroleum Geology.*  
 Lawrence A. Frakes, Ph.D., *Associate Research Geologist.*  
 \*\*David T. Griggs, M.A., *Professor of Geophysics.*  
 \*\*Willard F. Libby, Ph.D., *Professor of Chemistry.*  
 Louella R. Saul, M.A., *Senior Museum Scientist.*  
 Alexander Stoyanow, Ph.D., *Research Associate in Geology.*  
 Takeo Suzuki, M.A., *Senior Museum Scientist.*  
 William S. Ting, Ph.D., *Associate Research Geologist.*  
 Peter P. Vaughn, Ph.D., *Professor of Zoology.*  
 David Weide, A.B., *Museum Scientist.*

The program described below is designed to provide the student majoring in earth sciences with as broad and generalized a training as possible in a curriculum leading to the Bachelor of Science degree.

Students majoring in geology must confer with a departmental adviser at or before the beginning of each quarter. Sample undergraduate programs are available in the departmental office.

#### **Preparation for the Major**

Physical Sciences 3G, Geology 4; twelve courses in physical, mathematical, and life sciences, of which the following are required: Physics 1A-1B (1C strongly recommended); Chemistry 1A-1B-1C; Mathematics 11A-11B-11C; Biology 1A-1B-1C or 181A-181B; a second year of mathematical, biological or physical science (other than geology).

#### **The Major**

Geology 101A-101B-101C, 111A-111B-111C, 115, 121A-121B.

Students planning to do graduate work in specialized careers in geology should aim to take, when possible, appropriate courses in departments outside the major department. Suggested graduate programs for various fields of emphasis are available in the departmental office and will provide guidelines in choosing upper division courses.

Qualified undergraduate students may, upon consent of their adviser and the instructor, take Geology graduate courses numbered from 200 to 250.

#### **Graduate Study**

Students must have a B.S. or B.A. degree in any subject. *All entering graduate students*

are required to take the *General Preliminary Examination* early in the Fall Quarter of their first year of residence. This examination is general in scope, is based upon undergraduate courses only, and is used only for guidance. It has no bearing on admission to graduate status.

#### **Master of Science Degree**

*General University requirements.* See page 136.

*Departmental requirements.* The basic requirement is the completion of a minimum of nine upper division and graduate courses from any physical and/or life science department, of which at least six courses must be at the graduate level, subject to approval by a guidance committee. Of the six graduate level courses, at least one must be a seminar.

No more than two 500-series courses may be applied to the Divisional nine-course minimum and five-graduate-course minimum for the master's degree.

The Thesis Plan is required for those students for whom the M.S. degree is terminal. For those students proceeding to the Ph.D. degree, the Comprehensive Examination Plan is recommended.

Students with differing degree objectives (i.e., physical geology, geophysics, mineralogy, petrology, geochemistry, engineering geology, sedimentology-stratigraphy, paleontology, mineral deposits) will be expected to take appropriate courses in departments outside the major.

#### **Doctor of Philosophy Degree**

*General University requirements.* See page 140.

Students may proceed directly from the

\*\* Member of the Institute of Geophysics and Planetary Physics.

B.A. or B.S. degree toward the Ph.D. degree without receiving the M.S. degree. There is no fixed number of courses required for the Ph.D. degree. It is awarded primarily on the ability to do original research and on an understanding of the science as demonstrated by the completion of a dissertation and passing a series of examinations.

As the specific requirements for the degree will depend upon a student's area of interest and prior training, individual programs will be designed in consultation with a guidance committee. It is expected that the student will satisfy the minimum formal course program for the M.S. degree and a further program of intensive study and research, including where appropriate, courses from physical and/or life science departments outside the major.

In addition to the General Preliminary Examination, the required examinations include: a departmental written and oral examination including the area of specialization of the candidate; an Oral Qualifying Examination; and the Defense of Dissertation.

The foreign language requirement may be satisfied by either: (1) an excellent reading knowledge of one modern foreign language, most commonly German, Russian or French; or (2) a reading knowledge of two modern foreign languages with the possibility of substituting a minor program for one of these.

#### Lower Division Courses

#### Physical Sciences 38. Geology.

See Physical Sciences, page 393.

#### 4. Earth History.

(Formerly numbered 3.) Discussion, three hours; laboratory and field work, three hours. Prerequisite: Physical Sciences 3G. Methods of historical science; consideration of special problems relating to the physical and biological evolution of the earth from earliest times to the present. Stresses maximal individual participation and independent problem solving by students enrolled.

The Staff

#### Upper Division Courses

#### 101A-101B-101C. Mineralogy-Petrology.

Lecture, three to four hours; laboratory, five to six hours. Prerequisites: Physical Sciences 3G; Physics 1A-1B (strongly recommended, 1C); Chemistry 1A-1B-1C; Mathematics 11A-11B-11C. Integrated study of descriptive and determinative mineralogy, crystal chemistry, optical mineralogy and petrology, including petrography.

The Staff

#### 103. Intermediate Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 101C. Microscopic and megascopic study of selected suites of igneous, sedimentary, and metamorphic rocks; their composition, occurrence, and origin.

The Staff

#### 111A-111B-111C. Structural-Stratigraphic-Field Geology.

Lecture, three to four hours; laboratory, three hours; one day a week field trips. Prerequisites: course 4, or consent of instructor; recommended, course 101A-101B-101C taken prior or concurrently. Principles of geologic mapping, structural geology, stratigraphy, interpretation of geologic maps, graphic solution of structural problems.

The Staff

#### 112. Intermediate Structural Geology.

Lecture, two hours; laboratory, three hours; limited field study. Prerequisite: course 111B. Geometric and dynamic interpretation of faults and folds; structures of metamorphic and igneous rocks; large scale tectonics.

Mr. Christie, Mr. Oertel

#### 115. Principles of Paleontology.

(Numbered 11 in 1966-67.) Lecture, three hours; demonstration, one hour; or laboratory, three hours (geology majors must take laboratory); field trips. Prerequisite: one course in biological science; recommended a second course in biological science. Principles governing the evolution and distribution of fossils; the geologic history of plants, invertebrates and vertebrates.

Mr. Hall, Mr. Lane

#### 121A. Advanced Field Geology. (2 courses)

Summer, all day, eight weeks. Prerequisite: course 111C or consent of instructor; course 121B must be taken concurrently. Problems in field geology; preparation of geologic maps and structure sections of selected areas.

The Staff

#### 121B. Advanced Geologic Report Writing.

Summer, eight weeks. Prerequisite: must be taken concurrently with course 121A. Preparation of geologic reports in the field and a final summary report on region mapped in course 121A.

#### 128. Mineral Deposits.

(Formerly numbered 228.) Lecture, three hours; laboratory, three hours. Prerequisite: course 101C. Origin and occurrence of important metallic and nonmetallic deposits.

Mr. Carlisle

#### 130. Isotope Geochemistry.

(Same as Geophysics 130.) Lecture, three hours; discussion, one hour. Prerequisite: junior or senior standing in physical or biological science and consent of instructor. Theoretical aspects of geochronology, particularly Carbon-14 dating. Applications of radioisotopes to the hydrologic cycle and to atmospheric circulation. Stable isotope distribution in nature. Exchange mechanisms and their applications to paleotemperatures, hydrology, mineral formation and origin of biological deposits. (Alternates yearly with course 131).

Mr. Kaplan, Mr. Libby

#### 131. Geochemistry.

(Same as Geophysics 131.) Lecture, three hours; discussion, one hour. Prerequisite: junior or senior standing in chemistry, physics, or geology, or consent of instructor. Origin and abundance of the elements and their isotopes; distribution and chemistry of the elements in the earth, oceans, and atmosphere; chemistry of the earth's interior, phase transformations at high pressure and temperature. (Alternates yearly with course 130).

Mr. Kennedy, Mr. Wetherill

**132. Petroleum and Engineering Geology.**

(Formerly numbered 222.) Lecture, two and a half hours. Prerequisite: course 111C, or consent of the instructor. Geology applied to the exploration and production of gas, petroleum and water; techniques of surface and subsurface geology; problems of engineering, petroleum, and ground water geology. Mr. Bear

**133. Regional Geology.**

(Formerly numbered 246.) Lecture, three hours; discussion, two hours. Prerequisite: course 111C or consent of the instructor. Application of geologic, stratigraphic, paleontologic, biologic, and climatic principles to a specific province or provinces. Emphasis on tectonic evolution of selected regions. Mr. Nelson

**136. Geophysical Exploration.**

Lecture, three hours. Prerequisite: consent of instructor. Principles and techniques of gravimetric, seismic, magnetic, and other geophysical methods of exploration for ores, petroleum, and other economic minerals.

**150. Problems in Earth History.**

Discussion, three hours. Prerequisite: open to upper division and graduate students with permission of instructor; science background advised but not required. Current and classic problems in the history of the earth from its origin to the present. Selected aspects of the evolution of biosphere, atmosphere, chemosphere, and lithosphere. Term paper required. Mr. Cloud

**199. Special Studies in Geology. (½ to 1 course)**

Students may be allowed to take course more than once for credit. The Staff

**Graduate Courses****210. Advanced Paleontology.**

Lecture, two hours; laboratory, six hours; field trips. Prerequisite: course 115 or advanced standing in biological science. The detailed study of selected groups of fossils, including emphasis on evolution, classification, paleoecology, and stratigraphic utility. Mr. Cloud, Mr. Hall, Mr. Lane

**212. Paleocology.**

Lecture, two hours; laboratory, six hours; field trips. Prerequisites: course 115 and 111C or graduate standing in biological science. How and where animals and plants lived in the past; study of habits and habitats of animals, changes in habits and habitats, and the distribution of animals through time and space. Mr. Cloud, Mr. Hall

**214. Vertebrate Paleontology.**

(Same as Zoology 214.) Lecture, three hours; laboratory, three hours. Prerequisites: Zoology 101 and consent of the instructor; recommended, one course in general geology; limited enrollment. Study of the fossil record of the evolution of the vertebrates. Mr. Vaughn

**215. Paleobiology of Plant Microorganisms.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 115 or advanced standing in biological science. Survey of morphology, evolution and diversification, environmental interactions, and stratigraphic value of bacteria, algae and fungi, with emphasis on dinoflagellates and acritarchs, chrysomonads, silicoflagellates, ebridians and diatoms,

discoasters and collolithophorids. (Alternates yearly with course 216.) Mrs. Loeblich

**216. Micropaleontology.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 115 or advanced standing in biological science. Survey of microfossils of the animal kingdom, their systematics, morphology, ecology, evolutionary history and stratigraphic use, with emphasis on foraminiferans, radiolarians, chitinozoans, tintinnids, ostracods, scolecodonts and conodonts. (Alternates yearly with course 215.) Mrs. Loeblich

**218. Paleobotany.**

Lecture, three hours; field trips. Prerequisites: course 111C and elementary botany, or graduate standing in botany. Vegetation of the earth during geologic time.

**220. Biogeology.**

Discussion, three hours; laboratory, field, or library research leading to a term paper. Prerequisite: open to graduate students in science; qualified undergraduates admitted by petition. Selected problems related to biological processes and events in geology and cosmology. Course content to vary from year to year. Mr. Cloud

**230. X-Ray Crystallography.**

Lecture, three hours; laboratory, three hours. Prerequisite: course 101C. Point, translation, and space group symmetry, diffraction of x-rays, reciprocal lattice theory, single crystal x-ray methods, diffraction symmetry and elementary crystal structure analysis. (Alternates yearly with course 231.) Mr. Dollase

**231. Crystal Chemistry and Structure of Minerals.**

Lecture, three hours; laboratory, three hours. Prerequisite: course 101C. Bonding, interatomic configurations, polymorphic transformations, isotypism, thermal and positional disorder; survey of the structures of the common minerals, and relation of physical and chemical properties to crystal structure. (Alternates yearly with course 230.) Mr. Dollase

**234. Phase Equilibria.**

Lecture, three hours; discussion, two hours. Prerequisites: course 101C, Chemistry 113C or consent of instructor. Principles governing homogeneous and heterogeneous equilibria, with selected applications to mineral stability relations in igneous and metamorphic rocks (fractional crystallization, partial melting, hydrothermal solutions, element partitioning in coexisting phases). Mr. Ernst

**236A. Igneous Petrology.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 234 (may be taken concurrently) and a knowledge of differential equations. Solutions of the heat flow equation for specific examples of cooling magmatic bodies; the nature and origin of batholiths and associated rocks. (Alternates yearly with course 236B.) Mr. Hollister

**236B. Igneous Petrology.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 234 or consent of instructor. Occurrence and origin of mafic and ultramafic rocks. (Alternates yearly with course 236A.) Mr. Watson

**238. Metamorphic Petrology.**

Lecture, three hours; laboratory, six hours. Prerequisite: course 103 or consent of the instructor.

Interpretation of metamorphic rocks in the light of observation, theory, and experiment. Geological relations, petrographic evidence, metamorphic zoning, thermodynamics of phase equilibria, projections, chemographic relationships, use of piezobirefringent haloes, Rayleigh depletion model, isotopic fractionation, environmental factors of metamorphism. Laboratory study of representative metamorphic rocks and suites of rocks selected to illustrate topics discussed in lectures. Mr. Hollister, Mr. Rosenfeld

### 239. Structural Petrology of Deformed Rocks.

Lecture and discussion, three hours; laboratory, three hours. Prerequisite: courses 101, 111; 112 or 248 recommended, or consent of instructor. Use of universal stage. Microscopic study of textures, structures and preferred orientations of minerals in tectonites. Deformation mechanisms in crystals and aggregates. Theories of development of preferred orientation. Application of experimental data to the interpretation of microfabrics. (Alternates yearly with course 249.) Mr. Christie

### 240. Sedimentology.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of instructor. Characteristics of sediment particles (size, sorting, and morphology) and sedimentary masses and appropriate statistical approaches; relation of these characteristics to the environment and process of deposition. (Alternates yearly with course 241.) Mr. Gibbs

### 241. Sedimentary Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 101C, recommended course 240. Texture, composition, structure, and modes of origin of the sedimentary rocks. (Alternates yearly with course 240.) Mr. Gibbs

### 242. Clay Mineralogy.

Lecture, two hours; laboratory, six hours. Prerequisite: consent of instructor. Crystallography, chemistry, physical properties, occurrence, origin, and alterations of the clay and related minerals; theory and techniques of identification, characterization, and quantitative analysis using x-ray diffraction and electron microscopy; cation exchange and size characteristics of clay minerals. (Offered in alternate years.) Mr. Gibbs

### 244. Marine Geology.

Lecture, three hours; laboratory, six hours; field trips. Prerequisites: courses 101C, 111C. Recent marine sedimentology and geochemistry; oceanography; morphology, structure, and geologic history of the ocean basins. Mr. Gibbs, Mr. Kaplan

### 248. Advanced Structural Geology.

Lecture, three hours; discussion, two hours. Prerequisite: course 111C. Principles governing fracture, folding, and flow of rocks; solution of structural problems at various scales; regional tectonic problems. Mr. Christie, Mr. Oertel

### 249. Structural Analysis of Deformed Rocks.

Lecture and discussion, three hours; laboratory, three hours. Prerequisite: courses 111; 112 or 248 recommended, or consent of instructor. Geometrical analysis of megascopic structures in terranes with complex or multiple deformations. Analysis of strain from deformed primary features. Interpretation of structural history in metamorphic terranes. (Alternates yearly with course 239.) Mr. Christie, Mr. Oertel

### 250. Stress and Deformation of Geologic Materials.

Lecture, three hours; discussion, two hours. Prerequisites: Physics 1A-1B-1C; Mathematics, three courses or one year of calculus. Scalars, vectors, tensors; rotation and inversion of axes, transformation matrix; stress; infinitesimal strain, strain rate; finite strain; Mohr's circle construction and other graphical methods of representation. Mr. Shreve

#### Graduate Seminars

All seminars and Geology 297, 298, 596, 597, 598, 599 are to be arranged, all require consent of instructor. Seminars vary in content and instructor according to interests of staff and students. The range of subject matter is indicated by the descriptions following each of the seminar headings. In some, two or more staff members offer a cooperative seminar or sequence of seminars. Students are allowed to take a specifically numbered seminar as often as desired because of changing course content.

### 251. Seminar in Mineralogy.

Examination of groups of rock-forming minerals (e.g., feldspars) integrating such aspects as crystal structure, crystal chemistry, phase equilibria, and petrogenesis. The Staff

### 252. Seminar in Geochemistry.

Phase equilibria under crustal conditions, chemistry of ocean waters, recent and ancient sediments, structure and chemistry of the upper mantle, geochronology, cosmochemistry, and cosmochemistry. The Staff

### 253. Seminar in Petrology.

Problems of igneous or metamorphic petrology: methods of evaluating physical conditions of metamorphism; diffusion in mineralogic systems; origin of ultramafic rocks and problems of the mantle; element fractionation among coexisting phases; other current subjects in the field. The Staff

### 254. Seminar in Sedimentology.

Processes of sediment transport and deposition; deep sea sediments; deltas and estuaries; petrology of carbonates, sandstones, and lutites; stratigraphy; paleo-environmental studies. The Staff

### 255. Seminar in Structural Geology and Tectonics.

Flow and fracture in the earth's crust from microscopic to continental scale and in experiments. Examples may include metamorphic terranes, glaciers, plutons, volcanoes, and consolidated or unconsolidated sediments. Modern concepts of the oceanic basins: processes leading to segregation of continental-type rocks. The Staff

### 256. Seminar in Physical Geology.

Glacier physics, theoretical geomorphology, river mechanics, statistical models. The Staff

### 257. Seminar in Paleontology.

Current biogeologic literature and research on: evolution of selected groups of animals and plants, numerical taxonomy, organism-environmental relationships, origin and development of life, biostratigraphy, paleoecology, biogeography, and biostatistics. The Staff

**258. Seminar in Mineral Deposits.**

Problems of distribution, composition, and formation of mineral deposits; mineral economics; investigations of opaque minerals by microscopic or other techniques.

The Staff

**259. Advanced Topics in Geology. (½ to 1 course)**

The Staff

Individual Study and Research

**596. Directed Individual Study and/or Research.**

(½ to 1 course)

The Staff

**597. Preparation for Master's Comprehensive Examination or Doctoral Qualifying Examination. (½ to 1 course)**

The Staff

**598. Master's Research and Thesis Preparation.**

(½ to 1 course)

The Staff

**599. Doctoral Research and Dissertation**

Preparation. (½ to 1 course)

The Staff

**Related Courses in Other Departments**

**Geophysics and Planetary Physics 249. Experimental Petrology.**

250. Seminar in Geophysics.

260. Experimental Geology.

**Planetary and Space Science 222. Introduction to Seismology.**

225A-225B. Physics and Chemistry of Planetary Interiors.

**Zoology 260. Seminar in Vertebrate Paleontology.**

**■ GEOPHYSICS AND PLANETARY PHYSICS**

(Institute Office, 3687 Geology Building)

David T. Griggs, M.A., *Professor of Geophysics.*

Robert E. Holzer, Ph.D., *Professor of Geophysics.*

William M. Kaula, M.S., *Professor of Geophysics.*

George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*

Leon Knopoff, Ph.D., *Professor of Geophysics and Physics.*

Willard F. Libby, Ph.D., *Professor of Chemistry and Director of the Institute of Geophysics and Planetary Physics.*

†Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics and Geology.*

Willem V. R. Malkus, Ph.D., *Professor of Geophysics and Mathematics.*

Clarence E. Palmer, D.Sc., *Professor of Geophysics.*

George W. Wetherill, Ph.D., *Professor of Geophysics and Geology.*

Jacob A. B. Bjerknes, Ph.D., *Emeritus Professor of Meteorology and Geophysics.*

William W. Rubey, D.Sc., *Emeritus Professor of Geology and Geophysics.*

§Louis B. Slichter, Ph.D., *Emeritus Professor of Geophysics.*

W. Gary Ernst, Ph.D., *Associate Professor of Geology and Geophysics.*

Isaac R. Kaplan, Ph.D., *Associate Professor of Geology and Geophysics.*

Ronald L. Shreve, Ph.D., *Associate Professor of Geology and Geophysics.*

John T. Wasson, Ph.D., *Associate Professor of Chemistry and Geophysics.*

Stanton J. Peale, Ph.D., *Assistant Professor of Astronomy and Geophysics.*



Paul J. Coleman, Jr., Ph.D., *Acting Associate Professor of Planetary and Space Science.*

The Institute of Geophysics and Planetary Physics was established to encourage fundamental research in geophysics, geochemistry and space physics and to provide graduate instruction for qualified students. Members of the staff and associated departments are prepared to supervise graduate work in a variety of fields: atmospheric physics, physics of the radiation belts, interplanetary physics and

solar physics, geophysical fluid dynamics, high pressure physics, tectonophysics, geochemistry, nuclear geophysics, age determination, gravitation, physical oceanography and marine geophysics, seismology, physics of the deep interior, and exploration geophysics. The bachelor's degree may be in any field; however, a thorough undergraduate preparation in one or more of the basic sciences, physics, mathematics or chemistry is expected of students pursuing graduate

† Absent on leave, 1968-1969.

§ Recalled to active service, 1968-1969.

research. The student who elects to pursue research in geophysics, geochemistry or space physics may do so by entering the Geochemistry Interdepartmental Curriculum or by enrolling in one of the following departments: geology, physics, meteorology, mathematics, astronomy, chemistry, planetary and space science. An individual program of instruction will be worked out for each student, since the requirements for the M.S. or Ph.D. degree are not the same for all students. For further information, contact the Institute of Geophysics and Planetary Physics.

### Undergraduate Study

Undergraduate students with an interest in graduate study in Geophysics are advised to complete a major in physics, mathematics or chemistry. Attention is also drawn to opportunities to complete an undergraduate course of studies in Exploration Geophysics or Earth Physics. The catalog listing for this program is to be found on page 78.

#### Upper Division Courses

### 130. Isotope Geochemistry.

(Same as Geology 130.) Lecture, three hours; discussion, one hour. Prerequisite: upper division standing in physical or biological sciences and consent of instructor. Theoretical aspects of geochronology, particularly Carbon-14 dating. Application of radioisotopes to the hydrologic cycle and to atmospheric circulation. Stable isotope distribution in nature. Exchange mechanisms and their applications to pollutant temperatures, hydrology, mineral formation and origin of biological deposits. (Alternates yearly with course 131.) Mr. Kaplan, Mr. Libby

### 131. Geochemistry.

(Same as Geology 131.) Lecture, three hours; discussion, one hour. Prerequisite: upper division standing in chemistry, physics, or geology, or consent of instructor. Origin and abundance of the elements and their isotopes; distribution and chemistry of the elements in the earth, oceans, and atmosphere; chemistry of the earth's interior; phase transformations at high pressure and temperature. (Alternates yearly with course 130.) Mr. Kennedy, Mr. Wetherill

### 136. Geophysical Exploration.

(Same as Geology 136.) Lecture, three hours. Prerequisite: consent of the instructor. Principles and techniques of gravimetric, seismic, magnetic, and other geophysical methods of exploration for ores, petroleum, and other economic minerals.

#### Graduate Courses

### 241. Statistical Hydrodynamics.

(Same as Planetary and Space Science 212.) An introduction to the nonlinear fluid processes of planetary physics: aperiodic motion and statistical stability; similarity theory; upper bounds for the turbulent transport of heat and momentum; mean

field equations; quantitative theories of turbulent flow; the problem of statistical closure. Mr. Malkus

### 249. Experimental Petrology.

Prerequisite: consent of the instructor.

Mr. Kennedy

### 250. Seminar in Geophysics.

Prerequisite: consent of the instructor. Seismology, geophysical prospecting, electromagnetic prospecting. Selected topics in earth physics. The content will vary from year to year.

### 260. Experimental Geology. (¼ to 1½ courses)

Seminar, two hours; laboratory, optional. Prerequisite: consent of the instructor. The mechanics of rock deformation. Dimensional analysis and model theory applied to geological problems. Mr. Griggs

#### Individual Study and Research

### 596. Directed Individual Study or Research in Geophysics. (¼ to 1½ courses)

This course will include studies relative to exploration geophysics and experimental work in the electromagnetic model laboratory; research relative to gravity-surveying and to gravity earthtides; theoretical and experimental studies relative to seismology and geophysics (Mr. Knopoff); tectonophysics and properties of matter at high pressure (Mr. Griggs); atmospheric electrical phenomena (Mr. Holzer); meteorological problems (Mr. Palmer); radioactive dating and nuclear geophysics (Mr. Libby, Mr. Wetherill); hydrodynamics (Mr. Malkus); meteorites (Mr. Wetherill); volcanology, physics of high pressure, phase equilibria in geologically important chemical systems (Mr. Kennedy); geodesy and satellite orbit analysis (Mr. Kaula). The Staff

### 596A. Directed Individual Study or Research in Geochemistry. (¼ to 1½ courses)

Prerequisite: consent of the instructor. Nuclear geochemistry, geochronology, isotope chemistry of meteorites (Mr. Wetherill); cosmochemistry, trace element abundances in meteorites, natural radioactivity (Mr. Wasson); radiocarbon dating, tritium hydrology and water and moisture circulation, radioactive fallout circulation and precipitation and assimilation into the biosphere, high pressure chemistry particularly as applied to planetary interiors, chemistry of ionizing radiation particularly as applied to planetary atmospheres (Mr. Libby); experimental investigation of phases, equilibrium at high temperatures and pressures with emphasis on geochemically important systems (Mr. Kennedy); experimental and theoretical investigation of phase equilibrium relations involving crustal conditions (Mr. Ernst); sedimentary geochemistry, geochemistry of stable isotopes, geological microbiology, origin and diagenesis of marine and nonmarine sediments, chemical history of the oceans, organic compounds in meteorites and biochemistry of early evolutionary processes (Mr. Kaplan). The Staff

### 597A. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (¼ to 1½ courses)

For course content and staff see course 596.

**597B. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. in Geochemistry.** (¼ to 1½ courses)

For course content and staff see course 596A.

**598. Research for and Preparation of the Master's Thesis in Geochemistry.** (¼ to 1½ courses)

For course content and staff see course 596A.

**599A. Research for and Preparation of the Doctoral Dissertation.**  
(¼ to 1½ courses)

For course content and staff see course 596.

**599B. Research for and Preparation of the Doctoral Dissertation in Geochemistry.**  
(¼ to 1½ courses)

For course content and staff see course 596A.

## ■ GERMANIC LANGUAGES

(Department Office, 310 Royce Hall)

Franz H. Bäuml, Ph.D., *Professor of German.*

Carl William Hagge, Ph.D., *Professor of German.*

Wayland D. Hand, Ph.D., *Professor of German and Folklore.*

Victor A. Oswald, Jr., Ph.D., *Professor of German.*

Eli Sobel, Ph.D., *Professor of German (Chairman of the Department).*

Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages (Vice-Chairman, Scandinavian Section).*

Gustave Otto Arlt, Ph.D., LL.D., *Emeritus Professor of German.*

Alfred Karl Dolch, Ph.D., *Emeritus Professor of German.*

Frank H. Reinsch, Ph.D., *Emeritus Professor of German.*

Kenneth G. Chapman, Ph.D., *Associate Professor of Scandinavian Languages.*

Vern W. Robinson, Ph.D., *Associate Professor of German.*

Donald J. Ward, Ph.D., *Associate Professor of German.*

William J. Mulloy, Ph.D., *Emeritus Associate Professor of German.*

Ehrhard Bahr, Ph.D., *Assistant Professor of German.*

Rudolf A. Koester, Ph.D., *Assistant Professor of German.*

Wolfgang Nehring, Ph.D., *Assistant Professor of German.*

Stephen P. Schwartz, Ph.D., *Assistant Professor of German.*

Hans Wagener, Ph.D., *Assistant Professor of German.*

Alois Wierlacher, Dr.Phil., *Assistant Professor of German.*

Terence Harrison Wilbur, Ph.D., *Assistant Professor of German.*

Eric Wilson, Ph.D., *Assistant Professor of German.*

Jules Zentner, Ph.D., *Assistant Professor of Scandinavian Languages.*

Gudrun H. Wasson, Ph.D., *Instructor in German.*

———, *Instructor in German.*

———, *Instructor in German.*



Stephanie Lombardi, Ph.D., *Lecturer in German.*

David R. McCann, M.A., *Acting Assistant Professor of German.*

William F. Roertgen, Ph.D., *Lecturer in German, Dutch-Flemish, and Afrikaans.*

Edith A. Schulz, M.A., *Lecturer in German.*

———, *Associate in German.*

———, *Associate in German.*

### Preparation for the Major in German

Required: courses 1, 2, 3, 4, 5, 6, or their equivalents.

### The Major in German

Two majors of 12 courses each are offered by the department. Either one may be used in satisfaction of A.B. requirements.

Plan A is designed primarily for the undergraduate who may expect to continue study toward the attainment of a teaching credential and/or a terminal M.A. degree. This plan requires courses 100, 103, 104, 105, 106A, 106B, 116, 117, 118 and three courses to be selected from among German 123, 124, 125, 131, 132.

Plan B is designed primarily for the undergraduate who may expect to continue study toward the attainment of the M.A. and Ph.D. degree in Germanic languages. This plan requires courses 100, 101, 103, 104, 105, 106A, 106B, 117, and four courses to be selected from among German 118, 123, 124, 125, 131, 132.

#### **Honors Program**

Honors will be awarded only to those undergraduates who, in achieving the required grade-point average, have completed courses 140A and 140B.

#### **Admission to Graduate Status**

The completion of the undergraduate major, or its equivalent, with a minimum grade-point average of 3.0 is required. If the candidate is deficient in the undergraduate major he must complete it by taking the appropriate courses, as recommended by the departmental graduate adviser. A placement examination in German language and literature may be required of entering graduate students.

#### **Requirements for the Standard Secondary Credential**

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

#### **Requirements for the Master's Degree**

1. For the general requirements, see pages 136-140.

2. A minimum of nine upper division and graduate level courses of which at least six courses must be graduate level (200 or 500 series), plus a thesis or comprehensive examination. Familiarity with the works on the M.A. Reading List is expected, as well as with other readings that may be required by the candidate's guidance committee.

3. Application for advancement to candidacy may be made when the student has passed the Graduate Division reading examination in French.

4. Courses offered in satisfaction of the general requirements, under both the thesis plan and the comprehensive examination plan, must include one departmental seminar course.

5. A graduate wishing to attain the M.A. degree under the Comprehensive Examination Plan may choose between alternate sets of examinations (see items 7 and 8). When appropriate, the comprehensive examinations will be conducted orally.

6. A student who is accepted on the thesis plan takes only an oral examination in the field of the thesis, as provided on page 138.

7. A candidate who expects to terminate his studies with attainment of an M.A. and teaching credential will be examined on (a) the origin and development of the standard German language, (b) contemporary standards of the German language, and (c) major works and authors from earliest times to the present.

8. A candidate who plans to proceed toward the Ph.D. in Germanic languages will be examined on (a) a basic knowledge of bibliography, (b) a reading knowledge of Middle High German, (c) the origin and development of the German language, and (d) major works and authors from the earliest times to the present.

#### **Requirements for the Doctor's Degree**

1. For the general requirements, see pages 140-142.

2. The department reserves the right to require of a student holding an M.A. degree from another institution an examination equivalent to that given its own M.A. candidates. Failure to demonstrate satisfactory achievement may result in the assignment of additional preparatory courses.

3. Advancement to candidacy will take place when the student has (a) passed the graduate reading examination in French; (b) passed a departmental reading examination either in a modern Scandinavian language or in Dutch-Flemish-Afrikaans or in Latin; (c) successfully completed three seminars; (d) passed the qualifying examinations for the doctorate (see item four below).

4. At the beginning of his work toward the doctorate or as soon as possible thereafter, the student shall make known his intended major and minor fields, one of each to be selected from the four fields in which the degree is offered: (a) German Literature; (b) Germanic Philology and Linguistics; (c) Scandinavian Literature and Philology; (d) Germanic Folklore. The field in which the candidate intends to present a dissertation will be designated as his major field. A departmental doctoral guidance committee will direct his work toward the qualifying examinations. The candidate who chooses German Literature as his major field will be required to choose two fields of specialization, which will comprise the subject-matter of his major field examination from the following: (a)

Medieval German Literature; (b) German Literature of the 16th and 17th centuries; (c) the 18th century and Classicism; (d) Romanticism and the 19th century; (e) Modern German Literature. The candidate who chooses German Literature as a minor field will be required to select from the above five fields one field of specialization, which will comprise his minor field examination. The candidate shall pass one written qualifying examination in his major field and one written qualifying examination in a minor field. He is then subject to an oral qualifying examination administered by his doctoral committee, as provided on page 141. Upon passing his qualifying examinations the candidate shall write a dissertation which, upon completion, he shall be required to defend.

#### Lower Division Courses

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. Prerequisites for lower division courses are listed under the course descriptions. Students with demonstrated preparation may be permitted a more advanced program by the Department, or such students may be transferred to a more advanced course on recommendation of the instructor.

#### 1. Elementary German.

Lecture, five hours per week; laboratory, one hour.  
Mrs. Lombardi in charge

#### 16. Elementary German for Graduate Students. (No credit)

Lecture, five hours per week. To provide preparation for Graduate Division foreign language reading requirement.  
Miss Schulz in charge

#### 2. Elementary German.

Lecture, five hours per week; laboratory, one hour.  
Prerequisite: course 1. Mrs. Lombardi in charge

#### 3. Elementary German.

Lecture, five hours per week. Prerequisite: course 2 or two years of high school German.  
Mrs. Lombardi in charge

#### 4. Intermediate German.

Lecture, five hours per week. Prerequisite: course 3 or three years of high school German.  
3 or three years of high school German.

#### 4S. Intermediate German.

Lecture, five hours per week. Prerequisite: course 3 or three years of high school German. Readings in the sciences.  
Mr. Robinson in charge

#### 5. Intermediate German.

Prerequisite: course 4 or 4S, or four years of high school German.

#### 6. Intermediate German.

Prerequisite: course 5 or the equivalent.

#### 8. Conversational German. (½ course)

Lecture, four hours a week. Prerequisite: course 3 or the equivalent.  
The Staff

#### \*25. Advanced German.

Prerequisite: course 6 or the equivalent. Not required as preparation for the German major.  
Mr. Koester in charge

#### Upper Division Courses

The prerequisite for all upper division courses except 121A and 121B is course 6 or the equivalent.

#### Courses not Open to Graduate Students in German

#### 100. German Civilization and Culture.

Prerequisite: upper division standing, or consent of the instructor. A study of the development of German civilization and institutions from the earliest times to the present. Study of German culture as represented in its literature, art, music, and architecture.  
Mr. Büml, Mr. Wagener

#### 101. The Study of German Literature.

Prerequisite: upper division standing or consent of the instructor. Application of the techniques and methods employed in literary criticism. Study of the various genres of German literature and of German prosody.  
Mr. Bahr, Mr. McCann, Mr. Ward

#### 103. Introduction to Literature of the Classical Period.

Prerequisite: upper division standing or consent of the instructor. Selections from the main works of Lessing and Schiller.  
Mr. Bahr, Mr. Hagge

#### 104. Introduction to 19th-Century Literature.

Prerequisite: upper division standing or consent of the instructor. Selected works of the period extending from Romanticism through Poetic Realism.  
Mr. Wagener, Mr. Wilson

#### 105. Introduction to Modern Literature.

Prerequisite: upper division standing or consent of the instructor. Selected works of the period extending from Naturalism to the present time.  
Mr. Koester, Mr. Ward, Mr. Wilson

#### 106A. Advanced Composition, Grammar, and Conversation.

Prerequisite: upper division standing or consent of the instructor.  
Mr. Bahr, Mrs. Lombardi

#### 106B. Advanced Composition, Grammar, and Conversation.

Prerequisite: course 106A.  
Mr. Roertgen, Mrs. Lombardi

#### 116. Advanced Composition, Grammar, and Conversation.

Prerequisite: courses 106A-106B. Mr. Roertgen

#### 117. Language and Linguistics.

Prerequisite: courses 100 and 106A. Introduction to the historical development of the German language.

\* Not to be given, 1968-1969.

age: theory and method of descriptive, historical, and comparative linguistics. Mr. Schwartz

### 121A. German Literature in Translation.

Lecture, three hours per week. To fulfill, in part, college requirements in the humanities. Readings and lectures in English on Lessing, Schiller, and Goethe. Mr. Robinson

### 121B. German Literature in Translation.

Lecture, three hours per week. To fulfill, in part, college requirements in the humanities. Readings and lectures in English on selected modern authors. Mr. McCann, Mr. Wilson

### Courses Open to Graduate Students in German

#### 118. German Phonetics.

(Formerly numbered 200.) Mr. Wilbur

#### 123. Advanced Study in Literature of the Classical Period.

Lecture, four hours per week. Prerequisite: courses 100, 101 and 103, or consent of the instructor. Extensive reading and analysis of selected works, with emphasis on Goethe. Mr. Hagge

#### 124. Advanced Study in 19th-Century Literature.

Lecture, three hours per week. Prerequisite: courses 100, 101 and 104, or consent of the instructor. Reading and analysis of a wider range of works than in course 104. Mr. Robinson

#### 125. Advanced Study in Modern Literature.

Lecture, three hours per week. Prerequisite: courses 100, 101 and 105, or consent of the instructor. Reading and analysis of a wider range of works than in course 105.

Mr. Koester, Mr. Oswald, Mrs. Wasson

#### 131. Studies in German Literature before 1750.

Lecture, three hours per week. Prerequisite: courses 100 and 101, or consent of the instructor. Readings and analysis of major works from the Middle Ages to the Baroque. Mr. Bäuml, Mr. Sobel

#### 132. Goethe's Faust.

Prerequisite: courses 100, 101 and 103, or consent of the instructor. Detailed interpretation of Goethe's *Faust*, Parts I and II, together with more general consideration of other treatments of the Faust theme in European literature. Mr. Hagge

#### 134. German Folklore.

Lecture, three hours per week. A survey of the various genres of German folklore. Lectures and reading of selected texts. Mr. Ward

#### 140A. Honors Course in German.

Lecture, three hours per week plus discussion, oral and written reports. Prerequisite: senior standing with a minimum 3.0 grade-point average in the major, and consent of the departmental honors committee. The student must have completed courses 100, 101, 103, 104, 105. Intensive study of a selected special topic in German literature. The Staff

#### 140B. Honors Course in German.

Lecture, three hours per week. Prerequisite: course 140A. Supervised preparation of an honors essay on a selected special topic. The Staff

#### 199. Special Studies. (½ or 1 course)

Prerequisite: senior or graduate standing, and consent of the instructor. A course of independent study designed for graduates or senior undergraduates who desire more intensive or specialized investigation of material covered in a regular course, and who present such a course as a prerequisite.

The Staff

### Graduate Courses

#### 201. Bibliography and Methods of Literary History.

Lecture, three hours per week. Mr. Sobel

#### 202. Middle High German.

Mr. Bäuml

#### 203. Middle High German Literature.

Lecture, three hours per week. Mr. Bäuml

#### 204. Renaissance and Reformation Literature.

Lecture, three hours per week. Mr. Sobel

#### 205. Baroque Literature.

Lecture, three hours per week. Mr. Wagener

#### 206. Enlightenment and Sturm und Drang.

Lecture, three hours per week.

#### 207. Classicism.

Lecture, four hours per week. Mr. Hagge

#### 208. Romanticism.

Lecture, three hours per week. Mr. Nehring

#### 209. 19th-Century Literature.

Lecture, three hours per week. Mr. Bahr

#### 210. German Literature of the Modern Period 1890-1930.

Three hours per week. Mr. Koester, Mr. Oswald

#### 211. Contemporary German Literature, 1930 to the Present.

Lecture, three hours per week. Mr. Wilson

#### 217. History of the German Language.

Mr. Schwartz

#### 230. Survey of Germanic Philology.

Mr. Wilbur

#### 231. Gothic.

Mr. Wilbur

#### 232. Old High German.

Mr. Schwartz

#### \*233. Old Saxon.

Mr. Wilbur

#### 240. Folklore of the Germanic Peoples.

Lecture, three hours per week. Prerequisite: course 134, or Folklore 101. Mr. Hand

#### 245. Germanic Mythology.

(Same as Scandinavian 245.) Lecture, three hours per week. Prerequisite: knowledge of German, a Scandinavian language, or consent of the instructor. Mr. Wahlgren

#### 253. Seminar in Medieval Literature.

Three hours per week. Mr. Bäuml

\* Not to be given, 1968-1969.

**254. Seminar in Renaissance and Reformation.**

Three hours per week. Mr. Sobel

**255. Seminar in Baroque Literature.**

Three hours per week. Mr. Wagener

**256. Seminar in Enlightenment and Sturm und Drang.**

Three hours per week.

**257. Seminar in the Age of Goethe.**

Three hours per week. Mr. Hagge

**258. Seminar in Romanticism.**

Three hours per week.

**259. Seminar in 19th-Century Literature.**

Three hours per week. Mr. Nehring

**260. Seminar in the Modern Period.**

Three hours per week. Mr. Koester

**\*261. Seminar in Contemporary Literature.**

Three hours per week. Mr. Oswald

**290. Seminar in Germanic Linguistics.**

Three hours per week. Mr. Schwartz

**Professional Course in Method****370. The Teaching of German.**

Lecture, three hours per week and discussion periods. Prerequisite: graduate standing or consent of the instructor. Required of all candidates for the general secondary credential in German.

Mrs. Lombardi

**Individual Study and Research****596. Directed Individual Study or Research.**

To be graded on Satisfactory-Unsatisfactory scale. May be taken twice by any graduate student. Only one course in the 500-series may count toward Department graduate course requirement for the M.A.

The Staff

**597. Preparation for Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.**

To be graded on Satisfactory-Unsatisfactory scale. Holders of M.A. degree in German may take it twice. Only one course in the 500-series may count toward Department graduate course requirement for the M.A.

The Staff

**598. Research for Preparation of Master's Thesis.**

To be graded on Satisfactory-Unsatisfactory scale. May be taken three times. Only one course in the 500-series may count toward Department graduate course requirement for the M.A.

The Staff

**599. Research for Preparation of the Doctoral Dissertation.**

Open to only those admitted to candidacy for the Ph.D. To be graded on Satisfactory-Unsatisfactory scale. May be taken unlimited number of times.

The Staff

\* Not to be given, 1968-1969.

**Dutch-Flemish and Afrikaans****101A. Elementary Dutch-Flemish.**

Mr. Roertgen

**101B. Elementary Afrikaans.**

Mr. Roertgen

**101C. Intermediate Readings in Dutch-Flemish and Afrikaans.**

Prerequisite: course 101A or 101B, or consent of the instructor.

Mr. Roertgen

**199. Special Studies in Dutch-Flemish and Afrikaans. (½ to 1 course)**

Mr. Roertgen

**Scandinavian Languages****Preparation for the Major**

Plan A. Required: courses 1, 2, 3, 4, 5, 20, or 11, 12, 13, 14, 15, 20, or their equivalents. For Plans B and C, the requirements will include the above and German 1, 2, 3, 4, 5, 6.

**The Major in Scandinavian**

Three majors of 10 courses each are offered. Any one of the 3 may be used in satisfaction of the A.B. requirements.

Plan A is designed primarily for undergraduates who do not contemplate graduate work in this Department. This plan requires: Scandinavian 141, 142, 143, 185, and 6 courses from Scandinavian 105, 106, 144, 145, 151, 152, 153.

Plan B is designed primarily for undergraduates who may wish to pursue graduate work with the emphasis on literature. This plan requires: Scandinavian 141, 142, 143, 185, German 101, 103, 104, and 3 courses from the following: Scandinavian 105, 106, 144, 145, 151, 152, 153, German 105, 123, 124, 132.

Plan C is designed primarily for undergraduates who may wish to pursue graduate work with emphasis on philology. This plan requires: Scandinavian 141, 142, 143, German 101, 106A, 117, and 3 courses from Scandinavian 105, 106, 151, 152, 153.

**Admission to Graduate Status**

The completion of the undergraduate major, or its equivalent, with a minimum grade-point average of 3.0 is required. If the candidate is deficient in the undergraduate major he must complete it by taking the appropriate courses, as recommended by the adviser of the Scandinavian section. A placement examination in the Scandinavian languages, as

well as in German, may be required of entering graduate students.

#### Lower Division Courses

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition. Prerequisites for lower division courses are listed under the course descriptions. Students with demonstrated preparation may be permitted a more advanced program by the Department, or such students may be transferred to a more advanced course on recommendation of the instructor.

#### 1. Elementary Swedish. Mr. Zentner in charge

#### 2. Elementary Swedish. Prerequisite: course 1 or equivalent. Mr. Zentner in charge

#### 3. Elementary Swedish. Prerequisite: course 2 or equivalent. Mr. Zentner in charge

#### 4. Intermediate Swedish. Prerequisite: course 3 or equivalent. Mr. Zentner in charge

#### 5. Intermediate Swedish. Prerequisite: course 4 or equivalent. Mr. Zentner in charge

#### 11. Elementary Norwegian. Mr. Chapman in charge

#### 12. Elementary Norwegian. Prerequisite: course 11 or equivalent. Mr. Chapman in charge

#### 13. Elementary Norwegian. Prerequisite: course 12 or equivalent. Mr. Chapman in charge

#### 14. Intermediate Norwegian. Prerequisite: course 13 or equivalent. Mr. Chapman in charge

#### 15. Intermediate Norwegian. Prerequisite: course 14 or equivalent. Mr. Chapman in charge

#### 20. Intermediate Norwegian and Swedish. (Formerly numbered 6 and 16.) Lecture, three hours per week and special assignments. Prerequisites: courses 5, 15, or the equivalent. Readings in Swedish and Norwegian, written and oral exercises. Mr. Wahlgren in charge

#### Upper Division Courses

#### 105. Advanced Swedish. Lecture, three hours per week and special assignments. Prerequisite: course 20 or equivalent. Readings, composition, and conversation. Conducted in Swedish. Mr. Wahlgren in charge

#### 106. Advanced Swedish.

(Formerly numbered 105B.) Lecture, three hours per week with special assignments. Prerequisite: course 105 or equivalent. Readings, composition, and conversation. Conducted in Swedish.

Mr. Wahlgren in charge

#### 141. Medieval Scandinavian Literature.

Lecture, three hours per week. Open to all upper division students. Reading in the Old Icelandic sagas, the Eddas, and early ballad literature. Conducted in English, and no knowledge of a Scandinavian language is required.

The Staff

#### 142. Scandinavian Literature of the 16th and 19th Centuries.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 6 or 16, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.

Mr. Chapman, Mr. Wahlgren, Mr. Zentner

#### 143. Modern Scandinavian Literature.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.

Mr. Chapman, Mr. Wahlgren, Mr. Zentner

#### 144. Ibsen.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.

Mr. Chapman, Mr. Zentner

#### 145. Strindberg.

Lecture, three hours per week. Prerequisite for Scandinavian majors: course 20, or equivalent knowledge of Danish. For nonmajors: no knowledge of a Scandinavian language is required.

Mr. Chapman, Mr. Zentner

#### 151. Elementary Old Icelandic.

Lecture, three hours per week, and special assignments. Prerequisite: at least one year of a modern Scandinavian language or consent of the instructor. Grammar and readings of prose literature.

Mr. Chapman, Mr. Wahlgren

#### 152. Intermediate Old Icelandic.

Lecture, three hours per week, and special assignments. Prerequisite: course 151. Readings of Old Icelandic prose and poetry.

Mr. Chapman, Mr. Wahlgren

#### 153. Modern Icelandic.

Lecture, three hours per week. Prerequisite: course 152. Grammar, readings, composition, and conversation.

Mr. Chapman

#### 185. Readings in Scandinavian Literature History.

Reading course in the standard literary histories for Denmark, Iceland, Norway, and Sweden. Readings in English. No lectures; written examinations. Required for the A.B. and of graduate students offering Scandinavian as a minor field for the Ph.D.

The Staff

#### 190. Honors Course in Scandinavian.

Lecture by special arrangement. Prerequisite: senior standing with a minimum 3.0 grade-point

average in the major and consent of the honors committee of the Scandinavian section. Intensive study of a selected special topic in Scandinavian. Discussions, oral and written reports. **The Staff**

### 199. Special Studies in Scandinavian. (½ to 1 course)

Prerequisite: senior or graduate standing, and consent of the instructor. A course of independent study designed for graduates or senior undergraduates who desire more intensive or specialized investigation of material covered in a regular course, and who present such a course as a prerequisite.

Will not be used in lieu of regularly scheduled courses. **The Staff**

#### Graduate Courses

### 211. Typology of the Scandinavian Languages.

Lecture, three hours per week. Prerequisite: graduate standing, a thorough knowledge of one or more Scandinavian languages, and a reading knowledge of German. Icelandic is strongly recommended. **Mr. Chapman**

### 212. History of the Scandinavian Languages.

Lecture, three hours per week. Prerequisite: course 211. A knowledge of Icelandic is strongly recommended. **Mr. Chapman, Mr. Wahlgren**

### 245. Scandinavian Mythology.

(Same as German 245.) Lecture, three hours per week. Prerequisite: Knowledge of German, a Scandinavian language, or consent of the instructor. **Mr. Wahlgren**

#### Individual Study and Research

### 596. Directed Individual Study or Research.

To be graded on Satisfactory-Unsatisfactory scale. May be taken twice by any graduate student. Only one course in the 500-series may count toward Department graduate course requirement for the M.A. **The Staff**

### 599. Research for Preparation of the Doctoral Dissertation.

Open to only those admitted to candidacy for the Ph.D. degree. To be graded on Satisfactory-Unsatisfactory scale. May be taken unlimited number of times. **The Staff**

## ■ HISTORY

(Department Office, 6265 Social Sciences Building)

Milton Anastos, Ph.D., *Professor of Byzantine Greek and History.*

Truesdell S. Brown, Ph.D., *Professor of History.*

Robert N. Burr, Ph.D., *Professor of History.*

John W. Caughey, Ph.D., *Professor of History.*

Brainerd Dyer, Ph.D., *Professor of History.*

Gustave E. von Grunbaum, Ph.D., *Professor of History.*

Clinton N. Howard, Ph.D., *Professor of History.*

Jere C. King, Ph.D., *Professor of History.*

Gerhart B. Ladner, Ph.D., *Professor of History.*

†Andrew Lossky, Ph.D., *Professor of History.*

Lauro Martinez, Ph.D., *Professor of History.*

Hans J. Rogger, Ph.D., *Professor of History.*

Theodore Saloutos, Ph.D., *Professor of History.*

Stanford Shaw, Ph.D., *Professor of History.*

Speros Vryonis, Ph.D., *Professor of History.*

†Eugen Weber, M.Litt., *Professor of History.*

Hayden V. White, Ph.D., *Professor of History.*

†Lynn T. White, Ph.D., *Professor of History.*

Eugene N. Anderson, Ph.D., *Emeritus Professor of History.*

Yu-Shan Han, Ph.D., *Emeritus Professor of History.*

Frank J. Klingberg, Ph.D., LL.D., *Emeritus Professor of History.*

Amin Banani, Ph.D., *Associate Professor of Persian and History.*

Cornelius W. Bolle, Ph.D., *Associate Professor of History.*

John G. Burke, Ph.D., *Associate Professor of History.*

Mortimer H. Chambers, Jr., Ph.D., *Associate Professor of History.*

Stanley Coben, Ph.D., *Associate Professor of History.*

Raymond H. Fisher, Ph.D., *Associate Professor of History.*

† Absent on leave, 1968-1969.

Amos Funkenstein, Ph.D., *Associate Professor of History.*  
 † Frank Catell, Ph.D., *Associate Professor of History.*  
 Nikki Keddie, Ph.D., *Associate Professor of History.*  
 D. Cresap Moore, Ph.D., *Associate Professor of History.*  
 Arthur J. Slavin, Ph.D., *Associate Professor of History.*  
 Robert A. Wilson, Ph.D., *Associate Professor of History.*  
 Robert Wohl, Ph.D., *Associate Professor of History.*  
 Stanley Wolpert, Ph.D., *Associate Professor of History.*  
 Edward A. Alpers, Ph.D., *Assistant Professor of History.*  
 Claus-Peter Clasen, Ph.D., *Assistant Professor of History.*  
 Robert Dallek, Ph.D., *Assistant Professor of History.*  
 Roger Daniels, Ph.D., *Assistant Professor of History.*  
 David M. Farquhar, Ph.D., *Assistant Professor of History.*  
 Robert R. Griffith, Ph.D., *Assistant Professor of History.*  
 Philip C. Huang, Ph.D., *Assistant Professor of History.*  
 Norris C. Hundley, Ph.D., *Assistant Professor of History.*  
 James M. Lockhart, Ph.D., *Assistant Professor of History.*  
 Peter Loewenberg, Ph.D., *Assistant Professor of History.*  
 Michael G. Morgan, D.Phil., *Assistant Professor of History.*  
 Gary B. Nash, Ph.D., *Assistant Professor of History.*  
 Richard Rouse, Ph.D., *Assistant Professor of History.*  
 Damodar Sar Desai, Ph.D., *Assistant Professor of History.*  
 Ronald T. Takaki, Ph.D., *Assistant Professor of History.*  
 Gabor P. Vermes, Ph.D., *Assistant Professor of History.*  
 Richard Weiss, Ph.D., *Assistant Professor of History.*  
 Isser Woloch, Ph.D., *Assistant Professor of History.*  
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Philip J. Borden, M.A., *Acting Assistant Professor of History.*  
 Robert P. Brenner, M.A., *Acting Assistant Professor of History.*  
 Christopher Ehret, M.A., *Acting Assistant Professor of History.*  
 † Vartan Gregorian, Ph.D., *Visiting Associate Professor of History.*  
 Thomas S. Hines, M.A., *Acting Assistant Professor of History.*  
 Richard Hovannisian, M.A., Ph.D., *Visiting Associate Professor of History.*  
 Albert Hoxie, M.A., *Lecturer in History.*  
 Michael O. Jones, M.A., *Acting Assistant Professor of History and Folklore.*  
 Larry G. Kincaid, Ph.D., *Acting Assistant Professor of History.*  
 Hartmut Lehmann, Dr.Phil., *Visiting Associate Professor of History.*  
 H. H. Liang, Ph.D., *Lecturer in History.*  
 Miriam Lichtheim, Ph.D., *Lecturer in History.*  
 Peter H. Reill, Ph.D., *Acting Assistant Professor of History.*  
 Geoffrey Symcox, Ph.D., *Lecturer in History.*  
 Herwig Wolfram, Dr.Phil., *Visiting Associate Professor of History.*

\* In residence summer quarter only, 1968–1969.

† Absent on leave, 1968–1969.

### Preparation for the Major

Required: courses 1A-1B-1C. Three additional one-quarter lower division courses, at least one of which shall be taken from History 2A-2B, History 8A-8B or History 9A-9B-9C-9D.

History majors must take at least two one-quarter courses in U.S. history, either in the lower division as part of the preparation for the major, or in the upper division as part of the major. (See below.)

All history majors shall take at least four courses in other departments in the division of social sciences, whether lower or upper division (anthropology, geography, economics, political science, sociology, psychology, except Psychology 12 and 115).

### The Major

A minimum of 10 upper division courses in history which must include courses 197 and 199.

Recommended: French, German, Latin, Spanish, Italian, or Russian. For upper division work in history, a reading knowledge of one of these is useful. For language requirements for graduate work, see pages 139 and 141 of this bulletin.

### The Honors Major

Students are admitted to honors candidacy by the departmental honors committee. Attention is called to the fact that honors will normally be awarded only to those students who successfully complete the honors program.

1. Students in the honors program are required to take: (a) course 197 (one quarter) in their junior year; (b) course 199 honors; (two quarters) in their senior year, during which time they shall prepare an honors thesis.

2. Four courses in other departments in the division of social sciences, either lower or upper division (anthropology, geography, economics, political science, sociology, psychology, except Psychology 12 and 115).

3. Honors candidates are required to take two comprehensive examinations at the end of the senior year: one in the student's major field (to be determined in consultation with the director of the honors program), and one in the broader area of historical interpretation.

4. Honors candidates may, with consent

of the director of the honors program, take up to three quarters of 190 (directed reading) in preparation for the comprehensive examinations. This will count towards the overall requirement of upper division courses demanded of all majors.

### Teaching Minor in History

The teaching minor in history for purposes of the elementary, secondary and junior college teaching credentials consists of the following: nine courses (of which two must be in United States history) to include: (1) 1A-1B-1C (Introduction to Western Civilization); or 101A-101B-101C (Western Civilization); (2) two courses selected from: 2A-2B (History of Technology from Antiquity to the Twentieth Century), 5A-5B (History of England and Greater Britain), 7A-7B (Political and Social History of the United States), 8A-8B (History of Latin America), 9A-9B-9C-9D (History of India, China, Japan and the Near East); and (3) four upper division quarter courses selected from two of the fields listed under the M.A. program in history, or the history of science.

### Admission to Graduate Status

For admission to graduate status in the History Department students should normally have completed the undergraduate major or its equivalent; have received a bachelor's degree or its equivalent from an acceptable college or university; and have maintained at least a B-plus average in that major and a B average in all courses taken in the junior and senior years. The Department requires applicants to provide two letters of recommendation. In certain cases the Department may also require the Graduate Record Examination scores on the aptitude tests, but will in all cases be glad to receive these scores for consideration. Students not meeting the grade point average may be admitted if their letters of recommendation and their Graduate Record Examination scores or other evidence indicate unusual promise. Students may be admitted with subject deficiencies, but such deficiencies will have to be made up by taking courses in addition to requirements for an advanced degree program. Applications for the academic year should be submitted by January 15. Students are expected to begin their graduate work in the fall quarter. Only in exceptional cases will students be allowed to begin their work in the winter, spring or summer quarter.

Information and applications for the

Graduate Record Examination may be obtained by writing to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704 or, for applicants east of the Rocky Mountain states, the Educational Testing Service, Box 955, Princeton, New Jersey 08540.

### **Requirements for the General Secondary Teaching Credential**

Consult the ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### **Requirements for the Master's Degree**

A candidate for the degree of Master of Arts must meet the requirements set forth by the Graduate Council as stated on page 137.

*Foreign Language.* A reading knowledge of a foreign language approved by the Department for the field of history in which the candidate is working. It is recommended that this requirement be met by the second quarter of graduate work.

*Units of Work.* A minimum of nine upper division and graduate quarter courses in history. At least five of these must be graduate courses in history. Further, four of the nine courses must be in a field or fields other than that of the Master's examination. No course in the 300 series may be counted toward this requirement, and only one of the 500 series.

*Screening Examination.* No later than the end of his fourth quarter of full-time graduate work in the department, each candidate for an advanced degree must take a screening examination. This examination is designed to test the candidate's general understanding of historical method and his analytical powers. The graduate adviser will inform candidates of the department's expectation for this examination, which will be offered at the end of each quarter. Upon the basis of his overall record and his performance at this examination, each student will be either a) denied permission to continue his work in the department; b) allowed to continue work for the Master's Degree; or c) allowed to continue his work for the Master's degree, the Doctor's Degree, or both.

*Master's Examination.* The Department follows the Comprehensive Examination Plan (see page 138). By the end of the fourth quarter of full time graduate work in the Department the candidate must pass a three hour written examination in a field chosen by him from the following list: Ancient History; Medieval History, 300-1500; Modern European History since 1500; British History since 1485; African History; Far Eastern

History since 1368; United States History since 1492; Latin American History since 1492; Near Eastern History; Indian History. For the Certificate Program in Russian and East European Studies see page 450.

An acquaintance solely with textbook information will not be adequate. The student is advised to consult lists of recommended readings prepared by the Department, and to confer at the outset of his graduate work with instructors offering graduate courses in the field in which he proposes to present himself for examination. The Master's examination will ordinarily be given in May, July and December on dates announced by the Graduate Adviser.

### **Requirements for the Doctor's Degree**

A candidate for the degree of Doctor of Philosophy in history must meet the general requirements set forth on pages 140-142. Attention is directed to the requirement that a program, extending over the full time of study, must be approved by the Department. A command of good English, spoken and written, the ability to read at least two foreign languages, and an acquaintance with general history are expected of all candidates. Out of the minimum of nine upper division and graduate courses required for the Doctor's Degree by the Graduate Division (p. 140), the candidate must take a minimum of five one-quarter courses in the 200 series. Two of these must be in one seminar.

### **EXAMINATION**

*Foreign Language Requirements.* A reading knowledge of the languages prescribed below for the major fields is required. If only two languages are prescribed the student will display his competence in them by passing examinations administered by the Graduate Division. For a third or fourth language evidence of competence satisfactory to the chairman of the doctoral committee will be considered acceptable.

1. Ancient History. French, German, Latin and Greek.

2. Modern European History and the History of Science. Either French or German and a language needed by the student in his research and approved by the Guidance Committee.

3. Near Eastern History. Three languages—two Western and one Near Eastern—are required. They are to be selected on the basis of the candidate's specialization.

The two Western languages will generally be French and German, but Russian may be substituted for one of those in certain cases. Competence in one Western language and the Near Eastern language must be proven by passing an examination administered by the Graduate Division.

4. British History. French and German, with the possibility of substitution.

5. Medieval History. French and German for all candidates plus Greek for those specializing in Byzantine history and Latin for those specializing in western medieval history.

6. African History. Two languages are required. Normally, these are French and German. Portuguese may, with the approval of the chairman of the doctoral committee, be offered in lieu of French; Afrikaans or Dutch in lieu of German. Amharic, or Arabic, or Hausa, or Swahili, may, with the approval of the chairman, be offered in lieu of either French or German. In special circumstances, some other African language may be substituted for either French or German; but this requires the special permission of the Graduate Division in each case.

7. Asian History. (a) Indian: for those specializing in Indian history, three languages chosen from the following: French and/or German, Dutch or Portuguese, plus Hindi and/or one classical or modern regional language of India; (b) Chinese: French or German or Russian plus Chinese and Japanese; (c) Japanese: French and either German or Dutch plus Japanese.

8. United States History. Any two foreign languages. The study of certain branches of United States history may require additional languages and auxiliary fields.

9. Latin American History. Spanish and Portuguese and either French, German or Russian.

10. Russian History. Russian and German as well as French or another language deemed necessary by the instructor for the candidate's research.

Except in the fields of African, Asian, British and United States history reading knowledge of an appropriate language is required for admission to all graduate seminars.

*Screening Examination.* No later than the end of his fourth quarter of full-time graduate work in the department, each candidate for an advanced degree must take a screening examination. This examination is designed to

test the candidate's general understanding of historical method and his analytical powers. The graduate adviser will inform candidates of the department's expectation for this examination, which will be offered at the end of each quarter. Upon the basis of his overall record and his performance at this examination, each student will be either (a) denied permission to continue his work in the department, (b) allowed to continue his work for the Doctor's degree, or (c) allowed to continue work for the Master's degree only, if he does not already have it.

*Qualifying Examinations.* Before he is admitted to candidacy a student must pass an oral qualifying examination and, if his Ph.D. Committee so indicates, a written qualifying examination as well. In these examinations he is expected to show an adequate grasp of the wider fields of historical knowledge and an ability to correlate historical data pertaining to them and to explain their significance. These examinations will be designed to test not merely factual knowledge but also powers of historical analysis and synthesis, critical ability, and capacity for reflective thinking. A knowledge of the history of any area includes a reasonable knowledge of its historiography and bibliography; of its geography; and of its political, cultural, economic, and other historical aspects. The candidate must offer himself for examination in four fields, one of which may be an approved field in anthropology, economics, geography, language and literature, philosophy, political science, or other allied subjects. This allied field must be comparable in size and scope to the history fields listed below. The candidate should select the fields in consultation with his faculty sponsor, and must receive the Department's approval of all four fields not less than six months before his qualifying examination is taken. To obtain this approval he should supply the Graduate Studies and Guidance Committee with the name of the faculty member who has agreed to serve as the sponsor of his doctoral work and with the details of his proposed program as soon as he has passed his screening examination. A full-time graduate student should take his qualifying examinations not later than the end of his ninth quarter of graduate work. A student who fails to meet this requirement may be barred thereafter from graduate courses.

*Fields of Examination.* Ancient Greece; Ancient Rome; The Early Middle Ages, 300-1100; The Later Middle Ages, 1050-1500;

Byzantine History; Russia since 862; England, 1485-1763; England since 1763; The British Empire; China 900 to 1800; The Near East, 500-1500; The Near East since 1500; African History; History of Science to 1600; History of Science since 1600. Europe, Renaissance to the French Revolution; Europe since 1740; China since 1800; Modern Japan; South and Southeast Asia; United States, 1492-1800; United States since 1763; The American West; Latin America, 1492-1830; Latin America since 1759; History of Religions.

Should a written qualifying examination be required by the candidate's committee it will consist of a three-hour examination in one of the fields offered by him and selected by his committee. The oral examination will cover all four fields and will normally be held shortly after the written examination, but at the discretion of the doctoral committee it may be held as late as six months after the written examination. Both the written and oral examinations are the responsibility of the committee as a whole. A candidate in the history of science program must select three of the above fields and either the history of medicine or an allied field referred to above. The candidate must also demonstrate a detailed knowledge of the substance and historical development of a particular science, or of a type of engineering or technology, as a subfield common to the historical fields.

**Final Examination.** The final examination will be oral, and will cover the field within which the dissertation falls. The candidate will be expected to show such a mastery of his special field, and such an acquaintance with the literature, general and special, bearing on it, as would qualify him to give instruction in it to mature students.

#### DISSERTATION

Each candidate is required to present a dissertation on a subject chosen by him of such character as to show a thorough mastery of the sources of information, the ability to carry on independent research and to communicate its results in good literary form. In lieu of the customary type of dissertation, a student may in certain cases edit, or translate and edit, some historical source. Such a project involves careful textual criticism, explanatory annotations, and an historical introduction clearly showing the contribution of the source to historical knowledge. The dissertation must be completed within five years of the qualifying examinations. Any

extension of this period must be secured annually from the Chairman of the Department.

#### Lower Division Courses

##### 1A-1B-1C. Introduction to Western Civilization.

Lecture and discussion. A broad, historical study of major elements in the Western heritage from the world of the Greeks to that of the twentieth century, designed to further the beginning student's general education, introduce him to ideas, attitudes, and institutions basic to Western civilization, and to acquaint him, through reading and critical discussion, with representative contemporary documents and writings of enduring interest.

Mr. Hoxie, Mr. Weber, Mr. Wohl

##### 2A-2B. History of Technology from Antiquity to the Twentieth Century.

(Formerly numbered 105A-105B.) Designed for students in the natural sciences, social sciences, and fine arts. It is a survey of the development of man's ability to understand more fully and to utilize more efficiently his natural environment, stressing technology's changing social, economic, scientific and cultural relationships.

Mr. Burke

##### 5A-5B. History of England and Greater Britain.

Lecture and discussion. The political, economic, and cultural developments of the British Isles and the Empire from the earliest times to the present.

Mr. Moore, Mr. Rouse, Mr. Slavin

##### 7A-7B. Political and Social History of the United States.

Lecture and discussion. This course is designed for students in the social sciences who want a thorough survey of the political and social development of the United States as a background for their major work and for students in other departments who desire to increase their understanding of the rise of American civilization.

The Staff

##### 8A-8B. History of Latin America.

8A. Latin America from the Discovery to Independence.

An introductory survey of the political, economic and social history of Latin America up to the time of the achievement of independence.

8B. Latin America Since Independence.

A survey of the political, economic and social history of Latin America since the early nineteenth century.

Mr. Burr, Mr. Lockhart

##### 9A-9D. Introduction to Asian Civilizations. (1 course each)

9A. History of India.

An introductory survey for beginning students of the major cultural, social, and political ideas, traditions, and institutions of Indic civilization.

Mr. Wolpert

9B. History of China.

Survey of the history of China: the evolution of characteristic Chinese institutions and modes of thought from antiquity to 1950; the problems of political change; China's response to the western impact in modern times.

Mr. Farquhar

9C. History of Japan.

A survey of Japanese history from earliest recorded times to the present with emphasis on the development of Japan as a cultural daughter

of China. Attention will be given to the manner in which Chinese culture was Japanized and the aspects of Japanese civilization which became unique. The creation of the modern state in the last century and the impact of western civilization on Japanese culture will be treated.

Mr. Wilson

#### 9D. History of the Near and Middle East.

A survey of the major social, cultural and political institutions and ideas of the Near East.

Mrs. Keddie

### Upper Division Courses

The prerequisite for all upper division courses is upper division standing or consent of the instructor, unless otherwise stated. For certain graduate courses which are open to students with Upper Division standing and with the permission of the instructor, see page 306.

#### 101A-101B-101C. Western Civilization.

Lecture. A broad, historical study of major elements in the Western heritage from the world of the Greeks to that of the twentieth century. Primarily designed for non-history majors. May not be taken for credit by students who have taken History 1A-1B-1C.

Mr. Symcox, Mr. Weber Mr. Wohl

#### 111A-111B-111C. History of the Ancient Mediterranean World.

111A. A survey of the history of the ancient East from earliest times to the foundation of the Persian Empire.

111B. The history and institutions of the Greeks from their arrival to the death of Alexander.

111C. The history and institutions of Rome from the founding of the city to the death of Constantine.

Mr. Brown, Mr. Chambers, Mr. Morgan

#### 112A-112B. History of Ancient Greece.

112A. The Greek city-state. The emphasis will be on the period between the Persian Wars and the rise of Macedon.

112B. The Hellenistic Period. A consideration of the new patterns in government, social life, science, and the arts that appeared between the Macedonian conquest and the decisive intervention of Rome.

Mr. Brown

#### 113A-113B. History of Rome.

113A. To the death of Caesar. Emphasis will be placed on the development of imperialism and on the constitutional and social struggles of the late republic.

113B. From the death of Caesar to the time of Constantine. The early empire will be treated in more detail supplemented by a survey of the social and economic changes in the third century.

Mr. Chambers, Mr. Morgan

#### 117. History of Ancient Egypt.

A cultural history of ancient Egypt from predynastic times to the end of the new kingdom.

Miss Lichtheim

#### 121A. The Early Middle Ages.

A survey of religious, intellectual, artistic, social, and economic changes in Europe from the decay of the Roman Empire until about 1050.

Mr. L. White, Mr. Wolfram

#### 121B. The Later Middle Ages.

A continuation of course 121A, from 1050 to about 1450, with the added consideration of the new scientific movements.

Mrs. L. White, Mr. Wolfram

#### 123A-123B-123C. Byzantine History.

The course stresses the political, socio-economic, religious, and cultural continuity in the millennial history of Byzantium. It begins with the reforms of Diocletian and includes such topics as Byzantium's relations with Latin Europe, Slavs, Sassanids, Arabs, and Turks.

Mr. Vryonis

#### 124A-124B. History of Religions.

Introduction to the study of the history of religions. Discussion of the various systems, ideas and fashions in Western scholarship that have dominated the study of religion since the 18th century.

Mr. Boile

#### 125A-125B. History of Africa.

Introduction to the history of the societies of sub-Saharan Africa.

The Staff

#### 126. History of West Africa.

Mr. Griffith

#### 128A-128B. History of South Africa.

128A. History of Southern Africa from origins to 1870. The origins of the South African peoples and their interactions to 1870. Attention will be given to social and economic, as well as political aspects.

128B. History of Southern Africa since 1870. The interactions between the inhabitants of Southern Africa since 1870. Attention will be given to social and economic, as well as political aspects.

#### 131A-131B. Armenian History.

A survey of the political, economic, and cultural history of Armenia from ancient to modern times. From the beginnings to 1375: the fall of the Armenian Kingdom of Cilicia. From 1375 to present: the movements for independence and Soviet Armenia.

Mr. Hovannissian

#### 133A-133B. History of North Africa From The Moslem Conquest.

133A. To 1578.

133B. From 1578 to the present.

#### 134A-134B. Near and Middle East from 600 A.D.

134A. The rise of Islam, the Caliphate, the Crusades, the Turkish and Mongol invasions; the rise of the Ottoman Turks.

134B. The Ottoman and Persian empires, decay and westernization, internal change and reform.

Mr. von Grunebaum, Mrs. Keddie

#### 135. Introduction to Islamic Culture.

Origins of the Islamic way of life and thought, survey of Islamic history, Islamic literature in English translation, interaction of the Islamic world and Europe in medieval and modern times.

Mr. von Grunebaum

#### 136. Islamic Institutions and Political Ideas.

Institutions and ideas of government, administration, justice, education, economic and social life in the Islamic Near East as they were before the impact of the West, and as they were affected by that impact.

Mr. von Grunebaum

#### 138A-138B. Jewish History.

Jewish history from Biblical times to our period.

Mr. Funkenstein

**139A-139B. History of the Turks.**

A survey of the society, government, and political history of the Turks from earliest times to the beginning of the 18th century. Students are strongly advised not to begin with the second half of the course.

Mr. Shaw, Mr. Vryonis

**141A-141G. History of Modern Europe.**

141A. The Renaissance. Mr. Martines

141B. The Reformation. Mr. Clasen

141C. Europe: 1560-1660. Mr. Hoxie, Mr. Lossky

141D. Europe under the old Regime. Mr. Woloch

141E. Europe, 1789-1848. Mr. King, Mr. Woloch

141F. Europe, 1848-1900. Mr. King, Mr. Reill

141G. Europe in the 20th Century.

Mr. King, Mr. Wohl

**142A-142B-142C. Cultural and Intellectual History of Modern Europe.**

Climates of taste and climates of opinion. Educational, moral and religious attitudes; the art, thought, and manners of the time in an historical context. Quarter courses are oriented approximately as follows:

142A. 17th and 18th centuries. Mr. Hoxie

142B. 19th Century. Mr. Liang, Mr. Weber

142C. 20th Century. Mr. Liang, Mr. Weber

**143A-143E. History of Modern France.**

143A. 1480-1630. Mr. Lossky

143B. 1630-1789. Mr. Lossky

143C. The Revolution and Napoleon. Mr. Woloch

143D. 1815-1870. Mr. King, Mr. Woloch

143E. Contemporary France. Mr. King

**144A-144B-144C. History of Modern Germany.**

144A. 18th Century. Mr. Lehmann, Mr. Reill

144B. 19th Century. Mr. Loewenberg

144C. 20th Century. Mr. Loewenberg

**146A-146B-146C. History of Russia.**

146A. From the 13th century to the Crimean War.

Political, social, and economic developments, and foreign relations in the Muscovite and imperial periods.

146B. 1856-1917.

The Great Reforms, the agrarian problem and backwardness, the radical movement, the revolution of 1905; foreign relations, especially the Near Eastern question. Either part of the course may be taken without the other.

146C. The Soviet Union, 1917 to the present.

The Bolshevik Revolution, consolidation of the regime, collectivization and industrialization, foreign policy and domestic developments.

Mr. Fisher, Mr. Rogger

**148A-148B. History of Italy.**

148A. Late Middle Ages to Unity.

The Italian people from the late Middle Ages to the achievement of national unity.

Mr. Wohl

148B. 1861 to the Present.

Political, economic, social, diplomatic and ideological developments.

Mr. Wohl

**148C-148D. History of Spain and Portugal.**

Political, social and economic history of Spain and Portugal since the Muslim invasion. First quarter: 711-1700; second quarter: since 1700.

**149A-149B-149C. History of Eastern Europe.**

149A. The Balkans. From the 14th century to 1878.

Mr. Vermes, Mr. Vryonis

149B. East-Central Europe to 1800. The Western Slavs, their Baltic and Danubian neighbors.

149C. Contemporary East Central Europe and the Balkans.

**150A-150G. Studies in English History.**

(Formerly numbered 152A-152B, 153A-153B, 155, 156, and 157.)

150A-150B. Medieval England. Mr. Rouse

150C-150D. Renaissance England.

Mr. Brenner, Mr. Slavin

150E. 18th century England.

Mr. Brenner, Mr. Howard

150F-150G. 19th and 20th century England.

Mr. Moore

**158A-158B. The British Empire Since 1783.**

The political and economic development of the British Empire, including the evolution of colonial nationalism, the development of the commonwealth idea, and changes in British colonial policy.

Mr. Sar Desai

**162A-162B. Latin America in the 19th and 20th Centuries.**

162A. Latin America in the 19th Century. An intensive analysis of the economic, social, and political problems of the Latin American nations from their independence to around 1910.

162B. Latin America in the 20th Century. Emphasis will be placed upon the growth of nationalism in Latin America and the conflict between tradition and reform engendered by attempts at modernization.

Mr. Burr

**163A-163B. The History of Brazil.**

An introductory survey covering the period from the Portuguese discovery to the declaration of independence in the first part, and from the First Empire to the present day in the second. The lectures treat selected topics in the political, economic, social, and cultural development of Brazil.

**166. History of Mexico.**

The development of the viceroyalty of New Spain and the Mexican nation, with emphasis upon the problems of the period since Diaz.

**168A-168B. Colonial Latin America.**

Studies in the social, political and economic development of Latin America prior to 1825.

Mr. Lockhart

**169. Diplomatic History of Latin America.**

Emphasizes the historical development of a distinctive system of international relations among the nations of the Western Hemisphere, from 1808 to the present.

Mr. Burr

**171A. The United States: Colonial Period to 1763.**

Political and social history of the thirteen colonies and their neighbors; European background, settlement and westward expansion, intercolonial conflicts, beginnings of culture, colonial opposition to imperial authority.

Mr. Nash

### 171B. The United States: the New Nation, 1763-1800.

Political and social history of the American nation, with emphasis upon the rise of the new west, revolution, confederation, and union; the fathers of the Constitution. Mr. Nash

### 172A-172B. The United States: 1800-1850.

172A. Jeffersonian America. Jeffersonian Republican ascendancy and the Era of Good Feelings, 1800-1828; disintegration of the Federalist opposition; the testing of American nationality in the second war with Britain; beginnings of the transportation and industrial revolutions; restructuring of politics in an increasingly egalitarian age.

172B. Jacksonian America and Beyond. The "Jacksonian Revolution" and its aftermath, 1829-1850; the problem of national power versus state sovereignty; problems of rapid social change through industrialization and urbanization; reform impulse; antislavery movements; territorial expansion as focus for sectional rivalry. Mr. Catell

### 173A. The United States: Civil War and Reconstruction.

The topics studied will include: the rise of sectionalism, the antislavery crusade; the formation of the Confederate States; the war years; political and social reconstruction. Mr. Dyer, Mr. Kincaid

### 173B. The United States, 1875-1900.

American political, social, and institutional history in a period of great change. Emphasis on the altering concepts of the role of government and the responses to that alteration. Mr. Daniels

### 174A-174B. The United States: The Twentieth Century.

The political, economic, intellectual, and cultural aspects of American democracy in the twentieth century. Mr. Cohen, Mr. Weiss

### 175A-175B. History of American Capitalism Since the Civil War.

Recommended preparation: courses 7A-7B and Economics 13. A study of the changes in agriculture, industry, labor, banking, transportation, and commerce in a capitalist society, and of some of the prominent personalities who made these changes possible. Mr. Saloutos

### 176A-176B. History of the American Negro.

A survey of the social, cultural and political history of Negroes in the United States. Mr. Takaki

### 177A-177B. Intellectual History of the United States.

The principal system of ideas about man and God, nature and society, which have been at work in American history. Emphasis on the sources of these ideas, their connections with one another, and their expression in great documents of American thought. Mr. Borden

### 178A-178B. American Diplomatic History.

178A. The establishment of an independent foreign policy, the territorial expansion of the United States, and the emergence of a world power.

178B. The role of the United States in the 20th century world. Mr. Dallek

### 179A-179B. Constitutional History of the United States.

Prerequisite: eight units of United States history or government, or consent of the instructor. A study of the origins and development of the Federal Constitution. Mr. Dyer

### 180A-180B. Social History of the United States since 1800.

An historical study of the character and values of the American people as affected by regions, classes, and economic change; with particular attention to the cultural roles of women, businessmen, Negroes, and ethnic groups. Mr. Hines

### 181. The American West.

A study of the West as frontier and as region, in transit from the Atlantic seaboard to the Pacific, and from the 17th century to the present.

Mr. Caughey, Mr. Hundley

### 188. History of California.

The economic, social, intellectual, and political development of California from the earliest times to the present. Mr. Caughey, Mr. Hundley

### 190. Directed Reading for Honors. (½ to 1 course)

Reading to fill gaps in the historical training of individual honors students. Reports on reading will be made at regular intervals. May be taken for up to three quarters. The Staff

### 191A-191B-191C. History of China.

191A. From Beginning to 900.

191B. 900-1800.

Prerequisite: course 9B or 191A, or consent of the instructor.

191C. 1800 to the present.

Mr. Farquhar, Mr. Huang

### 193. Diplomatic History of the Far East.

The role of the Far Eastern states in the international community beginning with the establishment of the Treaty System in China and the opening of Japan to intercourse with the rest of the world in 1854. Mr. Wilson

### 195A-195B. Tokugawa and Modern Japan.

The political, economic, and cultural development of Japan since the establishment of the Tokugawa Shogunate in 1603. Mr. Wilson

### 196A. Early History of India.

Introduction to the civilization and institutions of India. A survey of the history and culture of the South Asian subcontinent from the earliest times to the founding of the Mughal Empire. Mr. Wolpert

### 196B. Recent History of India and Pakistan.

History of the South Asian subcontinent from the founding of the Mughal Empire, through the eras of European expansion, British rule, and the nationalist movement, to the present. Mr. Wolpert

### 196C-196D. History of Southeast Asia.

196C. Early History of Southeast Asia. A political and cultural history of the peoples of Southeast Asia from the earliest times to about 1815.

196D. Southeast Asia since 1815. History of modern Southeast Asia with emphasis on expansion of European influence in the political and economic spheres, growth of nationalism and the process of decolonization. Mr. Sar Desai

**197. History and Historians.**

Required of all history majors in their junior year. A study of historiography, including the intellectual processes by which history is written, the results of these processes, and the sources and development of history. Attention also to representative historians.  
Mr. Fisher, Mr. Reill, Mr. H. White

**198. Undergraduate Seminars.**

Admission with approval of the instructor. (These are to be offered in different fields, as schedule and staff allow.)  
The Staff

**199. Special Studies in History.**

An introduction to research, followed by individual investigation of selected topics, to be taken by all history majors in the senior year. Sections will be offered in different fields. Honors candidates may take two quarter courses for credit.  
The Staff

**Graduate Courses****200-215. Graduate Lecture Courses.**

Prerequisite: graduate status or, with permission of instructor, upper division standing.

**200A-200B. History of Ancient Mesopotamia and Syria.**

The political and cultural development of the "Fertile Crescent," including Palestine, from the Neolithic to the Achaemenid period.  
Mr. Buccellati

**201A. History of the Eurasian Nomadic Empires.**

(Formerly numbered 139C.) This course outlines the history of the great Eurasian nomadic empires (2nd century B.C.-13th century A.D.) with emphasis on their relations with the late Roman and the Byzantine Empires as well as the peoples of Eastern Europe and the Near East.  
Mr. Eckmann

**201B. The Mongols in East Asian History.**

(Formerly numbered 191D.) The historical development of the Mongols through the influence of surrounding cultures—Turkic, Chinese, Tibetan and Manchu; the Mongols as a "Barbarian" problem in Chinese history.  
Mr. Farquhar

**203. History of Ancient Egypt in the Late Period.**

Prerequisite: course 117 and a background in Graeco-Roman history. A cultural history of ancient Egypt from the end of the new kingdom to the coming of Christianity.  
Miss Lichtheim

**204A-204B. History of the Church in the Middle Ages.**

(Formerly numbered 122A-122B.) A course on the development of Christian doctrines, on ecclesiastical institutions and on relations between the church and empires, kingdoms, and lay society, from the beginnings of Christianity to the great reform councils of the late Middle Ages.  
Mr. Ladner

**206. Russian Intellectual History.**

(Formerly numbered 147.) Social thought and social movements, primarily in the 19th century. A background in Russian history or literature is required.  
Mr. Rogger

**207. Armenian Intellectual History.**

(Formerly numbered 131D.) Intellectual and cultural trends reflected in Armenian literature, historiography, religious and philosophical thought.  
Mr. Sanjian

**208. Modern British Biography.**

(Formerly numbered 150.) A study of the lives of leaders of Britain, the development of biographical technique and the place of biography in the writing of history.  
Mr. Howard

**209A-209B. The Modern Middle East.**

(Formerly numbered 137A-137B.) Social, intellectual and political change in Turkey, Iran and the Arab countries from Napoleon's invasion of Egypt to the present.  
Mrs. Keddie

**210A-210B. Morocco and Europe to the End of the French Protectorate.**

The internal development of Morocco in the light of Portuguese, Spanish, English and, above all, French contacts in the economic, military and cultural spheres as a basis of the rationale for its foreign relations.  
Mr. Laroui

**211A-211B-211C. Islamic Iran.**

(Formerly numbered 132A-132B.) Political, social and cultural history of Persia.  
A. 600 to 1400.  
B. 1400 to 1800.  
C. 1800 to the Present.  
Mr. Banani  
Mr. Banani  
Mrs. Keddie

**212. Intellectual History of Recent China.**

Confucianism on the eve of the encounter with the West; Chinese intellectuals' response to the West and modern Japan in the nineteenth and twentieth centuries.  
Mr. Huang

**213A-213B. History of Science.**

(Formerly numbered 106A-106B.) Scientists and scientific thought in relationship to societies from the ancient empires to the present.  
Mr. Burke

**215. American Reform Movements and Reformers.**

(Formerly numbered 176.) A study of educational, monetary, labor and agrarian reforms advocated in the nineteenth and twentieth centuries.  
Mr. Saloutos

**225. Introduction to Historical Methods.**

An historical and analytical examination of the methods of historical study and the assumptions and premises to which these methods are related.  
Mr. Moore, Mr. H. White

**†230A-230Q. Advanced Historiography.**

(Formerly numbered 202A-202R.) A. Ancient Greece; B. Ancient Rome; C. Medieval; D. Early Modern Europe; E. Modern Europe; F. Russia/Eastern Europe; G. Britain; H. United States; I. Latin America; J. Near East; K. India; L. China; M. Japan; N. Africa; O. Science/Technology; P. History of Religions; Q. Theory of History. The Staff

**†240A-240Q. Topics in History.**

(Formerly numbered 208A-208R.) A through Q as for 230. A graduate course involving reading, lecturing, and discussion of selected topics. This course does not fulfill the seminar requirements for the Ph.D. degree.  
The Staff

† Offered as schedule and staff allow.

**250-262. Seminars in History.**

Admission to all graduate seminars is subject to the instructor's approval and to appropriate language qualifications. Credit and grades will be given only on completion of the full seminar sequence.

**250A-250B. Seminar in Ancient History.**

Mr. Brown, Mr. Chambers

**251A-251B. Seminar in the History of the Medieval Church in the West.**

Mr. Ladner

**252A-252B-252C. Seminar in Byzantine History.**

Mr. Vryonis

**253A-253B. Seminar in Medieval History.**

Mr. L. White

**254A-254B. Seminar in the Renaissance.**

Mr. Martinez

**255A-255B. Seminar in the Reformation.**

Mr. Clasen

**256A-256B. Seminar in the History of Science.**

Mr. Burke

**257A-257B. Seminar in Early Modern European History.**

Mr. Lossky, Mr. Martinez

**258A-258B. Seminar in English History: Middle Ages and Renaissance.**

Mr. Rouse, Mr. Slavin

**259A-259B. Seminar in English History: Eighteenth to Twentieth Centuries.**

Mr. Howard, Mr. Moore

**260A-260B. Seminar in Modern European History.**

Mr. King

**261A-261B. Seminar in Modern European History.**

Mr. Weber, Mr. H. White

**262A-262B. Seminar in the Modern History of Spain, Italy and Portugal.**

Mr. Wohl

**263A-263B. Seminar in Russian History.**

Mr. Fisher, Mr. Rogger

**264A-264B. Seminar in British Empire History.****265A-265B. Seminar in African History.**

Mr. Griffith

**266A-266B. Seminar in Latin American History.**

Mr. Burr

**267A-267B. Seminar in Near Eastern History.**

The seminar will concentrate on studies in the History of the Near East and on Westernization of the Arab-speaking world in alternate years.

Mr. von Grunbaum

**268A-268B. Seminar in Jewish History.**

Studies in the intellectual and social history of the Jewish people from ancient times to the modern period.

Mr. Funkenstein

**269A-269B. Seminar in Early American History.**

Mr. Nash

**270A-270B. Seminar in Recent United States History.**

Mr. Cohen

**271A-271B-271C. Seminar in Recent American History.**

Mr. Saloutos

**272A-272B. Seminar in United States History of the Middle Nineteenth Century.**

Mr. Dyer

**273A-273B. Seminar in United States Social and/or Intellectual History.****274A-274B. Seminar in the History of the American West.**

Mr. Caughey, Mr. Hundley

**275A-275B. Seminar in American History of the Jacksonian Period.**

Mr. Gatell

**276A-276B. Seminar in American Diplomatic History.**

Mr. Dallek

**279A-279B. Seminar in Chinese History.**

Mr. Farquhar, Mr. Huang

**280A-280B. Seminar in South and Southeast Asia.**

Mr. Wolpert

**281A-281B. Seminar in Modern Japanese History.**

Mr. Wilson

**282A-282B. Seminar in the History of Religions.**

Mr. Bolle

Individual Study and Research

**596. Directed Studies. (1/4 to 1 course)**

The Staff

**597. Directed Studies for Graduate Examinations. (1/4 to 2 courses)**

Preparation for either the Master's Comprehensive Examination or the Ph.D. Qualifying Examinations.

The Staff

**599. Doctoral Research and Writing.**

(1/4 to 2 courses)

Open only to students who have passed the qualifying examination for the Ph.D. degree.

The Staff

**■ HUMANITIES**

Pier-Maria Pasinetti, Ph.D., *Professor of Italian.*



Bonnie T. Engdahl, Ph.D., *Lecturer in Italian.*

Selected masterpieces of world literature representing different types and national origins. Recommended as courses to satisfy the H-requirement in the College of Letters and Science.

**1A. World Literature: Antiquity to Renaissance.**

Class meets three hours a week.

**1B. World Literature: Renaissance to Modern Period.**

Class meets three hours a week.

**1C-1G. Special Topics.** Mrs. Engdahl, Mr. Pasinetti  
Prerequisites: courses 1A-1B, English 1 and 2, or consent of the instructor.

Related Courses in Other Departments

**Integrated Arts 1A-1B-1C.**

**Engineering 101.** Engineering. Its Role and Function in Human Society.

## ■ INTEGRATED ARTS

The main manifestations of the creative spirit in the arts of Western Civilization and the problems of their interrelation (literature excluded). For the general student; a knowledge of European history is expected.

**1A. Integrated Arts.**

Lecture, three hours. From Classic Antiquity to the end of the Middle Ages. Mr. Kayser

**1B. Integrated Arts.**

Lecture, three hours. From the Renaissance to the rise of Classicism. Mr. Kayser

**1C. Integrated Arts.**

Lecture, three hours. From the French Revolution to the present. Mr. Kayser

## ■ INTERDISCIPLINARY COLLOQUIA

Organized colloquia involving several disciplines are offered from time to time in conformity with faculty and student interests. They are open to all faculty members and to graduate students assigned to the colloquia by their advisers. Graduate credit is not awarded directly, but may be given through appropriate departmental courses.

### African Studies

*Committee in Charge.* C. S. Whitaker, Jr., Political Science (chairman); L. J. Kuper, Sociology; J. F. Povey, English; P. O. Proehl, Law; M. G. Smith, Anthropology; B. E. Thomas, Geography; L. M. Thompson, History.

A colloquium on Africa in the social sciences will meet biweekly throughout the year. Papers presented and discussed in this colloquium will focus each quarter upon a different integrating theme, such as Urbanization and Migration, Development and Adaptation of Legal Systems in Africa, the Plural Societies of Africa, and similar topics amenable to interdisciplinary discourse.

### Mathematics in the Behavioral Sciences

*Committee in Charge.* J. Marschak, Business Administration and Economics (chair-

man); W. R. Adey, Anatomy; J. L. Barnes, Engineering; E. C. Carterette, Psychology; M. D. Intriligator, Economics; A. Robinson, Mathematics; R. N. Rosecrance, Political Science; W. D. TenHouten, Sociology.

Meetings are announced in the UNIVERSITY CALENDAR.

A colloquium on mathematics in the behavioral sciences will meet biweekly throughout the year. Papers presented and discussed in this colloquium use mathematical language to improve communication between behavioral sciences, and also between these sciences and other branches of knowledge.

### Political Change

*Committee in Charge.* D. A. Wilson, Political Science (chairman); M. G. Smith, Anthropology; H. R. Swearer, Political Science; C. Wolf, Jr., Economics; E. V. Wolfenstein, Political Science.

A colloquium on the theoretical analysis of political change will meet regularly throughout the year. Papers presented will emphasize the interaction of the phenomena which are the subject matter of the traditional social science disciplines in the processes of change.

## ■ ISLAMIC STUDIES

For details of the undergraduate major, see Curriculum in Near Eastern Studies, page 74 of this catalog.

### Master of Arts in Islamic Studies

The program for the Master of Arts in Islamic Studies is designed primarily for the student desiring to prepare for an academic career. It may, however, be found useful also for the student seeking a general education and desiring a special emphasis in this particular area or for a student who plans to live and work in this area, whose career will be aided by a knowledge of the peoples, languages, and institutions. (Such a career might be centered on teaching, research, business, engineering, journalism, librarianship, or government service.) Subject to the limitations indicated below, the special course of studies is formulated for each candidate according to his experience and requirements.

### Requirements for the Master's Degree

*General Requirements* (as throughout the Graduate Division). See page 136.

*Admission to the Program.* Admission to the Graduate Division with a degree of Bachelor of Arts in Near Eastern Studies or its equivalent is required. The committee to administer the curriculum in Near Eastern Studies will pass on the application for admission to the program. A student entering the program is normally expected to have completed the equivalent of advanced Arabic (Arabic 103A-103B-103C), or advanced Persian (Persian 102A-102B-102C), or advanced Turkish (Turkish 102A-102B-102C).

*Plan.* The program is offered under both the Thesis Plan and the Comprehensive Examination Plan. The selection of a plan will be decided upon by the candidate and his adviser and approved by the interdepartmental advisory committee.

*Language Requirements.* A candidate for the degree of Master of Arts in Islamic Studies will be required to show proficiency in either French or German, in addition to two Near Eastern languages of their field of specialization. The student is expected to pass the graduate foreign language reading examination in either French or German by the end of the second quarter of residence. In view of the scholarly literature in the field, a candidate is earnestly advised to acquaint himself with a second European language in

which relevant material for his studies is available.

*Program.* The program of each candidate will be especially prescribed by the interdepartmental advisory committee. The program should, wherever possible, be established before the candidate enters his first quarter of work. The program will be planned to emphasize Arabic, Persian or Turkish (Islamic) studies and is intended particularly for the student desiring to prepare for an academic career in this field.

*Program in Arabic, Persian or Turkish (Islamic) Studies.* The student will be required to continue his language work by taking no less than four courses on the appropriate level in the two Near Eastern languages of his choice. The remaining five courses are to be chosen from the relevant upper division and graduate courses in history, political science or any of the other fields represented in the program depending on the student's preparation and specific needs, with the proviso that the selection must be limited to two of these disciplines. The omission of history may be approved only in exceptional cases. Especially recommended are: History 230J, 240J, 267A-267B, Political Science 250F and Sociology 236, 237.

Other study arrangements in the Near Eastern field are available through the Department of Near Eastern Languages.

### Requirements for the Ph.D. Degree in Islamic Studies

*General Requirements.* See pages 140-142.

*Admission to the Program.* Competence in one of the relevant Near Eastern languages, or an undergraduate major in one of the social sciences affiliated with the program, that is, at present, history, political science, and sociology, with some specialization in the Near East. The student may be required to take additional work to remove any deficiency in his undergraduate program especially in connection with language preparation.

*Requirements of the Program.* At the beginning of his first quarter in residence, the candidate will present to the chairman of the committee to administer the curriculum in Near Eastern studies a written statement explaining his preparation in one of the two modern languages required by the University (generally French and German). He

must pass the graduate foreign language reading examination in both languages by the end of his second year of residence. For work in some fields, a reading knowledge of Italian and/or Spanish is essential. In the first year of graduate study, the candidate will follow essentially the existing master's program in Islamic (Arabic, Persian or Turkish) studies, which calls for two Near Eastern languages. Normally the candidate will devote the second year to courses and seminars in departments affiliated with the program, these courses to be determined by the candidate's advisory committee. Upon completion of these courses, he will take his qualifying examinations and advance to candidacy. A final year will normally be devoted by the candidate chiefly to the preparation of his dissertation, after which he will take his final oral examination. During this year the candidate may satisfy the residence requirements either by taking additional seminars or by registering in Islamics 599.

### The Qualifying Examination

The qualifying examination will depend on the social science concentration elected by the student. If, for example, his chosen field is history, he will be examined on the whole range of Near Eastern history, in one field of sociology or political science, and in the particular Near Eastern languages and literatures of his approved program. Qualifying examinations for students with different concentrations will be constructed accordingly.

#### Lower Division Courses

**Arabic 1A-1B-1C.** Elementary Arabic.

**Geography 10C.** World Regional Geography: Africa and the Middle East.

**Hebrew.\***

**History 9D.** History of the Near East.

**Music 71K.** Music of Persia.

#### Upper Division Courses

**African Languages.†**

**Anthropology 123.** Culture and Personality.

124. Comparative Religion.

125. Comparative Society.

145. Oral Art and Drama of Non-Western Peoples.

\* See Department of Near Eastern Languages for complete listing and detailed description.

† See Linguistics Department for complete listing and detailed description.

146. Musical Arts of Non-Western People.

147. The Cultures of the Arab World.

148. The Theory of Oral Literature.

**Arabic 102A-102B-102C.** Intermediate Arabic.

103A-103B-103C. Advanced Arabic.

111A-111B-111C. Spoken Egyptian Arabic.

113A-113B-113C. Spoken Iraqi Arabic.

130A-130B-130C. Classical Arabic Texts.

140A-140B-140C. Modern Arabic Texts.

150A-150B. Survey of Arabic Literature in English.

180A-180B-180C. Structure of Literary Arabic.

199. Special Studies in Arabic.

**Armenian 101A-101B-101C.** Elementary Modern Armenian.

102A-102B-102C. Intermediate Modern Armenian.

103A-103B-103C. Advanced Modern Armenian.

130A-130B-130C. Elementary Classical Armenian.

131A-131B-131C. Intermediate Classical Armenian.

132A-132B-132C. Advanced Classical Armenian.

150A-150B. Survey of Armenian Literature in English.

199. Special Studies in Armenian Language and Literature.

**Art 101A-101B-101C.** Egyptian Art and Archeology.

103B. Hellenistic Art.

104. Art of the Ancient Near East.

105A. Early Christian and Byzantine Art.

105B. Early Medieval Art.

198. Special Courses in Art.

199. Special Studies in Art.

**Berber 101A-101B-101C.** Elementary Berber.

102A-102B-102C. Advanced Tamazight.

120A-120B-120C. Introduction to Berber Literature.

199. Special Studies in Berber Languages.

**Caucasian Languages 111A-111B-111C.** Elementary Georgian.

199. Special Studies in Caucasian Languages.

**Classics 145A.** Byzantine Civilization: Political Theory, Roman Law and Conflicts with Paganism.

145B. Byzantine Civilization: Theology and Relations with Rome.

145C. Byzantine Civilization: Literature, Art, Science and the Renaissance.

**Egyptian** 101A-101B-101C. Elementary Ancient Egyptian.  
102A-102B-102C. Intermediate Ancient Egyptian.

**Geography** 187. The Middle East.  
188. North Africa.

**Hebrew.\***

**History** 117. History of Ancient Egypt.  
121A. The Early Middle Ages.  
121B. The Late Middle Ages.  
123A-123B-123C. Byzantine History.  
124A-124B. History of Religions.  
126. History of West Africa.  
131A-131B. Armenian History.  
133A-133B. History of North Africa from the Muslim Conquest.  
134A-134B-134C. Near and Middle East from 600 A.D.  
135. Introduction to Islamic Culture.  
136. Islamic Institutions and Political Ideas.  
138A-138B. Jewish History.  
139A-139B. History of the Turks.  
149A-149B-149C. History of Eastern Europe.  
196A. Early History of India.  
196B. Recent History of India and Pakistan.  
198. Undergraduate Seminars.  
199. Special Studies in History.

**Music** 145. History and Theory of Persian Music.  
171K. Music of Persia.

**Near Eastern Languages** 150A-150B. Survey of Ancient Near Eastern Literatures in English.  
198. Special Studies in Near Eastern Languages.

**Persian** 101A-101B-101C. Elementary Persian.  
102A-102B-102C. Advanced Persian.  
150A-150B. Survey of Persian Literature in English  
199. Special Studies in Persian.

**Political Science** 132. International Relations of the Middle East.  
164. Governments and Politics in the Middle East.  
165. Government and Politics in North Africa.

**Semitics** 101A-101B-101C. Elementary Amharic (Modern Ethiopic).  
102A-102B-102C. Advanced Amharic (Modern Ethiopic).  
130. Biblical Aramaic.  
140A-140B. Elementary Akkadian.  
141A-141B. Advanced Akkadian.  
160A-160B. Introduction to Near Eastern Archaeology.  
161A-161B-161C. Archaeology of Mesopotamia.

**Sociology** 132. Population and Society in the Middle East.  
133. Comparative Sociology of the Middle East.  
151. Culture and Personality.

**Turkic Languages** 101A-101B-101C. Elementary Turkish.  
102A-102B-102C. Advanced Turkish.  
110A-110B-110C. Old and Middle Turkic.  
111A-111B-111C. Chagatai.  
112A-112B-112C. Uzbek.  
113A-113B-113C. Kirghiz.  
150A-150B. Survey of Turkish Literature in English.  
190A-190B-190C. Survey of the Turkic Languages.  
199. Special Studies in Turkic Languages.

**Urdu** 101A-101B-101C. Elementary Urdu.  
199. Special Studies in Urdu.

#### Graduate Courses

**African Languages.†**

**Anthropology** 260. Middle Eastern Culture in Society.

**Arabic** 220A-220B-220C. Islamic Texts.  
230A-230B-230C. Arabic Poetry.  
240A-240B-240C. Arab Historians.  
250A-250B-250C. Seminar in Arabic Literature.  
596. Directed Individual Study.  
597. Examination Preparation.  
599. Dissertation Research and Preparation.

**Armenian** 280. Seminar in Armenian Historiography.

**Art** 210. Egyptian Art.  
223. Classical Art.  
225. Medieval Art.

\* See Department of Near Eastern Languages for complete listing and detailed description.

† See Linguistics Department for complete listing and detailed description.

**Berber 201.** Berber Structure.

**Classics.** Greek 231A. Studies in Byzantine Literature.

231B. Seminar in Byzantine Literature.

232. Seminar in the History of Classical Scholarship of the Byzantine Period.

**French 221A.** Introduction to the Study of the French-African Literatures.

221B. French-African Literature of Madagascar and Bantu Africa.

221C. French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa.

257A-257B. Studies in French-African Literature.

**Geography 288.** Africa.

**Hebrew.\***

**History 200A-200B.** History of the Ancient East.

201A. History of the Eurasian Nomadic Empires.

203. History of Ancient Egypt in the Late Period.

204A-204B. History of the Church in the Middle Ages.

207. Armenian Intellectual History.

209A-209B. The Modern Middle East.

210A-210B. Morocco and Europe to the End of the French Protectorate.

211A-211B-211C. Islamic Iran.

230J. Advanced Historiography. The Near East.

240J. Special Topics. The Near East.

267A-267B. Seminar in Near Eastern History.

268A-268B. Seminar in Jewish History.

282A-282B. Seminar in the History of Religions.

596. Directed Studies.

597. Directed Studies for Graduate Examinations.

**Islamics 596.** Directed Individual Study.

597. Examination Preparation.

598. Thesis Research and Preparation.

599. Dissertation Research and Preparation.

**Linguistics 220A.** African Linguistics.

225M. Linguistic Structures: Berber.

**Near Eastern Languages 200A-200B-200C.**

Bibliography and Method of Near Eastern Languages and Literatures.

241. Folklore and Mythology of the Near East.

290. Seminar in Paleography.

596. Directed Individual Study.

**Persian 220A-220B.** Classical Persian Texts.

250. Seminar in Persian Literature.

596. Directed Individual Study.

597. Examination Preparation.

**Political Science 250F.** Seminars in Regional and Area Political Studies. Middle Eastern Studies.

250K. North African Studies.

**Semitics 201A-201B-201C.** Old Ethiopic.

202A-202B-202C. Readings in Old Ethiopic Literature.

209A-209B-209C. Comparative Study of the Ethiopian Languages.

210A-210B. Ancient Aramaic.

215A-215B-215C. Syriac.

220A-220B-220C. Ugaritic.

240. Seminar in Akkadian Language and Literature.

250. Seminar in Ancient Near Eastern Archaeology.

270. Seminar in Ancient Mesopotamia.

280A-280B-280C. Seminar in Comparative Semitics.

290A-290B-290C. Comparative Morphology of the Semitic Languages.

596. Directed Individual Study.

597. Examination Preparation.

599. Dissertation Research and Preparation.

**Sociology 236.** Social Change in the Middle East.

237. Social Stratification in the Middle East.

**Turkic Languages 210A-210B-210C.** Ottoman.

596. Directed Individual Study.

597. Examination Preparation.

599. Dissertation Research and Preparation.

\* See Department of Near Eastern Languages for complete listing and detailed description.

## ■ ITALIAN

(Department Office, 340 Royce Hall)

Pier-Maria Pasinetti, Ph.D., *Professor of Italian.*

Charles Speroni, Ph.D., *Professor of Italian.*

Franco Fido, Dottore in Lettere, *Associate Professor of Italian (Chairman of the Department).*

Franco Betti, Ph.D., *Assistant Professor of Italian.*

Margherita Cottino-Jones, Ph.D., *Assistant Professor of Italian.*

———, *Assistant Professor of Italian.*

———, *Assistant Professor of Italian.*



Anna Burney, M.A., *Associate in Italian.*

Mirella Cheeseman, Dottorato Università di Napoli, *Lecturer in Italian.*

Mario Pietralunga, Dottorato Università di Bologna, *Associate in Italian.*

Maria Russell, M.A., Dottorato Università di Roma, *Lecturer in Italian.*

Althea Soli, M.A., *Lecturer in Italian.*

### Preparation for the Major

Courses 1, 2, 3, 4, 5, 6, 8A, 8B, 8C.

### The Major

Required: 12 upper division courses as follows: 101A, 101B, 101C, 102, 103A, 103B, 113A, 113B, 113C, 120 and a choice of two courses between 116A, 116B and 119A, 119B. Recommended: History 148A, 148B, upper division courses in another literature, philosophy or fine arts, one course in a second language (Latin, French, Spanish or German) at least at level 3.

### Requirements for the Master's Degree

*General Requirements.* See page 136. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See page 138.

*Departmental Requirements.* Thesis Plan. The preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the Department. The chairman of the committee will be the instructor under whom the candidate proposes to write his thesis. No committee shall be appointed before a candidate has completed two full quarters of work in graduate standing in the Department.

1. Foreign Language. The same as for the Comprehensive Examination Plan.

2. Courses. Nine courses of which a minimum of six must be in the 200 series.

3. Thesis and Examination. The subject and general plan of investigation for the thesis must be approved by the Department and the instructor concerned before a guid-

ance committee can be appointed. After completion of the thesis, the candidate must pass a two-hour oral examination testing his knowledge of the field of his thesis and his general competence. Only those students who attain a 3.5 grade-point rating in the examination will be encouraged to proceed to candidacy for the Ph.D. degree.

*Departmental Requirements.* Comprehensive Examination plan.

1. Foreign Language. A reading knowledge of one other foreign language approved by the graduate adviser. This requirement must be met at least one quarter before the date of the comprehensive examination.

2. Courses. Twelve courses with a minimum of nine in the 200 series, chosen from the following: 214, 215, 216A, 216B, 217, 218A, 218B, 219A, 219B, 220, 250A, 250B, 250C.

3. The Comprehensive Examination. Two four-hour written examinations to be given the next to the last week preceding the final examination period of the fall and spring quarters. After the written examination, at the discretion of the Department, the candidate may be required to take an oral examination.

### Requirements for the Ph.D. Degree in Italian

*General Requirements.* See page 140.

*Departmental Requirements.*

1. Foreign Language. A student normally will pass this requirement by giving evidence of successful completion of courses through at least level 3 in Latin, French, and either German or Spanish (subject to departmental approval). Students may also pass a reading

examination in French, German, or Spanish. All language requirements must be fulfilled prior to taking the qualifying examinations. Qualifying examinations will be given in the second week of the fall and spring quarters.

2. Required Courses. In addition to those required for the master's degree, or equivalent: courses 201, 205A, 205B, 210A, 210B, 210C, and at least four other quarter courses from the seminar series: 250A-258B. In addition, the student will take such courses as his guidance committee will prescribe in preparation for the qualifying examinations, such as 596, 597, 599.

3. Fields of Specialization. The Department recognizes the following fields of specialization, from which *one major* and *two minor* fields will be selected. Medieval, Renaissance and Baroque, Modern.

4. Qualifying Examinations. The qualifying examinations will consist of: two four-hour written examinations in the candidate's major field; one four-hour written examination in each of the minor fields; a two-hour oral examination. The qualifying examinations are normally taken no later than nine quarters after the B.A. and six quarters after receiving the M.A.

5. The Dissertation. The dissertation should be presented within a period of three years after formal advancement to candidacy for the degree. After the acceptance of the dissertation in its final form, the candidate is required to take an oral examination which will cover principally the field within which the dissertation falls.

#### Lower Division Courses

##### 1. Elementary Italian—Beginning.

Sections meet five hours weekly.

Mrs. Burney in charge

##### 2. Elementary Italian—Continued.

Sections meet five hours weekly. Prerequisite: course 1 or one year of high school Italian.

Mrs. Cheeseman in charge

##### 3. Elementary Italian—Continued.

Sections meet five hours weekly. Prerequisite: course 2 or two years of high school Italian.

Mrs. Cheeseman in charge

##### 4. Intermediate Italian.

Sections meet five hours weekly. Prerequisite: course 3 or three years of high school Italian.

Mrs. Russell in charge

##### 5. Intermediate Italian.

Sections meet five hours weekly. Prerequisite: course 4 or four years of high school Italian.

Mrs. Russell in charge

##### 6. Intermediate Italian.

Sections meet five hours weekly. Prerequisite: course 5.

Mrs. Russell in charge

##### 8A-8B-8C. Italian Conversation. (½ course each)

Sections meet two hours weekly. Prerequisite: for 8A, course 1; for 8B, course 2; for 8C, course 3.

Mrs. Soli in charge

##### 25. Advanced Italian.

Sections meet five hours weekly. Prerequisite: course 6. A preparatory course for Italian composition.

#### Upper Division Courses

Twenty-four quarter units in Italian or the equivalent are required for admission to any upper division course. Upper division courses will be conducted mainly in Italian.

##### 101A-101B-101C. Grammar and Composition.

Classes meet four hours weekly.

Mrs. Russell in charge

##### 102. Italian Culture and Institutions.

Class meets four hours weekly. Aspects and trends of the Italian historical and cultural development studied in specific examples.

Mr. Pietralunga

##### 103A-103B. Survey of Italian Literature.

Classes meet three hours weekly. An introduction to the principal authors, works and movements of Italian Literature.

Mr. Betti

##### 113A-113B-113C. Dante's "Divina Commedia."

Classes meet three hours weekly.

113A. Inferno.

113B. Purgatorio.

113C. Paradiso.

Mr. Speroni

##### 114A-114B. Italian Literature of the Middle Ages.

Classes meet three hours weekly. Emphasis on "Stil Novo," Dante's minor works, Petrarca and Boccaccio.

Mrs. Cottino-Jones

##### 116A-116B. Italian Literature of the Renaissance.

Classes meet three hours weekly. Emphasis on Lorenzo De'Medici, Poliziano, Castiglione, Machiavelli, Ariosto, Tasso.

Mr. Betti

##### 118. Italian Literature of the Eighteenth Century.

Class meets three hours weekly. Emphasis on Goldoni, Parini, Alfieri.

Mr. Fido, Mr. Pasinetti

##### 119A-119B. Italian Literature of the Nineteenth Century.

Classes meet three hours weekly. Emphasis on Foscolo, Leopardi, Manzoni.

Mr. Pasinetti

##### 120. Italian Literature of the Twentieth Century.

Class meets three hours weekly. From Verga to Contemporaries.

Mr. Betti, Mr. Fido

##### 130. Advanced Grammar and Composition.

Class meets three hours weekly. Prerequisite: course 101C.

Mrs. Cottino-Jones

##### 190. Pre-Seminars in Italian Literature. (½ course)

The Staff

##### 199. Special Studies. (½ course)

The Staff

**Service Courses**

No knowledge of Italian is required for these courses. No credit is given toward the major.

**16. Special Reading Course. (No credit)**

Class meets three hours weekly. Mainly designed for graduate students in other areas.

Mrs. Russell in charge

**28. Special Reading Course. (No credit)**

Class meets three hours weekly. Mainly designed for graduate students in other areas.

Mrs. Russell in charge

**100A-100B-100C. Italian Literature in Translation.**

Classes meet three hours weekly.

100A. The Middle Ages.

100B. The Renaissance.

100C. From the Mannerism to the 20th Century.

Mr. Betti

**110A-110B-110C. The Divine Comedy in English.**

Classes meet three hours weekly.

110A. The Inferno.

110B. The Purgatorio.

110C. The Paradiso.

Mr. Speroni

**140. Readings in the Italian Theatre in Translation.**

Class meet three hours weekly.

Mr. Fido

**150. Modern Italian Fiction in Translation.**

Class meets three hours weekly.

The Staff

**Graduate Courses**

**201. Bibliography and Methods of Research.**

Course meets two hours weekly.

Mrs. Cottino-Jones

**205A-205B. History of Italian Literary Criticism.**

Course meets two hours weekly.

Mr. Fido

**210A-210B-210C. Italian Philology, with Reading of Early Italian Texts.**

Course meets two hours weekly.

Courses 214 through 220 are designed mainly for students preparing the M.A. degree.

**214. Italian Literature of the Fourteenth Century.**

Course meets three hours weekly.

Mrs. Cottino-Jones

**215. Italian Literature of the Fifteenth Century.**

Course meets three hours weekly.

Mr. Fido

**216A-216B. Italian Literature of the Sixteenth Century.**

Course meets three hours weekly.

Mr. Speroni

**217. Italian Literature of the Seventeenth Century.**

Mrs. Cottino-Jones

**218A-218B. Italian Literature of the Eighteenth Century.**

Course meets three hours weekly.

Mr. Fido, Mr. Pasinetti

**219A-219B. Italian Literature of the Nineteenth Century.**

Course meets three hours weekly.

Mr. Pasinetti

**220. Italian Literature of the Twentieth Century.**

Course meets three hours weekly.

**230A-230B. Folk Tradition in Italian Literature.**

(Same as Folklore 230A-230B.) Course meets two hours weekly.

Mr. Speroni

**Seminars**

**250A-250D. Seminar on Dante.**

Course meets three hours weekly.

Mr. Fido, Mrs. Cottino-Jones

**251. Seminar on Petrarch.**

Course meets three hours weekly.

Mrs. Cottino-Jones

**252. Seminar on Boccaccio.**

Course meets three hours weekly.

Mr. Fido

**253A-253B-253C. Seminar on Chivalric Poetry in Italy.**

Course meets three hours weekly. The relationship between the genre and its French medieval sources, with a study of its evolution in Italy, through Pulci, Boiardo, Ariosto, and Tasso.

Mr. Speroni

**254. Seminar on Machiavelli.**

Course meets three hours weekly.

Mr. Fido

**255A-255B. Seminar on the Baroque.**

Course meets three hours weekly.

Mrs. Cottino-Jones

**256A-256B. Seminar on the Eighteenth Century.**

Course meets three hours weekly.

Mr. Fido, Mr. Pasinetti

**257A-257B. Seminar on Romanticism.**

Course meets three hours weekly.

Mr. Pasinetti

**258A-258B. Seminar on Contemporary Italian Literature.**

Course meets three hours weekly.

**370. Problems and Methods in the Teaching of Italian.**

Course meets two hours weekly.

Mrs. Russell

**Individual Study and Research**

**596. Directed Individual Studies.**

The Staff

**597. Preparation for Comprehensive Examinations.**

The Staff

**599. Doctoral Research and Writing.**

The Staff

## ■ JOURNALISM

(Department Office, 55C Social Welfare Building)

Robert E. G. Harris, M.A., *Professor of Journalism.*

William W. Johnson, M.A., *Professor of Journalism.*

Robert A. Rutland, Ph.D., *Professor of Journalism.*

Walter Wilcox, Ph.D., *Professor of Journalism.*

Joseph A. Brandt, M.A. (Oxon.), B.Litt. (Oxon.), LL.D., *Emeritus Professor of Journalism.*

Jack Lyle, Ph.D., *Associate Professor of Journalism.*

John M. Smith, M.A., *Assistant Professor of Journalism.*



James H. Howard, M.A., *Lecturer in Journalism.*

Robert R. Kirsch, M.A., *Lecturer in Journalism.*

Alan Landsburg, B.A., *Lecturer in Journalism.*

Mel Stuart, B.A., *Lecturer in Journalism.*



Frank LaTourette, Litt.M., *Assistant Professor of Theater Arts.*

The graduate program in journalism prepares students for editorial careers in the mass media. Ordinarily, students have no previous journalistic experience and received their undergraduate degree in a field other than journalism. Such students enroll in the 400-series courses for instruction in news writing and editing, and also take the prescribed courses (191, 204, 260 or 268, and 274), along with a comprehensive examination in the spring quarter. Other students with journalistic experience may seek a degree by writing a thesis, or by substituting course work for the 400-series, and successful completion of the comprehensive examination. Students planning teaching careers usually have considerable experience as working newsmen and are encouraged to write a thesis. Thesis students who pass a foreign language examination receive the Master of Arts degree; others will receive the Master of Journalism degree.

Enrollment in the Television Documentary News program is limited to twelve students. These students take only the first quarter of the 400 series in the print media, then complete their work under the direction of lecturers who are associated with the television industry. Journalism 410 is open only to this group. Each student submits a finished documentary film as part of his requirements for the Master of Journalism degree.

For undergraduates there is a series of recommended courses for those who desire a broader knowledge of journalism or who wish preparation for graduate training. A

journalism adviser will counsel undergraduates regarding the recommended program.

*All students seeking instruction should have a superior knowledge of the English language.* Before admission as degree candidates, graduate students must take the Graduate Record Examination which is periodically conducted at selected centers throughout the nation.

### Lower Division Course

#### 2. Fundamentals of Journalism.

Lectures, field trips, and workshops. Survey of journalism principles and techniques.

### Upper Division Courses

#### 101. Reporting.

Lecture, two hours; laboratory, three hours. The news communication process including communications theory, media analysis, and audience analysis. Style, structure, and organization. Readability formulas. Laboratory: exercises and experiments in news communication.

#### 112. The History of American Journalism.

History of the news media and their ancillary agencies with special attention to the news and information function. Course emphasizes historical context, including the main forces in development of the free press and social responsibility concepts.

#### 180. Radio and Television News.

Lecture, two hours; laboratory, three hours. Prerequisite: course 2 or equivalent. Fundamentals of broadcast news; FCC regulations; network, station, and news agency problems and policies. Laboratory: exercises and experiments in preparing the newscast, with emphasis on television.

#### 181. Reporting of Public Affairs.

Prerequisite: course 2 or equivalent. Reporting governmental functions with emphasis upon judicial,

legislative and administrative procedures at the city and county level.

### 182A. Magazine Writing.

Analysis of the general magazine. Writing non-fiction articles: research, style and structure.

### 182B. Magazine Writing.

Continuation of course 182A. Prerequisite: course 182A or equivalent and consent of the instructor.

### 183. Fundamentals of Public Relations.

Analysis of institutional policy, definition of publics, attitudes measurement, communications and evaluation of results; functional and ethical considerations.

### 190. The Foreign Press.

Analysis of the four theories of the press; study of the flow of international news; analysis of the foreign media including problems of propaganda, governmental control, language and economic support.

### 191. Law of Mass Communications.

Basic laws affecting the press: First and Fourteenth amendments; libel, copyright, postal regulations, sedition, privacy, obscenity. Special laws affecting broadcasting. Required.

### 192. The Media of Mass Communications.

Institutional analysis of the mass media with emphasis upon the press and broadcasting the mass communications process; interaction with other institutions; critical evaluation.

### 195. The Critical Function of the Press.

Analysis and evaluation of the press in its role as critic of the popular arts, including television, books and motion pictures. Special lectures by professional critics.

#### Graduate Courses

### 204. Ethics and Responsibility in Mass Communications.

Critical evaluation of the mass media with respect to ethical practices and responsibility. Required for the master's degree.

### 207. Graphic Arts in Mass Communications.

Principles and theory of the graphic arts in journalism, including photography, typography, and charts and graphs; emphasis on research.

### 210. Advanced Graphic Arts in Mass Communications.

Prerequisite: course 207. Advanced concepts in graphic communications, including computer-based systems. Emphasis on experimentation and review of research literature. Analysis of experimental graphic techniques will include examination of their social implications. Mr. Smith

### 252. Seminar in Editing the Newspaper.

Study of editing problems with some emphasis upon role of special editorial divisions (urban, finance, science, etc.); guest lecturers.

### 253. Seminar in the History of Mass Communications.

Study of the historical trends in the development of the mass media.

### 260. Seminar in Issues in the News.

Relates significant writing and the main trends in modern social, economic, and political history to the contemporary newsworthy issues.

### 268. The Reporter and Society.

Study of media performance in relation to main forces in the contemporary cultural pattern; emphasis upon the role of interpretive reporting. Required for the master's degree.

### 274. Theories of Mass Communications.

Study of mass communications process in terms of source, message, medium, context, audience, and response. Required for the master's degree.

### 275. Mass Communications Research.

Theory and techniques of mass communications research methods.

### 282. Seminar in Magazine Journalism.

Analysis of dominant techniques in writing for American news and special quality magazines, emphasizing story structure and unique reporting methods; influence of nationally circulated news magazines on newspaper journalism. Mr. Johnson

### 290. Seminar in International and Comparative Journalism.

Investigative studies of newspapers now publishing in selected countries—their performance, goals, and influence are analyzed against the background of international affairs.

### 291. Seminar in the Law of Mass Communications.

Provides a framework for in-depth studies of changing concepts in laws affecting the mass media.

### 295. Journalism as Literature.

Studies of the interaction between journalism and literature since the 18th century, with an emphasis on style, literary trends, writer experience, and other influences.

#### Professional Courses

### 400. News Communication I.

Laboratory and field work in newspaper journalism and television news documentary productions.

### 401. News Communication II.

Continuation of News Communication I.

### 402. News Communication III.

Continuation of News Communication I and II.

### 410. Workshop in the Documentary Film.

Prerequisite: admission to the television documentary film program in the Department of Journalism. Students will plan and direct, under laboratory conditions, news and documentary films. Emphasis will be on creativity under simulated production conditions. Mr. LaTourette

#### Individual Study and Research

### 596. Directed Individual Studies in Mass Communications. (¼ to 1 course)

### 598. Directed Research Relative to Preparation of Master's Thesis. (¼ to 1 course)

## ■ LATIN AMERICAN STUDIES

### Curriculum in Latin American Studies

For details of the curriculum leading to the degree of Bachelor of Arts, see page 73 of this bulletin.

### Master of Arts in Latin American Studies

*Committee in charge.* Johannes Wilbert, Anthropology (Chairman); Charles F. Bennett, Geography; John E. Englekirk, Spanish and Portuguese.

The degree of Master of Arts in Latin American Studies is designed to provide systematic advanced training for (1) those planning to enter business or government service in the Latin American field and (2) those in a specified academic discipline who have a regional interest in Latin America.

### Requirements for the Master's Degree

*General Requirements.* See page 136.

*Preparation.* The degree of Bachelor of Arts in Latin American Studies, or its equivalent, constitutes the preparation for admission. In exceptional cases graduate students with other backgrounds may be admitted at the discretion of the committee, but may be required to complete additional course work to correct deficiencies in preparation.

*Language Requirement.* The same as required for the undergraduate major in the program. See page 73.

The Thesis Plan is followed. The thesis is written under the direction of a member of the staff participating in the Interdisciplinary Seminar 250A-250B.

*Course Requirements.* Ten courses, seven of which must be in one "major" discipline. The Interdisciplinary Seminar in Latin American Studies (250A-250B), required of all M.A. candidates, counts as two such courses. Further, a student whose seminar project is approved for field work will be permitted to count his quarter of field work as one course within the "major" field. The Thesis Plan will be followed and the thesis will be written in connection with the Interdisciplinary Seminar.

All work must be completed within five consecutive quarters by the terminal M.A. candidate, and seven consecutive quarters by the potential doctoral candidate who does field work.

#### Graduate Courses

### 200. Latin American Research Resources.

(½ course)

The course will acquaint students with general and specialized materials in fields concerned with Latin

American Studies. Library research techniques will provide the experience and competency required for future bibliographic and research sophistication as the basis for enhanced research results. Mr. Sable

### 250A-250B. Interdisciplinary Seminar in Latin American Studies.

Required of all candidates for the master's degree in Latin American studies. Problem-oriented on critical areas stressed in the University's cooperative programs in Latin America. Preparation of thesis and field study. Mr. Furst, Mr. Wilbert

#### Related Courses

### Anthropology 107. Peoples of South America.

109. Indians of Modern Mexico and Peru.

117. Introduction to Nahuatl Language and Literature.

121. Latin American Societies.

133A. Ancient Civilizations of Western Middle America (Nahuatl Sphere).

133B. Ancient Civilizations of Eastern Middle America (Maya Sphere).

134. Ancient Civilizations of Andean South America.

199. (When concerned with Latin America).

207. Indians of South America.

214B. Linguistic Areas: Aboriginal South America.

257. Indians of South America.

264. Problems of Higher Cultures of Nuclear America.

265. Contemporary Latin American Problems.

271. Historical Reconstruction and Archeology. (When concerned with America.)

272. Prehistoric Nonagricultural Societies. (When concerned with Latin America.)

274. Prehistoric Civilizations of the New World.

596. (When concerned with Latin America.)

Art 118B. The Arts of Pre-Columbian America.

198. (When concerned with Latin America.)

Dance 146. Dance in Latin America.

171J. Dance of Mexico.

Economics 108. Economic Demography.

110. Economic Problems of Underdeveloped Countries.

111. Theories of Economic Growth and Development.

112. Policies of Economic Development.

199. (When concerned with Latin America.)
211. Economic Growth of Underdeveloped Areas: Theory and Structure.
212. Economic Growth of Underdeveloped Areas: Models and Policy.
- 213D. Selected Problems of Underdeveloped Areas: Latin America.
- Education** 199. (When concerned with Latin America.)
- 204D. Latin American Education.
- 253D. Seminar: Latin American Education.
- Geography** 181. Middle America.
182. South America.
199. (When concerned with Latin America.)
225. Seminar in Cultural Geography. (When concerned with Latin America.)
281. Latin America.
290. Seminar: Selected Regions. (When concerned with Latin America.)
596. (When concerned with Latin America.)
- History** 162A-162B. Latin America in the 19th and 20th Centuries.
- 163A-163B. The History of Brazil.
166. History of Mexico.
- 168A-168B. Colonial Latin America.
169. Diplomatic History of Latin America.
199. Latin American History.
- 230I. Advanced Historiography: Latin America.
- 240I. Topics in History: Latin America.
- 266A-266B. Seminar in Latin American History.
- Indigenous Languages of Latin America** 117. Introduction to Nahuatl Language and Literature.
- 118A-118B-118C. Elementary Quechua.
- 119A-119B-119C. Intermediate Quechua.
- Law** 233. Comparative Law: Latin America.
- Music** 131. Music of Latin America.
- 171J. Music and Dance of Mexico.
259. Seminar in Music of Latin America.
- Political Science** 131. Latin American International Relations.
139. Special Studies in International Relations. (When concerned with Latin America.)
- 168A-168B. Government and Politics in Latin America.
169. Special Studies in Comparative Government. (when concerned with Latin America).
198. (When concerned with Latin America.)
199. (When concerned with Latin America.)
- 250A. Latin American Studies.
- Portuguese** 101A. Advanced Reading and Conversation.
- 120B. Survey of Portuguese Literature.
- 121A-121B. Survey of Brazilian Literature.
131. The Brazilian Novel.
133. Brazilian Poetry.
199. (When concerned with Brazil.)
203. The Development of the Portuguese Language.
236. Modern Brazilian Novel.
253. Studies in Luso-Brazilian Literature.
- Public Health** 256B. Seminar in Comparative and International Health.
- 290E. Special Group Studies: International Health.
- Sociology** 131. Latin American Societies.
199. (When concerned with Latin America.)
- Spanish** 118. History of the Spanish and Portuguese Languages.
- 121A-121B. Survey of Spanish American Literature.
137. The Literature of Colonial Spanish America.
139. Nineteenth Century Spanish American Literature.
143. Spanish American Literature in the Twentieth Century.
149. Folk Literature of the Hispanic World.
151. Folk Song in Spain and Spanish America.
- 160B. Hispanic Literature in Translation (Latin America).
199. (When concerned with Latin America.)
203. The Development of the Spanish Language.
209. Dialectology.
237. Chroniclers of the Americas.
239. Neo-Classical and Romantic Prose and Poetry in Spanish America.
240. The Modernist Movement.
243. Contemporary Spanish American Poetry.

244. Contemporary Spanish American Novel and Short Story.  
 245. Contemporary Spanish American Essay.  
 249. Hispanic Folk Literature.  
 256B. Studies in Dialectology.

277. Studies in Colonial Spanish American Literature.  
 278. Studies in Nineteenth Century Spanish American Literature.  
 280A-280D. Studies in Contemporary Spanish American Literature.  
 286. Studies in Hispanic Folk Literature.

## ■ LAW

(Department Office, 1224 Law Building)

Benjamin Aaron, A.B., LL.B., *Professor of Law and Director of the Institute of Industrial Relations.*

Norman Abrams, A.B., J.D., *Professor of Law.*

John A. Bauman, B.S.L., LL.B., LL.M., Jur.Sc.D., *Professor of Law.*

L. Dale Coffman, A.B., J.D., LL.M., S.J.D., *Professor of Law.*

William Cohen, A.B., LL.B., *Professor of Law.*

Jesse J. Dukeminier, Jr., A.B., LL.B., *Professor of Law.*

Kenneth W. Graham, Jr., B.A., J.D., *Professor of Law.*

Harold W. Horowitz, A.B., LL.B., LL.M., *Professor of Law.*

Edgar A. Jones, Jr., A.B., LL.B., *Professor of Law.*

Robert L. Jordan, A.B., LL.B., *Professor of Law.*

Kenneth L. Karst, A.B., LL.B., *Professor of Law.*

Harold Marsh, Jr., A.B., LL.B., LL.M., Jur.Sc.D., *Professor of Law.*

Richard C. Maxwell, B.S.L., LL.B., *Professor of Law (Chairman of the Department).*

David Mellinkoff, A.B., LL.B., *Professor of Law.*

Herbert Morris, A.B., LL.B., D.Phil. (Oxon.), *Professor of Law and Philosophy.*

†Addison Mueller, A.B., LL.B., *Professor of Law.*

Melville B. Nimmer, A.B., LL.B., *Professor of Law.*

†James C. N. Paul, A.B., LL.B., *Professor of Law in Residence.*

Paul O. Proehl, A.B., J.D., M.A., *Professor of Law and Director of the African Studies Center.*

Ralph S. Rice, B.S., LL.B., LL.M., *Connell Professor of Law.*

†Murray L. Schwartz, B.S., LL.B., *Professor of Law.*

James D. Sumner, Jr., A.B., LL.B., LL.M., J.S.D., *Professor of Law.*

Harold E. Verrall, A.B., LL.B., M.A., J.S.D., *Professor of Law.*

William D. Warren, A.B., J.D., J.S.D., *Professor of Law.*

Richard A. Wasserstrom, B.A., M.A., Ph.D., LL.B., *Professor of Law and Philosophy.*

Kenneth H. York, A.B., LL.B., *Professor of Law.*

Rollin M. Perkins, A.B., J.D., S.J.D., *Emeritus Connell Professor of Law.*

Donald G. Hagman, B.S., LL.B., LL.M., *Associate Professor of Law.*

Lawrence G. Sager, B.A., LL.B., *Assistant Professor of Law.*



Michael R. Asimow, B.S., LL.B., *Acting Professor of Law.*

Leon Letwin, Ph.B., LL.B., *Acting Associate Professor of Law.*

Wesley J. Liebeler, B.A., J.D., *Acting Professor of Law.*

Anthony X. McDermott, A.B., LL.B., *Lecturer in Law.*

Edward J. Owen, A.B., LL.B., *Lecturer in Charge of Legal Aid Instruction.*

Monroe E. Price, B.A., LL.B., *Acting Associate Professor of Law.*

Arthur I. Rosett, B.A., LL.B., *Acting Professor of Law.*

Herbert E. Schwartz, B.S., LL.B., *Acting Associate Professor of Law.*

John M. Suarez, M.D., *Assistant Professor of Psychiatry.*

†Absent on leave, 1968-1969.

## LIBRARY SERVICE

(Department Office, 326 Powell Library)

Harold Borko, Ph.D., *Professor of Library Service.*

Robert M. Hayes, Ph.D., *Professor of Library Service.*

Andrew H. Horn, Ph.D., *Professor of Library Service (Chairman of the Department).*

Robert Vosper, M.A., *Professor of Library Service.*

§Seymour Lubetzky, M.A., *Emeritus Professor of Library Service.*

Lawrence Clark Powell, Ph.D., Litt.D., L.H.D., *Emeritus Professor of Library Service.*

Raymund F. Wood, Ph.D., *Associate Professor of Library Service.*

———, *Assistant Professor of Library Service.*

———, *Assistant Professor of Library Service.*

———, *Assistant Professor of Library Service.*

———, *Assistant Professor of Library Service.*



Elizabeth R. Baughman, M.A., *Lecturer in Library Service.*

Jerome Cushman, A.B., B.S.L.S., *Lecturer in Library Service and English.*

Chase Dane, A.B., M.S.L.S., *Lecturer in Library Service and Supervisor of Teaching in the School of Education.*

Louise Darling, M.A., *Lecturer in Library Service and Medical History.*

J. Melvin Edelstein, M.A., *Lecturer in Library Service.*

Elizabeth R. Eisenbach, M.L.S., *Lecturer in Library Service.*

Everett T. Moore, M.A., *Lecturer in Library Service.*

Betty Rosenberg, M.A., *Lecturer in Library Service.*

Johanna E. Tallman, A.B., C.L., *Lecturer in Library Service and Engineering Bibliography.*

### Representatives of Other Departments on the Faculty of the School of Library Service

Hugh C. Dick, Ph.D., *Professor of English.*

Michel A. Melkanoff, Ph.D., *Professor of Engineering.*

C. D. O'Malley, Ph.D., *Professor of Medical History.*

Richard H. Rouse, Ph.D., *Assistant Professor of History.*

Gustave E. von Grunebaum, Ph.D., *Professor of History.*

For information regarding admission to the School of Library Service and for requirements for the degrees Master of Library Science or Master of Science in Information Science (Documentation) refer to the paragraphs on the School of Library Service under Schools and Colleges.

**Graduate courses.** 200-series. Consent of instructor is prerequisite to admission to all 200-series courses. For individual study courses, see 500-series. For professionally oriented courses, see 400-series.

**Professional courses.** 400-series. Planned primarily for the professional degree, Master of Library Science, and for specialized professional study. Required for the M.L.S. degree are 400, 402, 404, 410, 411, 420, 421, 430 and four additional courses in the 200-, 400-, or 500-

series selected with the approval of the candidate's faculty adviser.

**Professional internship courses.** 490-series. M.L.S. degree and consent of the Dean of the School of Library Service are prerequisite to admission. May not be applied in satisfaction of course requirements for a degree. Open to certificate candidates only.

**Individual study courses.** 500-series. Approval of the Dean of the School of Library Service is prerequisite to admission to all 500-series courses. Method of instruction is by individual conferences with assigned members of the staff. Seminar courses are numbered in the 200-series.

#### Graduate Courses

#### 205. History of Library Technology.

(Formerly numbered 213.) Seminar on the history of library techniques, methods, organization, equip-

§ Recalled to active service.

ment, architecture, legislation, and standards. Excluded is the traditional history of library founders, donors and collection development.

## 207. Seminar on Comparative Librarianship.

(Formerly numbered 240.) Library development and service patterns in European and other countries; comparisons of these with librarianship in the United States. Interlibrary cooperation between types of libraries and also between libraries of different political jurisdictions, including international cooperation.

## 210. Descriptive and Bibliographical Cataloging.

Bibliography and cataloging. Development of Anglo-American cataloging rules and international developments. Analysis of cataloging purposes, problems and principles. Evaluation of governing rules. Problems and potentialities of automation.

## 211. Subject Cataloging and Comparative Classification.

Bibliographic and subject control of collections. Subject headings and classification systems. Alphabetical and classed subject catalogs and indexes. Subject heading lists, thesauri, etc. D.C., U.D.C., Cutter, L.C., Bliss, Colon, and other classification systems. Automation of subject control.

## 215. Seminar on Cataloging and Classification.

History of cataloging and classification and special problems in cataloging and classification.

## 221. Bibliography of Science, Engineering and Technology.

(Formerly numbered 217.) Scientific and technical literature, with emphasis on special types of publications, research material, reference and bibliographical aids to the physical sciences. Importance, purpose and nature of technical literature searches. Flow of information among scientists.

## 222. Bibliography of the Medical and Life Sciences.

(Formerly numbered 218.) Literature of the medical and life sciences: reference and bibliographical works; periodicals, serials and the abstracts and indexes to them; notable books in the history of the biomedical sciences; patterns of publication; applications of technological developments in the control of the biomedical literature.

## 223. Literature of the Social Sciences.

(Formerly numbered 219.) Seminar on the literature of the social sciences, including a review of the classics in the various fields, monumental source collections, periodicals, bibliographies, catalogs, indexes, abstracts, etc. Trends in scholarly and popular writing. Interdisciplinary nature of the literature.

## 224. Literature of the Humanities and Fine Arts.

(Formerly numbered 220.) Seminar on the literature of the humanities and fine arts, including a review of the classics in the various fields, comparisons of editions, periodicals, bibliographical apparatus and reviewing media. Trends in scholarly and popular writing.

## 230. Publishing and the Book Trade.

Publishing and book trade history, ancient to modern times, with particular reference to book

collecting and libraries. Changing aspects of book production and distribution, emphasizing modern methods. Retail book trade, new and antiquarian; book auctions.

## 240. Information Systems Analysis and Design.

(Formerly numbered 243.) Theories and principles of special systems development, including determination of requirements, technical design and evaluation, and internal organization.

## 241. Management Information Systems.

Survey of information systems for the management of large scale projects and organizations, including systems for progress reporting, file control, and documentation.

## 242. Information Retrieval Systems.

Survey of principal specialized vocabularies, methods of file organization, and search strategies in the control of publications in mechanized form.

## 243. Data Base Systems.

Survey of methods for developing, implementing and operating mechanized data base systems such as socioeconomic data banks and technical data banks.

## 249. Seminar in Information Science.

(Formerly numbered 293.) Specialized studies in problem areas of information science: vocabulary development, representation coding, file organization and indexing, classification systems, searching procedures, measurement of relevancy, data reduction and presentation, and communication. May be repeated once for credit.

## 251. Reading and Reading Interests.

(Formerly numbered 215.) Interests of the common reader, excluding children, with special reference to types of library patrons. Fiction and subject categories, popular and standard: philosophy, religion, social sciences, art, music, literature, history, science. Influence of paperbacks, best sellers and current interest books on reading habits.

## 253. Special Studies in Children's Literature.

(Formerly numbered 209.) Special studies in children's books and reading interests. Historical backgrounds and development of: types of children's literature, folklore and oral tradition, levels of interest, criticism and evaluation, illustration, bibliography.

## 260. Historical Bibliography.

(Formerly numbered 211.) Early records and the manuscript period; history of the printed book and of periodical publications and newspapers, including materials and methods and production. Parallel history of scholarship, the book trade, and book collecting in ancient, medieval and modern Western civilization.

## 261. Analytical Bibliography.

History and methods of analytical bibliography with emphasis on recent scholarship. The book as a physical object and its relationship to the transmission of the text. Emphasis on hand-press books. Theories of Bradshaw, Proctor, Greg, McKerrow, Pollard, Esdalle, Bowers, Stevenson, Hinman, McKenzie, and others. Lectures, discussion, press demonstrations, and a written report on a bibliographical problem.

## Professional Courses

**400. Introduction to Librarianship.**

(Formerly numbered 203.) Introduction to the history of libraries and information centers, including their current status, organization, and problems. Professional education and research. Library literature and its bibliographical control. Trends in administration and management, national networks, standards, legislation, technology.

**402. Introduction to Bibliography.**

(Formerly numbered 200.) History of bibliography. Classification: historical, physical or critical (descriptive, analytical), enumerative or systematic, bibliographical apparatus, organization and control. Relationship to cataloging. New techniques and tools. Theory, methods, trends in bibliographical research.

**404. Introduction to Information Science.**

Scope of the information sciences and their relationship to libraries, information centers, information handling. Methods of systems analysis as applied to library operations; case studies of library systems, clerical operations, and information retrieval. Survey of data processing equipment.

**410. Descriptive Cataloging.**

(Formerly numbered 210A.) Entry and description of library materials. Constitution, structure, and form of the library catalog. Cataloging services, tools, and procedures. Cataloging rules and their application.

**411. Subject Cataloging and Classification.**

(Formerly numbered 210B.) Subject treatment of library materials. Structure of subject heading lists and their application. Organization of the subject catalog. Structure and application of the Dewey Decimal and Library of Congress classification systems. Organization of the classed catalog and the shelflist.

**412. Cataloging and Classification of Special Materials.**

(Formerly numbered 201C.) Problems in cataloging and classification of audio-visual and other non-book materials (e.g., manuscripts, maps, microforms, motion pictures, pictorial works, sound recordings, magnetic tapes) as separate collections and/or as parts of general collections.

**420. Basic Sources of Information.**

(Formerly numbered 202A.) History, methods and materials of reference service and information retrieval. Survey of devices for bibliographical control of information. Encyclopedias, dictionaries, biographical compilations, directories, etc.

**421. Comprehensive Bibliography.**

(Formerly numbered 202B.) Analysis and evaluation of bibliographical control of published and unpublished documents (books, periodicals, government publications, dissertations, reports, manuscripts). Systems of national bibliography, trade bibliography, indexing, abstracting, etc. American, British, French, German, Russian and other systems. Information retrieval using this apparatus.

**422. Secondary Bibliography.**

(Formerly numbered 202C.) Comparative analysis of the organization of information sources in the

humanities, fine arts, social sciences, life sciences, physical sciences and technologies. Problems of special libraries and information centers; reference and research service in general research libraries.

**430. Selection and Acquisition of Library Materials.**

(Formerly numbered 204.) Background of publishing and the book trade (new and antiquarian) pertinent to order departments of public, school, academic and special libraries. Theory and practice of selecting and ordering books and other materials. Organization and administration of order departments.

**431. Special Problems in the Selection of Materials and Evaluation of Collections.**

(Formerly numbered 205.) Subject and area collecting; special collections and rare books; building new collections. Evaluating and weeding collections. Cooperative collecting—regional, national and international. Storage centers; subject specialization. Special format materials: films, maps, sound recordings, etc. Copying methods; facsimile reprinting; changing character of research collections.

**440. Data Processing in the Library.**

(Formerly numbered 406.) Principles of application of data processing technique to library procedures. Survey of available equipment and computation components; methods of using them. Evaluation of specific programs and systems for various library clerical and administrative processes.

**461. College, University and Research Libraries.**

(Formerly numbered 401.) Organization, administration, collections, facilities, finances, and problems of college and university libraries and their relationships within the institutions of which they are a part. Functions of research libraries and work of their staffs in serving scholars.

**463. Public Libraries.**

(Formerly numbered 402.) The government, organization, and administration of municipal, country, and regional public libraries; developments in the changing patterns of public library service.

**464. School Libraries.**

(Formerly numbered 403.) A general survey of elementary and secondary school libraries. Emphasis on the function, administration, organization, services, materials, and the planning and equipment of school libraries in relation to the modern school.

**465. Children's Libraries.**

(Formerly numbered 404.) Public library service to children and young people. Function, administration, organization, services, materials, planning and equipment of children's libraries in relation to the public and school library.

**470. Special Libraries and Special Collections.**

(Formerly numbered 405.) Organization, administration, collections, facilities, finances and problems of special libraries and of special collections within general libraries. Methods of handling non-book materials. Current trends in documentation and mechanization.

**471. Medical and Biological Libraries.**

(½ course)

(Formerly numbered 418.) Required for Level 1 certification by Medical Library Association, and

enrollment limited to candidates for this certificate. Organization, administration, services and problems of biomedical libraries; relationships with institutions of which they are a part, and with the community.

#### 479. Libraries and Literature of the Southwest.

(Formerly numbered 241.) Special readings, reports and discussions on the history, resources, and problems of libraries in the southwestern United States and northwestern Mexico. Literature of the Southwest.

#### Professional Internship Courses

#### 490. University Library Internship.

Supervised professional training in one or more departments of the UCLA College Library or University Research Library. Field trips, when appropriate, to other libraries (e.g., Clark, Huntington, etc.). Minimum of 120 hours per quarter, including weekly critiques of bibliographical, administrative and service problems. Written reports; final oral examination. May be repeated twice.

#### 491. Medical Library Internship.

(Formerly numbered 449M.) Supervised library service, at a professional level, in the UCLA Biomedical Library for a minimum of 120 hours per quarter, including weekly critiques of bibliographical administrative and service problems. Written reports, final oral examination. May be repeated twice.

#### 492. Science and Engineering Library Internship.

(Formerly numbered 449S.) Supervised library service, at a professional level, in the UCLA Engi-

neering and Mathematical Sciences Library for a minimum of 120 hours per quarter, including weekly critiques of bibliographical, administrative and service problems. Written reports, final oral examination. May be repeated twice.

#### Individual Study Courses

#### 596. Directed Individual Study or Research. (½ or 1 course)

Directed special studies in the fields of bibliography, librarianship, and information science. Report of studies to be planned for publication. Variable conference time and unit credit, depending upon complexity of research project. May be repeated to a total of two courses.

#### 597. Preparation for the Master's Comprehensive Examination.

Directed study in preparation for the Comprehensive Examination, M.L.S. degree. Readings, conferences, reports. To be graded S/U.

#### 598. Research for and Preparation of the Master's Thesis. (½ or 1 course)

Research and writing leading to the Master's Thesis in Information Science (Documentation). May be repeated to a total of two courses. To be graded S/U.

#### Related Courses in Other Departments

Education 329. Supervised Library Service.  
441D. Junior College Administration.

English 112. Children's Literature.

## ■ LINGUISTICS

(Office, 6292 Graduate School of Business Administration Building)

William Bright, Ph.D., *Professor of Linguistics and Anthropology.*

Peter Ladefoged, Ph.D., *Professor of Phonetics.*

Robert P. Stockwell, Ph.D., *Professor of Linguistics (Chairman of the Department).*

William E. Welmers, Ph.D., *Professor of Linguistics and African Languages.*

Paul M. Schachter, Ph.D., *Associate Professor of Linguistics.*

George D. Allen, Ph.D., *Assistant Professor of Phonetics.*

Victoria A. Fromkin, Ph.D., *Assistant Professor of Linguistics.*

Kalon L. Kelley, Ph.D., *Assistant Professor of Linguistics.*

Daniel P. Kunene, Ph.D., *Assistant Professor of African Languages.*

Yolanda Lastra, Ph.D., *Assistant Professor of Linguistics.*

Barbara H. Partee, Ph.D., *Assistant Professor of Linguistics.*

\_\_\_\_\_, Ph.D., *Assistant Professor of Linguistics and African Languages.*

\_\_\_\_\_, Ph.D., *Assistant Professor of Linguistics.*

\_\_\_\_\_, Ph.D., *Assistant Professor of Linguistics.*



Kerstin Hadding-Koch, Ph.D., *Visiting Professor of Linguistics.*

Martin Kay, Ph.D., *Lecturer in Linguistics.*

Charles Kraft, Ph.D., *Visiting Associate Professor of Linguistics and African Languages.*

Frederick Longan, M.A., *Lecturer in African Languages.*

- Raimo A. Anttila, Ph.D., *Assistant Professor of Indo-European Studies.*  
 Bradford Arthur, Ph.D., *Assistant Professor of English.*  
 Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*  
 Mary B. Black, Ph.D., *Assistant Professor of Anthropology and Public Health in Residence.*  
 J. Donald Bowen, Ph.D., *Professor of English.*  
 Giorgio Buccellati, Ph.D., *Assistant Professor of Ancient Near East.*  
 William E. Bull, Ph.D., *Professor of Spanish.*  
 Russell N. Campbell, Ph.D., *Assistant Professor of English.*  
 Edward C. Carterette, Ph.D., *Associate Professor of Psychology.*  
 Kenneth G. Chapman, Ph.D., *Associate Professor of Scandinavian Languages.*  
 Walter J. Dowling, Ph.D., *Assistant Professor of Psychology.*  
 Janos Eckmann, Ph.D., *Professor of Turkish.*  
 Harry Hoijer, Ph.D., *Professor of Anthropology.*  
 Charles R. Krahmalkov, Ph.D., *Assistant Professor of Semitics.*  
 Wolf Leslau, Docteur-ès-Lettres, *Professor of Hebrew and Semitic Linguistics.*  
 Donald G. MacKay, Ph.D., *Assistant Professor of Psychology.*  
 Madeleine Mathiot, Ph.D., *Lecturer in Anthropology.*  
 Lois McIntosh, Ph.D., *Associate Professor of English.*  
 Thomas G. Penchoen, Ph.D., *Assistant Professor of Near Eastern Languages.*  
 Clifford H. Prator, Ph.D., *Professor of English.*  
 Jaan Puhvel, Ph.D., *Professor of Indo-European Studies.*  
 Earl Rand, Ph.D., *Assistant Professor of English.*  
 Stephen P. Schwartz, Ph.D., *Assistant Professor of German.*  
 Andreas Tietze, Ph.D., *Professor of Turkish.*  
 Terence H. Wilbur, Ph.D., *Assistant Professor of German.*  
 Robert Wilson, Ph.D., *Assistant Professor of English in Residence.*  
 Dean S. Worth, Ph.D., *Professor of Slavic Languages.*

### **The Undergraduate Major**

This major should be elected only by students with an exceptional interest in and aptitude for the study of languages and linguistics. It enables the undergraduate to gain substantial familiarity with several languages and types of linguistic structure, and to become conversant with the historical study of language and formal theories of linguistic analysis.

*Preparation for the Major.* In the lower division, in addition to the general University requirements, the student must complete the equivalent of the sixth quarter of work in two foreign languages, or the sixth quarter in one language and the third quarter in each of two others; Philosophy 31; and one course in Cultural Anthropology.

*Requirements for the Major.* A minimum of fourteen upper division courses of which nine must be in the Department of Linguistics. These nine must include Linguistics 100, 103, 110, 120, 160 and 190. The remaining eight courses must include English 121

and 122; three courses in a non-Indo-European language (which may, but need not, be in the Department of Linguistics, which offers African languages, Quechua, Thai, Hindi, and Tagalog); and three courses selected from Linguistics 105, 125, 150, 180, 185A-185B, Indo-European Studies 160, 161, 162, Philosophy 127A, 127B, 192, Psychology 122, Speech 103; or upper division courses in any foreign language for which the student's lower division preparation qualifies him.

### **The Graduate Linguistics Program**

The Programs leading to the M.A. and Ph.D. degrees in linguistics are open to qualified graduate students who are interested in the theory and methods of structural and historical linguistics. Preparation for graduate study in linguistics should be equivalent in as many respects as possible to the undergraduate curriculum in linguistics.

### **Admission to the Program**

In addition to meeting the requirements of the Graduate Division, the applicant

should have (1) an A.B. degree in linguistics or in a language or social science field, and (2) must have completed Linguistics 100 and 120 or their equivalents. For Programs A, B, and C, Linguistics 103 and 110 are also required. Letters from the applicant's former instructors should be provided, and the applicant should submit to the Chairman a detailed account of his aims in graduate study of linguistics and his background for it. Admission for the fall quarter will be granted only for students without undergraduate deficiencies, or for students with a full year of such deficiencies to make up. Students with less than one year of deficiency work will be admitted in the winter or spring quarters as needed to repair the deficiencies. Upon admission to graduate status, the student should consult the Chairman about the planning of his studies.

#### Requirements for the Master's Degree

**General Requirements.** See those of the Graduate Division.

**Plan and Language Requirements.** All candidates for the M.A. degree in linguistics are required to pass a comprehensive examination in accordance with the Comprehensive Examination Plan to be taken during the quarter following the completion of the courses required for the degree. During that quarter the student should ordinarily register for Linguistics 597, Preparation for Master's Comprehensive and Doctoral Qualifying Examinations. The comprehensives are offered twice a year, toward the end of the fall and spring quarters. A reading examination in one foreign language, ordinarily French, German, Spanish, or Russian, is required. With permission of the chairman, the candidate may substitute another language.

The M.A. degree is offered under four programs. These are programs (A) with theoretical and descriptive specialization, (B) with language-specific historical/comparative specialization, (C) with phonetic/experimental specialization, and (D) with specialization in relation to the teaching of English as a Second Language (TESL). These programs have little flexibility, since they are designed to provide the foundation necessary for advanced doctoral-level research in the field and must include all the fundamental theoretical and methodological concepts needed for that purpose. Programs A, B, and C are designed to lead on to the Ph.D. for students who intend to teach in colleges and universities. Program D is primarily for students who desire advanced training in linguistics

for its utility to other careers, such as the teaching of language. Those who take the M.A. degree in Program D may, on the recommendation of the faculty of the Department, proceed to the Ph.D., but they will not be eligible for qualifying examinations until they have completed the course requirements listed for one of the other programs.

1. Program A: Nine courses as follows: Linguistics 200A, 200B, 202, 205A, 205B, 210A, 210B; one option selected from 215, 220, or 225; and a second option selected from 215, 220, 225, 230A, 230B, or 235. Because these courses are arranged with interlocking prerequisites, the normal sequence in which they should be taken by full-time students is the following: fall—200A, 202, 205A; winter—200B, 205B, 210A; spring—210B and two options as above. Students who cannot carry a full course program and wish to spread their programs over a longer period will normally sequence their courses as follows: first year, fall—200A, 205A; winter—200B, 210A; spring—210B and one option; second year, fall—202 and one option; winter—205B.

2. Program B: Language-Specific Historical/Comparative Specialization. Program B is geared to the needs of those candidates who wish to combine work in general linguistic theory with in-depth studies in historical methodology and the comparative investigation of specific language families or sub-families. To this end the candidate must possess adequate advanced training in the language area of his choice and must select one of the fields currently designated for specialization. These fields are Ancient Indo-European, Germanic including English, Semitic, and Turkic. Others such as Romance and Finno-Ugric will be added as available staff permits.

Program B requires three areas of theoretical and descriptive work: phonology (courses 200A and 200B), grammar (courses 205A and 205B), and historical linguistics (course 202). The additional four courses required for the degree are chosen in consultation with appropriate advisers (Ancient Indo-European: Professors Anttila, Bimbaum, Puhvel, Schwartz, Wilbur, Worth; Germanic including English: Professors Chapman, Schwartz, Stockwell, Wilbur; Semitic: Professors Leslau, Buccellati, Krahmalkov; Turkic: Professors Tietze, Eckmann). The four courses in the language specialization must be selected from the follow-

ing lists: for Ancient Indo-European: Indo-European Studies 210 and three courses from Indo-European Studies 170 (or more advanced), 215A-215B, 218A-218B, 220A-220B, 222, 224, 225, 230A, Armenian 130A (or more advanced), German 231, Slavic 220A; for Germanic including English: German 230, English 210; one course chosen from German 231, 232, 233, Scandinavian 151 (or more advanced); one course chosen from German 217, English 212; for Semitic: two full course equivalents chosen from Semitics 280A-280B-280C and 290A-290B-290C and one advanced language course in each of two Semitic languages, chosen in consultation with the adviser; for Turkic: two full course equivalents chosen from Turkish 110A-110B-110C and 190A-190B-190C, and one advanced course in each of two Turkic languages, chosen in consultation with the adviser.

3. Program C: Nine courses as follows: Linguistics 200A, 200B, 205A, 205B, 210A, 210B, 225R, 230A, and 230B. Program C should be elected only if the candidate intends to pursue the doctorate in the phonetics channel.

4. Program D: Nine courses taken as graduate work, as follows: Linguistics 103, Linguistics 120; four courses selected from Linguistics 200A, 200B, 205A, 205B, 210A, 210B; three courses selected from the preceding or from Linguistics 110, 140, 202, 215-235, 260K, 261K, English 122 or 213, English 241, 250K. At least five of the nine courses must be graduate courses (200 series). Because most students in Program D have either taken the Certificate in the Teaching of English as a Second Language (the TESL certificate) in the year preceding their M.A. work in linguistics, or wish to combine the M.A. in linguistics with considerable advanced study in the English language and in English as a Second Language, consideration should be given to the following aspects of planning such a combined program: during the TESL year, students should complete all undergraduate linguistics deficiencies, in particular Linguistics 100 and 120; if they do not take a TESL year but wish to include key courses from the TESL program, they should take Linguistics 100 and 120 before the fall quarter (e.g., during the preceding summer session); and they should consult with a graduate adviser in the TESL program, as well as with an adviser in the Linguistics Department, regarding the planning of their programs.

### Requirements for the Doctor's Degree

Candidates for the Ph.D. degree in linguistics must have earned with distinction the M.A. degree in linguistics under Programs A, B, or C (or their equivalent, as demonstrated by passing the M.A. comprehensive examination), and must conform to the general requirements set by the Graduate Division for the Ph.D. degree.

Every candidate must take written and oral qualifying examinations in specified doctoral fields, as follows: If the student has come out of Program A and wishes to pursue the doctorate in the general linguistics channel, one field must be general linguistic theory. He must have two other fields, of which one is normally a specific language area, by which is meant one or two languages studied in depth, plus all that is known of their genetic, areal, and typological relationships to other languages; and the other is selected from mathematical and/or computational linguistics, sociolinguistics and/or ethnolinguistics, experimental and/or general phonetics, historical and comparative linguistics, psycholinguistics, or linguistics in relation to language teaching (the last two often combined).

If he has come out of Program B and wishes to pursue the doctorate in the historico-comparative channel, the student selects two fields, one of which is general linguistic theory and the other is the historico-comparative aspects of his Program B language specialization.

If he has come out of Program C and wishes to pursue the doctorate in the phonetics channel, the student selects two fields, one of which is general linguistic theory and the other is general and experimental phonetics, including detailed phonetic investigation within some particular language area.

Candidates in Programs A and C are expected to acquire experience in linguistic field work, in the course of which they may collect data for a dissertation.

(The dissertation and the final oral examination are required in accordance with the requirements of the Graduate Division.) Before the dissertation is begun, the subject must be approved by the faculty of the Department, on the basis of a prospectus submitted to the candidate's doctoral committee, with a copy to the Department. Prerequisite to such approval is a presentation by the candidate of the proposal and the preliminary research at a meeting of the Linguistics Colloquium. The Linguistics Colloquium has

biweekly meetings throughout the year. Advanced graduate students (beyond the comprehensive examinations) are required to participate.

All students are required to pass reading proficiency examinations in two languages approved by the faculty of the Department.

For information on student support in the form of fellowships, research assistantships, and teaching assistantships, consult the Chairman of the Department.

### Language Sections of the Department

The African Languages section of the Linguistics Department offers instruction in many of the major languages of Africa, relevant comparative-linguistics courses, and courses in African literature. The section on Indigenous Languages of Latin America offers instruction in Quechua and Nahuatl. The section on South Asian Languages offers instruction in Thai, Tagalog, and Hindi.

## General Linguistics

### Upper Division Courses

#### 100. Introduction to Linguistics.

(Formerly numbered 170. Same as Anthropology 112.) A beginning course in the descriptive and historical study of language: linguistic analysis; linguistic structures; language classification; language families of the world; language in its social and cultural setting.

Mr. Bright, Mr. Campbell, Mr. Hoijer

#### 103. Introduction to General Phonetics.

The phonetics of a variety of languages and the phonetic phenomena that occur in languages of the world. Extensive practice in the perception and production of such phenomena. A special section emphasizes those languages likely to be of interest to teachers of English as a Second Language.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

#### 105. Science of Speech.

(Same as Speech 104.) Prerequisite: course 100. An introduction to the anatomy and neuro-physiology of the speech organs in relation to the acoustic characteristics of the speech signal.

Mr. Allen, Mrs. Fromkin

#### 110. Introduction to Historical Linguistics.

(Formerly numbered 171. Same as Anthropology 113 and Indo-European Studies 149.) Prerequisite: course 100. The methods and theories appropriate to the historical study of language, such as the comparative method and method of internal reconstruction. Sound change, grammatical change, semantic change.

Mr. Anttila, Mr. Stockwell

#### 120. Linguistic Analysis.

(Formerly numbered 173. Same as Anthropology 114.) Prerequisite: course 100. Descriptive analysis of phonological and grammatical structures.

Mr. Bright

#### 123. Psycholinguistics.

(Same as Psychology 123.) A survey of current theory and research in psycholinguistics: the description of language in generative grammars; the acquisition of language by children; experiments on speech recognition, production and comprehension; errors in speech perception and production; speech physiology and pathology.

Mr. MacKay

#### 125. Cybernetics and Human Communication.

An introductory survey of the communication process from the point of view of linguistics, mathematics, engineering, physiology, and psychology.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

#### \*140. Linguistics in Relation to Other Disciplines.

(Formerly numbered 172.) Prerequisite: course 100. The role of linguistics in language learning, communications engineering, translation, literary criticism, psychology, and psychotherapy; recent developments in applied linguistics.

Miss Lastra

#### 150. Introduction to Indo-European Linguistics.

(Same as Indo-European Studies 150.) Prerequisite: one year of college level study (course 3 or better, 8 units minimum) of either Greek or Latin and either German or Russian. A survey of the Indo-European languages from ancient to modern times; their relationships and their chief characteristics.

Mr. Anttila, Mr. Puhvel

#### 160. History of Linguistics.

Prerequisite: course 120. Historical survey of the development of linguistics from Pāṇini to the present, including approaches to grammar, phonology, and language universals.

Mrs. Fromkin

#### 170. Language and Society: Introduction to Sociolinguistics.

(Same as Sociology 127.) Prerequisite: course 100. Study of the patterned covariation of language and society; social dialects and social styles in language; problems of multilingual societies.

Mr. Bright

#### 180. Mathematical Backgrounds for Linguistics.

Prerequisite: course 120. Introduction to selected topics in set theory, logic and formal systems, modern algebra, and automata theory, with elementary applications to linguistics. No previous mathematics assumed.

Mrs. Partee

#### 185A-185B. Linguistic Field Methods in

##### Anthropology.

(Same as Anthropology 185A-185B.) Prerequisite: course 100; course 185A is prerequisite to 185B. An introduction to linguistic field methods and analysis intended to prepare students to record and analyze linguistic data pertinent to ethnological studies. Informants will be used and emphasis will be placed on practical problems.

Mr. Hoijer, Miss Mathiot

#### 190. Language in Culture.

(Same as Anthropology 110.) The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning.

Miss Black, Mr. Hoijer, Miss Mathiot

#### 199. Special Studies in Linguistics. (½ or 1 course)

Prerequisite: course 120, and consent of instructor. May be repeated for credit.

The Staff

\* Not to be given, 1968-1969.

## Graduate Courses

Seminars (numbered 250 and above) may be repeated for credit, having been approved by the Graduate Council as nonrepetitive in content.

**200A. Phonology I.**

(Formerly numbered 200.) Prerequisite: courses 103 and 120. The nature of phonological theory; the relation between phonological and phonetic units; traditional and current views of phonological theory. Mr. Fromkin, Mr. Ladefoged

**200B. Phonology II.**

(Formerly numbered 203.) Prerequisite: course 200A. Generative phonology and phonological universals. Mr. Kelley, Mr. Schachter

**202. Historical Linguistics.**

(Same as Indo-European Studies 209.) Prerequisite: course 110 or equivalent. Advanced study of the comparative method, historical and internal reconstruction, internal and external borrowing. Mr. Anttila, Mr. Holjer

**205A. Grammatical Analysis I.**

(Formerly numbered 204.) Prerequisite: course 120. The form of grammars; word formation and sentence formation; formal and substantive universals in grammar; grammatical problems from a variety of languages. Mr. Kay, Mrs. Partee

**205B. Grammatical Analysis II.**

(Formerly numbered 205.) Prerequisite: course 205A. Theories of grammatical analysis; the variety of forms of grammar in contemporary descriptive practice, and their antecedents. Mr. Kay, Mrs. Partee

**210A. Field Methods I.**

(Formerly numbered 250A.) Prerequisite: courses 103 or 200A, and 205A; corequisite or prerequisite: course 200B. A language unknown to members of the class to be analyzed from data elicited from an informant. The term papers will be relatively full descriptive sketches of the language of the informant. Mr. Bright, Miss Lastra, Mr. Wellmers

**210B. Field Methods II.**

(Formerly numbered 250B.) Prerequisite: course 210A in the preceding quarter. Because different languages will be investigated in different years, 210B can only be taken as a direct continuation of 210A in the same year. When there are multiple sections, continuation must be in the same section. Mr. Bright, Miss Lastra, Mr. Wellmers

**215. Dialectology and Linguistic Geography.**

(Formerly numbered 206.) Prerequisite: course 120. A survey of current trends and modern methods used in structural dialectology and areal linguistics. Illustrative material from a variety of languages. Mrs. Lastra, Mr. Stockwell

**220. Linguistic Areas.**

Prerequisite: course 120; recommended preparation: courses 200B and 205A; may be repeated, in different sections, for credit. Analysis and classification of languages spoken in a particular area. Offered in one or more of the following sections each year. The Staff

220A. Africa. (Formerly numbered 216.)

220B. The Balkans.

- \*220C. South Asia. (Formerly numbered 218.)
- \*220D. Southeast Asia. (Formerly numbered 221.)
- \*220E. Australia.
- 220F. Aboriginal North America. (Formerly numbered 214. Same as Anthropology 214A.)
- \*220G. Aboriginal South America. (Same as Anthropology 214B.)
- \*220H. The Far East. (Formerly numbered 219.)

**225. Linguistic Structures.**

Prerequisite: course 120; recommended preparation: courses 200B and 205A; may be repeated, in different sections, for credit. Phonological and grammatical structure of a selected language, and its genetic relationships to others of its family. Though sectioned by families, the same language will not necessarily be the subject of study each time that family is offered. Offered in one or more of the following sections each year. The Staff

\*225A. Indo-European. (Formerly numbered 210.)

\*225B. Germanic. (Formerly numbered 212.)

\*225C. Slavic. (Formerly numbered 211. Same as Slavic 225.)

\*225D. Dravidian.

\*225E. Indo-Aryan.

\*225F. Uto-Aztecan.

\*225G. Romance.

225H. Japanese.

225J. Tai.

225K. Malayo-Polynesian. (Formerly numbered 220.)

225L. Finno-Ugric. (Formerly numbered 217. Same as Finno-Ugric Studies 210.)

225M. Berber. (Formerly numbered 215. Same as Berber 201.)

\*225N. Athabascan.

225P. Chinese.

225R. English Phonology. (Formerly numbered Speech 214.)

**230A. Experimental Methods in Linguistics.**

(Formerly numbered 207.) Prerequisite: course 200A. Techniques of experimental research in linguistics, including instrumentation in experimental phonetics and psycholinguistics, experimental design, and statistical evaluation. Mr. Allen

**230B. Experimental Design and Analysis.**

(Formerly numbered Speech 201.) Prerequisite: course 200A. Theory and practice, control and measurement encountered in experimental research in speech. Mr. Allen

**235. Mathematical Linguistics.**

(Formerly numbered 261B.) Prerequisite: course 180 or the equivalent. Formal properties of various types of grammars, including linear, context-free, and context-sensitive phrase structure grammars and unrestricted rewriting systems. Related formal properties of natural language. Mrs. Partee

**240A-240B. Computational Linguistics.**

(Formerly numbered 261C.) Prerequisite: course 180 or equivalent. Introduction to digital computers, algorithms and programming of linguistic tasks. Topics selected from dictionary maintenance and lookup, sentence generation and analysis, concordance construction, question answering, mechanical translation, etc. Mr. Kay, Mr. Kelley

\* Not to be given, 1968-1969.

**250A. Phonological Theory. Seminar.**

(Formerly numbered 255A.) Prerequisite: course 200B. Problems in phonological theory and in the phonological analysis of a variety of languages.

Mr. Kelley, Mr. Schachter

**250B. Grammatical Theory. Seminar.**

(Formerly numbered 255B.) Prerequisite: course 205B. Problems in grammatical and lexical theory and in the analysis of a variety of languages.

Mrs. Partee, Mr. Schachter, Mr. Stockwell

**250C. Topics in Linguistic Theory. Seminar.**

(Formerly numbered 255C.) Prerequisite: course 250B. The metatheory of language description and the history of linguistic theory.

The Staff

**255A. Acoustic Phonetics. Seminar.**

(Formerly numbered 267A.) Prerequisite: course 230A.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

**255B. General Phonetics. Seminar.**

(Formerly numbered 267B.) Prerequisite: course 200A.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

**255C. Physiological Phonetics. Seminar.**

(Formerly numbered 267C.) Prerequisite: course 200A.

Mr. Allen, Mrs. Fromkin, Mr. Ladefoged

**260A. Psycholinguistics I. Seminar.**

(Formerly numbered 262A. Same as Psychology 260A.) Prerequisite: course 230. Current psycholinguistic theory and research problems; coding and decoding; psycholinguistic parameters in language learning; speech recognition and perception.

Mr. Kelley, Mr. MacKay

**260B. Psycholinguistics II. Seminar.**

(Formerly numbered 262B. Same as Psychology 260B.) Prerequisite: course 260A or equivalent. Continuation of 260A.

Mr. Dowling, Mr. MacKay

**\*260K. Psycholinguistics and Language Teaching. Seminar.**

(Formerly numbered 262K. Same as English 260K.) Prerequisite: course 100, English 370K, and English 103K, or their equivalents with consent of instructor. An exploration of those areas of psycholinguistics covering foreign language acquisition; types and theories of bilingualism; learning theories underlying the current methods of teaching foreign languages; basic experimental designs to test existing assumptions about learning and teaching foreign languages.

The Staff

**261K. Bilingual Comparative Studies. Seminar.**

(Formerly numbered 251K. Same as English 251K.) Prerequisite: English 250K. The relationship of two languages in an incipient bilingual speaker, and the further study of the techniques of contrastive analysis as a means of predicting interference between linguistic systems, with applications to original research projects.

Mr. Bowen

**265A. Ethnolinguistics. Seminar.**

(Formerly numbered 263A. Same as Anthropology 263.) Prerequisite: consent of instructor. Problems in the relation of language to culture; structural semantics; language and prehistory.

Miss Black, Mr. Bright

\* Not to be given, 1968-1969.

**265B. Sociolinguistics. Seminar.**

(Formerly numbered 263B. Same as Sociology 278.) Prerequisite: course 170 or consent of instructor.

Mr. Bright

**270A. Historical Linguistics I. Seminar.**

(Formerly numbered 268A. Same as Indo-European Studies 270A.) Prerequisite: course 202. Course 270B is normally prerequisite of 270A. Problems in the use of the comparative method in historical linguistics.

Mr. Anttila

**270B. Historical Linguistics II. Seminar.**

(Formerly numbered 268B. Same as Indo-European Studies 270B.) Prerequisite: course 270A in the preceding quarter. Problems in the internal reconstruction of the history of languages.

Mr. Anttila

**Individual Study and Research****596A. Directed Studies. (¼ to 2 courses)**

(Formerly numbered 297.) Prerequisite: courses 200B and 205B. Up to one full course may be applied toward fulfillment of M.A. course requirements. Directed individual study or research. May be repeated for credit. Graded satisfactory/unsatisfactory.

The Staff

**596B. Directed Informant Work. (¼ to 2 courses)**

(Formerly numbered 298.) Prerequisite: pass with distinction on the M.A. comprehensive examination. Intensive informant work by students individually. May be repeated for credit. Graded satisfactory/unsatisfactory.

The Staff

**597. Preparation for Master's Comprehensive and Doctoral Qualifying Examinations. (¼ to 2 courses)**

Prerequisite: courses 200B and 205A. Can be taken only in the quarters in which the student expects to stand for his comprehensive or qualifying examinations. May not be applied toward fulfillment of M.A. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory.

The Staff

**599. Research for Dissertation. (¼ to 4 courses)**

(Formerly numbered 299.) Prerequisite: advancement to candidacy for the Ph.D. degree. May be repeated for credit. Graded satisfactory/unsatisfactory.

The Staff

**African Languages****Upper Division Courses****101A-101B-101C. Elementary Swahili.**

Five hours. The major language of East Africa, particularly Tanzania.

Mr. Longan

**102A-102B-102C. Intermediate Swahili.**

Five hours. Prerequisite: courses 101A-101B-101C or consent of the instructor.

Mr. Longan

**103A-103B. Advanced Swahili.**

Three hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Readings in Swahili literature and the contemporary press. Discussions mainly in Swahili.

Mr. Longan

**\*104A-104B-104C. Elementary Luganda.**

Five hours. A major language of Uganda.

The Staff

**\*107A-107B-107C. Elementary Sotho.**

Five hours. Southern Sotho, spoken primarily in Basutoland and Orange Free State, mutually intelligible with adjacent Northern Sotho and Tswana.

Mr. Kunene

**\*108A-108B-108C. Elementary Zulu.**

Five hours. The most widely spoken of the Nguni languages of South Africa, mutually intelligible with other members of this group.

Mr. Kunene

**\*109A-109B-109C. Elementary Xhosa.**

Five hours. A major Nguni language of South Africa, mutually intelligible with other members of this group.

Mr. Kunene

**110A-110B-110C. Intermediate Xhosa.**

Five hours. Prerequisite: courses 109A-109B-109C or consent of the instructor.

Mr. Kunene, Mr. Welmers

**111A-111B-111C. Elementary Yoruba.**

(Formerly numbered 267A.) Prerequisite: course 109.

Mr. Bright

**112A-112B-112C. Intermediate Yoruba.**

(Formerly numbered 122A-122B.) Five hours. Prerequisite: courses 111A-111B-111C or consent of the instructor.

Mr. Welmers

**113A-113B-113C. Elementary Igbo.**

Five hours. The major language of eastern Nigeria.

Mr. Welmers

**\*115A-115B-115C. Elementary Twi.**

(Formerly numbered 109A-109B.) Five hours. The major language of Ghana, including Ashanti, Fante, and other mutually intelligible dialects.

The Staff

**\*121A-121B-121C. Elementary Fula.**

Five hours. The language of the Fulani, spoken in widely scattered areas of West Africa, including major concentrations in Guinea and the Nigeria-Cameroon area.

The Staff

**131A-131B-131C. Elementary Bambara.**

(Formerly numbered 105A-105B.) Five hours. The major language of Mali, also widely spoken in adjacent parts of west Africa; includes Maninka (Malinke), Dyula, and other mutually intelligible dialects.

Mr. Welmers

**\*132A-132B-132C. Intermediate Bambara.**

Prerequisite: courses 131A-131B-131C or consent of instructor.

The Staff

**141A-141B-141C. Elementary Hausa.**

(Formerly numbered 112A-112B.) Five hours. The major language of northern Nigeria and adjacent areas.

The Staff

**142A-142B-142C. Intermediate Hausa.**

(Formerly numbered 113A-113B.) Five hours. Prerequisite: courses 141A-141B-141C or consent of the instructor.

The Staff

**\*150A-150B. African Literature in English Translation.**

Three hours. Courses 150A and 150B may be taken independently for credit. Narrative and didactic oral prose and poetry of sub-Saharan Africa, and written prose and poetry of South Africa.

Mr. Kunene

**190. Survey of African Languages.**

An introduction to the languages of Africa, their distribution and classification, and their phonological and grammatical structures; illustrations from several representative languages, with appropriate language laboratory demonstrations and drills.

Mr. Welmers

**\*192. Comparative Studies in African Languages.**

Prerequisite: two quarter courses in an African language, or course 190; Linguistics 110 is recommended as a prior or concurrent course. Comparison of structural and lexical features of a group of closely related languages, such as southern Bantu, southwestern Mande, Akan, or Senufo.

The Staff

**199. Special Studies in African Languages.**

( $\frac{1}{4}$  to  $1\frac{1}{2}$  courses)

Prerequisite: consent of the instructor. Instruction or supervised research based on the needs of the individual student, in any language or group of languages for which appropriate facilities are available.

The Staff

**Graduate Courses****\*201A-201B. Comparative Niger-Congo.**

Prerequisites: Linguistics 202, 220A; three quarter courses in one language selected from courses 101-131, 199. Investigation of relationships within the Niger-Congo family as a whole, or within selected branches of the family.

Mr. Welmers

**\*202A-202B. Comparative Bantu.**

Prerequisites: Linguistics 202, 220A; three quarter courses in one Bantu language selected from African Languages 101-109, 199. Investigation of relationships among the Bantu languages; the extent and external relationships of Bantu.

The Staff

**260. Seminar in African Languages.**

The Staff

**\*270. Seminar in African Literature.**

The Staff

**Individual Study and Research****596. Directed Studies. ( $\frac{1}{4}$  to 2 courses)**

Directed individual study or research. Up to one full course may be applied toward fulfillment of M.A. course requirements. May be repeated for credit. Graded satisfactory/unsatisfactory. The Staff

**Indigenous Languages of Latin America****Upper Division Courses****\*117. Introduction to Nahuatl Language and Literature.**

(Same as Anthropology 117.) Prerequisite: reading knowledge of Spanish. The Nahuatl (Aztec) language and historical sources published in Nahuatl.

Mr. Bright

**118A-118B-118C. Elementary Quechua.**

The language of the Incas and its present day dialects, as spoken in Andean South America.

Miss Lastra

**119A-119B-119C. Intermediate Quechua.**

Prerequisite: courses 118A-118B-118C.

Miss Lastra

\* Not to be given, 1968-1969.

**South Asian Languages**

Upper Division Courses

**151A-151B-151C. Elementary Thai.**

Five hours. The major language of Thailand.

Mr. Campbell

**161A-161B-161C. Elementary Tagalog.**

(Formerly numbered Oriental Languages 7A-7B-7C.) Five hours. The national language of the Philippines.

Mr. Bowen

**171A-171B-171C. Hindi.**

(Formerly numbered Indo-European Studies 190, 191, 192 and Oriental Languages 180A-180B.)

The Staff

Related Courses in Other Departments

(Other than Language Courses)

**Indo-European Studies (Department of Classics)** 210. Indo-European Linguistics: Advanced Course.

226. Celtic Linguistics.

280. Seminar in Indo-European Linguistics.

**English** 121. History of the English Language.  
122. The Structure of Modern American English.

212. History of the English Language.

213. The Development of Modern English.

240. Phonological Structure and Dialectology.

241. Grammatical and Lexical Structure.

250K. Contrastive Analysis of English and Other Languages.

**French** 204A. Phonology and Morphology from Vulgar Latin to French Classicism.

204B. Syntax and Semantics from Vulgar Latin to French Classicism.

**Germanic Languages** 117. Language and Linguistics.

217. History of the German Language.

230. Survey of Germanic Philology.

290. Seminar in Germanic Linguistics.

**Scandinavian Languages (Department of Germanic Languages)** 211. Typology of the Scandinavian Languages.

212. History of the Scandinavian Languages.

**Hebrew (Department of Near Eastern Languages)** 190A-190B. Survey of Hebrew Grammar.

210A-210B. History of the Hebrew Language.

**Semitics (Department of Near Eastern Languages)** 209A-209B-209C. Comparative Study of the Ethiopian Languages.

280A-280B-280C. Seminar in Comparative Semitics.

290A-290B-290C. Comparative Morphology of the Semitic Languages.

**Turkic Languages (Department of Near Eastern Languages)** 190A-190B-190C. Survey of the Turkic Languages.**Oriental Languages** 175A-175B. The Structures of the Chinese and Japanese Languages.

223. History of the Japanese Language.

**Philosophy** 127A-127B. Philosophy of Language.

192. Philosophy of Language.

237. Seminar: Philosophy of Language.

**Psychology** 122. Language and Communication.

202. Verbal Behavior and Thinking.

231. Seminar in Language and Communication.

**Slavic Languages** 202. Introduction to Comparative Slavic Linguistics.

242A-242B. Comparative Slavic Linguistics.

281. Seminar in Slavic Linguistics.

282. Seminar in Structural Analysis.

**Russian (Department of Slavic Languages)**

241. Russian Phonology.

242. Russian Morphology.

264A-264B. The Evolution of Literary Russian.

265. Russian Syntax.

**Spanish (Department of Spanish and Portuguese)** 100. Phonetics and Phonemics.

103. Morphology and Syntax.

115. Applied Linguistics.

118. History of the Spanish and Portuguese Languages.

203. The Development of the Spanish Language.

206. Linguistics.

209. Dialectology.

256A-256B. Studies in Linguistics and Dialectology.

**Portuguese (Department of Spanish and Portuguese)** 203. The Development of the Portuguese Language.**Speech**

102. Background and Theories of Oral Communication.

103. Phonetics of English.

## ■ MATHEMATICS

(Department Office, 6364 Mathematical Sciences Building)

- Richard Arens, Ph.D., *Professor of Mathematics.*  
 A. V. Balakrishnan, Ph.D., *Professor of Mathematics and Engineering.*  
 \*Edwin F. Beckenbach, Ph.D., *Professor of Mathematics.*  
 C. C. Chang, Ph.D., *Professor of Mathematics.*  
 †Earl A. Coddington, Ph.D., *Professor of Mathematics (Vice-Chairman—Graduate).*  
 Philip C. Curtis, Jr., Ph.D., *Professor of Mathematics (Vice-Chairman—Undergraduate).*  
 Henry A. Dye, Ph.D., *Professor of Mathematics.*  
 Thomas S. Ferguson, Ph.D., *Professor of Mathematics.*  
 Basil Gordon, Ph.D., *Professor of Mathematics.*  
 John W. Green, Ph.D., *Professor of Mathematics.*  
 †Magnus R. Hestenes, Ph.D., *Professor of Mathematics.*  
 Paul G. Hoel, Ph.D., *Professor of Mathematics.*  
 Alfred Horn, Ph.D., *Professor of Mathematics.*  
 S. T. Hu, Ph.D., *Professor of Mathematics.*  
 Paul B. Johnson, Ph.D., *Professor of Mathematics.*  
 \*\*Willem V. R. Malkus, Ph.D., *Professor of Mathematics and Geophysics.*  
 \*Theodore S. Motzkin, Ph.D., *Professor of Mathematics.*  
 Barrett O'Neill, Ph.D., *Professor of Mathematics.*  
 Lowell J. Paige, Ph.D., *Professor of Mathematics (Chairman of the Department).*  
 Raymond M. Redheffer, Ph.D., *Professor of Mathematics.*  
 †Leo Sario, Ph.D., *Professor of Mathematics.*  
 Robert H. Sorgenfrey, Ph.D., *Professor of Mathematics.*  
 †Robert Steinberg, Ph.D., *Professor of Mathematics.*  
 Ernst G. Straus, Ph.D., *Professor of Mathematics.*  
 J. Dean Swift, Ph.D., *Professor of Mathematics.*  
 Angus E. Taylor, Ph.D., *Professor of Mathematics.*  
 Charles B. Tompkins, Ph.D., *Professor of Mathematics.*  
 Frederick A. Valentine, Ph.D., *Professor of Mathematics.*  
 Clifford Bell, Ph.D., *Emeritus Professor of Mathematics.*  
 Paul H. Daus, Ph.D., *Emeritus Professor of Mathematics.*  
 I. S. Sokolnikoff, Ph.D., *Emeritus Professor of Mathematics.*  
 Donald G. Babbitt, Ph.D., *Associate Professor of Mathematics.*  
 Robert J. Blattner, Ph.D., *Associate Professor of Mathematics.*  
 David Cantor, Ph.D., *Associate Professor of Mathematics.*  
 T. Gamelin, Ph.D., *Associate Professor of Mathematics.*  
 Tilla Klotz, Ph.D., *Associate Professor of Mathematics.*  
 Paul J. Koosis, Ph.D., *Associate Professor of Mathematics.*  
 Sidney Port, Ph.D., *Associate Professor of Mathematics.*  
 William T. Puckett, Ph.D., *Associate Professor of Mathematics.*  
 †Charles J. Stone, Ph.D., *Associate Professor of Mathematics.*  
 \*V. S. Varadarajan, Ph.D., *Associate Professor of Mathematics.*  
 D. Ylvisaker, Ph.D., *Associate Professor of Mathematics.*

\* In residence spring quarter only, 1969.

† Absent on leave, fall quarter, 1968.

\* Absent on leave, spring quarter, 1969.

† Absent on leave, winter and spring quarter, 1969.

\*\* Member of the Institute of Geophysics and Planetary Physics.

† Absent on leave, 1968–1969.

† Absent on leave, fall and winter quarters, 1968–1969.

Leonard Asimow, Ph.D., *Assistant Professor of Mathematics.*  
 Kirby Baker, Ph.D., *Assistant Professor of Mathematics.*  
 Donald G. Babbitt, Ph.D., *Assistant Professor of Mathematics.*  
 \*A. Robert Brodsky, Ph.D., *Assistant Professor of Mathematics.*  
 Robert F. Brown, Ph.D., *Assistant Professor of Mathematics.*  
 Douglas Clark, Ph.D., *Assistant Professor of Mathematics.*  
 \*Rodolfo DeSapio, Ph.D., *Assistant Professor of Mathematics.*  
 Hector Fattorini, Ph.D., *Assistant Professor of Mathematics.*  
 Burton Fein, Ph.D., *Assistant Professor of Mathematics.*  
 Fred Galvin, Ph.D., *Assistant Professor of Mathematics.*  
 John Garnett, Ph.D., *Assistant Professor of Mathematics.*  
 †David Gillman, Ph.D., *Assistant Professor of Mathematics.*  
 Nathaniel Grossman, Ph.D., *Assistant Professor of Mathematics.*  
 Alfred W. Hales, Ph.D., *Assistant Professor of Mathematics.*  
 Richard Herman, Ph.D., *Assistant Professor of Mathematics.*  
 Albert E. Hurd, Ph.D., *Assistant Professor of Mathematics.*  
 William B. Jones, Ph.D., *Assistant Professor of Mathematics.*  
 \*Robion C. Kirby, Ph.D., *Assistant Professor of Mathematics.*  
 Jerome Malitz, Ph.D., *Assistant Professor of Mathematics.*  
 Ronald Miech, Ph.D., *Assistant Professor of Mathematics.*  
 Yiannis N. Moschovakis, Ph.D., *Assistant Professor of Mathematics.*  
 David Sanchez, Ph.D., *Assistant Professor of Mathematics.*  
 David H. Sattinger, Ph.D., *Assistant Professor of Mathematics.*  
 Cedric F. Schubert, Ph.D., *Assistant Professor of Mathematics.*  
 \*Edmund B. Staples, Ph.D., *Assistant Professor of Mathematics.*  
 Bertram Walsh, Ph.D., *Assistant Professor of Mathematics.*  
 \*Joseph M. Weinstein, Ph.D., *Assistant Professor of Mathematics.*  
 Guy H. Hunt, C.E., *Assistant Professor of Mathematics, Emeritus.*  
 Euphemia R. Worthington, Ph.D., *Assistant Professor of Mathematics, Emeritus.*



S. Agmon, Ph.D., *Visiting Professor of Mathematics.*  
 J. Cea, Ph.D., *Visiting Assistant Professor of Mathematics.*  
 †Lamberto Cesari, Ph.D., *Visiting Professor of Mathematics.*  
 Jack Hale, Ph.D., *Visiting Professor of Mathematics.*  
 Kenneth Hannsgen, Ph.D., *Acting Assistant Professor of Mathematics.*  
 William Harris, Ph.D., *Visiting Professor of Mathematics.*  
 \*P. K. Henrici, Ph.D., *Visiting Professor of Mathematics.*  
 Robert Herrera, M.A., *Lecturer in Mathematics.*  
 L. Howard, Ph.D., *Visiting Professor of Mathematics.*  
 Robert I. Jennrich, Ph.D., *Lecturer in Mathematics and Assistant Professor of Bio-mathematics in Residence.*  
 Jan E. Kučera, Ph.D., *Visiting Assistant Professor of Mathematics.*  
 John McGhee, M.A., *Lecturer in Mathematics.*  
 John Miller, Ph.D., *Acting Assistant Professor of Mathematics.*  
 John Milnor, Ph.D., *Visiting Professor of Mathematics.*  
 Kalyan Mukhervea, Ph.D., *Acting Assistant Professor of Mathematics.*  
 \*Y. Sibuya, Ph.D., *Visiting Professor of Mathematics.*  
 James White, Ph.D., *Acting Assistant Professor of Mathematics.*

† Absent on leave, 1968–1969.

\* In residence winter quarter only, 1969.

\* In residence spring quarter only, 1969.

\* Absent on leave, fall quarter, 1968.

\* Absent on leave, spring quarter, 1969.

### Preparation for the Major

Courses 11A-11B-11C, 12A-12B-12C or the corresponding courses in the honors sequence. These courses must be completed with an average grade of C or higher. Prospective majors who qualify are strongly urged to take the honors sequence Mathematics 11AH-11BH-11CH, 12AH-12BH-12CH. Three courses in physical sciences other than mathematics; the courses may be in physics, astronomy, chemistry or meteorology; the general physical science sequence is also acceptable. Recommended: courses in physics. A reading knowledge of French, German or Russian is strongly recommended and the student should select his foreign language to this end.

### Transfer Students

Transfer students must consult with a departmental adviser at their earliest opportunity. Particular areas where evaluation and direction may be necessary are linear algebra and differential equations. Students with less than a half-course credit of linear algebra should plan to take course 12A. The requirement for linear algebra may also be satisfied by taking a final examination for course 12A. Those with more than a half course but less than a full course should discuss their eligibility for entrance to course 110A. Students with a half course or more of differential equations may upon the approval of an adviser satisfy the requirements for course 130A by taking course 133.

### The Major in Mathematics

Courses 110A, 120A, 130A, 131A, and at least six additional courses in the 100 series numbered higher than 105. At least one course must be the B course in a sequence. Highly recommended for students who may wish to obtain a graduate degree: courses 110B-110C, 121 and 131B.

### The Major in the Teaching of Mathematics

Courses 101A-101B-101C, 102A-102B-102C, 370 and at least three other courses in the 100 series beyond 105. Highly recommended are courses 106, 130A, 141A, 152A. Other recommended courses include 107, 111A-111B-111C, 120A-120B-120C, 130B-130C, 132, 141B-141C, 152B.

### The Teaching Minor

Course 370 and seven and a half additional courses. The courses recommended for candidates for the standard secondary credential are 1, 2A-2B-2C or 3A-3B-3C or 11A-11B-11C, 41, 50, 103A-103B. Students are re-

quired to consult a departmental adviser. Lists of recommended courses for other credentials are available from departmental advisers or the School of Education.

### Conflicts or Duplication of Calculus Sequences

Since each of the sequences 2A-2B-2C, 3A-3B-3C, 11A-11B-11C-12A-12B-12C, 11A-11B-11C-13A-13B-13C has been designed in accordance with the requirements of majors in a particular group of departments, it will be difficult for students to transfer from one sequence to another. Good students who wish to pursue advanced mathematics should be able to enter 12A or 13A after completing 3C. Students wishing to continue in mathematics after completing 2C should take 3C, followed by 12A or 13A. Other changes should be made only with the concurrence of a departmental adviser who will determine the total allowable credit. Similar caution applies to transfer students entering with incomplete calculus sequences. Such students should be prepared to supply complete information as to texts used and chapters covered in their previous work. A placement examination, described below, may be required.

### Undergraduate Placement Examinations

An examination covering high school algebra and trigonometry is given each quarter during registration week. The exact time and place will be posted on the departmental bulletin board. This examination determines which students may be exempt from the prerequisites to courses 2A, 3A, 11A and which students are to be considered for course 11AH. No permanent records are kept and no penalty is attached to poor performance on this examination.

A student entering from high school who believes that he has had the equivalent of a course offered by the Department of Mathematics may demonstrate his proficiency in this course by examination. If, in the opinion of the Department, his level of achievement is sufficiently high, he will be permitted to enter the next course in the sequence. No University credit is earned by passing such an examination. Arrangements for such an examination must be made with the Department secretary in room 6356, Mathematical Sciences Building, on or before the Monday of registration week. Departmental advisers may request transfer students to take similar examinations as an aid in determining the correct sequence and course for initial placement.

**Requirements for the Master's Degree**

Candidates for the degree of Master of Arts in mathematics must qualify under The Comprehensive Examination Plan. For the general requirements, see pages 136-140. Eleven quarter courses must be offered. One alternative is to offer eight or more courses in the graduate list; the remainder may be approved upper division courses. The other alternative involves the preparation of a report under the direction of some member of the Department. This is a project designed to train the student in independent study of mathematical literature and the reduction to orderly form of the knowledge thus gained. This alternative requires six or more graduate courses and the remainder approved undergraduate courses; the preparation of the report may be given credit as one of the graduate courses. The candidate must pass a set of qualifying written examinations, one in basic analysis and one in basic algebra.

**Requirements for the Master of Arts in Teaching (M.A.T.) Degree**

The Department also offers a program leading to the degree of Master of Arts in Teaching (M.A.T.). Seven courses in mathematics are required, of which six are in the 200 series. Recommended are several courses of particular value to teachers, one of which leads to the preparation of a Master's essay. In addition, three courses in the Department of Education are required, as well as the course in supervised teaching. The comprehensive examinations cover both subject matter based upon the mathematical requirements and the content and philosophy of school mathematics. A variation of this program is available for those interested in a junior college credential.

**Requirements for the Doctor's Degree**

The requirements are, in general, in accordance with those listed under general requirements for the doctor's degree, pages 140-142. At present, the qualifying examinations which must be taken within the Department before the student is advanced to candidacy consist of an examination divided into four parts. The parts consist of (1) algebra, (2) real analysis, (3) complex analysis, and (4) mathematical electives. These written examinations are given twice each year; the student normally should take them during his second year of graduate study. As an additional requirement for the Ph.D. degree, students are required to actively participate in

two seminars during the course of their graduate study.

**Applied Mathematics Program**

An interdisciplinary program in applied mathematics leading to a Ph.D. degree is available. Usually three qualifying examinations are required before the student is advanced to candidacy: one in real and complex analysis, one in the specialized field, and one chosen from algebra and geometry, applied analysis, or statistics and random processes. There is considerable flexibility, both with respect to examinations and programs. Students interested in this program should consult a member of the Committee on Applied Mathematics: E. F. Beckenbach (Chairman), A. V. Balakrishnan, M. R. Hestenes, W. Malkus, C. Schubert.

**Foreign Language**

No foreign language is required for the M.A. degree. For the Ph.D. degree, one foreign language is required. Preferred languages are French, German and Russian.

**Lower Division Courses****1. College Algebra.**

Not open for credit to students who have credit for other mathematics courses except 38, 41, 50 and 100. Sets, real and complex numbers, fundamental operations, inequalities, relations and functions, set functions, polynomial, exponential, and trigonometric functions and their graphs; matrices, determinants, permutations, combinations, binomial theorem, sequences and series.

**2A-2B-2C. Mathematics for Social Science Students.**

Prerequisite: three years of high school mathematics or course 1. 2A: finite mathematics consisting of elementary logic, sets, combinatorics, probability, vectors and matrices. 2B: functions, graphs, differentiation and integration with applications from social sciences. 2C: linear equations, matrices, determinants, vector spaces, linear programming.

**3A-3B-3C. Calculus for Life Science Students.**

Prerequisite: three years of high school mathematics (including trigonometry) or course 1 or 2A. Course 3A is not open for credit to students with credit in another calculus sequence. 3A: techniques and applications of the differential calculus. 3B: techniques and applications of the integral calculus. 3C: prerequisite: course 2C or 3B. Functions of several variables, vectors, partial differentiation, and multiple integration.

**11A-11B-11C. Calculus and Analytic Geometry—Initial Sequence.**

Prerequisite: at least three years of high school mathematics including some coordinate geometry and trigonometry, or the passing of a special examination. 11A: Introduction to differentiation and integration with applications. 11B: Transcendental functions, extremal problems, techniques and appli-

cations of integration, elementary differential equations. 11C: Vectors and curves in two and three dimensions, infinite series.

### 11AH-11BH-11CH. Calculus and Analytic Geometry—Initial Honors Sequence.

Prerequisite: satisfactory performance on a placement examination and consent of the instructor. An honors sequence parallel to 11A-11B-11C.

### 12A-12B-12C. Linear Algebra and Calculus.

Prerequisite: course 11C, or 3C or consent of the instructor. 12A: Linear algebra, including real vector spaces, linear transformations, matrices and determinants. 12B: Vector differential calculus, line integrals, Green's theorem. 12C: Multiple integration, surface integrals, Stokes' theorem.

### 12AH-12BH-12CH. Linear Algebra and Calculus—Honors Sequence.

Prerequisite: course 11CH, or 11C with grade A or consent of the instructor. An honors sequence parallel to 12A-12B-12C.

### 13A-13B-13C. Intermediate Calculus and Applications.

Prerequisite: course 11C, 3C or consent of the instructor. 13A: Vectors and determinants, linear differential equations, partial differentiation. 13B: Laplace transforms, power and Fourier series, differential equations with variable coefficients. 13C: Line and surface integrals, field theory, introduction to coordinate transformations.

### 38. Fundamentals of Arithmetic.

Prerequisite: sophomore standing. Designed for prospective teachers of arithmetic. The study of the structure of the real numbers. Theory of the structure, arithmetic and algebra of the real number system, together with suitable visual aids. Although efficiency in arithmetical skills is required, the emphasis is on the understanding of arithmetical procedures.

### 41. Introduction to Coding for Automatic Digital Computers. (½ course)

Not open for credit to students having credit for a course in the 141A-141B-141C sequence. Binary arithmetic; standard machine operations; coding commands; iterations of most frequent use; applications to computers on this campus.

### 50. Elementary Statistics.

(Formerly numbered Statistics 1.) Not open for credit to students having credit for an advanced statistics course. Emphasis is placed on the understanding of statistical methods. Topics covered are empirical and theoretical frequency distributions, sampling, estimation, hypothesis testing, correlation, regression, modern techniques.

#### Upper Division Courses

### GENERAL AND TEACHER TRAINING

### 100. The Nature of Mathematics.

Prerequisite: junior standing. Not open to students majoring in mathematics, engineering, or physical science. A course designed to acquaint students with the arts, humanities, and social sciences with the nature of modern mathematics and the mathematical method.

### 101A-101B-101C. Topics in Algebra.

Prerequisite: course 12A. 101A is not open to students having credit for mathematics 110A. A sequence intended primarily for prospective secondary teachers. Group theory, numbers and number systems, relations and equivalence, topics from elementary number theory, the rational numbers, integral domains, rings and fields, the real numbers, cardinals, complex numbers, polynomials, vector spaces, nonconstructibility, nonsolvability.

### 102A-102B-102C. Topics in Geometry.

Prerequisite: course 12C. A sequence intended primarily for prospective secondary teachers. Axiomatic methods, advanced topics in Euclidean geometry, hyperbolic and other geometries, constructions, symmetries, isometry and related topics, projective geometry, map coloring, Jordan curve theorem.

### 103A-103B. Fundamental Concepts of Algebra and Geometry.

(Formerly numbered 101A-101B.) Prerequisite: course 2C or 3B. Designed for the general secondary candidate with a mathematics minor who is not majoring in one of the physical sciences. Number systems, logical concepts, algebraic operations, determinants and matrices. Deductive geometry, axiomatic approach and application to Euclidean geometry, non-Euclidean geometry, projective, metric, and affine geometry.

### 106. History of Mathematics.

(Formerly numbered 160.) Prerequisite: course 11C or 3C. Topics in the history of mathematics with emphasis on the development of modern mathematics.

### 107. Mathematical Ideas.

(Formerly numbered 114.) Prerequisite: course 12C or 13C. Postulational methods, sets, equivalence, cardinals; number systems, integers, reals, complex numbers; geometry, Euclid's axioms, alternative systems, non-Euclidean spaces; functions and limits; topology of convex sets, convex functions, fixed point theorem, fundamental theorem of algebra and related concepts.

### 109. Directed Individual and Group Studies.

(½ to 1 course)

Prerequisite: departmental approval. At the discretion of the chairman and subject to the availability of staff, individuals or groups may study topics suitable for undergraduate course credit but not specifically offered as separate courses. From time to time undergraduate research participation programs may be announced under this title.

### ALGEBRA, NUMBER THEORY AND LOGIC

### 110A-110B-110C. Algebra.

(Formerly numbered 111A-111B.) Prerequisite: course 12A. Course 110A is not open to students having credit for Mathematics 101A. Integral domains, fields, polynomial domains, factorization theory, groups, vector spaces and linear transformations, rational and Jordan canonical forms, quadratic and Hermitian forms. Rings and ideals, linear algebras, field extensions, algebraic numbers, Galois theory.

**111A-111B-111C. Theory of Numbers.**

(Formerly numbered 115A-115B.) Prerequisite: course 12A or consent of the instructor. Divisibility, congruences, Diophantine analysis, selected topics in the theory of primes, algebraic number theory, Diophantine equations.

**112A-112B-112C. Set Theory and Logic.**

(Formerly numbered 127A-127B.) Course 112A deals with informal axiomatic set theory presented as a foundation for modern mathematics. 112B and 112C cover predicate logic, formalized theories, Gödel's completeness and incompleteness theorems.

**GEOMETRY AND TOPOLOGY****120A-120B. Differential Geometry.**

(Formerly numbered 113A-113B.) Prerequisite: course 12C or 13C. Curves in 3-space, Frenet formulas, surfaces in 3-space, normal curvature, Gaussian curvature. Congruence of curves and of surfaces. Intrinsic geometry of surfaces, isometries, geodesics, Gauss-Bonnet theorem.

**121. Introduction to Topology.**

Prerequisite: course 131A. Metric and topological spaces, topological properties, completeness, mappings and homeomorphisms, the metrization problem.

**ANALYSIS****130A-130B-130C. Differential Equations.**

(Formerly numbered 119A-119B.) Prerequisite to course 130A: course 12B. Course 130A is not open for credit to students who have credit for course 13A. Prerequisite to course 130B: 130A or 13B and 133. Linear ordinary equations and systems, existence and uniqueness of solutions, self-adjoint eigenvalue problems, first and second order linear partial differential equations, separation of variables, special equations and techniques, harmonic functions.

**131A-131B. Analysis.**

(Formerly numbered 122A-122B.) Prerequisite: course 12C or 13C. Completeness of the real line; countable and uncountable sets; neighborhoods, open, closed, compact and connected sets; continuous functions of one variable; convergence of sequences and series, uniform convergence; differentiation theory for mappings between Euclidean spaces.

**131C. Measure and Integration.**

Prerequisite: course 131B or consent of the instructor. An introduction to Lebesgue measure and integration.

**132. Introduction to Complex Analysis.**

(Formerly numbered 185.) Prerequisite: course 12C or 13C. Complex numbers, functions, differentiability, series, extensions of elementary functions, integrals, calculus of residues, conformal maps and mapping functions with applications.

**133. Differential Equations. (½ course)**

Prerequisite: course 12C or 13C. Not open for credit for students having credit for course 130A. A course primarily intended for transfer students with credit for less than one course in differential equations. Existence and uniqueness theorems for differential equations.

**APPLIED MATHEMATICS****140A-140B-140C. Numerical Analysis.**

(Formerly numbered 135A-135B.) Prerequisite: course 130A. Interpolation and approximation, numerical differentiation and integration, solution of nonlinear equations, error analysis; numerical methods in linear algebra; numerical methods in ordinary differential equations.

**141A-141B-141C. Mathematical Theory of Computing Machines.**

(Formerly numbered 139A-139B.) Prerequisite: course 130A (which may be concurrent with 141A) and course 41 or the equivalent knowledge of coding. The mathematics governing effective design of computing machines and efficient preparation of problems for computation.

**142. Potential Theory.**

(Formerly numbered 128.) Prerequisite: course 12C or 13C; recommended: one year of college physics. Vector fields, divergence and Stokes' theorems, Newtonian potential, harmonic functions, Green's function, special problems.

**143. Analytic Mechanics.**

(Numbered 143A-143B in 1966-67.) Prerequisite: course 130A. Foundations of Newtonian mechanics, kinematics and dynamics of a rigid body, variational principles and Lagrange's equations; calculus of variations, variable mass; related topics in applied mathematics.

**144. Theory of Games and Linear Programming.**

Prerequisite: course 12A. The basic theorems of two person zero-sum matrix games including the minimax theorem; applications to games of chance and strategy; principles of linear programming, the duality theorem, and simplex methods; applications to industrial and business problems.

**PROBABILITY AND STATISTICS****150A-150B-150C. Probability and Statistics.**

(Formerly numbered 150A and 151A-151B.) Prerequisite: course 12C or 13C and, for 150C, course 131A. The first two quarters constitute a basic introduction to the theory of probability and statistics. The third quarter will be devoted to more advanced topics, as selected by the instructor.

**152A-152B. Applied Mathematical Statistics.**

(Formerly numbered Statistics 131A-131B.) Prerequisite: course 12C or 13C or consent of the instructor. Credit will not be allowed for both course 152A and 150B. A basic introductory course in the theory and application of statistical methods. This course is designed for students who wish to learn statistical methods without first taking a course in probability and who are interested in applications.

**Graduate Courses****TEACHER PREPARATION****201A-201B-201C. Topics in Algebra and Analysis.**

(Formerly numbered 284A-284B.) Prerequisite: B.A. degree with mathematics major or equivalent. A course for students in the mathematics-education program. Important ideas of algebra, geometry and calculus leading effectively from elementary to modern mathematics. Approaches to the number

system, point sets, geometric interpretations of algebra and analysis, integration, differentiation, series and analytic functions.

## 202A-202B. Mathematical Models and Applications.

(Formerly numbered 280.) Prerequisite: B.A. degree with mathematics major or equivalent. A course designed for students in the Mathematics-Education program. A development of mathematical theories describing various empirical situations. Basic characterizing postulates are discussed and a logical structure of theorems developed. Modern topics such as operations research, linear programming, game theory, learning models, models in social and life sciences.

## NUMBER THEORY

### 205A-205B-205C. Number Theory.

(Formerly numbered 205 and 206.) Prerequisite: courses 246A and 210A or consent of the instructor. Topics from analytic algebraic and geometric number theory, including distribution of primes and factorization in algebraic number fields. Also selected topics from additive number theory, Diophantine approximation, partitions, class-field theory, lattice point problems, valuation theory, etc.

### 206. Combinatorics.

Prerequisite: consent of the instructor. Selected topics from: combinatorial structures and their automorphism groups; counting principles of Sylvestor and Polya; partitions, coloring problems, binary structures, polyhedral structures, generating functions, combinatorial problems in geometry, number theory and statistics.

## ALGEBRA

### 210A-210B-210C. Algebra.

(Formerly numbered 221A-221B.) Prerequisite: course 110A-110B-110C or consent of the instructor. Group theory including the theorems of Sylow and Jordan-Hölder-Schreier; rings and ideals, factorization theory in integral domains, modules over principal ideal rings, Galois theory of fields, multilinear algebra, structure of algebras.

### 211. Structure of Rings.

Prerequisite: course 210A or consent of the instructor. The radical, irreducible modules and primitive rings, rings and algebras with minimum condition.

### 212. Homological Algebra.

Prerequisite: course 210A or consent of the instructor. Modules over a ring, homomorphisms and tensor products of modules, functors and derived functors, homological dimension of rings and modules.

### 213A-213B. Theory of Groups.

(Formerly numbered 222.) Prerequisite: course 210A or consent of the instructor. Topics chosen from representation theory, transfer theory, infinite Abelian groups, free products and presentations of groups, solvable and nilpotent groups, classical groups, algebraic groups.

### 214A-214B. Algebraic Geometry.

(Formerly numbered 212.) Prerequisite: course 210A or consent of the instructor. Preliminaries

from the theory of commutative rings and algebras. Theory of algebraic varieties. Topics chosen from plane curves, resolution of singularities, invariant theory, intersection theory, divisors and linear systems.

## LOGIC AND FOUNDATIONS

### 220A. Mathematical Logic. Model Theory.

Prerequisite: courses 112A-112B-112C or equivalent. Algebraic operations on models; the compactness theorem and applications; elementary submodels and extensions; the Lowenheim-Skolem theorems; saturated and special models and applications; properties preserved under algebraic operations; definability; cardinality problems; categoricity; model theory for richer than first-order languages.

### 220B. Mathematical Logic. Decidability and Undecidability.

Prerequisite: course 220A or consent of the instructor. The Gödel incompleteness theorem for arithmetic and related first-order theories; proofs of undecidability; tests and methods for proving completeness; the decision problem for certain theories, including possibly the more advanced topics of real closed fields, the word problem for groups, and Hilbert's tenth problem.

### 220C. Mathematical Logic. Recursive Functions.

Prerequisite: course 220B or consent of the instructor. Recursive functions and predicates; computability and recursiveness (Church's thesis); the arithmetical hierarchy; Post's theorem; partial recursive functions and functionals; the analytical hierarchy; the hyperarithmetical hierarchy; possibly other advanced topics, for example, in the analytical hierarchy, in classical set theory, and in model theory.

### 221A-221B-221C. Set Theory.

(Formerly numbered 231A-231B. Same as Philosophy 221A-221B-221C.) Prerequisite: course 112A or Philosophy 3. Students may not receive credit for both Mathematics 221A-221B-221C and Philosophy 221A-221B-221C. Sets, relations, functions. Partial and total orderings; well-orderings. Ordinal and cardinal arithmetic, finiteness and infinity, the continuum hypothesis, inaccessible numbers. Formalization of set theory, Zermelo-Fraenkel theory, von Neumann-Gödel theory. Constructibility. Results on relative consistency and independence.

### 222A-222B. Distributive Lattices and Boolean Algebras.

(Formerly numbered 239.) Prerequisite: course 121 or 235A or consent of the instructor. Partially ordered sets, lattices, distributivity laws, completeness properties, ideal theory, Heyting algebras, Boolean algebras, closure algebras, representation theory, applications to topology and logic.

### 223. Advanced Topics in Mathematical Logic.

Prerequisite: consent of the instructor. Content will vary from quarter to quarter.

## GEOMETRY

### 225. Differentiable Manifolds.

(Formerly numbered 216.) Prerequisite: course 131A or 120A-120B. Fundamentals of manifold theory: vector fields and integral curves, the calculus of differential forms. Submanifolds, Fröbenius

theorem. Stokes' theorem. Mappings, covering manifolds.

### 226A-226B-226C. Differential Geometry.

(Formerly numbered 210A-210B.) Prerequisite: course 225 or consent of the instructor. Connections, curvature and torsion, covariant differentiation, holonomy, Riemannian geometry, completeness manifolds of constant curvature. Variation theory of geodesics; conjugate points, Myers and Synge theorems. Isometric imbeddings. Selections from Kähler manifolds, symmetric spaces, or the generalized Gauss-Bonnet theorem.

### 227A-227B. Fibre Bundles.

Prerequisite: course 225, and for 227B one quarter of algebraic topology. Principal bundles, associated bundles, bundle maps. Coset manifolds, covering spaces. Vector bundles, characteristic classes, the Euler class. Sheaves, de Rham theorem.

### 228A-228B. Convex Sets.

(Formerly numbered 214.) Prerequisite: course 121 or 245A or consent of the instructor. Basic concepts for convex sets in topological linear spaces; separation theorems and support functions; local convexity; convex functions; Helly type theorems; duality. Course 228B will contain selected topics from current literature on convexity and research problems.

### 229A-229B. Lie Groups.

(Formerly numbered 235.) Prerequisite: course 225. Lie algebra of a Lie group, exponential mapping, analytic homomorphisms, covering groups. The correspondence between subalgebras and subgroups. Classical groups. Semisimple groups and algebras.

## TOPOLOGY

### 235A-235B. Topology.

(Formerly numbered 226A-226B.) Prerequisite: courses 131A-131B and 110A or consent of the instructor. Sets and functions, spaces and maps, sum and product of spaces, quotient spaces, homotopy and isotopy; separation axioms, compactness, convergence, connectedness; embedding and extension theorems, metrizable and metric spaces; polyhedra, fundamental groups.

### 236. General Topology.

Prerequisite: course 121 or 235A, or consent of the instructor. Topics in nonalgebraic topology, e.g., function spaces, uniform spaces, introduction to dimension theory.

### 237A-237B. Homology Theory.

Prerequisite: course 235B or consent of the instructor. Axioms of homology theory, computation of homology groups; singular theory; Čech theory; simplicial or cellular theory; cup and cap products, cohomology operations; duality theorems; further topics.

### 238A-238B. Homotopy Theory.

Prerequisite: course 235B or consent of the instructor. Main problems in homotopy theory and their relations; Hopf theorems; fiber spaces, covering spaces; homotopy groups, axiomatic approach,  $n$ -connective fiberings, Freudenthal's suspensions; obstruction theory; exact couples and spectral sequences.

## ANALYSIS AND DIFFERENTIAL EQUATIONS

### 245A-245B-245C. Real Analysis.

(Formerly numbered 209A-209B.) Prerequisite: courses 131A-131B-131C or the equivalent. Point-set topology in Euclidean and other spaces. Real functions. Integrals and measures. Convergence and approximation theorems for classes of functions. Differentiation and integration. Absolutely continuous functions. The  $L_p$ -spaces. Multiple integrals. Fubini's theorem, set functions and the Radon-Nikodym theorem.

### 246A-246B-246C. Complex Analysis.

(Formerly numbered 224A-224B.) Prerequisite: courses 131A-131B-131C. Introduction to the rigorous theory of functions of a complex variable. Linear transformations, conformal mappings, general form of Cauchy's theorem, calculus of residues, power series, partial fractions, infinite products, Riemann mapping theorem, Dirichlet problem, analytic continuation, monodromy theorem.

### 247A-247B-247C. Topics in Advanced Complex Analysis.

(Formerly numbered 234A-234B.) Prerequisite: courses 246A-246B-246C, the last previously or concurrently. Introduction to a special field of higher complex analysis, e.g., univalent functions, Riemann surfaces, capacity functions, value distribution theory, meromorphic curves, several complex variables, subharmonic functions, harmonic functions and forms. The content of the course varies from year to year.

### 248A-248B. Trigonometrical Series.

(Formerly numbered 227.) Prerequisite: course 246A or 245A, taken previously or concurrently; or consent of the instructor. Selected topics in Fourier series, power series, orthogonal polynomials, almost periodic functions, and completeness of sets of functions.

### 249A-249B-249C. Calculus of Variations.

(Formerly numbered 237A-237B.) Prerequisite: courses 246A, 245A, or consent of the instructor. Conditions for minima or maxima of functionals. The problems of Lagrange, Bolza, and Mayer, with or without inequality constraints. Mathematical aspects of optimal control theory. Multiple integral problems. The theory of quadratic forms in Hilbert space with applications to elliptic partial differential equations. Existence theorems.

### 250A. Differential Equations.

Prerequisite: course 246A. Basic theory of ordinary differential equations. Existence and uniqueness of solutions. Continuity with respect to initial conditions and parameters. Linear systems and  $n$ -th order equations. Analytic systems with isolated singularities of the first and second kind. Self-adjoint boundary value problems on finite intervals.

### 250B. Differential Equations.

Prerequisite: course 250A. Basic results for partial differential equations. Cauchy-Kowalewski theorems. Classification of second order differential operators. Basic classical theory of the Laplace equation (potential theory), the heat equations, and the wave equations.

### 250C. Nonlinear Ordinary Differential Equations.

Prerequisite: course 250A. Asymptotic behavior of nonlinear systems. Stability. Existence of periodic

solutions for nonautonomous and autonomous systems. Perturbation theory of two-dimensional real autonomous systems. The Poincaré-Bendixson theory. Differential equations on a torus.

## 2500. Spectral Theory of Ordinary Differential Operators.

Prerequisite: courses 250A and 255A. Singular self-adjoint boundary value problems for second-order equations. Symmetric, self-adjoint, formally normal, and normal unbounded operators in Hilbert space. Formally normal ordinary differential operators. Characterization of normal extensions in terms of boundary conditions. Eigenfunction expansions for symmetric ordinary differential operators.

## 250E. Partial Differential Operators with Constant Coefficients.

Prerequisite: courses 250B and 255A. General theory of constant coefficient partial differential operators of arbitrary order, including existence of a fundamental solution, strengths of operators, approximation of solutions of homogeneous equations, ellipticity and hypo-ellipticity. Equations with no solution. Elements of the theory of distributions.

## 250F. Advanced Topics in Partial Differential Equations.

Prerequisite: course 250E or consent of the instructor. Topics selected from elliptic boundary value problems, semigroups and parabolic equations, the Cauchy problem for hyperbolic systems, nonlinear partial differential equations.

## FUNCTIONAL ANALYSIS

### 255A-255B-255C. Functional Analysis.

(Formerly numbered 228A-228B.) Prerequisite: courses 245A-245B-245C and 246A. Standard theorems on normed linear spaces. Weak topologies. Analysis of vector valued functions. Operational calculus. Introduction to spectral theory in Banach spaces and Hilbert space. Commutative normed rings.

### 256. Topological Groups.

(Formerly numbered 236.) Prerequisite: courses 245A-245B-245C and 235A. An introduction to the structure and representation theories for topological groups.

### 257. Abstract Harmonic Analysis.

Prerequisite: consent of the instructor. Selected topics in the harmonic analysis of locally compact groups.

### 258A-258B. Topological Linear Algebras.

(Formerly numbered 240.) Prerequisite: courses 255A-255B-255C. Representation of, and approximation in, certain Banach algebras. Operational calculus for several elements. Extension problems. Analytic function algebras.

### 259A-259B. Operator Algebras in Hilbert Space.

Prerequisite: courses 255A-255B-255C. Selected topics from the theories of  $C^*$  and von Neumann algebras. Applications.

## APPLIED MATHEMATICS

### 265A-265B-265C. Applied Complex and Real Analysis.

(Formerly numbered 229A-229B.) Prerequisite: course 131A, or 132, or equivalent. Students may not

receive credit toward the master's degree for 265A-265B and 245A or 246A. Basic concepts, continuous functions, differentiations, analytic functions, Cauchy's theorem, residue calculus, evaluation of integrals, conformal mappings, infinite series and products, special functions, integration theory, measure theory, absolute continuity, Fubini's theorem,  $L_p$ -spaces, orthogonal functions, applications.

### 266A-266B-266C. Classical Applied Mathematics.

(Same as Physics 231A-231B-231C.) Prerequisite: consent of the instructor. Students may not receive credit for both Mathematics 266A-266B-266C and Physics 231A-231B-231C. Linear operators, review of functions of a complex variable, integral transforms. Partial differential equations, ordinary differential equations. Calculus of variations. Perturbation theory, singular integral equations, numerical methods.

### 267A-267B. Applied Algebra.

Prerequisite: course 110A or the equivalent. Students may not receive credit toward the master's degree for 267A and 210A. Linear algebra, eigenvalues and quadratic forms; linear inequalities, finite fields and combinatorial analysis. Group theory, with emphasis on representations. Application to physical problems.

### 268A-268B-268C. Applied Functional Analysis.

(Formerly numbered 254A-254B.) Prerequisite: courses 245A and 265A, or consent of the instructor. Students may not receive credit toward the master's degree for 268A and 255A. Linear vector spaces, inner products, norms, completeness, linear functionals and linear operators, spectral theory of operators, eigenvalue problems for differential equations. Partial differential equations, generalized functions, applications.

### 269A-269B-269C. Advanced Numerical Analysis.

(Formerly numbered 251 and 252.) Prerequisite: courses 110A, 140A-140B-140C, 141A, and 131A-131B, or consent of the instructor. Analysis of numerical methods for solving linear and nonlinear systems. Numerical methods for finding eigenvalues and eigenvectors. Computational aspect of partial differential equations, finite difference methods, stability, error analysis and related topics. Suitability of methods for digital computers.

### 270A-270B. Approximation Theory.

(Formerly numbered 253.) Prerequisite: courses 140A-140B-140C or consent of the instructor. Existence, uniqueness and characterization of best approximators; the relevant spaces. Infra-functions. Unsolvability. Smoothing. Approximation in the complex and in geometry. Incompatible systems. Rational and harmonic approximation. Convergence. Classes of approximants. Deviator integrals.

### 271A. Tensor Analysis.

Prerequisite: course 131A-131B or consent of the instructor. Algebra and calculus of tensors in  $n$ -dimensional manifolds. Applications to geometry of curves and surfaces embedded in 3-dimensional Euclidean manifolds.

### 271B. Analytical Mechanics.

Prerequisite: course 271A and some knowledge of mechanics. Newtonian and Lagrangian equations. Hamilton's principle. Principle of least action. Holonomic and nonholonomic systems. Hamilton's canonical equations, contact transformations, applications.

**271C. Introduction to Relativity.**

Prerequisite: course 271A and some knowledge of mechanics. Restricted theory of relativity. Extensions to general theory. The relativistic theory of gravitation.

**272A. Introduction to Elasticity.**

Prerequisite: course 271A or consent of the instructor. A study of classical theory of elasticity, analysis of stress and strain. Field equations of elastostatic and elastodynamics, Saint Venant's torsion and flexure problems.

**272B-272C. Fluid Mechanics.**

Prerequisite: courses 271A and 272A. Field equations for ideal and viscous fluids. Study flows. Vortex motions. Airfoil theory. Gas dynamics, subsonic and supersonic flows. Motion of viscous fluids, elements of the theory of turbulence and Reynolds' equations.

**273. Wave Mechanics.**

Prerequisite: consent of the instructor. Differential geometry of dynamical systems, particularly with curved time-space, both Newtonian and Lorentzian. Construction of undular counterparts of such systems, and the correspondence principle. Spinor fields, and other topics selected by the instructor.

**PROBABILITY AND STATISTICS****275A-275B-275C. Probability Theory.**

(Formerly numbered 220A-220B.) Prerequisite: courses 245A-245B. Review of essential material in measure and integration. Distribution and characteristic functions. Sums of independent random variables. Central limit theorems. Ergodic theorems. Martingale theorems. Brownian motion.

**276A-276B-276C. Statistical Inference.**

(Formerly numbered Statistics 231A-231B.) Prerequisite: courses 150A-150B, or 152A-152B and courses 131A-131B. Decision theory, the minimax and complete class theorems, the Neyman-Pearson theory of testing hypotheses, unbiased and invariant tests and estimates; applications to experimental designs, sequential analysis, and nonparametric inference.

**277. Mathematical Theory of Design of Experiments.**

(Formerly numbered Statistics 240.) Prerequisite: courses 150A-150B, or 152A-152B, or consent of the instructor. Advanced statistical theory basic to the construction of experimental designs. Criteria for optimum designs. Methods of application to typical research problems.

**278A-278B. Classical Methods of Statistics.**

Prerequisite: courses 150A-150B or 152A-152B, and courses 131A-131B. Large sample theory, re-

gression theory, nonparametric methods, multivariate analysis.

**285. Seminars. (1 course each)**

Prerequisite: consent of instructor. Topics in various branches of mathematics and their applications by means of lectures and informal conferences with members of the staff.

285A. Seminar in the History and Development of Mathematics.

285B. Seminar in Number Theory.

285C. Seminar in Algebra.

285D. Seminar in Logic.

285E. Seminar in Geometry.

285F. Seminar in Topology.

285G. Seminar in Analysis.

285H. Seminar in Differential Equations.

285I. Seminar in Functional Analysis.

285J. Seminar in Applied Mathematics.

285K. Seminar in Probability.

285L. Seminar in Statistics.

**290. Seminar in Current Literature.**

A seminar for Ph.D. candidates. Readings and presentations of papers in mathematical literature under the supervision of a staff member.

**Professional Course in Method****370. The Teaching of Mathematics.**

Prerequisite: course 12A or 2C or 3C and senior standing. A critical inquiry into present-day tendencies in the teaching of mathematics.

**Individual Study and Research****596. Directed Individual Study or Research.**

(½ to 1 course)

Supervised individual reading and study on a project approved by a faculty member, which may be preparation for the master's essay. May be taken multiply or repeated for credit, but only two such courses may be applied toward the master's degree unless departmental approval is obtained.

**596X. Directed Individual Study or Research.**

Individual study to prepare for foreign language examinations. May not be used for credit toward M.A. or M.A.T. degree. Registration is limited to three quarters.

**597. Preparation for Master's Comprehensive and Doctoral Qualifying Examinations.**

Individual study to prepare for comprehensive and qualifying examinations. May not be used for credit toward M.A. or M.A.T. degree. Registration is limited to four quarters.

**599. Research in Mathematics. (½ to 2 courses)**

Study and research for the Ph.D. dissertation. May be taken multiply or repeated for credit.

**■ MEDICAL HISTORY**

(Department Office, 50-074 Center for the Health Sciences)

John Field, II, Ph.D., *Professor of Medical History and Physiology.*

Franklin D. Murphy, M.D., Sc.D., *Professor of Medical History.*

C. D. O'Malley, Ph.D., *Professor of Medical History (Chairman of the Department).*

**Hans Simmer, M.D.,** *Professor of Medical History, Obstetrics and Gynecology and Physiology in Residence.*

**L. R. C. Agnew, M.D.,** *Associate Professor of Medical History.*

**M. Peter Amacher, Ph.D.,** *Assistant Professor of Medical History and Physiology in Residence.*



**Elmer Belt, M.D.,** *Lecturer in Medical History and Clinical Professor of Surgery.*

**Louise M. Darling, M.A.,** *Lecturer in Medical History and Library Service.*

**Robert J. Moes, M.D.,** *Lecturer in Medical History.*

#### **Admission to Graduate Status**

Candidates for admission to graduate status in the Department of Medical History must meet the general requirements set by the Graduate Division for admission to such status.

#### **Requirements for the M.A. Degree**

1. Requirements for admission will be such as have been established by the Graduate Division, with the further requirement that the program will be limited to those already possessing the M.D. or D.D.S. degree, or a Ph.D. degree in one of the basic medical or biological sciences.

2. The residence requirement will be a minimum of one year.

3. A reading knowledge normally of French or German will be required.

4. A minimum of nine courses (equalling 36 quarter units) will be required, and of these, five courses (equalling 20 quarter units) will be at the graduate level. The student will be required to pass an examination covering the general field of medical history.

#### **Requirements for the Ph.D. Degree**

1. The general requirements for admission to the Graduate Division must be met. Normally, students admitted to this program will hold the M.D. or D.D.S. degree, or an M.A. degree, including a background in a basic medical or biological science. Other students may be admitted with, for example, an M.A. degree in history, but will be required to take appropriate medical or biological courses as part of the program.

2. The minimum residence requirement will be two years.

3. Before taking the qualifying examination, the student will be required to demonstrate a reading knowledge of normally French and German. Other languages, such as Latin, might also be required depending upon the area or period emphasized by the student.

4. The program of study will be arranged

in accordance with the student's academic background, to prepare him for the qualifying examination and for preparation of the dissertation. The qualifying examination will be divided into three parts: (a) a test of the student's general comprehension of the field of Medical History; (b) a more intensive test of his knowledge of a selected area within the general field of Medical History; (c) a test of his knowledge of one of the fields of the History of Science as already established at UCLA. This last test will be administered by whoever may be responsible for the subject. The fields of intensive examination within the history of medicine will be the following:

Medicine to 1600

Medicine in the 17th and 18th centuries

Medicine in the 19th and 20th centuries

Successful completion of the several parts of the written examination will be followed by an oral examination conducted by the student's advisory committee, composed of representatives of the History of Medicine and the History of Science, and any others deemed necessary as representatives of other disciplines in accordance with the student's program.

5. A dissertation on a subject related to the student's field of intensive study, approved by his advisory committee, will be required. The dissertation must be the result of original research and constitute a genuine contribution to knowledge.

6. There will be a final, oral examination conducted by the student's advisory committee that will center on the dissertation and its relation to the field of intensive study.

#### **Upper Division Courses**

#### **107B. Historical Development of Medical Sciences.**

Three hours per week in the spring quarter. The major contributions of medicine and medical personalities from the 5th century B.C. to the 19th century A.D. Illustrated lectures and required readings from selected texts. Mr. Agnew, Mr. O'Malley

## Graduate Courses

**240A-240B. History of Medical Sciences.**

(½ course each)

One hour per week in the winter and spring quarters. Survey of the development of scientific and medical thought from ancient times to the present.

Mr. O'Malley

**241A-241B. History of Clinical Sciences.**

One hour per week in the fall and winter quarters. Survey of the development of the clinical specialties and comparison of medical practice in western civilization with that developed in other parts of the world.

Mr. Agnew

**242. History of Pathology. (¼ course)**

One hour per week in the fall quarter. Survey of the history of pathology and related sciences from antiquity to the 20th century, tracing the development of pathological theory, practice, organization and education and comparing them to current practice.

Mr. Agnew

**243. History of Surgery. (¼ course)**

One hour per week in the winter quarter. Survey of the history of surgery and related sciences from antiquity to the 20th century, tracing the development of surgical theory, practice, organization and education and comparing them to current practice.

Mr. Agnew

**244. History of American Medicine. (¼ course)**

One hour per week in the spring quarter. Survey of the history of medicine in the United States from the colonial period to the present.

Mr. Agnew

**250. History of Neurology and Medical Psychology.**

(¼ course)

One hour per week in the fall quarter. Lectures on the history of neurology and medical psychology

from antiquity to the 20th century. The lectures discuss concepts held by medical scientists on the structure and function of the nervous system and on the interaction of mind and body, as well as the influence of these concepts on therapy of nervous and mental disorders.

Mr. Amacher

**252A-252B. Seminar in Medical History.**

One 2-hour session per week in the fall and winter quarters. Prerequisite: ability to read at least one foreign language. Bibliography and readings, class discussion and papers on selected topics in the history of medicine: course, 252A, beginnings to 1600; course 252B, 1600 to present.

Mr. O'Malley

**253. Development of the Basic Medical Sciences and Their Impact Upon Clinical Medicine.**

Prerequisite: open to medical students and qualified graduate students. The influence of the basic medical sciences as they develop from the 16th to the 19th century upon clinical medicine, and demonstration of the resulting advancement of medicine.

Mr. Agnew, Mr. O'Malley, Mr. Simmer

**596. Directed Individual Studies in Medical History.**

Investigation of subjects in medical history selected by students with the advice and direction of the instructor in the fall, winter and spring quarters. Individual reports and conferences.

Mr. Agnew, Mr. O'Malley

**599. Research for and Preparation of the Doctoral Dissertation.**

Investigation of materials relative to the doctoral dissertation, their evaluation and written presentation.

Mr. Agnew, Mr. O'Malley

**■ MEDICAL MICROBIOLOGY AND IMMUNOLOGY**

(Department Office, 43-239 Center for the Health Sciences)

Marcel A. Baluda, Ph.D., *Professor of Microbiology and Immunology in Residence.*

Ruth A. Boak, M.D., Ph.D., *Professor of Microbiology and Immunology, Pediatrics, and Public Health.*

John M. Chapman, M.D., *Professor of Microbiology and Immunology, Public Health, and Preventive Medicine and Public Health.*

William H. Hildemann, Ph.D., *Professor of Microbiology and Immunology (Vice-Chairman of the Department).*

A. F. Rasmussen, Jr., M.D., Ph.D., *Professor of Microbiology and Immunology (Chairman of the Department).*

Telford H. Work, M.D., *Professor of Infectious and Tropical Diseases in Medical Microbiology and Immunology and in Public Health.*

Stephen Zamenhof, Ph.D., *Professor of Microbial Genetics and Biological Chemistry.*

John F. Kessel, Ph.D., *Emeritus Professor of Infectious Diseases.*

Seymour Froman, Ph.D., *Associate Professor of Microbiology and Immunology in Residence.*

Dexter H. Howard, Ph.D., *Associate Professor of Microbiology and Immunology.*

David T. Imagawa, Ph.D., *Associate Professor of Microbiology and Immunology and Pediatrics.*

David L. McVickar, M.D., Ph.D., *Associate Professor of Microbiology and Immunology.*

James N. Miller, Ph.D., *Associate Professor of Microbiology and Immunology.*

Margaret I. Sellers, Ph.D., *Associate Professor of Microbiology and Immunology.*

Jack G. Stevens, *Associate Professor of Microbiology and Immunology.*

Marietta Voge, Ph.D., *Associate Professor of Microbiology and Immunology.*

Henry E. Weimer, Ph.D., *Associate Professor of Microbiology and Immunology.*

Felix O. Wettstein, Ph.D., *Associate Professor of Molecular Biology.*

Marcus M. Jensen, Ph.D., *Assistant Professor of Microbiology and Immunology in Residence.*

Jerrold A. Turner, M.D., *Assistant Professor of Microbiology and Immunology and Medicine in Residence.*



Frances A. Hallman, M.S., *Lecturer in Microbiology and Immunology.*

———, *Clinical Instructor of Microbiology and Immunology.*

Kent H. Thayer, M.D., *Assistant Clinical Professor of Microbiology and Immunology.*

———, *Clinical Instructor of Microbiology and Immunology.*

Maurice L. White, Ph.D., *Assistant Clinical Professor of Microbiology and Immunology.*

The Department of Medical Microbiology and Immunology in the School of Medicine offers the M.S. and Ph.D. degrees in medical microbiology and immunology. Graduate study may be in the fields of bacteriology, immunochemistry, immunogenetics, microbial genetics, mycology, parasitology, or virology. The graduate program is primarily designed for students seeking advanced training leading to the Ph.D. degree in any one of these special fields, or for students with a broader interest in the biology of infectious agents, immunology and host-parasite relationships who may elect to combine two or more fields. Occasional students may be accepted for the M.S. degree.

#### Admission to Graduate Status

For admission to the graduate program, a student must meet the requirements of the Graduate Division, and must hold an approved bachelor's degree with a major in either the biological or physical sciences. Candidates are selected on the basis of an evaluation of the applicant's potential for graduate work as determined by:

1. Undergraduate, and where applicable, graduate scholastic record.
2. An interview with members of the Department, when possible.
3. Letters of recommendation.

#### Requirements for the Master's Degree

1. The general Graduate Division requirements (pages 136-140).
2. Microbiology and Immunology 201A-201B.
3. General Biochemistry 152A-152B or Biological Chemistry 101A-101B.
4. Comprehensive Examination.

#### Requirements for the Doctor's Degree

1. The general Graduate Division requirements (pages 140-142). (Proficiency in only one foreign language required.)
2. Three "core" courses in Biochemistry: Biochemistry 153, 253, and 255, or equivalent. Preparation for these courses include Mathematics 3A-3B-3C and General Physical Chemistry 102, or equivalent.
3. Microbiology and Immunology 201A-201B, or equivalent.
4. Microbiology and Immunology 599 (Research).

In addition to the formal requirements stated above, every student must pass written examinations within the Department to become eligible to take the oral qualifying examination. The written examinations are divided into 5 parts of 3 hours each and given over a 3-day period to test the student's general knowledge in the field of medical

microbiology and immunology. These written examinations are given twice each year; the student, normally, should take them during the second year of graduate study.

#### Graduate Courses

#### 201A. Microbiology and Immunology. (1½ courses)

Lectures and laboratory. Prerequisite: consent of the instructor. Study of the infectious agents of human disease with emphasis on host-parasite relationships and immunologic phenomena in immunity and disease, including identification of bacteria, fungi, animal parasites and viruses, and principles of prevention, treatment, and laboratory diagnosis.  
The Staff

#### 201B. Microbiology and Immunology.

Continuation of course 201A.

The Staff

#### 208A. Animal Virology. (½ course)

Prerequisite: course in general biochemistry and in general microbiology, including virology. Consent of the instructor may be obtained in special cases. Lectures. A study of viral structure, basic mechanisms of virus cell interaction, biochemistry of virus replication, and onogenesis of viruses.  
Mr. Baluda

#### 208B. Animal Virology. (½ course)

Prerequisite: course 208A, taken concurrently or previously. Consent of the instructor may be obtained in special cases. Laboratories. A study of viral structure, basic mechanisms of virus cell interaction, biochemistry of virus replication, and onogenesis by viruses. In addition, special projects will be assigned on an individual basis.  
Mr. Baluda

#### 209. Principles of Immunochemistry.

Prerequisite: consent of the instructor. A study of the chemistry of antigens, antibodies, and complement, and the mechanism of their interaction. The methods for their detection and measurement, as well as of the chemical basis of immunity and resistance to disease is considered. Techniques and methods involved in the study of antigen-antibody reactions are presented with emphasis on the quantitative aspects of serologic reactions.  
Mr. Weimer

#### 210. Medical Mycology.

Prerequisite: a course in microbiology. A study of the morphology, physiology, and pathogenicity of fungi causing human and animal diseases.  
Mr. Howard

#### 251A-251D. Seminar in Microbiology and Immunology. (¼ to 1¼ courses)

Consideration of the history of infectious diseases, their host-parasite relationships, etiology, pathogenesis, epidemiology, diagnosis, and immunity.  
Mr. Rasmussen and the Staff

#### 252. Seminar in Medical Virology. (¼ course)

Review of current literature in the field of medical virology emphasizing fundamental host-cell interrelationships in human disease of viral origin. Selected topics will be discussed and results interpreted; conclusions and experimental methods will be evaluated.  
Miss Sellers

#### 253. Seminar in Medical Parasitology. (¼ course)

Review of current and recent literature in the field of medical parasitology, emphasizing experimental work of medical or public health importance. Students will be expected to prepare reviews of selected subjects, and to discuss the contributions of various workers from the standpoint of experimental methods, results, their interpretation and their evaluation.  
Mrs. Vogt

#### 254. Seminar in Immunogenetics. (½ course)

Review of current and recent literature in the field of immunogenetics, with emphasis on fundamental studies involving genetic and immunologic principles and techniques. Selected topics will be discussed and results interpreted; conclusions and experimental methods will be evaluated.  
Mr. Hildemann

#### 255. Seminar in Medical Mycology. (¼ course)

Review of current and recent literature in the field of medical mycology, with emphasis on the host-parasite relationships in the human and animal mycoses. Students will be expected to prepare reviews of selected subjects and to discuss contributions of various workers from the standpoint of experimental methods, results, their interpretation and evaluation.  
Mr. Howard, Mr. McVicker

#### 256. Seminar in Viral Oncology. (½ course)

An advanced research seminar designed to consider the current developments in the field. Selection of current subjects and publications dealing with tumor viruses, onogenesis, development, and cellular regulation.  
Mr. Baluda

#### Individual Study and Research

#### 597. Preparation for the Examinations for the M.S. Degree or for the Ph.D.

(½ to 1½ courses)

The Staff

#### 598. Research for and Preparation of the M.S.

Thesis. (½ to 1½ courses)

Research on an original problem in the field of Medical Microbiology and Immunology, to be selected by the graduate student with the advice of the instructor.  
The Staff

#### 599. Research for and Preparation of the Doctoral Dissertation. (½ to 1½ courses)

Research on an original problem in the field of Medical Microbiology and Immunology, to be selected by the graduate student with the advice of the instructor.  
The Staff

## ■ METEOROLOGY

(Department Office, 7127 Mathematical Sciences Building)

Jörgen Holmboe, M.Sc., *Professor of Meteorology.*

Yale Mintz, Ph.D., *Professor of Meteorology (Chairman of the Department).*

†Morris Neiburger, Ph.D., *Professor of Meteorology.*

Zdenek Sekera, Ph.D., *Professor of Meteorology.*

† Absent on leave, 1968-1969.

Ernest H. Vestine, Ph.D., *Professor of Meteorology in Residence.*

Morton G. Wurtele, Ph.D., *Professor of Meteorology.*

\*\*Jacob Bjerknes, Ph.D., *Emeritus Professor of Meteorology and Geophysics.*

Akio Arakawa, D.Sc., *Associate Professor of Meteorology.*

James G. Edinger, Ph.D., *Associate Professor of Meteorology.*

\*Sekharipuram V. Venkateswaran, Ph.D., *Associate Professor of Meteorology.*

William D. Bonner, Ph.D., *Assistant Professor of Meteorology.*

Hans Pruppacher, Ph.D., *Assistant Professor of Meteorology.*



Alain L. Fymat, Ph.D., *Lecturer in Meteorology.*

W. Lawrence Gates, D.Sc., *Lecturer in Meteorology.*

### Preparation for the Major

Course 4A-4B-4C; Physics 1A-1B-1C-1D; Mathematics 11A-11B-11C and 13A-13B-13C.

### The Major

Course 109A-109B-109C, Physics 110A, 110B, 112A, 131; Mathematics 132; three courses from courses 143, 151A-151B, 161, 204A, 221, 223A, 225A, 242. In addition, students preparing for graduate studies in atmospheric radiation or upper atmospheric physics should take as electives the following four courses in physics: Physics 113, 115A, 115B, 108 or 122; students preparing for graduate studies in cloud physics should take as electives the following five courses: Physics 112B, 140A, Chemistry 113A, 113C, 115A.

### Admission to Graduate Status

The Department recognizes the desirability of a wide variety of backgrounds of students concerned with study of the various aspects of the atmosphere. In addition to those holding bachelor's degrees in meteorology, graduates with degrees in related disciplines—physics, mathematics, geophysics, engineering, chemistry, and geology—are encouraged to apply for graduate status in the Department. Programs are arranged by consultation between the student and the Department's graduate advisers, and considerable flexibility is maintained so that maximum advantage may be taken of the candidate's previous education.

### Requirements for the Master's Degree

A bachelor's degree in one of the following: meteorology, physics, mathematics, astronomy, chemistry, geophysics or engineering.

A study program, approved by the Departmental graduate advisers. This shall include Meteorology 260, and graduate courses in at least three of the following fields of specialization; Dynamic Meteorology, Synoptic Meteorology, Cloud Physics, Atmospheric Radiation, Physics of the Upper Atmosphere and Planetary and Space Physics.

A passing grade on a written comprehensive examination, to be conducted in two parts, one in the candidate's field of specialization and one in related fields. The candidate will choose his related fields with the approval of the graduate advisers.

The Department operates under the "comprehensive examination plan" rather than the "thesis plan." However, arrangements can be made for a student to write a master's thesis provided he has a worthwhile research problem, and provided some professor is willing to undertake the guidance of his work. In this case the student must petition the Department for permission to pursue the "thesis plan." The comprehensive examination requirement will be waived if the petition is approved.

A reading knowledge of a foreign language is not required.

### Requirements for the Doctor's Degree

For the general requirements, see pages 140-142.

A reading knowledge of one foreign language is required and should be taken during the first year of residence. Courses in numerical analysis which will aid the candidate in the use of high-speed computers can be substituted for the reading knowledge of a foreign language.

For consideration as a potential candidate for the doctor's degree in meteorology, a

\*\* Member of the Institute of Geophysics and Planetary Physics.

\* In residence summer quarter only, 1968-1969.

student must have completed the course requirements for the master's degree in this department or have an academic record showing an exceptionally strong background in physics and applied mathematics. Students are encouraged to complete the master's degree program before proceeding for the Ph.D. degree.

The program of preparation for the qualifying examination should include advanced graduate courses in mathematics and physics appropriate to the area of specialization in meteorology in which the student plans to do his research, as well as advanced courses in meteorology in his area of specialization. The fields of specialization in the Department are: dynamic meteorology (fundamental hydrodynamics, atmospheric waves, planetary circulations, turbulence and diffusion, numerical weather prediction); synoptic meteorology (application of dynamic theories to the analysis of atmospheric structures, from the local to the planetary scale); physics of clouds and precipitation; radiative transfer and atmospheric optics (theory and application of radiative transfer in the study of the Earth and other planetary atmospheres); physics of the upper atmosphere (ionospheric electrodynamics, magnetospheric phenomena, solar influences).

The following examinations are required for advancement to candidacy: (a) A written and an oral departmental qualifying examination in the candidate's field of specialization. In addition, the Department has the option of conducting a one-week open-book written examination. (b) An oral qualifying examination conducted by the candidate's doctoral committee.

After advancement, the candidate must complete satisfactorily the following: (a) A dissertation which represents an original contribution to knowledge in the field of meteorology. (b) A final doctoral examination conducted by the doctoral committee.

#### Lower Division Courses

#### Physical Sciences 3M. Meteorology.

See Physical Sciences, page 393.

#### 4A-4B-4C. Introduction to Meteorology.

Lecture, three hours; laboratory, six hours. Prerequisite: Mathematics 11A-11B-11C, and Physics 1A-1B. Composition, thermal structure and field of motion of atmosphere; weather systems; clouds and precipitation; radiation and energy budget; upper atmospheric phenomena; local circulations and microclimates; meteorological instruments and observations.

#### Upper Division Courses

#### 109A. Dynamics of the Atmosphere I.

Lecture, three hours; laboratory, three hours. Prerequisite: course 4C; Mathematics 13C. Kinematics of fluid motion. Lamellar and solenoidal fields. Vorticity and divergence theorems. Laplacian field. Dynamics of barotropic flow, of shear flow. Rayleigh surface and Helmholtz waves. Instability of stratified shear flow. Buoyancy instability, in dry and moist layers. Mr. Wurtele

#### 109B. Dynamics of the Atmosphere II.

Lecture, three hours; laboratory, three hours. Prerequisite: course 109A. Dynamics of a rotating atmosphere. Coriolis force. The planetary vorticity gradient. Potential vorticity. Hydrostatic and geostrophic approximations. Elementary linear cyclone theory in a two-layer atmosphere and in models with continuous stratification and shear. Mr. Wurtele

#### 109C. Dynamics of the Atmosphere III.

Lecture, three hours; laboratory, three hours. Prerequisite: course 109B. Introduction to the theory of viscous flow. Viscous stress. The Navier-Stokes equations. The Ekman boundary layer. Energy transformations. Dissipation. The first law of thermodynamics. The general forms of the vorticity equation, with applications. Mr. Wurtele

#### 143. Physical Oceanography.

Lecture, three hours; discussion or field trip, one hour. Prerequisite: courses 4A-4B-4C. Physical structure of the oceans; observational techniques. Theory of waves, currents, swell and tides. Mr. Gates

#### 151A. Synoptic Weather Analysis I.

Lecture, two hours; laboratory, 10 hours. Prerequisite: course 109C and Physics 131. Three dimensional analysis of large scale weather systems using numerical models. Diagnostic studies of cyclone development. Current weather discussion. Mr. Bonner

#### 151B. Synoptic Weather Analysis II.

Lecture, two hours; laboratory, 10 hours. Prerequisite: course 151A. Relationship between atmospheric flow patterns and weather. Examples of the use of satellite data in meteorological analysis. Current weather discussions. Mr. Bonner

#### 161. Introduction to Experimental Meteorology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 4C. Techniques of meteorological measurement and observation in the laboratory and in the field. Mr. Edinger

#### \*162A-162B. Experimental Meteorology.

Laboratory, 12 hours. Prerequisite: course 161 or consent of the instructor. Design and execution of laboratory and field experiments. Option to experiment in one of the following fields: hydrodynamics, convection, turbulence, local meteorology, cloud physics, radiation, physics of the upper atmosphere. Mr. Edinger in charge

#### 199. Special Studies in Meteorology.

(1/2 or 1 course)

Prerequisite: senior standing and consent of the instructor. Special individual study. The Staff

\* Not to be given, 1968-1969.

## Graduate Courses

## GENERAL

**202A-202B. Experimental Meteorology.**

Laboratory, 12 hours, with individual instruction. Prerequisite: course 161 or consent of the instructor. Experimental design, techniques of data acquisition and reduction, performance of projects in the laboratory and in the field. Mr. Edinger

**\*203A-203B. Statistical Methods in Meteorology.**

Lecture, three hours; laboratory, one hour. Prerequisite: Mathematics 152A-152B, or consent of the instructor. Application of stationary time series, generalized harmonic analysis and other statistical methods to meteorological problems. Mr. Palmer

## ATMOSPHERIC DYNAMICS

**204A-204B-204C. Meteorological Hydrodynamics.**

Lecture, three hours. Analysis of strain and shear, solution of simple viscous flows; compressible flow; gravity waves with application to mountain waves; topics on shear flow, with application to cyclone theory. Mr. Holmboe

**\*206A-206B. Atmospheric Convection.**

Lecture, three hours. Cellular and turbulent convection over a uniform surface, with applications to atmospheric motion; cloud dynamics. Mr. Wurtele

**\*208A-208B. Atmospheric Turbulence and Diffusion.**

Lecture, three hours. Kinematics of homogeneous and shear flow turbulence; surface and planetary boundary layers; survey of field and laboratory observations and their interpretation by theory. Turbulent diffusion, with applications to air pollution. Mr. Neiburger, Mr. Wurtele

**\*210A. Theory of Planetary Circulation I.**

Lecture, three hours. Dynamics of geostrophic motion. Anelastic balance and hydrostatic balance. Gravity-inertia waves and geostrophic adjustment. Filtered equations. Quasi-geostrophic balance.  $\beta$ -plane approximation. Integral constraints. Wave instability. Physical basis of numerical weather prediction. Mr. Arakawa

**\*210B. Theory of Planetary Circulation II.**

Lecture, three hours. Prerequisite: course 210. Thermally forced circulation in a rotating fluid. Hadley regime and Rossby regime. Generation of eddy transports. Theory of finite amplitude disturbances. Viscillation. Maintenance against friction. Effect of topography and heat sources. Mr. Arakawa

**212A. Numerical Weather Prediction I.**

(Formerly Numbered 214A.) Lecture, three hours. Basic computational methods in numerical weather prediction and in other numerical studies of atmospheric motion. Finite difference methods and truncation error. Initial value problem. Linear and nonlinear computational instability. Aliasing error. Boundary value problem. Relaxation. Computational boundary conditions. Mr. Arakawa

**212B. Numerical Weather Prediction II.**

(Formerly numbered 214B.) Lecture, three hours. Prerequisite: courses 212A, 210A or instructor's consent. Physical and computational design of numerical weather prediction and climate simulation models. Map projection. Barotropic model. Solution of balance equation. Quasi-geostrophic baroclinic model. Balanced model. Primitive equation and its

initial condition. Inclusion of topography, heat and friction. Mr. Arakawa

**214A-\*214B. General Circulation of the Atmosphere.**

(Formerly numbered 216A-216B.) Lecture, three hours. Simulation of the global circulation and climate by numerical integration of the governing equations of motion, and comparisons with observations. Global heat, momentum and water vapor budgets, and energy transformation integrals. Numerical experiments on atmospheric predictability, climate modification, paleoclimates and the circulation and climate on Mars. Mr. Arakawa

**\*216. Dynamics of the Tropical Atmosphere.**

(Formerly numbered 218.) Lecture, three hours. Organized large-scale circulations in the tropics; easterly waves, tropical cyclones, cold-core low-pressure systems, equatorial trough and subtropical jet stream.

**\*218A. Structure and Dynamics of Large-Scale Weather Systems.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 151B. Multilevel analysis of selected weather systems. Calculation of moisture and energy budgets and determination of vertical motions from models that include diabatic heating. Mr. Bonner

**\*218B. Mesoscale Analysis.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 151B. Detailed analysis of severe weather situations emphasizing the use of satellite data and radar reports in conjunction with standard observations to trace the history of individual mesosystems. Mr. Bonner

**\*220A-220B. Dynamics of the Atmosphere-Ocean Systems.**

(Formerly numbered 212A-212B.) Lecture, three hours. Mass, momentum and heat transfers between atmosphere and ocean; wind-driven ocean currents; thermohaline convection; dynamics of the Gulf Stream. Mr. Gates

## CLOUD AND PRECIPITATION PHYSICS

**\*221. Atmospheric Chemistry.**

Lecture, three hours. Variable and nonvariable gases of the atmosphere; physical and chemical properties of atmospheric aerosols; washout and coagulation processes; atmospheric radioactivity. Mr. Pruppacher

**223A. Cloud and Precipitation Physics I.**

Lecture, three hours. Microstructure of clouds: Physical properties of clouds and precipitation elements. Production, separation and distribution of electric charges in clouds. Physics of water substance: molecular structure, thermal and electrical properties of water vapor, liquid water, aqueous solutions and ice. Surface phenomena. Mr. Pruppacher

**223B. Cloud and Precipitation Physics II.**

Lecture, three hours. Prerequisite: course 223A. Basic thermodynamic principles including surface effects. Concept of thermodynamic equilibrium applied to systems with plane and curved interfaces. Thermodynamics of phase transition. Application of the kinetic theory of gases and liquids to homogeneous and heterogeneous nucleation in water vapor and supercooled liquid water. Mr. Pruppacher

\* Not to be given, 1968-1969.

**223C. Cloud and Precipitation Physics III.**

Lecture, three hours. Prerequisite: course 223B. Growth of water drops and ice crystals by diffusion of water vapor. Dynamics of water drops and ice crystal collision. Coalescence of water drops. Effect of electric fields on the growth of water drops and ice crystals. Mr. Pruppacher

**ATMOSPHERIC RADIATION****225A-225B. Radiation Processes in the Atmosphere.**

Lecture, three hours. Scattering of radiation by electrons and atoms. Transmission of molecular bands along homogeneous and atmospheric paths—atmospheric emission—radiative equilibrium—techniques of atmospheric probing. Mr. Fymat

**225C. Scattering Processes in the Atmosphere.**

(Formerly numbered 227A-227B.) Lecture, three hours. Scattering of radiation by atoms, molecules and aerosols.

**228A-228B. Theory of Radiative Transfer in Planetary Atmospheres.**

Lecture, three hours. Radiative transfer in plane-parallel atmospheres, subject to different types of scattering, absorption and emission processes; extension to spherical geometry. Mr. Sekera

**229. Radiometric Analysis of Planetary Atmospheres.**

Lecture, three hours. Analysis and interpretation of radiation measurements made from satellites and space probes. Mr. Sekera

**PHYSICS OF THE UPPER ATMOSPHERE****242. Upper Atmospheric Structure.**

Lecture, three hours. Photochemistry and motion fields of the stratosphere and the mesosphere; the time-dependent structure of the thermosphere; the concept of the exosphere and the problem of escape of gases from planetary atmospheres, ionospheric layer formation and the global morphology of ionospheric layers.

**243. Radiation Dynamics of the Upper Atmosphere.**

Lecture, three hours. Interrelated problems of composition, energetics and circulation of the atmosphere from the tropopause to the lower thermosphere; photochemistry of ozone, hydrogen compounds; D-layer formation; infrared radiation, causes and effects of global scale circulations. Mr. Leovy

**244. Solar and Geomagnetic Influences.**

(Formerly numbered 243.) Lecture, three hours. The distant geomagnetic field; the outer ionosphere; physics of trapped radiation; interaction between the magnetosphere and the solar wind; ionospheric electrodynamics; theories of geomagnetic storms and aurorae; airglow phenomena. Mr. Venkateswaran

**\*245. Atmospheric Applications of Plasma Physics.**

(Formerly numbered 244.) Lecture, three hours. Comparison of laboratory, ionospheric and cosmic plasmas; kinetic theory of plasmas applied to upper atmospheric problems; plasma waves. Mr. Venkateswaran

**Seminars****260. Seminar in Meteorology. (½ course)**

Mr. Sekera, Mr. Wurtele

**261. Seminar in Atmospheric Dynamics. (½ course)**

Mr. Arakawa, Mr. Holmboe

**262. Seminar in Cloud and Precipitation Physics.**

(½ course)

Mr. Pruppacher

**263. Seminar in Atmospheric Radiation. (½ course)**

Mr. Sekera

**264. Seminar in Physics of the Upper Atmosphere.**

(½ course)

Mr. Vestine

**265. Seminar in Weather Analysis and Forecasting.**

(½ course)

Mr. Bonner

Individual Study and Research

**596. Directed Studies for Graduate Students.**

(½ to 1 course)

The Staff

**597. Preparation for the Master's Comprehensive Examinations and the Doctoral Qualifying Examinations. (½ to 1 course)**

The Staff

**598. Research and Preparation of the Master's Thesis. (½ to 2 courses)**

The Staff

**599. Research on Doctoral Dissertation.**

(½ to 1½ courses)

The Staff

**Related Courses in Other Departments**

Astronomy 101; 103A-103B-103C.

Chemistry 113A-113B-113C; 114A; 123A-123B.

Engineering 100C; 117A-117B; 120A; 124A; 125A-125B; 125L; 127A-127B; 131C; 160A-160B; 161A; 181A; 192A-192B-192C.

Mathematics 130A-130B-130C; 131A-131B-131C; 132; 140A-140B-140C; 141A-141B-141C; 142; 143; 150A-150B-150C; 152A-152B.

Physics 108; 110A-110B; 112A-112B; 122; 131.

Planetary and Space Science 101.

Graduate Courses of Special Interest to Qualified Meteorology Majors.

Astronomy 201A-201B-201C.

Chemistry 215; 223.

Engineering 218C, 218E; 224B; 225A-225B; 231C; 250A-250B; 251A-251B; 259A.

Mathematics 250A-250F; 265A-265B-265C; 266A-266B-266C; 267A-267B; 269A-269B-269C; 271A-271B-271C; 276A-276B-276C.

Physics 210A-210B; 215A-215B; 220B; 222A-222B-222C; 231A-231B-231C.

Planetary and Space Science 208A-208B; 210; 215; 218; 240; 260A-260B-260C; 265.

\* Not to be given, 1968-1969.

## ■ MICROBIOLOGY

### Graduate Study

The M.A. and Ph.D. degrees in microbiology are offered in the Department of Bacteriology (see page 171). Programs of study and research leading to the M.A. and Ph.D. degrees in the general area of microbiology are also offered in the Department of Botanical Sciences (see page 179), in the Depart-

ment of Medical Microbiology and Immunology, School of Medicine (see page 345), and in the Department of Zoology (see page 488). More detailed information regarding admission requirements and opportunities for graduate studies in these programs may be obtained by writing to the graduate adviser in the department concerned.

## ■ MILITARY SCIENCE

(Department Office, 132 Men's Gymnasium)

Donald G. Moore, B.A., Lieutenant Colonel, Infantry, *Professor of Military Science (Chairman of the Department)*.

———, *Associate Professor of Military Science.*

Donald L. McShane, B.S., Major, Infantry, *Assistant Professor of Military Science.*

———, *Assistant Professor of Military Science.*

———, *Assistant Professor of Military Science.*

### College of Letters and Science

Most department majors have sufficient free electives to allow all courses in this Department to be included in meeting the minimum degree requirements in Letters and Science. Students should check with this Department and with major Department counselors for details on number of courses acceptable toward a baccalaureate degree.

### College of Engineering

The number of courses in this Department which may be included in meeting the minimum requirements for an engineering degree will be determined on an individual basis. The student should check with this Department and with his engineering counselor for details.

### College of Fine Arts

At least six courses of this Department are acceptable toward meeting the minimum degree requirements in the College of Fine Arts. Students should check with this Department and with their fine arts counselor for details.

### Army Reserve Officers' Training Corps

The Army R.O.T.C. program provides training in the general military science curriculum leading to a commission in the Army. Students in all academic fields are eligible for admission in the general military science program. The purpose of the program is to provide a general type of training to produce

officers who may serve in any arm of service of the Army after further basic training in the appropriate service school. The length of such service is to be a period of six months to two years, contingent upon the requirements of the service, as prescribed by the Armed Forces Reserve Act of 1955. It is the continuing effort of the Department of the Army to assign graduates to the arm or service most closely aligned with the individual's capabilities, professional training, and preference.

Students are enrolled in the Army Reserve Officers' Training Corps under one of three programs. These programs are:

**Scholarship Program.** Students are selected by nationwide competitive examination. Successful candidates receive tuition, books, uniforms, fees and \$50 per month from the Department of the Army for a maximum of twelve quarters. Students enrolled under this program must successfully complete the Basic Course in most cases and the Advanced Course in all cases before commissioning.

**Four-Year Program.** Students are enrolled in the Basic Course on a voluntary basis. Upon completion of the Basic Course and entrance into the Advanced Course, students are required to execute a contract with the Department of the Army agreeing to complete the Advanced Course, enlist in the United States Army Reserve, and accept a commission if offered. Advanced Course students receive \$50 per month, military science books, and uniforms.

**Two-Year Program.** This program is primarily designed for the student who has previously attended an institution that does not offer Army R.O.T.C. Students are enrolled in this program during the Winter Quarter of their sophomore year and must attend a six-week summer camp between their sophomore and junior years. Upon successful completion of this summer camp, the student will enter the Advanced Course under the same requirements as for the four-year program. He will receive \$50 per month, military science books, and uniforms.

The Army R.O.T.C. program is divided into two parts: (1) the two-year Basic Course for all qualified male students who select Army R.O.T.C., and (2) the Advanced Course for selected students who desire to complete an additional two years of R.O.T.C. training leading to a commission in the United States Army Reserve. Successful completion of the two- or four-year R.O.T.C. branch general curriculum qualifies graduates for a commission in any arm of service. The interests, aptitudes, and educational accomplishments of the student are given careful consideration in order that he may be recommended for a commission in the arm of service for which he is best qualified.

The Universal Military Training and Service Act (65 Stat. 75; 50 U.S.C. App. 451-467) as amended, and as further amended by the Reserve Forces Act of 1955 (PL305, 84th Congress; DA Bul. 12, 1955) defers from the draft students who are enrolled in a military science program and who meet the standards for acceptance and who agree to complete the Advanced Course training upon completion of the Basic Course. The purpose of deferring a student's active military service until completion of the R.O.T.C. course of instruction is to permit him to complete the entire four-year R.O.T.C. program prior to undertaking his active military service obligations. Additional information may be obtained from the Department.

#### Basic Course (Lower Division)

The Basic Course is offered on an elective basis to all qualified lower division male students. (The two-year Basic Course may be compressed into one year with the approval of the professor of military science.)

The objective of the two-year Basic Course is to acquaint the student with the fundamental principles of national security through the study of the military history of this country, to introduce the techniques

and principles of modern warfare, and to develop the traits of character and leadership necessary to prepare him to meet his citizenship obligations. These courses prepare the student for the Advanced Course. Draft deferments may be granted to qualified Basic Course students who intend to pursue the four-year R.O.T.C. training program.

All necessary equipment, uniforms, and textbooks are provided free of charge to students.

#### 1A-1B-1C. First Year Basic Military Science.

##### (½ course each)

One hour of classwork and one hour of leadership laboratory. Organization of the Army R.O.T.C., United States Army and National Security, individual weapons and marksmanship, and leadership. In addition, one hour of classwork and one hour of leadership laboratory; the student in course 1B is also required to participate in a six-hour Saturday field trip. The student must complete a two-unit (½ course) elective during one quarter in one of the following fields: effective communication, science comprehension, general psychology, political development, and political institutions. The Staff

#### 20A-20B-20C. Second-Year Basic Military Science.

Prerequisites: courses 1A-1B-1C or may be taken concurrently with 1A-1B-1C. One hour of classwork and one hour of leadership laboratory, the student in course 20A is also required to participate in a six-hour Saturday field trip. The areas of studies are American military history, map and aerial photography reading, introduction to basic tactics and techniques and leadership laboratory. The Staff

#### 20SC. First- and Second-Year Basic Military Science.

Six-week summer camp taken in lieu of 1A, 1B, 1C, 20A, 20B, and 20C. Contact Department for eligibility.

#### The Advanced Course (Upper Division)

The Advanced Course of instruction is designed to produce junior officers who by their education, training, and inherent qualities are suitable for continued development as officers in any arm or service of the United States Army. Training in military leadership is emphasized. Instruction is given in subjects common to all branches of the Army and qualifies the graduate for the duties of a junior officer. Students in this program, pursuing courses in basic science and engineering, are fully qualified for commissions in the arms or service related to their academic course of study.

Admission to the Advanced Course is by selection from qualified regularly enrolled students who meet the academic and physical requirements and who have demonstrated positive interest and leadership potential.

Students may apply if they have successfully completed one year of the Basic Course or have credit for the Basic Course from other institutions authorized to present the equivalent instruction or can present evidence of satisfactory service in the Armed Forces. A student must qualify for appointment as second lieutenant prior to reaching twenty-eight years of age. Normally, students accepted for entrance into the Advanced Course must have at least two more academic years remaining before qualifying for their first baccalaureate degree.

Students, other than scholarship program students, accepted for admission to the Advanced Course are paid approximately \$1000 during the two-year period (exclusive of summer camp). All students have the use of all necessary equipment and textbooks free of charge. The officers uniform provided each student becomes his personal property upon successful completion of the Advanced Course.

Advanced Course students are required to attend a six-week course of training at R.O.T.C. summer camp during the summer vacation period following the completion of the first year of the Advanced Course; this summer camp is attended by Advanced Course R.O.T.C. students from several universities. The training is designed to provide the broad background necessary for a junior officer and stresses practical work in leadership, physical development, and knowledge of the important roles played by all branches of the service in the military team. Supervised social and recreational activities are provided. The student is furnished uniforms, equipment, and receives \$180 and travel expenses to and from camp. Academic credit

of four units or one course for the six weeks of camp is granted by the University.

**Flight Training Program.** Flight Instruction is offered to students in the second year of the Advanced Course. Under this program the Army will pay for flight training for selected qualified R.O.T.C. students. To qualify, the student must have an aptitude for flying and meet required physical standards.

#### 103A-103B-103C. First-Year Advanced Military Science.

Three hours of classwork and one hour of leadership laboratory. Prerequisite: basic course, or basic summer camp, or six or more months active-duty service in the Armed Forces. Leadership, military teaching principles, branches of the Army, small-unit tactics and communications, precamp orientation, leadership laboratory. In addition, the student must complete a two-unit ( $\frac{1}{2}$  course) elective during one quarter in one of the following fields: effective communications, science comprehension, general psychology, political institutions. The student is required to participate in a four day field training exercise at Camp Pendleton, California, scheduled during the break between the winter and spring quarters. (With consent of the Professor of Military Science, extra-curricular special training conducted during the fall and winter quarters may be substituted for this requirement.) The student is required to meet minimum standards of physical fitness established by the Department; the student who fails to meet these standards must enroll in Physical Education 1 (Military Conditioning) each quarter until standards are met.

The Staff

#### 104A-104B-104C. Second-Year Advanced Military Science.

Three hours of classwork and one hour of leadership laboratory.

Prerequisite: 103A-103B-103C. Operations, logistics, Army administration, military law, the role of the United States in world affairs, service orientation, leadership laboratory. In addition, the student must complete a two-unit ( $\frac{1}{2}$  course) elective during one quarter in one of the following fields: effective communications, science comprehension, general psychology, political development, and political institutions.

The Staff

## MOLECULAR BIOLOGY

### Undergraduate Study

Undergraduate students with interest in molecular biology are advised to complete an undergraduate major in chemistry, biology, or physics, and to adapt their course programs in consultation with the appropriate undergraduate advisers. In making preparation for graduate study, attention could be given to recommended courses listed below for the Ph.D. degree in molecular biology.

### Graduate Study

A program of study leading to the Ph.D. degree in molecular biology is offered as an

interdepartmental degree under the supervision of a Molecular Biology Training Committee of the Graduate School. The Molecular Biology Institute serves this Committee and the various departments concerned in support of faculty research and teaching associated with the Ph.D. program.

In general, recommended undergraduate training for the Ph.D. degree program includes a major in a biological or physical science. Course work should include mathematics through calculus, one year each of general and of organic chemistry, a year each of physics and physical chemistry based on use of calculus, and a year of biology.

Modification in undergraduate requirements may be made for qualified candidates with interests in certain areas. Candidates may enter the program with some course deficiencies, but with anticipation those will be made up in the early part of the graduate program.

Staff for the degree program are drawn from members of appropriate departments and the Molecular Biology Institute. Areas for study include molecular genetics, structure-function relationships of biopolymers,

biological ultrastructure, energy transduction, and molecular basis of biological regulation. Entering students are eligible for fellowship support during the first year of graduate study while gaining perspective in various areas and before selection of a specific adviser and submission of an individualized program of graduate study.

Additional details and information may be obtained by writing to the Director of the Molecular Biology Institute.

## ■ MUSIC

(Department Office, 2449 Schoenberg Hall)

Frank A. D'Accone, Ph.D., *Professor of Music.*

Mantle Hood, Ph.D., *Professor of Music and Director of the Institute of Ethnomusicology.*

Boris A. Kremenliev, Ph.D., *Professor of Music.*

W. Thomas Marrocco, Ph.D., *Professor of Music.*

Robert U. Nelson, Ph.D., *Professor of Music.*

Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and Psychology.*

H. Jan Popper, Ph.D., *Professor of Music.*

Gilbert Reaney, M.A., *Professor of Music.*

Walter H. Rubsamen, Ph.D., *Professor of Music (Chairman of the Department).*

Clarence E. Sawhill, Mus.D., *Professor of Music.*

Robert M. Stevenson, Ph.D., *Professor of Music.*

Roy E. Travis, M.A., *Professor of Music.*

John N. Vincent, Jr., Ph.D., *Professor of Music.*

Donald K. Wilgus, Ph.D., *Professor of English and Anglo-American Folk Song.*

Raymond Moremen, M.S.M., *Emeritus Professor of Music.*

§Feri Roth, Mus.D., *Emeritus Professor of Music.*

Paul E. Des Marais, M.A., *Associate Professor of Music.*

Maurice Gerow, Ph.D., *Associate Professor of Music.*

Edwin H. Hanley, Ph.D., *Associate Professor of Music.*

William R. Hutchinson, Ph.D., *Associate Professor of Music.*

Henri Lazarof, M.F.A., *Associate Professor of Music.*

Robert L. Tusler, Ph.D., *Associate Professor of Music.*

Alden Ashforth, M.F.A., *Assistant Professor of Music.*

Paul S. Chihara, A.M.D., *Assistant Professor of Music.*

Malcolm Cole, Ph.D., *Assistant Professor of Music.*

Maureen Hooper, M.A., *Assistant Professor of Music.*

Richard A. Hudson, Ph.D., *Assistant Professor of Music.*

David Morton, Ph.D., *Assistant Professor of Music.*

———, *Assistant Professor of Music.*

———, *Assistant Professor of Music.*



Judith Balsam, *Associate in Music.*

James R. Bossert, M.A., *Acting Assistant Professor of Music.*

Murray C. Bradshaw, M.M., *Acting Assistant Professor of Music.*

§ Recalled to active service.

- Marjorie Call, B.M., *Lecturer in Music.*  
 Mario Carta, *Associate in Music.*  
 Charles DeLancey, M.A., *Lecturer in Music.*  
 Robert L. DiVall, B.A., *Lecturer in Music.*  
 George Drexler, *Lecturer in Music.*  
 Bert Gassman, *Lecturer in Music.*  
 Alan Gilbert, *Lecturer in Music.*  
 Albert Goldberg, *Lecturer in Music.*  
 Gary C. Gray, M.M., *Lecturer in Music.*  
 Thomas Harmon, M.A., *Acting Assistant Professor of Music.*  
 Malcolm Hamilton, D.M.A., *Lecturer in Music.*  
 Roy Harris, Hon.Doc., *Lecturer in Music.*  
 Freeman K. James, M.A., *Lecturer in Music.*  
 Bess Karp, B.A., *Lecturer in Music.*  
 Leon Knopoff, Ph.D., *Research Musicologist in Ethnomusicology.*  
 Douglas H. Leedy, M.A., *Acting Assistant Professor of Music.*  
 Natalie Limonick, B.A., *Lecturer in Music.*  
 Sinclair R. Lott, B.A., *Lecturer in Music.*  
 Tsun Y. Lui, *Lecturer in Music.*  
 Mitchell Lurie, *Lecturer in Music.*  
 Mehli Mehta, *Lecturer in Music.*  
 Peter Mercurio, M.A., *Lecturer in Music.*  
 Frederick W. Moritz, *Lecturer in Music.*  
 Roy H. Morton, *Lecturer in Music.*  
 Theodore Norman, *Lecturer in Music.*  
 Cesare A. Pascarella, *Lecturer in Music.*  
 Barbara Patton, B.A., *Lecturer in Music.*  
 Stanley Plummer, *Lecturer in Music.*  
 Sven H. Reher, M.A., *Lecturer in Music.*  
 Charles Seeger, B.A., *Research Musicologist in Ethnomusicology.*  
 Peggy Ann Sheffield, M.M., *Associate in Music.*  
 Hardja Susilo, M.A., *Lecturer in Music.*  
 Paul O. W. Tanner, M.A., *Lecturer in Music.*  
 Pauline V. Turrill, M.A., *Lecturer in Music.*  
 Aube Tzerko, B.M., *Lecturer in Music.*  
 Roger Wagner, Mus.D., *Lecturer in Music.*  
 Donn Weiss, M.M., *Lecturer in Music.*  
 Edward V. Williams, M.A., *Acting Assistant Professor of Music.*  
 Erwin Windward, B.A., *Lecturer in Music.*  
 Waldo M. Winger, M.A., *Lecturer in Music.*  
 Mitsuru Yuge, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*  
 ———, *Lecturer in Music.*

#### Requirements for Entering Music Students

Students planning to complete a major or minor in music whether or not they have en courses elsewhere, are required to take aptitude and achievement tests prior to en-

rollment in classes. These examinations, which include piano sight-reading and music fundamentals, are administered during pre-registration and registration weeks. Students with exceptional ability and achievement

may satisfy lower division requirements in musicianship and harmony by examination. Further information may be obtained from the Department of Music.

### Music Department Honors Program

This program is designed for the senior student majoring in music who has achieved a 3.25 overall academic average and who has been recommended by the Department. If the student qualifies for this program, he must obtain the permission of the faculty member with whom he wishes to work. The program will allow the qualified student to work on an individual project in his field of specialization during one quarter of his senior year and obtain unit credit equivalent to one course. During this quarter the student need not enroll in any other courses. A public presentation will conclude the project, whether it be a composition, musicological paper, or a recital.

### Preparation for the Major

Courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Three quarters of either French, German, or Italian, or the equivalent.

## COLLEGE OF FINE ARTS

### Distribution of Units

The total number of courses in the Music Department which may be included in the 45 courses required for the Bachelor of Arts degree may not exceed 21.

### The Major

A minimum of 15 courses in the upper division, including 100A-100B, 106A, 107A; three courses from 120-146 including one course from 120-122 and one from 123-125; two years of performance organization courses 170, 171; and five courses selected from one of the specializations listed below:

1. Composition and Theory: courses 106B, 107B-107C and two elective courses from 101, 103A-103B, 104, 105, 106C, 108, 141-144, 192 and 194.

2. History and Literature: two additional courses, one chosen from 120-122, one from 123-125, and three elective courses. Recommended: courses 120-125, 130-140, 150-153, and 191.

3. Ethnomusicology: 140A-140B, one additional period course in Western music from 120-122, and two courses selected from 123-125, 141-146, or 190A-190B.

4. Performance: three courses in applied music classes 160-165, and two elective courses of which no more than one can be in applied music classes or performance organizations. Recommended: 101, 110A-110B, 111A-111B, 171, and additional courses in performance.

5. Music Education: five courses toward credential requirements selected from one of the following groups: (a) Instrumental and General Music: Music 111A, 114, 115A-115B-115C-115D, 116, 193, (Proficiency examinations covering the equivalent of two quarters in piano and one quarter in voice are required for the credential.†) (b) Choral and General Music: Music 110A-110B, 114, 193, and two elective courses. (Proficiency examinations covering the equivalent of six quarters in piano and six quarters in voice are required for the credential.†) (c) Elementary Music: Music 113, 115A-115B-115C, 193 and one and one-half elective courses. (Proficiency examinations covering the equivalent of three quarters in piano and three quarters in voice are required for the credential.†)

NOTE: For further information on teaching credentials, consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION and the music education adviser in the Department of Music.

## COLLEGE OF LETTERS AND SCIENCE

### The Major

Twelve courses of upper division work distributed as follows: courses 100A-100B, 106A, 107A; three courses from courses 120-146, including one course from 120-122 and one from 123-125; two years of performance organization courses 170, 171; and two additional upper division courses in music.

## GRADUATE DIVISION

All graduate students are required to take placement examinations in the following subjects: *harmony, counterpoint, history and literature of music* (part I, before 1750; part II, after 1750), *formal analysis and identification of styles* (part I, before 1750; part II, after 1750), *score reading* (including basic piano), and *solo performance* in the student's principal performing medium. The placement examinations are given just prior to the fall quarter and again during the year at times to

† The proficiency examinations are required as a prerequisite to student teaching. Students with advanced work in piano and/or voice may be exempt from the course work by passing the proficiency examinations during the junior year.

be announced. Entering students are required to take at least five of the eight examinations prior to their first quarter of residence, and the remaining examinations during the following two quarters. Where deficiencies are indicated, the student will retake the examination(s) or complete appropriate course work with a minimum grade of B. (A listing of appropriate courses is available from the secretary of the departmental graduate committee.) In addition, the student's transcript must show at least a grade B average in each of the following subjects: musicianship (dictation, sight singing, and keyboard harmony) and orchestration. Deficiencies in these areas must be removed by examination or appropriate course work.

The completion of all of the above requirements is prerequisite to the final examination for the M.A. degree and the qualifying examinations for the Ph.D. degree.

#### **Requirements for the Secondary Credential and Elementary Credential**

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

#### **Requirements for the Master of Arts Degree**

For general requirements, see page 136. In addition, candidates for the Master of Arts degree in music must satisfy the following:

**Admission.** The candidate must have completed a bachelor's degree with a major in music (or the equivalent degree) as described in this bulletin, on page 137. All prospective graduate students in composition should submit scores for evaluation at the time they apply for admission to the Graduate Division. Those unable to do so can only be admitted provisionally, subject to the submission and ultimate approval of their compositions by the faculty.

**Fields.** Concentration of studies may be in historical musicology, ethnomusicology, systematic musicology, music education or composition.

**Thesis.** In historical musicology, ethnomusicology, and systematic musicology, the thesis will be an extended musicological essay (see page 138). For composition students the thesis will be a composition in a large form. Students in music education may elect either The Thesis Plan or the Comprehensive Examination Plan (see program in music education, below).

**Course of Study.** Each student should plan his program under the guidance of a

graduate adviser. He is required to take courses 200A-200B (exception: students whose field is composition need take only course 200A). He is also required to attend a proseminar or seminar appropriate to his discipline during each quarter of attendance: historical musicology, courses 191, 210, 211, 250, 256, 260; composition, courses 192, 194, 249, 251, 252; ethnomusicology, courses 190A, 190B, 280; systematic musicology, courses 269, 272, 275; music education, courses 193, 270. Exceptionally a student may be allowed, upon petition, to substitute courses 596A, 596B, 596C for a seminar in his discipline. Course 598 serves to guide the preparation of the thesis and should normally be taken for one quarter after the completion of the placement examinations. All candidates are required to complete a minimum of nine courses in graduate residence, five of which must be at the graduate level. A maximum of two courses in performance may be counted toward the master's degree; no more than one may be from courses 160-165, nor more than one from courses 170-171. In addition to these, only the following upper division courses will be allowed to count toward the course requirement for the master's degree: 101, 103, 104, 105, 106B, 106C, 107B†, 107C‡, 108, 110†, 111†, 113†, 120, 121, 122, 123, 124, 125, 130, 131, 138, 139, 140A§, 140B§, 141, 142, 143, 144, 145, 146, 198, 199, Psychology 188A-188B.

**Foreign Language.** A reading knowledge of French, German, or Italian is required.

**Examinations.** All candidates must take the placement examinations and pass them completely before taking the final examination; the latter is oral, and includes both defense of the thesis and related matters. Students in music education electing the Comprehensive Examination Plan will substitute a comprehensive examination (described below) for the final examination.

**Program in Music Education.** The student may follow either the Thesis Plan or the Comprehensive Examination Plan. The Thesis Plan constitutes the first phase of the program leading to the Ph.D. degree, and is identical with the general program outlined above. The Comprehensive Examination Plan, is designed for students intending to teach, or who are currently teaching, at

† May be applied only by students whose emphasis is music education.

§ Will not count for students whose emphasis is ethnomusicology.

|| Will not count for students whose emphasis is composition.

the elementary, secondary, or junior college level. The Comprehensive Examination Plan is not acceptable for future Ph.D. candidates. The Comprehensive Examination Plan is identical with the Thesis Plan, with the exception that the student will complete, in lieu of a thesis, a research project in music education, and pass a comprehensive examination consisting of a three-hour examination in his area of specialization (music in the elementary school, choral or instrumental music in the secondary school, or music in the junior college); a three-hour examination in the general field of music education; and a two-hour examination in theory, composition, ethnomusicology, historical or systematic musicology. In addition, students electing the Comprehensive Examination Plan must complete courses 200A-200B, 270, 463, 596C, and four elective courses. Three of the elective courses must be in areas of music other than music education or performance. The remaining elective course may be taken outside the Department but cannot fulfill a requirement for a credential.

#### Requirements for the Doctor's Degree

For the general requirements, see page 140. In addition, candidates for the Doctor of Philosophy degree in music must satisfy the following:

**Admission.** The candidate must have an M.A. in music (or the equivalent degree) as described in this bulletin on page 357. The degree normally will have been in the same field of concentration as the proposed doctorate. If a student wishes to obtain a doctorate in a field other than that of his M.A. he must complete additional work as prescribed by the Department. All prospective graduate students in composition should submit scores for evaluation at the time they apply for admission to the Graduate Division. Those unable to do so, can only be admitted provisionally, subject to the submission and ultimate approval of their compositions by the faculty.

**Fields.** The Ph.D. is offered in historical musicology, ethnomusicology, systematic musicology, music education, and composition.

**Dissertation.** In all fields but composition the dissertation will be an extended musicological monograph. In the field of composition, the dissertation will be a composition in an extended form, accompanied by an essay that analyzes the work thoroughly, describes its techniques and style, and shows its relationship to the tradition.

**Course of Study.** Each student should plan his program under the guidance of a graduate adviser. He is required to take courses 200A-200B (exception: students whose field is composition need only take course 200A). He is also expected to attend a seminar appropriate to his discipline during each quarter of attendance until the Ph.D. qualifying examinations have been passed: historical musicology, courses 210, 211, 250, 256, 260; ethnomusicology, course 280, or with an interdisciplinary emphasis, 258; systematic musicology, courses 269, 272; music education, course 270; composition, courses 249, 251, 252. Candidates for the Ph.D. in composition are required to complete at least seven courses beyond the M.A. degree. In exceptional circumstances, and upon petition, a student may substitute course 596A, 596B, 596C for the seminar in his discipline. Course 599 serves to guide the preparation of the dissertation and should normally be taken for three quarters after the completion of the qualifying examinations.

**Foreign Language.** In all fields except composition, candidates must have a command of French (or Italian, upon petition) and German, and of such other languages (e.g., Latin, Japanese, Russian, Spanish) and skills (notation, statistics) as the field of specialization may require. In the field of composition the candidate will elect two languages from the following: German, French, Italian, Russian, or Latin.

**Examinations.** Before he is admitted to candidacy, the student must pass a series of qualifying examinations; after he has completed his dissertation he must pass a final examination, concerned primarily with the defense of his dissertation. The qualifying examinations are both written and oral. In all fields but composition the written examinations consist of the following: (a) history of musical styles in Western civilization (three hours); (b) analysis of form, style and texture in Western music (three hours); (c) an examination to demonstrate a basic knowledge of the music of non-Western cultures (two hours); and (d) a choice of one or more: acoustics of music, aesthetics of music, psychology of music, and organology (two hours).

In the following fields of specialization further written examinations, totaling six hours, are required in two areas:

**Historical musicology.** One area to be selected from Ancient, Medieval, Renaissance,

or Baroque music; the other area from classical, romantic, or 20th-century music.

**Ethnomusicology.** Two areas to be selected from contrasting musical cultures.

**Systematic musicology.** Two areas to be selected from acoustics, psychology of music, aesthetics of music and organology.

**Music education.** Two areas, one to encompass historical, philosophical, and psychological bases, the other to be selected from music education emphasizing elementary, secondary, college-university levels, or adult education.

**Composition.** The written qualifying examinations consist of the following: (a) general history of music (three hours); (b) one or more of the following: acoustics, psychology of music, aesthetics of music, or ethnomusicology (three hours); (c) 20th century music and analysis (three hours); and (d) music theory from the medieval period to the present (three hours).

The written qualifying examinations are administered by the student's guidance committee. At their conclusion an oral examination, covering the general and specialized areas mentioned above, is administered by the doctoral committee.

#### Lower Division Courses

### 1. Fundamentals of Music.

(Formerly numbered 31.) Five hours weekly, including two laboratory hours. May not be applied toward the degree by the student whose major is music. Singing, ear training, reading music and harmonization of simple melodies are the basic skills developed in this course. The Staff

### 2A-2B. Introduction to the Literature of Music.

(Formerly numbered 30A-30B.) Five hours weekly, including two laboratory hours. Course 2A is prerequisite to 2B. Designed for the general University student. Course 13A-13B is for the major and minor in music. 2A surveys the technical and formal principles of music literature through the mid-eighteenth century; 2B surveys music literature from the mid-eighteenth century to the present. Mr. Hanley, Mr. Hutchinson

### 3A-3B-3C. Fundamentals of Voice. (½ course each)

(Formerly numbered 40A.) Four hours weekly. Will not count toward the degree for the student whose major is music. Mrs. Patton, Mr. Windward, Mr. Winger

### 4. Fundamentals of Piano. (½ course)

(Formerly numbered 40E.) Three hours weekly. Will not count toward the degree for the student whose major is music. Mrs. Turrill

### 10A-10B-10C. Musicianship. (½ course each)

(Formerly numbered 1A-1B-1C.) Five hours weekly, including three laboratory hours. For pre-

requisites see Requirements for Entering Music Students, page 355. Students must enroll in the corresponding course and section of the 11 series. Ear training, sight singing, dictation, and keyboard harmony are correlated with the corresponding quarter of course 11A-11B-11C. The Staff

### 11A-11B-11C. Harmony. (½ course each)

(Formerly numbered 3A-3B-3C.) Two hours weekly. For prerequisites see Requirements for Entering Music Students, page 355. Students must enroll in the corresponding course and section of the 10 series. The study of harmony in music from Bach through the 20th century. The Staff

### 12A-12B. Counterpoint.

(Formerly numbered 5A-5B.) Four hours weekly. Prerequisites: courses 10A-10B-10C and 11A-11B-11C. Writing and analysis of representative contrapuntal works. First quarter: modal counterpoint; second quarter: tonal counterpoint. The Staff

### 13A-13B. Introduction to Musical Styles.

(½ course each)

(Formerly numbered 20A-20B-20C-20D.) Two hours weekly. Course 13A is prerequisite to 13B. Surveys the principal compositions of Western art tradition with emphasis on listening. Designed for the major and minor in music. Mr. Des Marais, Mr. Marrocco, Mr. Hanley

### 60-65. Applied Study of Music Literature:

Intermediate. (½ course each)

Two hours weekly. Prerequisites: consent of the instructor. Students enrolling in the following courses must be able to perform scales in all keys for the instrument or voice and must demonstrate proficiency in a repertoire of smaller forms. May be repeated for credit.

**String Classes.** 60A. Violin; 60B. Viola; 60C. Cello; 60D. String Bass; 60E. Harp; 60F. Classical Guitar; 60G. Viola da gamba. (Formerly numbered 41K, 41L, 41M, 41N, 41X respectively.) The Staff

**Woodwind Classes.** 61A. Flute; 61B. Oboe; 61C. Clarinet; 61D. Bassoon. (Formerly numbered 41P, 41Q, 41R, 41S respectively.) The Staff

**Brass Classes.** 62A. Trumpet; 62B. French Horn; 62C. Trombone. (Formerly numbered 41U, 41T, 41V respectively.) The Staff

**Percussion Classes.** 63. Percussion (Formerly numbered 41W.) The Staff

**Keyboard Classes.** 64A. Piano; 64B. Organ; 64C. Harpsichord. (Formerly numbered 41E, 41J, 41Y respectively.) The Staff

**Voice Classes.** 65. Voice. (Formerly numbered 41A.) The Staff

### 70A-70N. Performance Organizations.

(½ course each)

(Formerly numbered 42D, 42C, 42F, 42E, 42J, 42G, 42A, 42B, 42K, 42H respectively.) Prerequisites: consent of the instructor.

70A. A Cappella Choir; 70B. University Chorus; 70C. Madrigal Singers; 70D. Men's Glee Club; 70E. Women's Choral Society; 70F. Collegium Musicum; 70G. Chamber Music; 70H. Symphony Orchestra; 70J. Symphonic Band; 70K. Marching and Varsity Bands; 70L. Opera Workshop; 70N. Chamber Orchestra. The Staff

## 71A-71N. Ethnomusicology Performance Organizations. (½ course each)

(Formerly numbered 45A, 45B, 45C, 45D, 45E, 45F, 45G, 45H, 45J, 45K, 45L, 45M respectively.)  
Prerequisite: consent of the instructor.

71A. Music and Dance of Bali; 71B. Music and Dance of the Balkans; 71C. Music of China; 71D. Music and Dance of Ghana; 71E. Music and Dance of Greece; 71F. Music of India; 71G. Music and Dance of Japan; 71H. Music and Dance of Java; 71J. Music and Dance of Mexico; 71K. Music of Persia; 71L. Music of the Philippines; 71M. Music of Thailand; 71N. Music of Korea. The Staff

### Upper Division Courses

## 100A-100B. Studies in Analysis.

(Formerly numbered 108A-108B.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; course 100A is prerequisite to 100B. Analysis of significant works from each of the style periods of Western music with emphasis upon the techniques of composition.

100A: Gregorian Chant through 1750; 100B: Roccoco to the Present.

Mr. Nelson, Mr. Stevenson, Mr. Tusler

## 101. Keyboard Harmony and Score Reading.

(Formerly numbered 101 and 102.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Emphasizes the reading of figured bass, sequences, modulations in the harmonic vocabulary of the 18th and 19th centuries. Reading at the piano of multi-staff notation, the various C clefs, and parts for transposing instruments; chamber music and simple orchestral scores. The Staff

## 103A-103B. Advanced Harmony.

Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The advanced study of harmonic practices. Mr. Travis

## 104. Advanced Modal Counterpoint.

(Formerly numbered 105.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Writing in three and more voices, with emphasis on 16th century practices. Mr. Nelson

## 105. Fugue.

(Formerly numbered 106.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Fugal writing for three and more voices. Mr. Nelson

## 106A-106B-106C. Orchestration.

(Formerly numbered 109A-109B.) Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; course 106A is prerequisite to 106B; course 106B is prerequisite to 106C.

106A: Instrumentation; 106B-106C: Scoring for Ensembles and Full Orchestra. The Staff

## 107A-107B-107C. Composition.

Three hours weekly. 107A. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B, and 100A-100B which may be taken concurrently. Vocal and instrumental composition in the smaller forms 107B. Prerequisite: course 107A. Primarily for the student whose specialization is composition.

107C. Prerequisites: course 107B and consent of the instructor. Primarily for the student whose specialization is composition. The Staff

## 108. Acoustics.

(Formerly numbered 118.) Four hours weekly. Prerequisite: one year of high school physics, Physical Sciences 1, or the equivalent. A course covering the physical basis of musical sounds, including a discussion of the objective cause of consonance and dissonance, together with a treatment of the generation and the analysis of the tones produced by the various musical instruments and the voice. Illustrated lectures and class discussions. Mr. Petrus

## 110A-110B. Study and Conducting of Choral Literature. (½ course each)

(Formerly numbered 110 and 179B.) Five hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B; 110A is prerequisite to 110B. The theory and practice of conducting as related to the study of choral works from the Renaissance to the present day. Mr. Gerow, Mr. Weiss

## 111A-111B. Study and Conducting of Instrumental Literature.

(Formerly numbered 111 and 179A.) Five hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The theory and practice of conducting as related to the study of instrumental works for string and wind ensembles. Mr. Sawhill

## 112. Band Scoring.

Four hours weekly, including two laboratory hours. Prerequisite: course 106A. Scoring for the modern band and wind ensembles. Mr. James

## 113. Music Literature for Children.

(Formerly numbered 179C.) Four hours weekly, including one laboratory hour. Prerequisite: any one of the following: course 1, 2A, 13A, or consent of the instructor. Study of folk and art music suitable for children, including vocal and orchestral literature of selected periods and countries. Mr. Gerow, Miss Hooper

## 114. Music Literature for the Adolescent.

Five hours weekly, including one laboratory hour. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B, 193. The study of basic concert repertoire of selected periods and countries suitable for use with the adolescent. Emphasis will be placed upon the development of the skills of analysis and research needed in the preparation of musical materials for the beginning and intermediate young listener. Mr. Gerow, Miss Hooper

## 115A-115D. Study of Instrumental Techniques. (½ course each)

Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The study of instruments and the techniques used in the development of tone, intonation, fingering, relationships and transposition. Mr. Sawhill, Mr. Tanner

## 116. Study of Instrumental Ensembles. (½ course)

Four hours weekly. Prerequisites: courses 115A-115B-115C-115D, 193. Students will be assigned to small string and/or wind ensembles as soon as

they become proficient in their playing. Written arrangements for small ensembles in various combinations will be performed in class. Mr. James

## 120. Music in the Middle Ages.

(Formerly numbered 123.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. A detailed study of the musical forms and an introduction to sacred and secular music from early Christian times to the end of the 14th century. The Staff

## 121. Music in the Renaissance Period.

(Formerly numbered 124.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The meaning of the Renaissance as it applies to music. A study of musical forms, techniques, and aesthetic attitudes from the pre-Renaissance through the age of Palestrina. The Staff

## 122. Music in the Baroque Period.

(Formerly numbered 125.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. A study of representative works from Monteverdi through Handel and J. S. Bach. The Staff

## 123. Music in the Classic Period.

(Formerly numbered 126.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. A study of representative works from Domenico Scarlatti through Haydn, Mozart, and Beethoven. The Staff

## 124. Music of the Romantic Period.

(Formerly numbered 127.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. The growth of Romanticism in the works of Weber and Schubert; the expansion of the style and its culmination in Brahms, Wagner, and Mahler. The Staff

## 125. Music of the Twentieth Century.

(Formerly numbered 128.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Form, style, and idiom in music from 1900 to the present. The Staff

## 130. Music of the United States.

(Formerly numbered 121A.) Four hours weekly. Prerequisite: course 2A, or 13A or consent of the instructor. A survey of art music from colonial times to the present. Mr. Marrocco

## 131. Music of Latin America.

(Formerly numbered 121B.) Four hours weekly. Prerequisite: consent of the instructor. A survey of art music from the earliest times to the present. Mr. Stevenson

## 132. Development of Jazz.

(Formerly numbered 153.) Four hours weekly, including one laboratory hour. Prerequisite: course 2A or 13A or consent of the instructor. An introduction to jazz; its historical background and its development in the United States. Mr. Tanner

## 133. Bach.

(Formerly numbered 150.) Four hours weekly, including two laboratory hours. Prerequisite: course 2A or 13A or consent of the instructor. The life and works of Johann Sebastian Bach. The Staff

## 134. Beethoven.

(Formerly numbered 151.) Four hours weekly, including two laboratory hours. Prerequisite: course 2A or 13A or consent of the instructor. The life and works of Ludwig van Beethoven. The Staff

## 135A-135B-135C. History of the Opera.

(Formerly numbered 152.) Five hours weekly, including one laboratory hour. Prerequisite: course 2A or 13A or consent of the instructor. 135A: Opera of the Baroque and Classical Periods; 135B: Opera of the Romantic Period; 135C: Opera of the Twentieth Century. Mrs. Limonick, Mr. Popper

## 136. Music for the Legitimate Drama and Dramatic Motion Picture.

(Formerly numbered 137.) Four hours weekly. Prerequisite: consent of the instructor. A history and analysis of incidental music for the theater from ancient Greece to the present. The place and function of background or mood music, overtures, entr'actes, and music that relates to the action or locale. Mr. Rubsamen

## 137. Political Influence on Music.

(Formerly numbered 138.) Four hours weekly. Prerequisite: consent of the instructor. The influence of revolution and dictatorship upon music and its allied arts from antiquity to the present. The Staff

## 138. Aesthetics of Music.

(Formerly numbered 139.) Three hours weekly. Prerequisite: course 2A or 13A or consent of the instructor. A survey of the literature of music aesthetics from Plato to the present. Mr. Marrocco

## 139. History and Literature of Church Music.

(Formerly numbered 171.) Four hours weekly. Prerequisite: course 2A or 13A or consent of the instructor. A study of the forms and liturgies of western church music. Mr. Weiss

## 140A-140B-140C. Musical Cultures of the World.

(Formerly numbered 136A-136B.) Five hours weekly, including two laboratory hours. Prerequisite: consent of the instructor. Course 140A is not prerequisite to 140B. A survey of the musical cultures of the world (excluding western art music), the role of music in society and its relationship to other arts; consideration will also be given to scale structure, instruments, musical forms and performance standards. Mr. Morton

## 141. Music of Indonesia.

(Formerly numbered 122.) Four hours weekly, including two laboratory hours. Prerequisite: course 140A-140B or consent of the instructor. Study of the diverse musical cultures of Indonesia, with emphasis on the music, dance, theater, literature and historical background of Java and Bali, including a laboratory in gamelan performance. Mr. Hood

## 142. Music of the Balkans.

(Formerly numbered 129.) Four hours weekly, including two laboratory hours. Prerequisite: course 140A-140B or consent of the instructor. A survey of the music of the Balkan countries, including a study of eastern and western elements; performance on representative instruments. Mr. Kremenliev

## 143A-143B. Music of Africa.

(Formerly numbered 176A-176B.) Five hours weekly, including two laboratory hours. Prerequisite:

course 140A-140B or consent of the instructor. Course 143A is prerequisite to 143B. An investigation of the historical aspects, social functions and relationships of music to other art forms in selected areas of Africa. **The Staff**

#### 144. American Folk and Popular Music.

(Formerly numbered 120 and same as Folklore 144.) Four hours weekly, including one laboratory hour. Prerequisite: course 2A or 13A or consent of the instructor. A survey of the history and characteristics of the music developed in or for general American culture and various subcultures. **Mr. Wilgus**

#### 145. History and Theory of Persian Music.

Four hours weekly. Prerequisites: courses 140A-140B or consent of the instructor. A detailed analytical study of the history, the theory and the aesthetics of Persian classical music, covering both instrumental and vocal tradition. **The Staff**

#### 146. Music of Thailand.

Four hours weekly, including one laboratory hour. Prerequisites: courses 140A-140B or consent of the instructor; concurrent participation in Music of Thailand study group. Study of the traditional music of Thailand, with emphasis on the historical background, evolution of the music, instruments and ensembles, forms and styles, theatrical and dance music; the music in its social context. **Mr. Morton**

#### 150. Music Criticism. (½ course)

Two hours weekly. Prerequisites: courses 2A, 13A, or consent of the instructor. A study of factors in critical evaluation of musical works in performance. **Mr. Goldberg**

#### 151. History of Musical Performance Practices. (½ course)

Two hours weekly. Prerequisites: courses 2A, 13A, or consent of the instructor. A study of musical interpretation and re-creation from the viewpoint of stylistic authenticity. **Mr. Goldberg**

#### 152. Survey of Chamber Music since Mozart. (½ course)

Two hours weekly. Prerequisites: courses 2A, 13A, or consent of the instructor. A history and analysis of typical works of chamber music in the Classic, Romantic and modern periods. **Mr. Roth**

#### 153. History of Chamber Music Performance. (½ course)

Two hours weekly. Prerequisites: courses 2A, 13A, or consent of the instructor. A survey of interpretation, techniques, and performance practices in chamber music. **Mr. Roth**

#### 160-165. Applied Study of Music Literature: Advanced. (½ course each)

Two hours weekly. Prerequisite: one year of intermediate instruction or its equivalent, and consent of the instructor.

**String Classes:** 160A. Violin; 160B. Viola; 160C. Cello; 160D. String Bass; 160E. Harp; 160F. Classical Guitar; 160G. Viola da gamba. (Formerly numbered 141K, 141L, 141M, 141N, 141X respectively.) **The Staff**

**Woodwind Classes:** 161A. Flute; 161B. Oboe; 161C. Clarinet; 161D. Bassoon. (Formerly numbered 141P, 141Q, 141R, 141S respectively.) **The Staff**

**Brass Classes:** 162A. Trumpet; 162B. French Horn; 162C. Trombone. (Formerly numbered 141U, 141T, 141V respectively.) **The Staff**

**Percussion Classes:** 163. Percussion. (Formerly numbered 141W.) **The Staff**

**Keyboard Classes:** 164A. Piano; 164B. Organ; 164C. Harpsichord; 164D. Accompanying; 164E. Performance Practices in Piano—enrollment only by consent of the instructor. Designed for the most advanced students. (Formerly numbered 141E, 141J, 141Y, 143, 144 respectively.) **The Staff**

**Voice Classes:** 165. Voice. (Formerly numbered 141A.) **The Staff**

#### 170A-170N. Performance Organizations. (½ course each)

(Formerly numbered 142D, 142C, 142F, 142E, 142E, 142J, 142G, 142A, 142B, 142K, 142H, 142B respectively.) Prerequisite: consent of the instructor.

**170A.** A Cappella Choir; **170B.** University Chorus; **170C.** Madrigal Singers; **170D.** Men's Glee Club; **170E.** Women's Choral Society; **170F.** Collegium Musicum; **170G.** Chamber Music; **170H.** Symphony Orchestra; **170J.** Symphonic Band; **170K.** Marching and Varsity Bands; **170L.** Opera Workshop; **170M.** Symphonic Wind Ensemble; **170N.** Chamber Orchestra. **The Staff**

#### 171A-171N. Ethnomusicology Performance Organizations. (½ course each)

(Formerly numbered 145A, 145B, 145C, 145D, 145E, 145F, 145G, 145H, 145J, 145K, 145L, 145M respectively.) Prerequisite: consent of the instructor.

**171A.** Music and Dance of Bali; **171B.** Music and Dance of the Balkans; **171C.** Music of China; **171D.** Music and Dance of Ghana; **171E.** Music and Dance of Greece; **171F.** Music of India; **171G.** Music and Dance of Japan; **171H.** Music and Dance of Java; **171J.** Music and Dance of Mexico; **171K.** Music of Persia; **171L.** Music of the Philippines; **171M.** Music of Thailand; **170N.** Music of Korea. **The Staff**

#### Proseminars

#### 190A-190B. Proseminar in Ethnomusicology.

(Formerly numbered 197.) Three hours weekly. Prerequisites: courses 140A-140B-140C. **The Staff**

#### 191. Proseminar in Historical Musicology.

Three hours weekly. Prerequisite: two courses from 120, 121, 122, 123, 124, 125. **The Staff**

#### 192. Proseminar in Composition.

Three hours weekly. Prerequisite: course 107C. **The Staff**

#### 193. Proseminar in Music Education.

Three hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. **Mr. Gerow, Miss Hooper**

#### 194. Proseminar in Orchestration.

Three hours weekly. Prerequisite: course 106A-106B-106C. **The Staff**

#### 198A-198F. Special Courses in Music. (½ to 1 course)

Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. **The Staff**

¶Does not fulfill the performance organization requirement for music majors unless 170J is taken concurrently.

**199. Special Studies in Music.**

Individual studies and Music Department Honors Program. May be repeated to a maximum of eight units. The Staff

**Graduate Courses****200A. Research Methods and Bibliography.**

Three hours weekly. A survey of general bibliographic material in music. The Staff

**200B. Research Methods and Bibliography.**

Three hours weekly. Prerequisite: course 200A. Guided writing, utilizing specific bibliography in historical musicology, systematic musicology, ethnomusicology, and music education. The Staff

**210. Seminar in Medieval Notation.**

(Formerly numbered 210A.) Three hours weekly. Prerequisite: course 120. Vocal and instrumental notation; paleography of the period. Mr. Reaney

**211. Seminar in Renaissance Notation.**

(Formerly numbered 210B.) Three hours weekly. Prerequisite: course 121. Vocal and instrumental notation; paleography of the period. Mr. Rubsamen

**249. Seminar in Theory.**

Three hours weekly. Prerequisite: course 107C. The Staff

**250. Seminar in the History of Music Theory.**

Three hours weekly. The Staff

**251. Seminar in Orchestration.**

(Formerly numbered 251A-251B.) Three hours weekly. Prerequisites: courses 106B and 107C. May be repeated for credit. The Staff

**252. Seminar in Composition.**

(Formerly numbered 252A-252B.) Three hours weekly. Prerequisites: courses 106B and 107C. May be repeated for credit. The Staff

**253. Seminar in Notation and Transcription in Ethnomusicology.**

Three hours weekly. Prerequisites: courses 140A-140B and 190A. The Staff

**254. Seminar in Field and Laboratory Methods in Ethnomusicology.**

Three hours weekly. Prerequisites: courses 140A-140B and 190A. Mr. Hood

**255. Seminar in Musical Instruments of the Non-Western World.**

Three hours weekly. Prerequisites: courses 140A-140B-140C. The Staff

**256. Seminar in Musical Form.**

Three hours weekly. Prerequisites: course 100A-100B. The Staff

**257. Seminar in Music of the United States and Canada.**

(Formerly numbered 257A.) Three hours weekly. Prerequisite: course 130. Mr. Marrocco

**258. Seminar in Anglo-American Folk Music.**

(Same as Folklore 258.) Three hours weekly. Prerequisite: course 144. Mr. Wilgus

**259. Seminar in Music of Latin America.**

(Formerly numbered 257B.) Three hours weekly. Prerequisite: course 131. Mr. Stevenson

**260. Seminar in Historical Musicology.**

(Formerly numbered 260A-260B.) Three hours weekly. Prerequisites: courses 200A and 200B; 210 or 211. Students may enroll in 200B, 210 or 211 concurrently. May be repeated for credit. Mr. Hanley, Mr. Rubsamen

**266. Seminar in Music of the Twentieth Century.**

Three hours weekly. Prerequisite: course 125. The Staff

**269. Seminar in the History of European Instruments.**

Three hours weekly. The Staff

**270. Seminar in Music Education.**

(Formerly numbered 270A-270B.) Three hours weekly. Prerequisite: course 193. May be repeated for credit. Mr. Gerow

**272. Seminar in Systematic Musicology.**

(Formerly numbered 272A-272B.) Three hours weekly. Prerequisite: course 108, Psychology 188A-188B, or consent of the instructor. May be repeated for credit. Mr. Petran

**275. Seminar in Aesthetics of Music.**

Three hours weekly. Prerequisite: course 138. Mr. Marrocco

**280. Seminar in Ethnomusicology.**

(Formerly numbered 280A-280B.) Three hours weekly. Prerequisite: courses 140A-140B and 200A-200B. May be repeated for credit. Mr. Hood

**Professional Courses****330. Music in the Elementary School.**

Five hours weekly, including one laboratory hour. A professional course to equip the student to teach many phases of music in the modern school. Emphasis is placed upon the study of musical literature and interpretive activities. Recommended for candidates for the elementary credential. Miss Hooper

**370. Music in General Education.**

Four hours weekly. Prerequisite: courses 110 or 111, 114, 193. Must be taken concurrently with supervised teaching. A study of music instructional materials and learning experiences for the student in general education at the secondary level. Miss Hooper

**463. Administration and Supervision of Music Education.**

Three hours weekly. Considers basic principles and procedures applicable to supervision of instruction, in-service education of teachers who teach music, and problems of administration in music education. Mr. Gerow

**Individual Study and Research****596A. Directed Individual Studies in Orchestration and Composition. (½ to 1 course)**

The Staff

**596B. Directed Individual Studies in Musicology. (½ to 1 course)**

The Staff

**596C. Directed Individual Studies in Music Education.** (½ to 1 course)

The Staff

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.** (½ to 1 course)

The Staff

**598. Guidance of Master's Thesis.**

The Staff

**599. Guidance of Doctoral Dissertation.**

The Staff

**Related Courses in Other Departments**Dance 154. Music as Dance Accompaniment.  
206. Music for Dance.Folklore 106. Anglo-American Folk Song.  
243. The Ballad.

Integrated Arts 1A-1B-1C. Integrated Arts.

Psychology 188A-188B-188C. Psychology of Music.

**NAVAL SCIENCE**

(Department Office, 123 Men's Gymnasium)

Robert R. Dupzyk, B.S., Captain, U. S. Navy, *Professor of Naval Science (Chairman of the Department).*David F. Stiling, A.B., Commander, U. S. Navy, *Associate Professor of Naval Science.*William A. Dempsey, B.S., Lieutenant, U. S. Naval Reserve, *Assistant Professor of Naval Science.*Barry P. Rust, B.S., Major, U. S. Marine Corps, *Assistant Professor of Naval Science.*James M. Giles, B.A., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*George H. Ng, B.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science.*James J. Keatley, B.A., Lieutenant, U. S. Naval Reserve, *Assistant Professor of Naval Science.*

*Application of Naval Science Courses Toward the Departmental Major Requirements.* Naval science courses may be taken as free elective courses and applied toward the total departmental course requirements. Contact the Naval R.O.T.C. unit and the cognizant college or department to determine the number of free elective courses for which naval science courses may be substituted.

**Naval Reserve Officers' Training Corps**

By action of the Secretary of the Navy and of the Regents of the University of California in June, 1938, provision was made for the establishment of a unit of the Naval Reserve Officers' Training Corps on the Los Angeles campus.

The primary objective of the Naval Reserve Officers' Training Corps is to provide at civil institutions systematic instruction and training which will qualify selected students of such institutions for appointment as officers in the regular Navy, Naval Reserve, Marine Corps, and Marine Corps Reserve.

Courses in naval science are given for those who intend to complete the four years of training for a commission in the Navy or Marine Corps. In addition to the courses in naval science described herein, Naval

R.O.T.C. students are required to take each week a one-hour laboratory in leadership and a one-hour laboratory associated with the naval science course.

Initial enrollment is restricted to able-bodied male students who are citizens of the United States between the ages of seventeen and twenty-one years. Students must pass a physical examination prior to acceptance in this program.

All courses listed are those prescribed by the Navy Department for the Naval Reserve Officers' Training Corps. The United States furnishes on loan to the individual arms, equipment, uniforms, and naval science textbooks for the use of these students. Upon satisfactory completion of the course, the uniform becomes the property of the student who was enrolled in the regular or contract status.

Regular and Contract students may apply for a delay in active duty to allow graduate work in selected disciplines.

*Types of N.R.O.T.C. Students.* The Department of the Navy recognizes three N.R.O.T.C. student categories:

1. Regular N.R.O.T.C. students are appointed midshipmen, U.S.N.R., and receive retainer pay at the rate of \$50 per month for a maximum period of four years while under

instruction at the N.R.O.T.C. institution. Their tuition, fees, books, and laboratory expenses are paid by the U.S. Government during the above period. These midshipmen are required to take three summer cruises and to remain a member of a regular or reserve component of the U. S. Naval Service until the sixth anniversary of receipt of original commission in that service, four years of which will be on active duty after commissioning as ensign, U. S. Navy or second lieutenant, U. S. Marine Corps. Midshipmen enrolled in this status are selected by nationwide competitive examination and selection commencing in early November of the year preceding the students' entrance into the University in the fall.

2. Contract N.R.O.T.C. students have the status of civilians who have entered into a mutual contract with the Navy during their first two years. For administrative purposes they are called midshipmen. During their junior and senior years, they are enlisted in the U. S. Naval Reserve and are entitled to a retainer pay at the rate of \$50 per month. Contract N.R.O.T.C. students agree to accept a commission in the Naval Reserve or in the Marine Corps Reserve, to remain a member of a reserve component of the U. S. Naval Service until the sixth anniversary of receipt of original commission in that service and to serve not less than three years on active duty when ordered. Contract N.R.O.T.C. Program may be completed in one summer training cruise. The Contract N.R.O.T.C. Program may be completed in two years provided the student has participated in a special Naval Science Summer Session of six weeks duration.

Regular and contract students are deferred from induction until after completion or termination of their courses of instruction and so long as they continue in a regular or reserve status upon being commissioned. Credit may be allowed for work completed during practice cruises and summer camps at the rate of  $\frac{1}{2}$  unit per each two weeks' duty performed, not to exceed a total of six units.

3. Naval science students are civilians who, with the approval of the academic authorities and the Professor of Naval Science, may be permitted to pursue Naval Science courses for college credit. They are neither eligible to take N.R.O.T.C. training cruises nor to be paid any compensation or benefits. When vacancies occur in the N.R.O.T.C. Unit quota, naval science students are encouraged to apply for enrollment.

#### Freshman Year

##### 1A. Naval Orientation.

A study in the fundamentals of the naval service, its mission, standards, traditions and customs. The duties and leadership qualities of naval officers are stressed. Valuable in developing a fundamental background in the Navy and stimulating interest in the study of sea power. **LT Keatley**

##### 1B. Evolution of Sea Power.

A study of the influence of sea power on history, the evolution of naval strategy and tactics, and the development of ships and weapons. **LT Keatley**

##### 1C. Evolution of Sea Power. (½ course)

Prerequisite: course 1B. A study of the Navy as an instrument of national power and the qualities of character and professional competence which have made great naval leaders. **LT Keatley**

#### Sophomore Year

##### 2A. Naval Weapons, I.

Prerequisite: confidential security clearance. The objective of this course is to develop an understanding of the fundamentals of naval weapons and weapons systems and their application to the control of the seas. **LT Dempsey**

##### 2B. Naval Weapons, II. (½ course)

Prerequisite: course 2A and confidential security clearance. A study of nuclear weapons and space systems, and their application to naval warfare. **LT Dempsey**

##### 2C. Naval Weapons. Laboratory. (No Credit)

Prerequisite: course 2B. Continuation of 2B providing practical application of subject material along with guest lectures preparatory for midshipman summer cruise. **LT Dempsey**

#### Junior Year

##### 101A. Dead Reckoning Navigation.

A study of piloting, coastal navigation, rules of the nautical road and introduction to relative motion as applied to the maneuvering of ships in formation. **LT Giles**

##### 101B. Celestial Navigation.

Prerequisite: course 101A. A study of the methods and techniques employed in the determination of position at sea through the use of celestial points of reference. **LT Giles**

##### 101C. Naval Operations. (½ course)

Prerequisite: course 101A and confidential security clearance. An introduction to the factors involved in planning a naval engagement including a continued investigation of relative motion as directly involved in the operation and control of a combatant unit. **LT Giles**

##### †103A. Evolution of the Art of War, I.

Provides history, missions, and organization of the Marine Corps. Examines the evolution of the art of

† These courses to be pursued by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A-101B-101C, 102A-102B-102C.

land warfare with emphasis on the principles of offensive and defensive combat employing historical examples. MAJ Rust

#### †103B. Evolution of the Art of War, II.

Further development of the principles of offensive and defensive combat employing historical examples from the Civil War through World War II. MAJ Rust

#### †103C. Basic Strategy and Tactics. (½ course)

Further development of the principles of offensive and defensive combat with emphasis on Marine Corps small unit tactics. An introduction to basic strategy and tactics with an examination of the strategic philosophies of other nations. MAJ Rust

Senior Year

#### 102A. Naval Engineering.

A study of naval machinery and auxiliary equipment with emphasis on the basic steam cycle. Concepts of heat transfer, flow of fluids, gas turbine cycle, distillation and refrigeration are included. An introduction is made to principles and problems of nuclear reactors. LT Ng

#### 102B. Ship Stability and Damage Control. (½ course)

Introduction to ship design and construction with special emphasis on damage control as related to stability considerations. Ship models will be used to determine metacentric height, righting arm, and associated stability characteristics. LT Ng

#### 102C. Leadership, the Naval Judicial System and Functions and Concepts of Naval Management.

Conceptual approaches to leadership, interpersonal relationships, motivational practices and counseling techniques, ethical and moral responsibilities of persons in authority, extragroup relations as a representative of the Navy. Function of the division officer, study of military law. LT Ng

#### †104A. Amphibious Warfare, I.

The primary mission of the Marine Corps is to conduct amphibious warfare. The evolution of amphibious doctrines and techniques is examined with emphasis on the U. S. landings in the South Pacific during World War II. LT Ng

#### †104B. Amphibious Warfare, II.

Continuation of the examination of the evolution of amphibious warfare techniques with emphasis on the U. S. landings in the European Theater in World War II. Marine Corps operations in Korea are examined. A detailed study is made of the phases of an amphibious operation. LT Ng

#### †104C. Uniform Code of Military Justice, Leadership. (½ course)

The midshipman is given an indoctrination in military law, coordinated with the development of administrative leadership qualities. LT Ng

† These courses to be pursued by candidates for commissions in the Marine Corps or Marine Corps Reserve in lieu of courses 101A-101B-101C, 102A-102B-102C.

## ■ NEAR EASTERN LANGUAGES

(Department Office, 302 Royce Hall)

Janos Eckmann, Ph.D., *Professor of Turkic Languages.*

Wolf Leslau, Docteur-ès-Lettres, *Professor of Hebrew and Semitic Linguistics.*

Moshe Perlmann, Ph.D., *Professor of Arabic.*

Andreas Tietze, Ph.D., *Professor of Turkish (Chairman of the Department).*

Pinhas Delougaz, Baccalaureat, *Professor in Residence of Near Eastern Archaeology.*

Amin Banani, Ph.D., *Associate Professor of Persian.*

Arnold J. Band, Ph.D., *Associate Professor of Hebrew.*

Herbert A. Davidson, Ph.D., *Associate Professor of Hebrew.*

Avedis K. Sanjian, Ph.D., *Associate Professor of Armenian.*

Ruth K. Blum, Ph.D., *Assistant Professor of Hebrew.*

Giorgio Buccellati, Ph.D., *Assistant Professor of Ancient Near East.*

Joseph Eliash, Ph.D., *Assistant Professor of Arabic.*

Thomas Penchoen, Ph.D., *Assistant Professor of Berber.*

\_\_\_\_\_, *Assistant Professor of Arabic.*

\_\_\_\_\_, *Assistant Professor of Semitics.*

Suzan Akkan, B.A., *Lecturer in Turkish.*

Shimeon Brisman, *Lecturer in Hebrew.*

John Callender, B.A., *Acting Assistant Professor of Egyptology.*

Jay D. Frierman, M.A., *Lecturer in Near Eastern Archaeology.*

Haroun Haddad, Ph.D., *Lecturer in Arabic.*

Kazem Kazemzadeh, M.A., *Lecturer in Persian.*

David L. Lieber, D.H.L., *Lecturer in Hebrew*.  
 ———, *Visiting Associate Professor of Georgian*.  
 Stanford Shaw, Ph.D., *Professor of History*

#### **Bachelor of Art Degree**

The degree is offered in both Hebrew and Arabic. In each case the student must both meet the prerequisites and take the courses prescribed for majors.

For a Hebrew major the prerequisites are Hebrew 1A-1B-1C, 102A-102B-102C, 150A-150B or their equivalents. The student is required to take 16 quarter courses distributed as follows: Hebrew 103A-103B-103C; three courses from Hebrew 120A, 120B, 120C, 120D, 120E, 120F; two courses from 130A, 130B, 130C, 130D; two courses from Hebrew 140A, 140B, 140C, 140D, 160A, 160B, both 190A and 190B; three additional courses in Hebrew or Aramaic to be approved by Department Adviser; History 138A or 138B.

For an Arabic major the prerequisites are Arabic 1A-1B-1C, 102A-102B-102C, 150A-150B or their equivalents. The student is required to take 17 quarter courses distributed as follows: 14 courses in Arabic selected with approval of Department Adviser from Arabic 103A-103B-103C, 111A-111B-111C, 113A-113B-113C, 130A-130B-130C, 140A-140B-140C, 180A-180B-180C, 199; one elective in the 200 series; two courses from History 134A, 134B.

For a major in Ancient Near Eastern Civilizations the prerequisites are History 1A-1B-1C, 9D, Anthropology 5A-5B-5C, Geography 10C, and (only for students taking option 3) Hebrew 1A-1B-1C and 102A-102B-102C (or their equivalents). The student is required to take 16 quarter courses including: Near Eastern Languages 150A-150B, History 117, 200A-200B, 203; six quarter courses out of Semitics 160A-160B, 161A-161B-161C, Art 101A-101B-101C, 104; and one of the following options: (1) Semitics 140A-140B, 141A-141B; (2) Ancient Egyptian 101A-101B-101C, 102A; (3) four courses out of Hebrew 120A-120B-120C-120D-120E-120F, Semitics 130. For recommended courses the student will consult with the Departmental Adviser.

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

#### **Requirements for the Master's Degree in Near Eastern Languages and Literatures.**

*General Requirements.* See page 137.

*Department Program.* (1) The master's degree is offered in five specialties: Hebrew, Arabic, Semitics, Persian, and Turkish. The candidate for the degree in Hebrew or Arabic will also be required to study another Semitic language. The candidate for the degree in Semitics will be required to study three Semitic languages. The candidate for the degree in Persian will be required to study Persian and one related language. The candidate for a degree in Turkish will be required to study two Turkic languages. The student may concentrate on either language or literature but will be required to do work in both. In addition, each candidate will be required to have competent knowledge of the history of his major culture area. (2) For admission to the program: a bachelor's degree, or its equivalent, in the language area chosen for the M.A. (3) Course requirements: nine upper division and graduate level courses, of which at least six courses must be graduate level. All candidates will be required to take one quarter of Near Eastern Languages 200, Bibliography and Method. (4) The candidate must be able to read one modern European language. The choice of the language will be determined in consultation with the departmental adviser. The student must pass the Graduate Foreign Language Reading Examination in this language by the end of the third quarter of residence. It is also strongly recommended that the student who intends to continue toward a Ph.D. degree acquire a knowledge of a second European language while still a candidate for the M.A. (5) Final examination: the candidate will take a comprehensive final examination.

#### **Requirements for the Doctor of Philosophy Degree in Near Eastern Languages and Literatures**

*General Requirements.* See pages 140-142.

*Requirements for the Program.* (1) A reading knowledge of two major Western foreign languages. The student is expected to take the examination in one of the two languages at the beginning of his first quarter in residence; the examination of the second not

later than at the beginning of his fourth quarter. The choice of languages must be approved by the adviser. (2) The candidate for the degree may concentrate either in language or in literature. In either case, upon entrance to the program he is required to demonstrate competence in the language of his main interest and to have sufficient knowledge of a second language in his field of concentration. In the case of a student specializing in language, the second language should be genetically related to the main language of his interest, e.g., a Semitist is expected to know two Semitic languages; a Turkologist, two Turkic languages. In the case of a student specializing in literature, the second language should be a literary language taken from the cultural area related to the main language of his interest, e.g., a Hebraist can choose Aramaic, Akkadian, Arabic, or Yiddish; an Arabist can choose Persian or Turkish; a Turkologist can choose Arabic or Persian. The student is advised to take his M.A. degree prior to his Ph.D. degree.

### Special Requirements for the Degree

(1) A candidate in languages is expected to take the equivalent of one year of general linguistics and one year of comparative grammar in his field of concentration, e.g., Semitics or Turkic. Moreover, he is required to achieve competence in three languages taken from his field of concentration with particular emphasis on two major languages. It is mainly the structural mastery of the languages and familiarity with their development and their position within the appropriate family of languages that are required. The student is advised to acquaint himself with the historical, literary, religious, and social background of the various languages of his interest. His fields of examination will be three languages and the literary and historical background of at least two of them. (2) The candidate interested in literature will be required to be familiar with the history of literary criticism and methods of literary research as offered by the various departments of the University, particularly the course in literary criticism offered by the English Department. His field of examination will be the literatures written in two languages within the cultural area of his concentration, and the historical and cultural background of these languages with emphasis on one of them.

## Ancient Egyptian

### Upper Division Courses

#### 101A-101B-101C. Elementary Ancient Egyptian.

Three hours. Prerequisite: consent of the instructor. Grammar and texts. Mr. Callender

#### \*102A-102B-102C. Intermediate Ancient Egyptian.

Two hours. Prerequisites: courses 101A-101B-101C or consent of the instructor. Readings in Ancient Egyptian literature. Mr. Callender

### Related Courses in Other Departments

Art 101A-101B-101C. Egyptian Art and Archaeology.

210. Egyptian Art.

History 117. History of Ancient Egypt.

## Arabic

### Lower Division Courses

#### 1A-1B-1C. Elementary Arabic.

Sections meet seven hours weekly. Basic structure. The Staff

### Upper Division Courses

#### 102A-102B-102C. Intermediate Arabic.

(Formerly numbered 102A-102B and 118A-118B.) Lecture, four hours; laboratory, two hours; Arabic lecture, one hour. Prerequisite: courses 1A-1B-1C or consent of the instructor. Readings in both Classical and Modern Arabic. Composition, conversation and a weekly lecture in Arabic.

The Staff

#### 102K. Intensive Intermediate Arabic. (2 courses)

Prerequisites: courses 1A-1B-1C or consent of the instructor. Offered in the summer quarter only. Readings in both classical and modern Arabic, composition, conversation. Mr. Eliash

#### 103A-103B-103C. Advanced Arabic.

(Formerly numbered 103A-103B, 119A-119B and 160A-160B.) Lecture, four hours; laboratory, two hours; Arabic lecture, one hour. Prerequisite: courses 102A-102B-102C or consent of the instructor. Review of grammar, continued reading of literary works. Composition, conversation and a weekly lecture in Arabic. Mr. Eliash

#### 111A-111B-111C. Spoken Egyptian Arabic.

Three hours. Prerequisite: consent of the instructor. Introduction to the contemporary Arabic dialect of Egypt. Phonology, morphology and syntax will be presented with emphasis on oral practice.

Mr. Haddad

#### 113A-113B-113C. Spoken Iraqi Arabic.

Three hours. Prerequisite: consent of the instructor. Introduction to the contemporary Arabic dialect of Iraq. Phonology, morphology and syntax will be presented with emphasis on oral practice.

#### 130A-130B-130C. Classical Arabic Texts.

Lecture, three hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Reading and

\* Not to be given, 1968-1969.

interpretation of texts from classical Arabic literature: Koran, historiography, biography, geography and travelogues, philosophy, poetry. Mr. Eliash

#### 140A-140B-140C. Modern Arabic Texts.

Lecture, three hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Readings and interpretation of modern Arabic texts: newspaper articles, modern fiction, poetry, folklore. Mr. Haddad

#### 150A-150B. Survey of Arabic Literature in English.

Lecture, three hours. Knowledge of Arabic is not required. Courses 150A and 150B may be taken independently for credit. The Staff

#### \*180A-180B-180C. Structure of Literary Arabic.

Lecture, three hours. Prerequisite: consent of the instructor. A survey of the basic structural features of literary Arabic with emphasis on the verbal system. The Staff

#### 199. Special Studies in Arabic. (¼ to 1½ courses)

Prerequisite: consent of the instructor. The Staff

#### Graduate Courses

#### 220A-220B-220C. Islamic Texts.

Lecture, two hours. Scripture and interpretation in Islam; traditional scholarship; historical and literary problems of modern research; selections from various fields of Arabic letters. Mr. Eliash

#### 230A-230B-230C. Arabic Poetry.

Lecture, two hours. Readings in Arabic poetry from various periods. The Staff

#### 240A-240B-240C. Arab Historians.

Lecture, two hours. Readings from the works of the most outstanding Arab historians of the classical period of Islam. Mr. Perlmann

#### 250A-250B-250C. Seminar in Arabic Literature.

Two hours. The Staff

#### Individual Study and Research

#### 596. Directed Individual Study. (¼ to 1½ courses)

The Staff

#### 597. Examination Preparation. (¼ to 1½ courses)

The Staff

#### 599. Dissertation Research and Preparation.

(¼ to 1½ courses) The Staff

#### Related Courses in Another Department

History 134A-134B. Near and Middle East from 600 A.D.

267A-267B. Seminar in Near Eastern History.

## Armenian

#### Upper Division Courses

#### 101A-101B-101C. Elementary Modern Armenian.

Three hours. Armenian grammar, conversation and exercises. Mr. Sanjian

#### 102A-102B-102C. Intermediate Modern Armenian.

Three hours. Prerequisite: courses 101A-101B-101C or its equivalent. Reading of selected texts, composition and conversation. Mr. Sanjian

#### 103A-103B-103C. Advanced Modern Armenian.

Three hours. Prerequisite: courses 102A-102B-102C or the equivalent. Mr. Sanjian

#### 130A-130B-130C. Elementary Classical Armenian.

Three hours. Grammar of the Classical Armenian language and reading of selected texts. Mr. Sanjian

#### 131A-131B-131C. Intermediate Classical Armenian.

Three hours. Prerequisite: courses 130A-130B-130C or its equivalent. Reading of selected texts. Mr. Sanjian

#### 132A-132B-132C. Advanced Classical Armenian.

Three hours. Prerequisite: courses 131A-131B-131C or its equivalent. Mr. Sanjian

#### 150A-150B. Survey of Armenian Literature in English.

Three hours. Knowledge of Armenian is not required. Courses 150A and 150B may be taken independently for credit. Mr. Sanjian

#### 199. Special Studies in Armenian Language and Literature. (¼ to 1½ courses)

Prerequisite: Consent of the instructor.

#### Graduate Course

#### 280. Seminar in Armenian Historiography.

Two hours. Prerequisite: courses 131A-131B-131C or its equivalent. Mr. Sanjian

#### Related Courses in Other Departments

History 131A-131B. Armenian History.

207. Armenian Intellectual History.

Indo-European Studies 150. Introduction to Indo-European Linguistics.

## Berber

#### Upper Division Courses

#### 101A-101B-101C. Elementary Berber.

(Formerly numbered 105A-105B.) Lecture, three hours; laboratory, two hours. Development of oral proficiency and analysis of basic grammatical structure. Mr. Penchoen

#### 102A-102B-102C. Advanced Berber.

(Formerly numbered 106A-106B.) Prerequisite: courses 101A-101B-101C or consent of the instructor. Advanced study of Berber. Regional and stylistic variants in folk literature. Mr. Penchoen

#### \*120A-120B-120C. Introduction to Berber Literature.

Three hours. Prerequisites: courses 102A-102B-102C or consent of the instructor. The development of Berber literary forms: systematic analysis of texts and a study of Berber writing systems.

\* Not to be given, 1968-1969.

**199. Special Studies in Berber Languages.**

(¼ to 1½ courses)

Prerequisite: consent of the instructor. Study based on the requirements of the individual student.

**Graduate Courses****201. Berber Structure.**

(Formerly numbered 220A-220B and same as Linguistics 225M.) Three hours. Prerequisite: consent of the instructor. Analysis of phonology, morphology, and syntax of the major Berber languages and introduction to Berber dialectology.

Mr. Penchoen

**Related Courses in Other Departments****History 133A-133B. History of North Africa from the Muslim Conquest.****Caucasian Languages****111A-111B-111C. Elementary Georgian.**

Three hours. Prerequisite: consent of the instructor. Script, grammar, simple reading in this main Caucasian language.

**199. Special Studies in Caucasian Languages.**

(¼ to 1½ courses)

Prerequisite: consent of the instructor. The Staff

**Hebrew****Lower Division Course****1A-1B-1C. Elementary Hebrew.**

Lecture, three hours; laboratory, two hours. Structural principles of grammar. Students who have previous knowledge of reading and some vocabulary are recommended to take courses 10A-10B-10C.

The Staff

**10A-10B-10C. Accelerated Elementary Hebrew.**

Prerequisite: consent of the instructor. Structural principles of grammar. Open to students who wish to cover the equivalent of two years college Hebrew in one academic year; recommended for students who have previously studied the rudiments of Hebrew.

The Staff

**Upper Division Courses****102A-102B-102C. Intermediate Hebrew.**

(Formerly numbered 102A-102B and 118A-118B.) Five hours. Prerequisite: courses 1A-1B-1C or the equivalent. Amplification of grammar; reading of vocalized texts from modern, Biblical, and Medieval/Rabbinic literature.

The Staff

**102K. Intensive Intermediate Hebrew. (3 courses)**

Prerequisites: courses 1A-1B-1C or the equivalent. Offered in the summer quarter only. Amplification of grammar; reading of vocalized texts from modern, Biblical and Medieval/Rabbinic literature.

Mr. Davidson

**103A-103B-103C. Advanced Hebrew.**

(Formerly numbered 103A-103B and 119A-119B.) Five hours. Prerequisite: courses 102A-102B-102C or the equivalent. Reading of unvocalized texts, primarily modern literature. The Staff

**120A-120F. Biblical Texts.**

Three hours. Prerequisite: courses 102A-102B-102C or the equivalent. Translations and analysis of Old Testament texts with special attention given to texts of primary literary and historical importance. Courses 120A, 120B, 120C, 120D, 120E, and 120F may be taken independently for credit.

**130A-130D. Medieval Hebrew Texts.**

Lecture, three hours. Prerequisites: courses 103A-103B-103C or consent of the instructor. Readings in medieval Hebrew prose and poetry with special attention to literature of the "Golden Age." Courses 130A, 130B, 130C, and 130D may be taken independently for credit.

Mr. Davidson

**135A-135B. Advanced Medieval Texts.**Three hours. Prerequisite: two courses from 130A-130B-130C-130D or the equivalent. Readings in genres such as medieval Hebrew Bible commentaries, the *Musar* literature, and philosophy.

Mr. Davidson

**140A-140D. Modern Hebrew Poetry and Prose.**

Three hours. Prerequisite: courses 103A-103B-103C and consent of the instructor. A study of the major Hebrew writers of the past one hundred years: prose—Mendele, Ahad, Ha'am, Agnon, Yizhar; poetry—Bialik, Tchernichovsky, Schneur, Greenberg, Shlonsky.

Mr. Band

**150A-150B. Survey of Hebrew Literature in English.**

Three hours. Knowledge of Hebrew not required. Courses 150A and 150B may be taken independently for credit. 150A: From Biblical period to 1300; 150B: From 1300 to the present day.

Mr. Band

**160A-160B. The Hebrew Essay.**

Three hours. Prerequisite: courses 103A-103B-103C or consent of the instructor. The Hebrew essay from its rise in Europe in the late eighteenth century to the contemporary Israeli essay; the literary, political, sociological, philosophical, and scholarly essay will be studied.

Mr. Davidson

**†190A-190B. Survey of Hebrew Grammar.**

Two hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Descriptive and comparative study of the Hebrew phonology and morphology.

Mr. Leslau

**199. Special Studies in Hebrew. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. The Staff

**Graduate Courses****210A-210B. History of the Hebrew Language.**

Prerequisite: courses 103A-103B-103C or consent of the instructor. The development of the Hebrew language in its various stages: Biblical, Mishnaic, Medieval, Modern, and Israeli; differences in vocabulary, morphology, syntax, and the influence of other languages; problems of language expansion in Israeli Hebrew.

The Staff

**220A-220B-220C. Studies in the Text of the Hebrew Bible.**

Three hours. A critical study of the Hebrew text in relation to the major versions; philological, comparative, literary, and historical study of various Biblical books.

† Given in alternate years.

**230A-230B-230C. Seminar in Medieval Hebrew Literature.**

Three hours.

Mr. Davidson

**240A-240B-240C. Studies in Modern Hebrew Literature.**

Three hours. Studies in specific problems and trends in Hebrew literature of the last two centuries.

Mr. Band

Individual Study and Research

**586. Directed Individual Study. (¼ to 1½ courses)**

The Staff

**597. Examination Preparation. (¼ to 1½ courses)**

The Staff

**599. Dissertation Research and Preparation. (¼ to 1½ courses)**

The Staff

Related Courses in Other Departments

**English 201. The Functions of Literary Criticism.****History 138A-138B. Jewish History.****Islamic**

Individual Study and Research

**586. Directed Individual Study. (¼ to 1½ courses)**

The Staff

**597. Examination Preparation. (¼ to 1½ courses)**

The Staff

**598. Thesis Research and Preparation.**

(¼ to 1½ courses)

The Staff

**599. Dissertation Research and Preparation.**

(¼ to 1½ courses)

The Staff

Related Courses in Another Department

**History 135. Introduction to Islamic Culture.**  
**136. Islamic Institutions and Political Ideas.**  
**209A-209B. The Modern Middle East.****Near Eastern Languages**

Upper Division Course

**150A-150B. Survey of Ancient Near Eastern Literatures in English.**

Knowledge of original languages not required. Courses 150A and 150B may be taken independently for credit. 150A: Mesopotamia and Hittites; 150B: Egypt and Syria-Palestine.

Mr. Buccellati, Mr. Callender

**198. Special Studies in Near Eastern Languages.**

(¼ to 1½ courses)

Prerequisite: consent of the instructor. The Staff

Graduate Courses

**200A-200B-200C. Bibliography and Method of Near Eastern Languages and Literatures.**

Two hours. Prerequisite: consent of the instructor. One quarter required for the M.A. in Near Eastern Languages and Literatures. An introduction to the bibliography of all the Near Eastern Languages: morphology, lexicography, and literature.

The Staff

**\*241. Folklore and Mythology of the Near East.**

(Same as Folklore 241.) Prerequisite: Folklore 101 or the equivalent and consent of the instructor. Folklore and mythology of Palestine-Israel, Arab countries, Turkey, Persia, Ethiopia.

The Staff

**†290. Seminar in Pateography.**

Three hours. To provide the students with the ability to cope with varieties of manuscripts.

Mr. Banani

Individual Study and Research

**586. Directed Individual Study. (¼ to 1½ courses)**

The Staff

**Persian**

Upper Division Courses

**101A-101B-101C. Elementary Persian.**

(Formerly numbered 101A-101B and 118A-118B.) Lecture, three hours; laboratory, two hours.

Mr. Banani

**102A-102B-102C. Advanced Persian.**

(Formerly numbered 102A-102B and 119A-119B.) Lecture, three hours; laboratory, two hours. Prerequisite: courses 101A-101B-101C or the equivalent.

Mr. Banani

**150A-150B. Survey of Persian Literature in English.**

Three hours. Knowledge of Persian not required. Courses 150A and 150B may be taken independently for credit.

Mr. Banani

**199. Special Studies in Persian. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. The Staff

Graduate Courses

**220A-220B. Classical Persian Texts.**

Two hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Study of selected Classical Persian texts.

Mr. Banani

**†250. Seminar in Persian Literature.**

Three hours. Prerequisite: courses 102A-102B-102C and Persian 199 or consent of the instructor.

Mr. Banani

Individual Study and Research

**586. Directed Individual Study. (¼ to 1½ courses)**

The Staff

**597. Examination Preparation. (¼ to 1½ courses)**

The Staff

\* Not to be given, 1968-1969.

† Given in alternate years.

## Related Courses in Other Departments

History 132A-132B. Islamic Iran.

Indo-European Studies 180. Elementary Sanskrit.

161. Intermediate Sanskrit.

162. Advanced Sanskrit.

230A-230B. Old Iranian.

231A-231B. Middle Iranian.

## Semitics

## Upper Division Courses

101A-101B-101C. Elementary Amharic (Modern Ethiopic).

Lecture, three hours. Elements of Amharic, the national language of Ethiopia; grammar and reading of texts. Mr. Leslau

102A-102B-102C. Advanced Amharic (Modern Ethiopic).

Lecture, three hours. Prerequisite: Semitics 101A-101B-101C or consent of the instructor. Mr. Leslau

†130. Biblical Aramaic.

Three hours. Prerequisite: Hebrew 102A-102B-102C or the equivalent. Grammar of Biblical Aramaic and reading of texts. Mr. Leslau

140A-140B. Elementary Akkadian.

Lecture, three hours. Elementary grammar and reading of texts in standard Babylonian. Mr. Buccellati

141A-141B. Advanced Akkadian.

Lecture, three hours. Prerequisite: consent of the instructor. Selected grammatical and lexical questions; reading of Old Babylonian and literary texts. Mr. Buccellati

180A-180B. Introduction to Near Eastern Archaeology.

Terminology, geography, principles, strategy of research, bibliography, and a general survey of Near Eastern archaeology. Mr. Frierman

161A-161B-161C. Archaeology of Mesopotamia.

Lecture, three hours. Prerequisite: consent of the instructor. Survey of the main archaeological periods in Mesopotamia with special emphasis on late prehistoric and early historical periods and with reference to neighboring cultural areas. Mr. Delougaz

## Graduate Courses

201A-201B-201C. Old Ethiopic.

Lecture, two hours. Grammar of Old Ethiopic and reading of texts. Mr. Leslau

202A-202B-202C. Readings in Old Ethiopic Literature.

Lecture, two hours. Prerequisite: Semitics 201A-201B-201C. Mr. Leslau

209A-209B-209C. Comparative Study of the Ethiopian Languages.

Two hours. Prerequisite: consent of the instructor.

tor. Comparative study of the various Semitic Ethiopic languages: Geez, Tigrinya, Tigre, Amharic, Harari, Gurage, and Gafat. Mr. Leslau

210A-210B. Ancient Aramaic.

(Formerly numbered 210 and 211.) Two hours. Prerequisite: Hebrew 103A-103B-103C or the equivalent. Study of the grammar and vocabulary of Ancient Aramaic and reading of the surviving inscriptions and texts. The Staff

†215A-215B-215C. Syriac.

Two hours. Morphology and syntax of the Syriac language; readings in the Syriac translation of the Bible and Syriac literature. The Staff

†220A-220B-220C. Ugaritic.

Two hours. Prerequisite: Hebrew 103A-103B-103C or the equivalent. Study of the Ugaritic language and literature. The Staff

240. Seminar in Akkadian Language and Literature.

Two hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Buccellati

250. Seminar in Ancient Near Eastern Archaeology.

Lecture, two hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Delougaz

270. Seminar in Ancient Mesopotamia.

Two hours. Prerequisite: consent of the instructor. May be repeated for credit. Mr. Buccellati

280A-280B-280C. Seminar in Comparative Semitics.

Two hours.

Mr. Leslau

290A-290B-290C. Comparative Morphology of the Semitic Languages.

Two hours. Prerequisite: Semitics 280A-280B-280C or consent of the instructor. Comparative study of the noun and verb of the various Semitic languages (Arabic, Hebrew, Ethiopic, Akkadian, and Aramaic). Mr. Leslau

## Individual Study and Research

596. Directed Individual Study. (¼ to 1½ courses)

The Staff

597. Examination Preparation. (¼ to 1½ courses)

The Staff

599. Dissertation Research and Preparation. (¼ to 1½ courses)

The Staff

## Related Courses in Other Departments

Art 104. Art of the Ancient Near East.

History 200A-200B. History of the Ancient East.

## Turkic Languages

## Upper Division Courses

101A-101B-101C. Elementary Turkish.

(Formerly numbered 101A-101B and 118A-118B.) Lecture, three hours; laboratory, two hours.

† Given in alternate years.

Grammar, reading, conversation and elementary composition drills. Mr. Tietze

### 102A-102B-102C. Advanced Turkish.

(Formerly numbered 102A-102B and 119A-119B.) Lecture, three hours; laboratory, two hours. Prerequisite: courses 101A-101B-101C or the equivalent. Continuing study of grammar, readings, conversation and composition drills. Mr. Tietze

### \*110A-110B-110C. Old and Middle Turkic.

(Formerly numbered 112A-112B.) Three hours. Prerequisite: courses 101A-101B-101C or consent of the instructor. Grammar, readings in 8th to 14th century texts. Mr. Eckmann

### 111A-111B-111C. Chagatai.

Three hours. Prerequisite: courses 101A-101B-101C or consent of the instructor. Literary language of Central Asia before the Soviet era. Grammar, readings in 15th to 19th century texts. Mr. Eckmann

### 112A-112B-112C. Uzbek.

(Formerly numbered 110A-110B.) Three hours. Prerequisite: courses 101A-101B-101C or consent of the instructor. Grammar, reading of literary and folkloristic texts. Mr. Eckmann

### \*113A-113B-113C. Kirghiz.

Three hours. Prerequisite: courses 101A-101B-101C or consent of the instructor. Grammar, reading of literary and folkloristic texts. Mr. Eckmann

### 150A-150B. Survey of Turkish Literature in English.

Three hours. Knowledge of Turkish not required. Courses 150A and 150B may be taken independently for credit. The Staff

### 190A-190B-190C. Survey of the Turkic Languages.

Three hours. Prerequisite: courses 101A-101B-101C or consent of the instructor. Classification, structure, comparative grammar, historical grammar. Mr. Eckmann

### 199. Special Studies in Turkic Languages. (¼ to 1½ courses)

Prerequisite: consent of the instructor. The Staff

#### Graduate Courses

### 210A-210B-210C. Ottoman.

Two hours. Prerequisite: courses 102A-102B-102C or consent of the instructor. Readings of literary texts. Mr. Tietze

### 211. Ottoman Diplomatics.

Prerequisites: courses 210A-210B-210C or the equivalent, Organization and contents of the Ottoman archives; reading and discussion of documents and registers. Introduction to the use of Ottoman archive materials as a source for historical research. Mr. Shaw

\* Not to be given, 1968-1969.

## Neuroscience

A new interdisciplinary program of graduate training leading to the Ph.D. in Neuroscience is offered, utilizing facilities, resources, and activities of the Brain Research Institute and administered by an interdepartmental degree committee.

Applicants must satisfy minimum requirements for admission to the Graduate Division (page 28).

All students will be given instruction designed to provide basic knowledge of the anatomy, physiology, and chemistry of neural function. Thereafter, the student may pursue an educational experience through any of eight subdisciplines: neuroanatomy, neurochemistry, neurophysiology, behavior, neurocybernetics and communications, neuroendocrinology, neuropharmacology, neuroimmunology.

Prospective applicants may inquire concerning the availability of this curriculum by consulting J. D. French, 73-364 Brain Research Institute, Center for the Health Sciences.

#### Individual Study and Research

### 596. Directed Individual Study. (¼ to 1½ courses)

The Staff

### 597. Examination Preparation. (¼ to 1½ courses)

The Staff

### 599. Dissertation Research and Preparation.

(¼ to 1½ courses)

The Staff

#### Related Courses in Another Department

History 139A-139B. History of the Turks.

201A. History of the Eurasian Nomadic Empires.

## Urdu

#### Upper Division Courses

### 101A-101B-101C. Elementary Urdu.

Three hours. Prerequisite: consent of the instructor. Elements of Urdu, the language of Pakistan.

### 199. Special Studies in Urdu. (¼ to 1½ courses)

Prerequisite: consent of the instructor.

#### Related Courses in Another Department

South Asian Languages 171A-171B-171C. Hindi.

## ■ NURSING

(Department Office, 12-139C Center for the Health Sciences)

Lulu Wolf Hassenplug, R.N., M.P.H., Sc.D., *Professor of Nursing (Chairman of the Department)*.

Dorothy E. Johnson, R.N., M.P.H., *Professor of Pediatric Nursing*.

Imogene D. Cahill, R.N., M.N., M.A., Ed.D., *Associate Professor of Nursing*.

Harriet C. Moidel, R.N., M.A., *Associate Professor of Medical-Surgical Nursing*.

Agnes A. O'Leary, R.N., M.P.H., *Associate Professor of Public Health Nursing and Lecturer in Public Health (Vice-Chairman of the Department)*.

Jeanine Auger, R.N., M.S., *Assistant Professor of Nursing*.

Bonnie Bullough, R.N., M.S., M.A., *Assistant Professor of Nursing*.

Carolyn E. Carlson, R.N., M.S., *Assistant Professor of Psychiatric Nursing*.

Beatrice M. Dambacher, R.N., M.S., N.Sc.D., *Assistant Professor of Psychiatric Nursing*.

M. Margo McCaffery, R.N., M.S., *Assistant Professor of Pediatric Nursing*.

Noreen T. Meinhardt, R.N., M.S., *Assistant Professor of Nursing*.

Afaf I. Meleis, R.N., M.S., *Assistant Professor of Nursing*.

Grace A. Millington, R.N., M.A., *Assistant Professor of Nursing*.

Phyllis A. Putnam, R.N., Ph.D., *Assistant Professor of Nursing*.

Mary N. Turner, R.N., M.S., *Assistant Professor of Nursing*.

Donna L. Vredevoe, Ph.D., *Assistant Professor of Nursing*.

Ruth R. Wu, R.N., M.S., *Assistant Professor of Pediatric Nursing*.

———, *Assistant Professor of Nursing*.

———, *Assistant Professor of Nursing*.

———, *Assistant Professor of Nursing*.

Marie F. Branch, R.N., M.S., *Instructor in Nursing*.

Edythe J. Ellison, R.N., M.S.N., *Instructor in Nursing*.

Betty Handler, R.N., M.S., *Instructor in Psychiatric Nursing*.

Karen Kloes, R.N., M.S., *Instructor in Psychiatric Nursing*.

Leonide Tanner, R.N., M.S., *Instructor in Nursing*.

Mary A. Wallace, R.N., M.S., *Instructor in Nursing*.



Clara Arndt, R.N., M.S., *Lecturer in Nursing Service Administration*.

Charles K. Ferguson, Ed.D., *Lecturer in Nursing*.

Elizabeth Hartigan, R.N., M.S., *Lecturer in Nursing*.

Ieva-Jurate Kades, R.N., M.S., *Lecturer in Nursing*.

Beryl Lovaas, R.N., M.S., *Lecturer in Nursing*.

Betty McDonald, R.N., M.S., *Lecturer in Nursing*.

Roberta S. O'Grady, R.N., M.A., *Lecturer in Nursing*.

G. Marjorie Squaires, R.N., M.A., *Lecturer in Nursing*.

Muriel Uprichard, Ph.D., *Lecturer in Nursing and Associate Research Psychologist*.

Jean Wilcox, R.N., M.S., *Lecturer in Nursing*.



Rachel A. Ayers, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration*.

Jamella M. Bell, R.N., M.S., *Assistant Clinical Professor of Nursing Service Administration*.

Cynthia A. Dauch, R.N., Ed.D., *Assistant Clinical Professor of Public Health Nursing*.

Evelyn M. Hamil, R.N., M.N., *Assistant Clinical Professor of Nursing Service Administration*.

- Barbara W. Madden, R.N., M.S., *Assistant Clinical Professor of Medical-Surgical Nursing.*
- Julia Ilene Toten, R.N., M.P.H., *Assistant Clinical Professor of Public Health Nursing.*
- Dorothy Wheeler, R.N., M.A., *Assistant Clinical Professor of Nursing Service Administration.*
- Ruth M. White, R.N., M.S., *Assistant Clinical Professor of Psychiatric Nursing.*
- Katherine M. Bryan, R.N., B.S., *Clinical Instructor in Public Health Nursing.*
- Edith M. Cole, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
- Dorothy J. Hicks, R.N., B.S., *Clinical Instructor in Medical-Surgical Nursing.*
- Eleanor E. Hicks, R.N., B.S., *Clinical Instructor in Psychiatric Nursing.*
- Mary Louise Jarvis, R.N., *Clinical Instructor in Public Health Nursing.*
- Ina B. Knight, R.N., M.S., *Clinical Instructor in Public Health Nursing.*
- Jerry G. Peers, R.N., B.S., *Clinical Instructor in Surgical Nursing.*
- Helen L. Salmon, R.N., B.S., *Clinical Instructor in Public Health Nursing and Lecturer in Public Health.*
- Bertha B. Unger, R.N., M.A., *Clinical Instructor in Psychiatric Nursing.*
- Sheila G. Cadman, R.N., M.A., *Field Work Supervisor.*

The School of Nursing admits students of junior or higher standing and offers curricula leading to the degrees of Bachelor of Science, Master of Science, and Master of Science in nursing.

#### **CURRICULA OFFERED FOR THE BACHELOR OF SCIENCE DEGREE**

##### **Preparation for the Major**

Completion of 22½ courses of college work including the courses listed on page 81 of this catalog or the equivalent.

##### **The Major**

At least 23 courses of required upper division nursing courses and elective courses designed to prepare university women for professional nursing responsibilities in the care of the patient and his family.

#### **REGISTERED NURSES**

##### **Preparation for the Major**

Same as baccalaureate program.

##### **The Major**

A minimum of 23 courses of coordinated upper division nursing and elective courses planned on the basis of professional need.

##### **Upper Division Courses**

#### **101A-101B. Pathophysiological Basis for Nursing Measures.**

Lecture, two hours; laboratory, six hours. Prerequisites: Medical Science 101A and enrollment in School of Nursing. Study of the theory underlying and practice in the nurses' participation in the medical management of patients. Discussion and laboratory are focused on pathophysiological basis for

medical management and nursing care of patients. Laboratory includes practice in selected nursing measures and in evaluation of patients' response to treatment. The Staff

#### **102A-102B-102C. The Development of Modern Nursing. (½ course each)**

Lecture, two hours. Prerequisites: junior standing and acceptance by the School of Nursing for the baccalaureate program in nursing. Study of the evolution of nursing. Content focuses on its historical base with a consideration of the interpersonal and moral and legal ramifications of the formal and informal components of the social systems in which nursing is practiced today.

Mrs. Moidel, Miss Uprichard

#### **104A-104B. Nursing Science.**

Lecture, two hours; laboratory, eight hours. Prerequisite: accepted by School of Nursing for baccalaureate program in nursing. 104A and 104B can be taken in either sequence. A synthesis and ordering of knowledge about biopsychosocial man through study of integrated behavioral systems as they operate through the life cycle and within the usual fluctuations of the environment.

Mrs. Kades, Miss O'Grady

#### **105. Behavior in Illness.**

Lecture, two hours; laboratory, eight hours. Prerequisite: courses 104A-104B. Study of the nature of illness and wellness, the adaptive responses and the behavioral expectations associated with the experience of illness, and the conditions under which these expectations become operative. Mrs. Wu

#### **110A-110B-110C. Clinical Nursing. (1½ courses each)**

Lecture, two hours; laboratory, 16 hours. Prerequisites: courses 101A-101B, 104A-104B, 105, Medical Science 101A-101B, and Psychology 112 or its equivalent. Study of theories and their application in the nursing care of adults and children, including consideration of family and community health, Laboratory problems and practice in hospital and community settings.

Mrs. McCaffery, Mrs. Kloes and Staff

**155. Changing Perspectives in the Nursing Profession.**

Lecture, four hours. Prerequisite: senior standing. A critical examination of the current situation in nursing and the changing perspectives in the health fields. Discussion is directed toward helping the student develop a philosophy and focus for leadership consistent with today's world. Mrs. Hassenplug

**175. Nursing Care of Children in Schools. (1½ courses)**

Lecture, two hours; laboratory, 12 to 16 hours. Prerequisites: consent of the instructor. Study of the theory involved in the planning, organization, implementation and evaluation of nursing services in public schools. Laboratory problems and practices in public school systems. Mrs. Branch

**185. Study of the Nursing Profession.**

Lecture, four hours. Prerequisite: concurrent with course 195. A study of the institutional, associational and societal aspects of professional nursing practice with emphasis on the rights and obligations of professional status within nursing, between professions and in relation to the community. Miss Cahill

**190. The Interpersonal Process in Nursing.**

Lecture, two to four hours. Prerequisites: consent of the instructor. Study of theoretical and practical problems in human relationships. Focus on the nature of two person nurse-patient interaction and the implications for improved communication and its effect on nursing care. Miss Dambacher

**191. Group Process and Interaction in Nursing.**

Lecture, three hours; small group experience, one and one-half hours. Prerequisites: consent of the instructor. Study of the structure of small groups in which nurses function, i.e., institutional, professional, community, etc. Consideration of task and maintenance functions as phenomena in group life. Analysis of cognitive, methodological, emotional and goal systems, power, role, communications and norms in groups pertinent to nursing. Miss Carlson

**192. Health Care Organizations as Small Societies.**

Lecture and discussion, four hours. Prerequisites: consent of the instructor. A study of the large scale interaction systems within which nursing is practiced. Content is focused on the role and function of nursing at the interprofessional and professional-societal levels of analysis. Miss Cahill

**195. Nursing Care Practices and Staffing Patterns. (2 courses)**

Lecture, three hours; laboratory to be arranged. Prerequisites: courses 101A-101B, 104A-104B-104C, 102A-102B-102C. Analysis and synthesis of systems of administering nursing care programs including evaluation and prediction of success. Participation in administering nursing services. Mrs. Auger and Staff

**198. Special Courses in Nursing. (1 to 2 courses)**

Lecture, two to four hours; laboratory none to eight hours. Prerequisites: admission to School of Nursing and consent of the instructor. Not offered for students who have credit for courses 105, 110A-110B-110C, or who are eligible for 200 nursing level courses. Study of modern concepts, recent

advances and specific problems in the field. Nursing laboratory in hospitals and community agencies may be required in certain sections. Miss O'Leary and Staff

**199. Special Studies in Nursing. (½ to 1 course)**

Lecture, to be arranged. Prerequisites: senior standing or consent of the instructor. Individual study of a problem in the field of nursing. Miss Carlson and Staff

**Graduate Courses****203. Theoretical Framework of Nursing Practice.**

Lecture, two hours. Comparative study of selected conceptual models of nursing and the recipient of nursing, with particular emphasis on the regulatory model, the adaptation model, the supplementary model, and the complementary model. Miss Johnson

**204. Research Orientation in Nursing.**

Prerequisite: upper division statistics. Critique of selected research literature and evaluation of problem areas in nursing will be directed toward understanding of concepts of systematic problem exploration. For students electing the comprehensive plan. Miss Putnam

**205A-205B. Research in Nursing.**

Prerequisite: course 203 and upper division statistics. An examination of processes for exploration, experimentation, and validation of knowledge in nursing. Particular emphasis will be given to the treatment of problems of inquiry in a clinical setting. Miss Vredeve

**210. Developmental Theory and Problems.**

Prerequisites: three approved coordinated basic science courses. A critical analysis of the problems of deprivation, distortion, and overload arising from disturbances in sensory input or through constraints in man-man interactions. The focus will be on clinical nursing problems of both a conceptual and practical nature. Miss Putnam

**212. Man-Environment Interactions.**

Lecture, two hours. Prerequisite: three approved coordinated basic science courses. Study of physical and social influences on patient behavior, with particular emphasis on sensory deprivation and social isolation. Miss Johnson

**214. The Self and the Social Situation in Patient Behavior.**

Lecture, two hours. Prerequisite: three approved coordinated basic science courses. Examination of psychological influences and social processes in patient behavior characterized by social withdrawal and estrangement from the self and society. Miss Dambacher

**216. Patho-Physiological Changes and Patient Behavior.**

Lecture, two hours. Prerequisite: three approved coordinated basic science courses. Study of problems in somatic stability and instability as these are influenced by medical pathology and psychosocial processes and interaction. Mrs. Auger

**234. Group Behavior in Health Care Institutions.**

Lecture, two hours. Prerequisite: three approved coordinated basic science courses. Focuses on the problems of social control, legitimization of author-

ity, and processes of decision making in relation to organized social life in the complex settings in which nursing is practiced. The Staff

#### Professional Courses

### 370. Supervised Teaching of Nursing. (1 to 2 courses)

Prerequisite: course 430B. Critical appraisal of the content of courses offered in collegiate nursing programs. Supervised teaching experience in the student's major field of nursing. Miss Uprichard

### 401. Nursing Assessment and Intervention.

Instruction and experience in the systematic assessment of patients for the identification of nursing problems. Discussion and evaluation of major modes of interventive practice. Mrs. Moidel

### 410. Selected Problems in Nursing Care.

Prerequisite: course 401 or consent of instructor. May be repeated by enrollment in a different section.

Section 1. Problems in Environmental Management. Mrs. McCaffery

Section 2. Management of Developmental Problems. Mrs. Cahill, Miss Putnam

Section 3. Problems in Patient Motivation. Miss Dambacher

Section 4. Nursing Problems Related to Medical Pathology. Miss Wilcox

### 420. Supervised Practice in Nursing Care.

Prerequisites: courses 401, 410. Application of newly acquired knowledge and technology in nursing practice. Supervised practice in the clinical area of the student's choice. May be repeated for credit. Miss Arndt and the Staff

### 425. Human Relations in Administration.

(Formerly numbered 225.) A systematic study of the principles of human relations in administration, with emphasis upon their application to the field of nursing. Mr. Ferguson

### 430A-430B. Educational Programs in Nursing.

(Formerly numbered 230.)

430A. A critical appraisal of patterns of nursing education as considered from the standpoint of the changing social order. Focuses on philosophy and objectives, social origins, and relationships.

430B. A systematic study of the nature of the relationship between theories of learning, the selection and organization of learning experiences, and the evaluative process. Miss Uprichard

### 432. Current Concepts in Community College Nursing Programs.

(Formerly numbered 332.) Prerequisite: course 430A. A study of theoretical and practical problems in associate degree programs in nursing. Individual and group study and field work. Mrs. Wu

### 434. Nursing Administration.

(Formerly numbered 252A-252B and 254.) Pre-

requisites: courses 401, 410, 420, 425. A study of administrative theories and their relationships to effective administration in nursing service and nursing education. Critical analysis of the role of the administrator. Mrs. Hassenplug, Miss Arndt

### 435. Internship in Nursing School Administration. (2 courses)

(Formerly numbered 454.) Prerequisite: post-masters and course 434. The internship in Nursing School Administration is organized to provide experience in administering either a junior college or a baccalaureate program in nursing. May be repeated for credit. Mrs. Hassenplug

### 436. Internship in Nursing Service Administration. (2 courses)

Prerequisites: post-masters and course 434. Directed learning in nursing service organizations with critical appraisal of the applicability of administrative theories. May be repeated for credit. Miss Arndt, Miss White

### 470. Clinical Nursing Specialization. (2 courses)

Prerequisites: courses 401, 410 and 420. The refinement and extension of professional knowledge and skills in a clinical field of the student's choice. May be repeated for credit. Mrs. Moidel and the Staff

### 475. Supervision of Nursing Services. (1 to 2 courses)

Prerequisites: course 434. Critical appraisal of supervisory theory and process. Guided experience in supervision in hospitals or health agencies. Miss Arndt and Miss O'Leary

### 476A-476B. Mental Health-Public Health Nurse Consultation.

Prerequisites: courses 401, 410, 420, and 470. This course provides the opportunity for the graduate nursing student to achieve competency in practice of the consultation process in a clinical area. Mrs. Handler

#### Individual Study and Research

### 596. Directed Individual Studies for Graduate Students.

(Formerly numbered 297.) Opportunity for graduate students in nursing to pursue special research interests. May be applied toward departmental minimum one time only. The Staff

### 597. Individual Study for Master's Comprehensive Examination. (1 to 2 courses)

One quarter course only may be applied toward departmental minimum requirement for the Master of Nursing. The Staff

### 598. Research for Thesis. (1 to 2 courses)

(Formerly numbered 299.) Prerequisite: one quarter in research; thesis approved. May be applied toward departmental minimum one time only. The Staff

## ■ ORIENTAL LANGUAGES

(Department Office, 399 Social Welfare Building)

Fr. Heinrich Busch, Ph.D., *Professor of Oriental Languages in Residence.*

Fr. Eugen Feifel, Ph.D., *Professor of Oriental Languages in Residence.*

\*Kan Lao, B.A., Academician, *Professor of Oriental Languages.*

Richard C. Rudolph, Ph.D., *Professor of Oriental Languages.*

Fr. Gerhard Schreiber, Ph.D., *Professor of Oriental Languages in Residence.*

Chi-Chen Wang, B.A., *Professor of Oriental Languages in Residence.*

Ensho Ashikaga, M.Litt., Giko, *Associate Professor of Oriental Languages (Chairman of the Department).*

Ben Befu, Ph.D., *Assistant Professor of Oriental Languages.*

Alicia O. Matsunaga, Ph.D., *Assistant Professor of Oriental Languages.*

———, *Assistant Professor of Oriental Languages.*



Y. C. Chu, M.A., *Lecturer in Chinese.*

Che-Hwei Lin, B.A., M.S. in L.S., *Lecturer in Japanese.*

Man-hing Mok, M.A., M.S., *Lecturer in Chinese.*

Kuo-yi Pao (Ünensečen), M.A., M.S., *Lecturer in Oriental Languages.*

George Takahashi, M.A., *Lecturer in Japanese.*

The Bachelor of Arts Degree in Oriental Languages is offered with a major either in Chinese or Japanese. The program is designed to provide familiarity with the culture and history of the Far East and a more specialized knowledge of the language and literature of the area of major interest.

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

#### Preparation for the Major

For the major in Chinese, courses 1A-1B-1C, 9A-9B-9C, 13A-13B, and 40A; also History 9B and 9C. For the major in Japanese, courses 1A-1B-1C, 9A-9B-9C, and 40B; also History 9B and 9C. Recommended for both majors: Anthropology 5A and 5C.

#### The Major

Required for the major in Chinese: eight upper division quarter courses chosen from 101A, 101B, 101C, 113A, 113B, 121A, 121B, 139, 163A and 163B; in addition, courses 140B, 195, 199, Art 114B and Political Science 159.

Required for the major in Japanese: eight upper division quarter courses chosen from 109A, 109B, 109C, 119A, 119B, 129A, 129B, 139, 179A and 179B; in addition, courses 140A, 196, 199, Art 114C and Political Science 160.

In the event Art 114B or 114C is not offered, substitutions may be made as follows: course 170A, 170B or 170C for 114B, course 172C for 114C.

*Recommended for Chinese majors:* course 13C.

*Recommended for both majors.* Anthropology 110, Geography 186. A reading knowledge of French and/or German should be acquired by those planning to go on to graduate work.

#### Requirements for Admission to Graduate Study

A candidate for admission to graduate study in Oriental languages must meet, in addition to the general University requirements, the minimum requirements for an undergraduate major. Although students whose undergraduate preparation was not in the field of Oriental languages will be accepted, such students will be required to meet the departmental standards in linguistic competence and course requirements prior to undertaking advanced work.

#### Requirements for the M.A. Degree

1. For general requirements, see page 136.
2. Demonstrate a reading knowledge of French or German by passing the examination administered by the Graduate Division. The requirement must be met during the first quarter of graduate study.
3. Complete at least five graduate courses and the requisite number of upper division courses within the department to make a total of nine courses.
4. Submit a brief research paper showing the results of an original investigation of an appropriate problem.
5. Pass a series of comprehensive examinations in the culture, history and literature of either China or Japan. Under certain circumstances, the department will accept a thesis in lieu of the comprehensive examinations.

\* In residence spring quarter only, 1969.

**Requirements for the Ph.D. Degree**

1. For general requirements, see page 140.
2. Requirements for the Master's degree in the department or its equivalent must be met prior to admission to the program. Students majoring in Chinese will be further required to have completed six courses in Classical Chinese and those majoring in Japanese to have completed four courses in Classical Japanese prior to admission. In addition, students are required to have completed at least two courses in an Oriental language other than Chinese or Japanese (Mongolian, Sanskrit, Tibetan, or Vietnamese).
3. Demonstrate a reading knowledge of French and German (whichever was not offered for the M.A. degree) by passing the examination administered by the Graduate Division. This requirement must be met prior to advancement to candidacy.
4. Present a minor chosen from the following five fields: Buddhism, Chinese Archaeology, Linguistics, Chinese Language and Literature, and Japanese Language and Literature.
5. Complete a minimum of five graduate courses in the department beyond the M.A. degree.
6. Students specializing in Chinese archaeology will, in addition, be required to have completed courses 170A-170B-170C, 198, and Anthropology 130A-130B (Origins of Old World Civilization) or Indo-European Studies 132 (European Archaeology: The Bronze Age). Recommended courses: Anthropology 133A (Ancient Civilizations of Western Middle America—Nauhatal Sphere), 133B (Ancient Civilizations of Eastern Middle America—Maya Sphere).
- Students specializing in Buddhism will be required to have completed courses 172A-172B-172C, 164A-164B, 139, Indo-European Studies 160 and 161 (Sanskrit).
- For those majoring in Chinese or Japanese studies the departmental guidance committee will arrange a suitable program.
7. Complete preliminary written qualifying examinations and oral qualifying examinations in two of the fields listed in item 4 above (one of which must be Chinese or Japanese literature and language) and in the area of Far Eastern history and culture.
8. Present a dissertation embodying the results of independent investigation.
9. Pass a final oral examination with major emphasis upon the defense of the dissertation.

**Lower Division Courses****1A-1B-1C. Elementary Modern Chinese.**

Lecture, five hours. Not open to students with previous training. An introduction to the standard or "National Language" (Kuo Yü of China).

Mr. Chu in charge

**9A-9B-9C. Elementary Modern Japanese.**

Lecture, five hours. Not open to students with previous training.

Mr. Takahashi in charge

**13A-13B-13C. Classical Chinese.**

Lecture, three hours; reading or discussion, one hour. Prerequisite: course 1A or consent of the instructor. Introduction to the development of Chinese writing and the classical language in which the bulk of Chinese literature is written.

Mr. Pao

**40A-40B. History of Far Eastern Civilization.**

Lecture, three hours; reading or discussion, one hour. (A) A survey of the development of the outstanding aspects of Chinese culture from prehistoric to modern times. No knowledge of Chinese required. (B) A survey of the development of Japanese culture and its relationship to the Asiatic mainland. No knowledge of Japanese required.

Mrs. Matsunaga

**Upper Division Courses****101A-101B-101C. Intermediate Chinese.**

Lecture, three hours; laboratory, one hour. A continuation of 1A-1B-1C.

Mr. Pao

**109A-109B-109C. Intermediate Modern Japanese.**

Lecture, three hours; laboratory, one hour. A continuation of 9A-9B-9C.

Mr. Takahashi

**113A-113B. Intermediate Classical Chinese.**

Lecture, three hours; reading or discussion, one hour. Prerequisite: courses 13A-13B. Further readings in the classics.

Mr. Leo

**119A-119B. Advanced Modern Japanese.**

Lecture, three hours; laboratory, one hour. A continuation of 109A-109B-109C.

Mr. Takahashi

**121A-121B. Advanced Chinese.**

Lecture, three hours; laboratory, one hour. A continuation of 101A-101B-101C, with practice in newspaper style.

Mr. Chu

**123. Readings in Modern Chinese.**

Prerequisite: course 121A-121B or consent of the instructor.

Mr. Chu

**129A-129B. Classical Japanese and Kambun.**

Lecture, three hours; reading or discussion, one hour.

Mr. Befu

**139. Introduction to Buddhist Texts.**

Lecture, three hours; reading or discussion, one hour. Prerequisite: course 101C or 109C, or the equivalent, and consent of the instructor. Studies on Buddhist terminology.

Mr. Ashikaga

**140A-140B. Far Eastern Literature in Translation.**

Lecture, three hours; reading or discussion, one hour. No knowledge of Chinese or Japanese is required. (A) Japanese Literature in Translation: A survey of Japanese literature from the beginning to modern times, emphasizing Chinese, Buddhist and Western influences. (B) Chinese Literature in Trans-

lation: lectures and collateral reading of representative works in English translation.

Mr. Befe, Father Feifel

#### 143A-143B. Readings in Modern Japanese.

Prerequisite: courses 119A-119B or equivalent. Advanced readings in modern works in social science and literature. Mrs. Matsunaga, Mr. Takahashi

#### 144A-144B-144C. Vietnamese.

Lecture, three hours; reading or discussion, one hour.

#### 152A-152B. Far Eastern Poetry and Fiction.

Lecture, three hours; reading or discussion, one hour. (A) Prerequisite: a reading knowledge of Chinese. (B) Prerequisite: a reading knowledge of Japanese. Mr. Lao, Mrs. Matsunaga

#### 154A-154B. Mongolian.

Lecture, three hours; laboratory, one hour.

Mr. Pao

#### 163A-163B. Readings in Chinese Literary and Historical Texts.

Lecture, three hours; reading or discussion, one hour. Prerequisite: course 118A-118B. Selections from masters in the Ku wen style. Mr. Lao

#### 164A-164B. Tibetan.

Lecture, three hours; reading or discussion, one hour. Mr. Ashikaga

#### 170A-170B-170C. Archaeology in Early and Modern China.

170A. Introduction to Chinese archaeology: types of artifacts, monumental remains, bronze inscriptions. Early Chinese study of their own past: development of antiquarianism, earliest interpretation of archaeological data; Sung dynasty museums, classification and illustrated catalogues. Types of Chinese archaeological literature and early field work up to 1900.

170B-170C. Major work since the beginning of scientific archaeology in China; survey of palaeolithic, neolithic and bronze ages; results of archaeological discovery under both Nationalist and Communist regimes. Mr. Rudolph

#### 172A-172B-172C. The Influence of Buddhism on Far Eastern Cultures and European Thought.

Lecture, three hours; reading or discussion, one hour. No language requirement. The historical development of Buddhism in China, Tibet, and Japan and its influence on the culture, society, and institutions of these areas to Europe. Mr. Ashikaga

#### 174. Readings in Mongolian.

Mr. Pao

#### 175A-175B. The Structures of the Chinese and Japanese Languages.

Lecture, three hours; reading or discussion, one hour. Prerequisite: consent of the instructor. Phonology, morphology, and syntax of Chinese and Japanese.

#### 179A-179B. Readings in Japanese.

Lecture, three hours; reading or discussion, one hour. Prerequisite: course 129A or consent of the instructor. Mr. Befe, Mrs. Matsunaga

#### 195. Chinese Bibliography.

Prerequisite: reading knowledge of Chinese and consent of the instructor. Mrs. Mok

#### 196. Japanese Bibliography.

Prerequisite: reading knowledge of Japanese and consent of the instructor. Mr. Lin

#### 198. Chinese Paleography.

Lecture, three hours; reading or discussion, one hour. Prerequisite: an advanced reading knowledge of classical Chinese and consent of the instructor. The decipherment and interpretation of ancient texts on bone, bronze, stone, and wood. Mr. Lao

#### 199. Special Studies in Oriental Languages.

(½ course)

Prerequisite: senior standing in the Department or advanced reading knowledge of Chinese or Japanese, and consent of the instructor. Special individual study. The Staff

#### Graduate Courses

#### 203A-203B. Chinese Philosophical Texts.

#### 213A-213B. Chinese Buddhist Texts.

#### 223. History of Japanese Language.

#### 229A-229B. Japanese Buddhist Texts.

#### 242A-242B. Japanese Classics.

#### 252A-252B. Seminar in Japanese Literature.

#### 253A-253B. Seminar in Buddhist Studies.

#### 262. Seminar in Sino-logical Literature.

#### 270A-270B. Problems in Chinese Archaeology.

#### 275. Seminar in Chinese Cultural History.

#### 285. Problems in Buddhist Culture.

#### 295. Bibliography and Methods of Research.

#### Individual Study and Research

All of these courses will be graded Satisfactory/Unsatisfactory. A student may enroll in 596 and 598 two times and in 597 and 599 three times, but only one of these may apply toward the minimum course requirement.

#### 596. Directed Individual Studies.

(1 to 2 courses)

#### 597. Preparation for Comprehensive or Qualifying Examinations.

#### 598. Master's Level Research.

#### 599. Doctoral Research.

## ■ PATHOLOGY

(Department Office, 13-265 Center for the Health Sciences)

- W. Jann Brown, M.D., *Professor of Pathology.*  
 Baldwin G. Lamson, M.D., *Professor of Pathology and Director of Hospital and Clinics.*  
 Harrison Latta, M.D., *Professor of Pathology.*  
 Sidney C. Madden, M.D., *Professor of Pathology (Chairman of the Department).*  
 Roy L. Walford, M.D., *Professor of Pathology.*  
 Louis J. Zeldis, M.D., *Professor of Pathology.*  
 M. Anthony Verity, M.D., *Associate Professor of Pathology.*  
 Robert Y. Foos, M.D., *Assistant Professor of Pathology.*  
 Gen Niwayama, M.D., *Assistant Professor of Pathology.*  
 Lydia Osvaldo-Decima, M.D., *Assistant Professor of Pathology.*  
 Joseph Raymond, M.D., *Assistant Professor of Pathology and Director of Clinical Laboratories.*  
 George S. Smith, M.D., *Assistant Professor of Pathology.*  
 Gary M. Troup, M.D., *Assistant Professor of Pathology.*  
 ———, *Assistant Professor of Pathology.*



- Dorian R. Faber, M.D., *Assistant Clinical Professor of Pathology.*  
 Hans F. Smetana, M.D., *Visiting Professor of Pathology.*  
 Eichichi Yamada, M.D., *Visiting Professor of Pathology.*

Graduate study programs in the department are offered to a limited number of medical students between the second and third or between the third and fourth years. For further information consult the chairman of the Department. The following course is open to qualified nonmedical graduate students in so far as facilities permit.

the study of human pathology. Candidates should make application to the Department of Pathology office. Limited to four students. Demonstrations, discussions, and individual study of a student loan collection of microscopic slide preparations of fresh specimens from recent autopsies, supplemented by fixed museum specimens, Kodachrome photomicrographs, and projection of microslides. The course of study includes general pathology and the special pathology of organ systems, emphasizing the correlation of abnormal anatomy with deranged physiology and chemistry. Laboratory exercises illustrative of major phenomena of disease are performed by students under staff supervision. The topic for the term paper should be selected in consultation with the instructor. The Staff

### Graduate Course

#### 231A. Pathological Anatomy and Physiology. (2 courses)

Credit to be given only on completion of 231B. Prerequisite: graduate student status and completion of a curriculum satisfying basic requirements for

#### 231B. Pathological Anatomy and Physiology. Continuation of course 231A.

## ■ PHARMACOLOGY

(Department Office, 23-267 Center for the Health Sciences).

- John A. Bevan, B.Sc., M.B., B.S., *Professor of Pharmacology.*  
 Robert George, Ph.D., *Professor of Pharmacology.*  
 Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology and Biomathematics.*  
 Dermot B. Taylor, M.A., M.D., *Professor of Pharmacology (Chairman of the Department).*  
 Wallace D. Winters, M.D., Ph.D., *Associate Professor of Pharmacology in Residence.*  
 M. D. Fairchild, Ph.D., *Assistant Professor of Pharmacology in Residence.*  
 Peter Lomax, M.D., *Assistant Professor of Pharmacology.*  
 Ronald Okun, M.D., *Assistant Professor of Pharmacology in Residence.*  
 J. Heward Thompson, M.B., B.Ch., B.A.O., *Assistant Professor of Pharmacology.*



- J. H. Beckerman, M.S., *Lecturer in Pharmacology.*  
 Bo L. Karlen, Ph.D., *Visiting Assistant Professor of Pharmacology.*

**Admission to Graduate Status**

In addition to meeting the requirements of the Graduate Division, the student must have received the bachelor's degree in a biological or physical science or in the pre-medical curriculum, provided that the following, or their equivalents, have been completed: 6 semester units of college mathematics, 8 units of physics, 16 units of chemistry (including quantitative analysis and organic chemistry), 8 units of zoology (including comparative gross and microscopic anatomy), 8 units of mammalian physiology (including laboratory), 10 units of biochemistry (including laboratory).

In suitable cases, students who have not completed the above requirements may be admitted to graduate status, but the deficiencies will have to be removed within a specified time.

Students may from time to time be required to pass such examinations as may be thought advisable by the staff of the Department.

**Requirements for the Degree of Master of Science**

In addition to the general requirements of the Graduate Division the student must complete the following: Pharmacology 201. (Mammalian Pharmacology and Toxicology); Pharmacology 232. (Fundamental Principles of Drug Action); Pharmacology 233. (Bioassay Theory); Pharmacology 234. (Experiments in Bioassay and Modes of Drug Action); Pharmacology 251A-251B-251C. (Seminar); suitable additional courses in related subjects to make a total of 36 units; and a thesis.

The responsibility for completion of all technical requirements for the master's degree rests solely with the candidate. This includes application to the Graduate Division for advancement to candidacy during the first two weeks of the final quarter in which the candidate hopes to qualify. The deadline for this application is set by the Graduate Division.

**Requirements for the Doctor's Degree**

**Advancement to Candidacy.** In addition to the general requirements of the Graduate Division, the student must pass a series of qualifying examinations both written and oral. His guidance committee may also stipulate additional requirements. This committee will be appointed by the Chairman of the Department.

**Departmental Requirements.** The mini-

mum requirements in addition to those for the master's degree in pharmacology and toxicology are: Pharmacology 236 (Neuropharmacology); a reading knowledge of French and German; two quarters of physical chemistry; a course in calculus; such additional subjects as his guidance committee may designate.

The language and course requirements should be satisfied as soon as possible, and students must pass the examinations in foreign languages before applying for the qualifying examination.

The responsibility for completion of all technical requirements for the doctor's degree rests solely with the candidate.

**Upper Division Courses****101. Elements of Pharmacology. (2 courses)**

Lectures, laboratories, demonstrations and conferences. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Required course for junior dental students. A general consideration of the modes of action and the pharmacological and toxicological effect of drugs with a more detailed study of those agents used in clinical dentistry and the principles governing their use.

Mr. Lomax in charge

**Graduate Courses****201. Mammalian Pharmacology and Toxicology. (3 courses)**

Lectures, demonstrations, laboratories and conferences. Prerequisite: mammalian physiology. A detailed and comprehensive consideration of the classification, description, modes of action and the pharmacological and toxicological actions of drugs with special reference to the principles governing their use in medicine.

Mr. Taylor in charge

**232. Fundamental Principles of Drug Action.**

Prerequisite: Inorganic, organic and physical chemistry. Advanced lectures on the scientific basis of pharmacological action. Interaction between drugs and cell components. Principles governing absorption, distribution, metabolism and excretion. Diffusion of drugs into and through tissues. Relationships between structure and action in relevant series of drugs.

The Staff

**233. Bioassay Theory. (½ course)**

The theory and practice of the application of statistical methods to the design of experiments and the analysis of data in pharmacology, toxicology and therapeutics.

Mr. Jenden in charge

**234. Experiments in Bioassay and Modes of Drug Action. (½ course)**

A detailed laboratory course on the bioassay of pharmacological agents and the experimental techniques involved in the elucidation of their modes of action.

The Staff

**235. Systemic Mammalian Pharmacology and Toxicology. (2 courses)**

Prerequisite: mammalian physiology. A comprehensive lecture course in systemic general mammal-

ian pharmacology including the classification, description and mode of action of pharmacological agents. Mr. Taylor in charge

### 238. Neuropharmacology.

Prerequisite: neurophysiology. Advanced neuropharmacology, including actions and modes of action of drugs acting on C.N.S., interactions between drugs and nervous tissue, movements of drugs through blood brain barrier, and distribution to C.N.S., problems of central transmission. The Staff

### 251A-251B-251C. Seminar in Pharmacology.

(½ course each)

Mr. Thompson in charge

Individual Study and Research

### 598. Directed Individual Research in Pharmacology.

(1 to 3 courses)

The Staff

### 599. Research for and Preparation of the Doctoral

Dissertation. (1 to 3 courses)

The Staff

## ■ PHILOSOPHY

(Department Office, 321 Social Welfare Building)

Alonzo Church, Ph.D., *Professor of Philosophy and Mathematics in Residence.*

Donald Kalish, Ph.D., *Professor of Philosophy (Chairman of the Department).*

Richard Montague, Ph.D., *Professor of Philosophy.*

Ernest A. Moody, Ph.D., *Professor of Philosophy.*

Herbert Morris, LL.B., D.Phil., *Professor of Philosophy and Law.*

J. Wesley Robson, Ph.D., *Professor of Philosophy.*

Richard A. Wasserstrom, LL.B., Ph.D., *Professor of Philosophy and Law.*

Robert M. Yost, Jr., Ph.D., *Professor of Philosophy.*

Rudolf Carnap, Ph.D., LL.D., *Emeritus Professor of Philosophy.*

Hugh Miller, Ph.D., *Emeritus Professor of Philosophy.*

Montgomery Furth, Ph.D., *Associate Professor of Philosophy.*

David B. Kaplan, Ph.D., *Associate Professor of Philosophy (Vice-Chairman—Student Affairs).*

Thomas E. Hill, Ph.D., *Assistant Professor of Philosophy.*

David K. Lewis, Ph.D., *Assistant Professor of Philosophy.*

C. Wade Savage, Ph.D., *Assistant Professor of Philosophy.*

J. Howard Sobel, Ph.D., *Assistant Professor of Philosophy.*



Charles H. Chastain, M.A., *Lecturer in Philosophy.*

John S. Earman, B.A., *Acting Assistant Professor of Philosophy.*

John Perry, B.A., *Acting Assistant Professor of Philosophy.*

Sandra L. Peterson, B.A., *Acting Assistant Professor of Philosophy.*

Warren Quinn, M.A., *Acting Assistant Professor of Philosophy.*

Krister Segerberg, Fil Lic, *Lecturer in Philosophy.*

Robert Solomon, Ph.D., *Acting Assistant Professor of Philosophy.*

John M. Taurek, B.A., *Lecturer in Philosophy.*

Friedrich von Hayek, Ph.D., *Visiting Flint Professor of Philosophy.*

### Preparation for the Major

Four lower division philosophy courses (16 units), including course 31 and either courses 6 and 7 or courses 20 and 21.

For a student who enrolled as a major before the fall term of 1966, the preparation for the major is as follows: Course 31 (either a semester or a quarter course) and either (i) 20A and 20B; (ii) 20 and 21 and either 6, 7, or 32; or (iii) 6 and 7 and either 20, 21, or 32.

### The Major

Twelve upper division or graduate philosophy courses (48 units), including at least two courses (8 units) in each of the following four groups.

Group I. 101, 102, 103, 104, 105, 106, 107, 108.

Group II. 125, 126A-126B-126C, 127A-127B, 128, 129, 133, 134, 135.

Group III. 150, 151, 152, 155, 156, 157, 160, 161, 164.

Group IV. 175, 176, 178, 180, 184, 186, 188, 190, 192, 194.

For a student who enrolled as a major before the fall term of 1966, the major is as follows: (A) either (i) 36 quarter units (1 semester unit equals  $1\frac{1}{2}$  quarter units) of upper division philosophy courses if he has completed a total of sixty semester units before the fall quarter of 1966 or (ii) 48 quarter units if he has completed a total of less than 60 semester units before the fall quarter of 1966; and (B) for each of the Groups I to IV, either (iii) one semester-course in a Group (see 1964-1965 *Catalog* for a listing of semester courses in the Groups) or (iv) two quarter courses in a Group (see above list).

Philosophy majors may not use a philosophy course to satisfy the I requirement of the College of Letters and Science (limited electives).

Upon the recommendation of the Philosophy Department faculty, honors in philosophy will be awarded at graduation to a major whose grade point average in upper division philosophy courses is 3.3 and who has completed two graduate courses (8 units) in philosophy with an average grade of 3.5.

#### Admission to Graduate Status

Students interested in admission to graduate study should write to the Graduate Adviser, Department of Philosophy for documents describing the graduate program.

An undergraduate major in Philosophy is not required, although some undergraduate preparation is expected.

#### Graduate Courses and Seminars

During the period between admission to graduate standing and advancement to candidacy a graduate student is normally required in each academic year of attendance to take at least two courses (8 units) in philosophy numbered in the 200 series.

#### Requirements for the Master's Degree

*General Requirements.* See page 136.

*Foreign Language.* A reading knowledge of one of the following languages: Greek, Latin, French, or German. On petition to the Department, another language relevant to the candidate's field of specialization may be chosen.

*Course Requirement.* At least nine courses (36 units) numbered over 100 (excluding 199), five courses (20 units) or which must be in philosophy courses numbered in the 200 series.

#### Thesis Plan

*Qualifying Examination.* An oral examination administered by the Department designed to test the student's general knowledge of philosophy.

*Thesis.* A thesis supervised and approved by a committee appointed by the Dean of the Graduate Division.

#### Comprehensive Examination Plan

The Comprehensive Examination Plan for the master's degree requires passage of the written Qualifying Examinations for the doctorate in Philosophy or passage of the written Master's Comprehensive Examinations. The latter cover the four fields examined for the doctorate. For full details consult the *Plan for the Written Master's Comprehensive Examinations in Philosophy*.

#### Requirements for the Doctor's Degree

*General Requirements.* See page 140.

*Foreign Language.* A reading knowledge of two of the following languages: Greek, Latin, French, or German. On petition to the Department, one of these may be replaced by another language relevant to the candidate's field of specialization.

*Course Requirement.* Three advanced courses (12 units) outside philosophy taken prior to advancement to candidacy. The choice of these courses will be determined in consultation with the Graduate Adviser.

*Qualifying Examinations.* Qualifying examinations for advancement to candidacy consisting of a written examination in each of the following fields: (1) history of philosophy, (2) logic, (3) ethics and value theory, and (4) metaphysics and epistemology. These examinations, administered by the Department, may be taken in two groups, the student choosing which two examinations are taken as the first group. For full details, consult the *Plan for the Written Qualifying Examinations for the Doctorate in Philosophy*, available in the Philosophy Department office. The examinations are normally scheduled for the third and fourth weeks of the fall quarter and for the second and third weeks before instruction ends in the spring quarter. (None will be given in the winter quarter.) In addition to the written examinations, an oral qualifying examination, administered by the doctoral committee appointed by the Dean of the Graduate Division, is required in one of the four general philosophical fields

and in a related field which will normally be represented by the nondepartmental members of the doctoral committee.

**Dissertation.** A dissertation on a subject chosen by the candidate and approved by his doctoral committee and the Dean of the Graduate Division.

**Final Examination.** An oral examination in the field of the student's special interest as represented by his dissertation, administered by the doctoral committee.

#### Lower Division Courses

All lower division courses are introductory and without prerequisites except as otherwise stated.

#### 6. Introduction to Philosophy.

(Formerly numbered 6A.) Lectures, three hours; discussion section, one hour. Selected topics from the following: ethics, political philosophy, and philosophy of art. Mr. Solomon, Mr. Taurek

#### 7. Introduction to Philosophy.

(Formerly numbered 6B.) Course 6 is not a prerequisite. Lectures, three hours; discussion section, one hour. Selected topics from the following: metaphysics, theory of knowledge, philosophy of science, and philosophy of religion.

Mr. Chastain, Mr. Hill, Mr. Yost

#### 20. Ancient Philosophical Classics.

(Formerly numbered 20A.) Lectures, three hours; discussion section, one hour. Selected topics from the following: the beginnings of Western science and philosophy; the philosophies of Socrates, Plato, and Aristotle; Greek philosophies in the Roman world and in the Christian era.

Mr. Moody, Mr. Quinn, Mr. Savage

#### 21. Modern Philosophical Classics.

(Formerly numbered 20B.) Course 20 is not a prerequisite. Lectures, three hours; discussion section, one hour. Selected topics from the following: the Renaissance and the rise of modern science; rationalism in Descartes, Spinoza, Leibniz; empiricism in Locke, Berkeley, Hume; philosophies of Kant and his successors; recent movements.

Mr. Chastain, Mr. Perry, Mr. Taurek

#### 31. Logic, First Course.

Lectures, three hours; discussion section, one hour. Recommended for students who plan to pursue more advanced studies in logic. The elements of symbolic logic, sentential and quantificational; forms of reasoning and structure of language.

Mr. Church, Mr. Kalish, Mr. Montague

#### 32. Logic, Second Course.

Lectures, three hours; discussion section, one hour. Prerequisite: course 31, preferably in the preceding quarter. Symbolic logic: extension of the systematic development of course 31. Quantifiers, identity, definite descriptions.

Mr. Church, Mr. Earman, Mr. Sobel

#### Upper Division Courses

Normally, prerequisite for all upper division courses is upper division standing and

such special prerequisites as are mentioned in the course listings. Many courses in the Department of Philosophy contain material that is relevant to programs of study in the following areas: fine arts, literature, literary and intellectual history, jurisprudence, political theory, social sciences, psychology, natural sciences, and mathematics. The following courses, which require no specific philosophical background, are suitable for satisfying the (I) requirements of the College of Letters and Science, or for nonmajors who are interested simply in taking a course in philosophy as an elective:

No prerequisite in philosophy required: courses 125, 150, 155, 160, 164, 175, 176, 178, 180.

One course (4 units) in philosophy or consent of the instructor required: courses 101, 102, 103, 104, 105, 106, 107, 108, 161.

Two courses (8 units) in philosophy or consent of the instructor required: courses 151, 152, 156, 157, 184, 186, 188, 190, 192, 194.

#### GROUP I

##### 101. Greek Philosophy: Plato and Predecessors.

(Formerly numbered 152.) Prerequisites: one course (4 units) in philosophy or consent of the instructor. A study of the pre-Socratic philosophers in relation to selected works of Plato. Miss Peterson

##### 102. Greek Philosophy: Aristotle and Later Greek Philosophy.

(Formerly numbered 153.) Prerequisite: one course in philosophy or consent of the instructor. A study of the philosophical contributions of Aristotle, the Stoics, Epicureans, Sceptics, and late Platonists, based on the reading and discussion of major works of Aristotle and of selected sources from later Greek authors. Miss Peterson

##### 103. Medieval Philosophy from Augustine to Aquinas.

(Formerly numbered 157.) Lectures, three hours. Prerequisite: one course in philosophy or consent of the instructor. The formation of western scholastic philosophy within the framework of Christian doctrine, and its assimilation and criticism of the Greek philosophical heritage by Aquinas and other thirteenth century theologians. Selected writings of authors from Augustine through Aquinas read in translation. Mr. Moody

##### 104. Late Medieval and Renaissance Philosophy.

(Formerly numbered 158.) Lectures, three hours. Prerequisite: one course in philosophy or consent of the instructor. Duns Scotus, Ockham, and the *via moderna* of the fourteenth century; Renaissance scepticism and humanism; and the philosophical background of the scientific revolution. Selected texts of late scholastic and Renaissance philosophers. Mr. Moody

**105. Continental Rationalism.**

(Formerly numbered 162.) Lectures, three hours.  
Prerequisite: one course in philosophy or consent of the instructor. The philosophies of Descartes, Spinoza, and Leibniz. Mr. Yost

**106. British Empiricism.**

(Formerly numbered 163.) Prerequisite: one course in philosophy or consent of the instructor. The philosophies of Locke, Berkeley, and Hume. Mr. Perry

**107. Kant and Idealism.**

(Formerly numbered 166.) Prerequisite: one course in philosophy or consent of instructor. A study of Kant as the basis for later German Idealism. Mr. Hill

**108. Nineteenth Century Philosophy.**

Prerequisite: one course in philosophy or consent of the instructor. Selected topics in nineteenth century thought. Mr. Solomon

**GROUP II****125. Introduction to Modern Logic.**

(Formerly numbered 102.) Lectures, three hours; discussion section, one hour. Open to lower division students with consent of the instructor. A survey of elementary topics in sentential logic, axiomatic foundations of arithmetic, calculus of classes and relations, elementary theory of probability, modal logic. Mr. Lewis

**126A. Philosophy of Science.**

Prerequisite: course 32 or course 125. Lectures, three or four hours. An analysis of explanation, confirmation, and theory in the sciences. Mr. Lewis

**126B. Philosophy of Science.**

Lectures, three or four hours. Prerequisite: course 126A or consent of the instructor. Certain philosophical problems regarding the content of the sciences. Mr. Earman

**126C. Philosophy of Science: Social Sciences.**

Prerequisite: consent of the instructor. Classification of the sciences. Theory and history. The tests of scientific theories. Problems of "induction." Errors of behaviorism, etc. Theory of complex phenomena. Object of social theory: the undersigned results of human action. Intelligibility and the data of social theory. Mr. von Hayek

**127A-127B. Philosophy of Language.**

(Formerly numbered 187B.) Lectures, three or four hours. Prerequisite: course 31 and either course 32 or course 125; or consent of the instructor. With the consent of the instructor, course 127B may be taken without course 127A. Semiotic: syntax, semantics, pragmatics. The semantical concept of truth, sense and denotation, synonymy and analyticity, modalities and tenses, indexical terms, semantical paradoxes. Indirect discourse, subjunctive conditionals. Mr. Church, Mr. Kaplan

**128. Philosophy of Mathematics.**

(Formerly numbered 191.) Lectures, three hours. Prerequisite: course 134 or Mathematics 112A-112B or consent of the instructor. Axiomatic and set-the-

oretical foundations of systems of numbers; natural numbers, integers, rationals, reals, complex numbers. Foundational approaches of Russell, Hilbert, and Brouwer. Mr. Segerberg

**129. Philosophy of Psychology.**

Prerequisites: one 4-unit course in Psychology and one 4-unit course in Philosophy. Selected philosophical issues arising from psychological theories of thinking, learning, motivation, perception and measurement. The meaning and verification of such theories. The difference between philosophy and psychology. Mr. Savage

**133. Logic, Third Course.**

Lectures, three hours; or lectures, three hours, and discussion section, one hour. Prerequisite: course 32, preferably in the preceding quarter. Symbolic logic: formal theories, definitions, selected applications. Mr. Kaplan, Mr. Segerberg

**134. Introduction to Set Theory.**

(Formerly numbered 184A.) Lectures, three hours; discussion section, one hour. Prerequisite: course 133 (which with the consent of the instructor may be taken concurrently), or upper division standing in mathematics and consent of the instructor. Introduction to axiomatic set theory: sets, natural numbers, relations, functions, cardinality, infinity. Mr. Kalish

**135. Introduction to Metamathematics.**

(Formerly numbered 184B.) Lectures, three or four hours. Prerequisite: course 134 or consent of the instructor. Models, satisfaction, truth, definability; logical truth and logical consequence; consistency and completeness. Mr. Montague

**GROUP III****150. Society and Morals.**

(Formerly numbered 105.) Lectures, three hours. Analyses of some contemporary moral issues. Mr. Quinn

**151. History of Ethics.**

(Formerly numbered 104.) Lectures, three hours. Prerequisite: two courses in philosophy or consent of the instructor. Selected classics in the history of ethics. Mr. Sobel, Mr. Taurek

**152. Ethical Theory.**

(Formerly numbered 188.) Prerequisites: two courses in philosophy or consent of the instructor. Fundamental concepts and theories of morals. Mr. Sobel, Mr. Taurek

**155. Social Philosophy.**

(Formerly numbered 147.) Selected problems in the field of social philosophy.

**156. Political Philosophy.**

(Formerly numbered 121.) Prerequisite: two courses in philosophy or consent of the instructor. An analysis of basic concepts in political theory. Mr. Hill

**157. Legal Philosophy.**

(Formerly numbered 192.) Prerequisite: two courses in philosophy or consent of the instructor. Selected problems in the field of legal philosophy. Mr. Morris, Mr. Wasserstrom

# 160. Philosophy of Art.

(Formerly numbered 136.) Lectures, three hours; discussion section, one hour; or lectures, two hours, discussion section, two hours. The aesthetic experience; form and expression; the functions of art; bases of art criticism.

# 161. Aesthetic Theory.

(Formerly numbered 189.) Prerequisite: one course in philosophy or consent of the instructor. Theories of art; theories of aesthetic value; philosophical problems of art criticism. Mr. Quilan

# 164. Philosophy in Literature.

(Formerly numbered 146A-146B.) The study of philosophical ideas expressed in literature. Mr. Morris

## GROUP IV

# 175. Philosophy of Religion.

(Formerly numbered 112.) The nature and existence of God; the concept of immortality; religious obligation and the question of free will; the systematic nature of theology and its relation to the philosophical enterprise. Mr. Savage

# 176. Existentialism and Phenomenology.

(Formerly numbered 123.) A general introduction to basic concepts and methods. Mr. Solomon

# 178. Philosophy of History.

(Formerly numbered 149.) Selected problems in the philosophy of history. Mr. Chastain

# 180. Dialectical Materialism.

(Formerly numbered 173.) An analysis of the philosophical foundations and implications of dialectical materialism.

# 184. Metaphysics.

(Formerly numbered 111.) Lectures, three hours. Prerequisite: two courses in philosophy or consent of the instructor. A study of selected metaphysical questions illustrating traditional approaches but stressing recent discussions. Questions will be selected from such topics as: metaphysical systems, causation, space and time, substance, qualities and relations, universals and particulars, identity, mind and body, free will, etc. Mr. Lewis

# 186. Theory of Knowledge.

(Formerly numbered 181.) Lectures, three hours. Prerequisite: two courses in philosophy. Philosophical problems concerning knowledge and belief. Possible topics: perception, certainty, memory, the analytic-synthetic distinction, self-knowledge, etc. Mr. Chastain, Mr. Earman

# 188. Philosophy of Perception.

Lectures, three hours. Prerequisite: two courses in philosophy or consent of the instructor. A critical study of the main philosophical theories of perception and the arguments used to establish them. Mr. Yost

# 190. Philosophy of Mind.

(Formerly numbered 180.) Lectures, three hours. Prerequisite: two courses in philosophy or consent of the instructor. An analysis of various problems concerning the nature of mind and mental phenomena, monism, knowledge of other minds, and behaviorism and its alternatives. Miss Peterson

# 192. Philosophy of Language.

(Formerly numbered 187A.) Lectures, three hours. Prerequisite: two courses in philosophy or linguistics. Analysis of the concepts of meaning, reference, and truth in natural languages; syntactic and semantic descriptions of natural languages; theory of speech acts. Mr. Perry

# 194. Contemporary Philosophy.

(Formerly numbered 170A-170B.) Lectures, three hours. Prerequisite: two lower division courses in philosophy or one upper division course in philosophy or one course in logic or consent of the instructor. Analysis of the views of several recent philosophers. Mr. Savage

# 199. Special Studies. (½ to 2 courses)

Prerequisite: consent of the instructor.  
The Staff, Mr. Kaplan in charge

## Graduate Courses

# 201. Plato.

A study of the later dialogues. Miss Peterson

# 202. Aristotle.

Prerequisite: undergraduate preparation in the history of Greek philosophy. Analysis of major problems in Aristotle's philosophy based on the reading, exposition and critical discussion of relevant texts in English translation. Mr. Furth

# 204. Hume.

Prerequisite: consent of the instructor. Mr. Savage

# 208. Kant.

(Formerly numbered 215.) Prerequisite: consent of the instructor. A study of one of the three Critiques and supplementary works. Mr. Savage

# 210. History of Logic.

Prerequisite: course 31 or the equivalent. Analysis and discussion of major contributions to the development of logic, and of semantical problems of meaning and truth, by the Aristotelian, Stoic, and western scholastic traditions, with emphasis on the relevance of these contributions to contemporary treatments. Mr. Moody

# 221A-221B-221C. Set Theory.

(Formerly numbered 231A-231B and same as Mathematics 221A-221B-221C.) Lectures, three hours. Prerequisite: Mathematics 112A or Philosophy 134 or consent of the instructor. Students may not receive credit for both Mathematics 221A-221B-221C and Philosophy 221A-221B-221C. Sets, relations, functions. Partial and total orderings; well-orderings. Ordinal and cardinal arithmetic, finiteness and infinity, the continuum hypothesis, inaccessible numbers. Formalization of set theory, Zermelo-Fraenkel Theory, von Neumann-Gödel Theory. Constructability. Results on relative consistency and independence. Mr. Chang

# 222. Gödel Theory.

(Formerly numbered 232B.) Lectures, three hours. Prerequisite: course 135 or Mathematics 112A-112B or consent of the instructor. Elementary syntax: arithmetization of syntax; the Herbrand-Gentzen-Beth theorem. Theory of arithmetical theories: models, interpretability, self-reference, incompleteness, nondemonstrable consistency, modern developments. Number-theoretically definable relations; specializations to recursive functions.

**223. Model Theory.**

(Formerly numbered 232A.) Lectures, three hours.  
Prerequisite: course 135 or Mathematics 112A-112B.

**224. Philosophy of Physics.**

Lecture, three hours. Prerequisite: consent of the instructor. Selected philosophical topics related to physical theory, depending on interests and background of the participants. Might include: space and time; observation in quantum mechanics; foundations of statistical mechanics. Mr. Earman

**225. Probability and Inductive Logic.**

(Formerly numbered 223.) Lectures, three hours.  
Prerequisite: course 134 or Mathematics 112A-112B or consent of the instructor. Recommended: course 133 or course 128 or a course in calculus. Mr. Lewis

**226. Topics in Mathematical Logic.**

(Formerly numbered 224.) Lectures, three hours.  
Prerequisite: consent of the instructor. Content will vary from quarter to quarter. Mr. Segerberg

**251A. Seminar: History of Ancient Philosophy.**

Prerequisite: consent of the instructor. Selected problems and philosophers. Miss Peterson

**251B. Seminar: History of Medieval and Renaissance Philosophy.**

Prerequisite: consent of the instructor. Selected problems and philosophers. Mr. Moody

**251C. Seminar: History of Modern Philosophy.**

Prerequisite: consent of the instructor. Selected problems and philosophers.

**260. Seminar: Mathematical Philosophy.**

(Formerly numbered 272 and 273.) Prerequisite: consent of the instructor. Mr. Kaplan

**261. Seminar: Logic.**

(Formerly numbered 271.) Prerequisite: consent of the instructor. Mr. Church

**262A-262B. Seminar: Recursive Functions.**

Prerequisite: consent of the instructor. Mr. Montague

**270. Seminar: History of Ethics.**

(Formerly numbered 204.) Prerequisite: consent of the instructor. Selected topics. Mr. Hill

**271. Seminar: Ethical Theory.**

(Formerly numbered 205.) Prerequisite: consent of the instructor. Selected topics. Content will vary from quarter to quarter. Mr. Quinn, Mr. Sobel

**273. Law, Legislation, and Liberty.**

Prerequisite: consent of the instructor. Kinds of order. The law of liberty and of legislation. General welfare and particular purpose. Justice is not an empty word, but "social" justice is. The market order. Majority opinion and contemporary democracy. Public and private sector. A constitution of liberty. Mr. von Hayek

**274. Seminar: Free Will and Morality.**

Prerequisite: consent of the instructor. Mr. Taurek

**275. Seminar: Responsibility in Law and Morals.**

(Formerly numbered 257.) Prerequisite: consent of the instructor. Mr. Morris

**276A. Legal Philosophy: The Nature of Law.**

Prerequisite: consent of the instructor. 276A is not a prerequisite to 276B. An inquiry into selected theories concerning the nature of law. Mr. Morris, Mr. Wasserstrom

**276B. Legal Philosophy: The Nature of Justice.**

Prerequisite: consent of the instructor. An inquiry into selected topics relating to justice and the law. Mr. Morris, Mr. Wasserstrom

**277. Seminar: Aesthetic Theory.**

(Formerly numbered 258.) Prerequisite: consent of the instructor. Selected topics.

**280. Seminar: Phenomenology.**

(Formerly numbered 268.) Prerequisite: consent of the instructor. Mr. Solomon

**281. Seminar: Philosophy of History.**

(Formerly numbered 259.) Prerequisite: consent of the instructor.

**282. Seminar: Metaphysics.**

(Formerly numbered 251.) Prerequisite: consent of the instructor. Mr. Perry

**283. Seminar: Theory of Knowledge.**

(Formerly numbered 252.) Prerequisite: consent of the instructor. Mr. Yost

**284. Seminar: Philosophy of Perception.**

Prerequisite: consent of the instructor. Mr. Yost

**285. Seminar: Problems in Philosophical Psychology.**

Prerequisite: consent of the instructor.

**287. Seminar: Philosophy of Language.**

(Formerly numbered 270A-270B.) Prerequisite: consent of the instructor. Mr. Furth, Mr. Lewis

**288. Seminar: Wittgenstein.**

Prerequisite: consent of the instructor. Mr. Savage

**Individual Study and Research**

The courses in the 500 series do not apply toward the course requirement for the master's degree.

**596A-596B. Directed Individual Studies.**

(½ to 2 courses)

Any properly qualified graduate student who wishes to pursue a problem through reading or advanced study may do so if his proposed project is acceptable to a member of the staff. May be repeated for credit. Course 596A offered only on a graded basis; 596B only on a satisfactory/unsatisfactory basis. The Staff, Mr. Kaplan in charge

**597. Preparation for Master's Comprehensive or Doctoral Qualifying Examinations.**

(½ to 2 courses)

Independent study in preparation for examination may be repeated for credit. Graded only on a satisfactory/unsatisfactory basis. Mr. Kaplan in charge

**598A-598B. Research for Master's Thesis.**

(½ to 2 courses)

Prerequisite: passage of the oral qualifying examinations for the master's degree. May be repeated for credit. Course 598A offered only on a graded basis; 598B only on a satisfactory/unsatisfactory basis.  
The Staff, Mr. Kaplan in charge

**599A-599B. Research for Doctoral Dissertation.**

(½ to 2 courses)

Prerequisite: advancement to candidacy for the doctoral degree. May be repeated for credit. Course 599A offered only on a graded basis; 599B only on a satisfactory/unsatisfactory basis.  
The Staff, Mr. Kaplan in charge

**■ PHYSICAL EDUCATION**

(Department Office, 206 Men's Gymnasium, 124 Women's Gymnasium)

Camille Brown, Ed.D., *Professor of Physical Education.*  
 Valerie V. Hunt, Ed.D., *Professor of Physical Education.*  
 Ben W. Miller, Ph.D., *Professor of Physical Education.*  
 Norman P. Miller, Ed.D., *Professor of Physical Education.*  
 Laurence E. Morehouse, Ph.D., *Professor of Physical Education.*  
 Raymond A. Snyder, Ed.D., *Professor of Physical Education.*  
 Rosalind Cassidy, Ed.D., *Emeritus Professor of Physical Education.*  
 Carl H. Young, Ed.D., *Emeritus Professor of Physical Education.*  
 Senera Arnold, Ed.D., *Associate Professor of Physical Education.*  
 Bryant J. Cratty, Ed.D., *Associate Professor of Physical Education.*  
 Glen Egstrom, Ph.D., *Associate Professor of Physical Education.*  
 Gerald W. Gardner, Ph.D., *Associate Professor of Physical Education.*  
 Donald T. Handy, Ed.D., *Associate Professor of Physical Education (Chairman of the Department).*  
 Jack Keogh, Ed.D., *Associate Professor of Physical Education (Vice-Chairman of the Department).*  
 Marjorie E. Latchaw, Ph.D., *Associate Professor of Physical Education.*  
 Wayne W. Massey, Ph.D., *Associate Professor of Physical Education.*  
 Jeanette B. Saurborn, Ed.D., *Associate Professor of Physical Education.*  
 David Lamb, Ph.D., *Assistant Professor of Physical Education.*  
 John W. Loy, Ph.D., *Assistant Professor of Physical Education.*

Ethel T. Bell, Ed.D., *Supervisor of Physical Education.*  
 Norman D. Duncan, M.A., *Supervisor of Physical Education (Facility Manager).*  
 Briggs M. Hunt, B.E., *Supervisor of Physical Education.*  
 Robert Hutton, M.S., *Lecturer in Physical Education.*  
 Joan L. Martin, M.S., *Associate Supervisor of Physical Education.*  
 Nanette T. McIntyre, M.S., *Associate Supervisor of Physical Education.*  
 William F. Pillich, M.S., *Associate Supervisor of Physical Education (Director, Activity Programs).*  
 Sterling S. Winans, M.S., *Lecturer in Physical Education.*  
 Edith I. Hyde, M.A., *Supervisor of Physical Education, Emeritus.*  
 Orsie M. Thomson, M.A., *Supervisor of Physical Education, Emeritus.*

**Bachelor's Degree in Physical Education**

Students of physical education pursue course work designed to develop and integrate concepts of human movement (kinesiology) and an allied field of inquiry, either physiology, psychology, or sociology. Selection of Plan I, II, or III in preparation for the major and in the major is contingent upon declaration of the allied field during the first year in the program. Subsequent

transfer from one plan to another is permissible with the approval of an adviser. Some courses in allied and related fields satisfy a requirement in all three plans as well as one of the requirements of the College of Letters and Science. Students intending to major in physical education should confer with a departmental adviser before enrollment in classes.

All students are expected to demonstrate

an acceptable level of performance in specified movement patterns through participation in proficiency-skills testing. Referral for instruction in appropriate activity areas will be made on the basis of individual test results.

#### **Preparation for the Major**

Courses 2, 10A, 10B; and one of the following groups of related and allied field courses.

Plan I. Allied Field, Physiology: Chemistry 1A, 1B, 1C; Biology 1A, 1B, 1C. Recommended electives: Chemistry 4A, 4B, 4C; 6A, 6B, 6C; Mathematics through Calculus; Physical Education 15; Psychology 10, 12; Sociology 1; Philosophy 6 or 7.

Plan II. Allied Field, Psychology: Psychology 10, 12; Physical Education 15; Sociology 1; Philosophy 6 or 7.

Plan III. Allied Field, Sociology: Sociology 1A, 1B, 19; Anthropology 22, 100; Physical Education 15; Psychology 10, 12; Philosophy 6 or 7.

#### **The Major**

Physical education courses—110A, 110B, 120, 148, and at least two (2) full courses from 112, 113, 114, 116, 119, 122, 136\*, 193, 199. One of the following groups of allied field courses.

Plan I. Allied Field, Physiology: a choice of four (4) physiological upper division courses in zoology approved by the departmental adviser.

Plan II. Allied Field, Psychology: Psychology 141 and six (6) upper division courses from the following areas: learning and learning disorders, physiological psychology, perception, personality and abnormal psychology, developmental psychology, social psychology, psychological measurement and evaluation. All six courses may be completed in one area or in two or three, provided there are at least two (2) courses in each area selected.

Plan III. Allied Field, Sociology: four (4) upper division courses selected with the approval of the major adviser as follows: Two must be selected from Core Area I (Theory and Method), and two must be selected from either Core Area II (Social Structure and Change) or Core Area V (Social Psychology).

Upon completion of the bachelor's degree the student of physical education has several options. He may (1) with attention to requirements for the teaching major in the selection of undergraduate electives, complete the fifth year to meet California State Teach-

ing Credential requirements; (2) proceed directly toward both the master's degree and the teaching credential; or (3) proceed toward a doctoral degree.

#### **Requirements for the Bachelor's Degree in Prephysical Therapy**

For curricular requirements in prephysical therapy see interdepartmental major, College of Letters and Science, page 82.

#### **Requirements for the Standard Teaching Credential**

For information concerning the teaching major consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION or confer with a departmental adviser.

*Teaching Minors.* (Elementary, Secondary, Junior College.) Eight (8) courses are required for the teaching minors as follows: Physical Education 2, 10A–10B, 111A–111B, 120; one course selected from 113 or 119 or a dance elective; 121 or 370.

#### **Admission to Graduate Status**

Students seeking admission to graduate status in the Department of Physical Education will be expected to meet the general requirements of the Graduate Division for admission, as described on page 28. Questions should be directed to the Chairman, Committee of Graduate Studies, Department of Physical Education.

#### **Requirements for the Master's Degree†**

The degree of Master of Science is awarded with concentrations in physical education or recreation. Study under the Thesis Plan or the Comprehensive Examination Plan (see page 138) is available.

The Master of Science degree program comprises an integrated course of study in primarily the theoretical foundations of kinesiology. The program is an interdisciplinary one with emphasis upon research and general principles. It is designed to provide the student with the intellectual orientation necessary for scholarly studies, research and professional work in the human movement field. It does so by three stages:

1. Provides a common core of knowledge, integrated by a framework of the total field, developed as a continuum of the undergraduate major in human movement;
2. Provides directions of specialization within the field; and,

\* Prior to Fall Quarter, 1966.

† Special section for Physical Education and Sociology major and minor students.

3. Brings the student to the point of successful, independent research work in a selected area of specialization.

Requirements are based on a minimum of nine courses taken for this degree, of which six must be 200 series. Five courses in the 200 series must be taken in the Department of Physical Education. Three courses must be selected, with the approval of the major adviser, from one of the departments of Physiology, Psychology or Sociology. Course requirements will be developed on an individual basis in conference with a graduate adviser.

The current graduate offerings in adapted physical education for the M.S. degree meet the eligibility requirements for taking the examination for certification in corrective therapy as determined by the Association for Physical and Mental Rehabilitation.

#### Requirements for the Degree of Doctor of Education

The Department of Physical Education participates with the School of Education in offering a program leading to the degree of Doctor of Education. A student considering this program should communicate with the Dean of the Graduate School of Education in this regard. For admission and program requirements see pages 118 and 142. In addition consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION. Specific information regarding the degree should be obtained by correspondence or in conferences, well in advance of beginning course work, with the Dean of the Graduate School of Education and the Chairman of the Committee on Graduate Studies, Department of Physical Education.

#### Lower Division Courses

##### 1. Physical Education Activities (Men and Women). (½ course)

Four units (one full course) of Physical Education 1 may be counted toward the bachelor's degree. Graduate students may enroll on a Satisfactory/Unsatisfactory basis. Classes† meet for ninety minutes of instruction per week, scheduled in two or three meetings, depending on the nature of the activity. Program content is designated by section each semester in the printed SCHEDULE OF CLASSES. Expert instruction is available on beginning, intermediate and advanced levels in such activities as: aquatics (swimming, water safety instruction, senior lifesaving), badminton, basketball, body conditioning, dance (social, tap, square), field sports, exercise and figure control, fencing, golf, self-defense (men and women), skiing, wrestling. Mr. Fillich in charge

† Towels and gymnasium clothing, except shoes and bathing caps, are furnished. Information concerning special equipment and course fee required for some activities may be obtained in departmental offices.

##### 2A-2Z. Fundamentals of Human Performance (Men and Women). (¼ course each)

Lecture, one hour; laboratory, two one-half hour sessions. Open to Physical Education major and minor students only. The principles of conditioning and improvement of human performance. 2A, Badminton; 2B, Basketball (M); 2C, Basketball (W); 2D, Dance (Folk-social); 2E, Modern Dance; 2F, Field Sports (M); 2G, Field Sports (W); 2H, Football (M); 2J, Golf; 2K, Gymnastics; 2L, Scuba; 2M, Softball (W); 2N, Swimming; 2P, Tennis; 2R, Track and Field; 2S, Volleyball; 2T, Wrestling (M). Unless otherwise specified, all sections are coeducational.

Mr. Fillich in charge

##### 10A-10B. Introduction to Kinesiology.

(Formerly numbered 4A-4D and 10.) Lecture, three hours; laboratory, two hours. Required of all physical education majors and teaching minors in physical education. Basic concepts in the study of human movement.

Miss Brown in charge

##### 15. Introduction to Human Anatomy and Physiology. (2 courses)

(Formerly numbered Zoology 15 and 17.) Lecture, five hours; laboratory, eight hours. Prerequisite: Biology 2A; Physical Sciences 1, 2 or consent of the instructor. An introduction to human anatomy and physiology.

Mr. Hutton, Mr. Lamb

##### 43. Recreation and Rehabilitation.

Lecture and laboratory, five hours. Examination of recreation and play in the rehabilitation of the handicapped.

Mrs. Arnold, Mr. Winans

#### Upper Division Courses

##### 110A-110B. General Kinesiology.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 10A-10B; Biology 1A-1B-1C or 2A and Physical Education 15; Physical Sciences 1 and 2 or chemistry 1A-1B-1C; Sociology 18 or Psychology 141 (may be taken concurrently with 110A). Relationship between man's movement and his structure, function and behavior.

Mr. Egstrom, Mr. Gardner

##### 111A-111B. Elements of Kinesiology.

Lecture, four hours. Not open to Physical Education major students. 111A must be completed prior to enrollment in 111B. A study of the biological and physical principles of movement and the effects of movement upon the structure and function of the human body.

Miss V. Hunt

##### 112. Analysis of Expressive Movement.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B or 111A-111B. Interpretation of the expressive aspects of human movement.

Miss Hunt

##### 113. Assessment of Human Movement Skill.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B or 111A-111B. Analysis and evaluation of movement skills under varying environmental conditions.

Mr. Egstrom

##### 114. Kinesiotherapy.

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B. The role of exercise in the improvement of movement in physically handicapped individuals.

Mr. Gardner in charge

**118. Conditioning for Maximal Performance.**

Prerequisite: courses 110A-110B. The study of anatomical, physiological and psychological barriers to maximal performance. Examination and evaluation of theories of conditioning. Mr. Lamb

**119. Movement Strategy in Team Play.**

(Formerly numbered 162A-162I.) Prerequisite: advanced knowledge in team sports, specifically football, basketball, soccer and baseball and consent of the instructor. The study of defensive and offensive strategy in selected team sports.

Mr. Cunningham, Mr. Duncan

**120. Human Movement Development.**

Prerequisite: upper division standing. Movement development throughout life with emphasis upon individual and societal determinants.

Mr. Keogh, Mr. Cratty

**121. Nature and Theory of Physical Education for Children.**

Lecture, three hours; laboratory, two hours. Prerequisite: Consent of instructor. Not open to physical education major students. Exploration of varied, graded and sequential physical activities for children.

Mrs. Bell, Miss Saurborn

**122. Perceptual-Motor Education.**

Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B; course 120 recommended. Movement problems of the minimally-neurologically handicapped with emphasis on the clumsy-child syndrome.

Mr. Cratty

**136. Sports in American Life.**

Prerequisite: junior standing and consent of the instructor. The national and international roles and interrelationships of American sports emphasizing sociocultural variables, changing patterns, current trends, problems and issues. (A special section is open only to Physical Education and Sociology major and minor students—see (Schedule of Classes)).

Mrs. Bell, Mr. Loy, Mr. Snyder

**139A-139B. Leisure and Recreation in Contemporary Society.**

(Formerly numbered 139 and 140.) Prerequisite: consent of the instructor. A consideration of the historical development, philosophical concepts and social forces influencing leisure and recreation in American life.

Mr. Arnold, Mr. Winans

**148. History of Physical Education in the United States.**

Prerequisite: upper division standing. Challenge, continuity, and change underlying human movement programs.

Mr. B. Miller in charge

**190A-190B. Field Studies.**

Prerequisite: consent of the instructor. The Staff

**193. Kinesiometrics.**

Prerequisite: consent of the instructor. Measurement and instrumentation in Kinesiology.

Mr. Egstrom, Mr. Keogh

**199. Special Studies in Kinesiology.**

Prerequisite: senior standing and consent of the instructor. The Staff

**Graduate Courses****200. Philosophy in Physical Education.**

(Formerly numbered 250.) Study of philosophical thought influencing physical education programs in contemporary United States of America.

Miss Latchaw

**201. Social Bases of Leisure and Recreation.**

(Formerly numbered 266.) A synthesis of basic concepts and processes underlying theories of leisure and recreation with implications for solution of fundamental problems.

Mrs. Arnold

**205. Advanced Kinesiotherapy.**

(Formerly numbered 258.) Selected studies in therapeutic exercises.

Mr. Gardner

**210. Human Movement Theory.**

(Formerly numbered 265.) Significant theoretical formulations of the body of knowledge of human movement.

Miss Brown

**215. Social Correlates of Human Movement.**

(Formerly numbered 266.) Cultural derivation, and style and pattern variations of human movement.

**220. Exercise Physiology.**

(Formerly numbered 267.) Response of organs and systems to exercise, and physiological mechanisms underlying elements of human performance.

Mr. Morehouse

**225. Movement Behavior.**

A study of man's movement responses. Miss Hunt

**227. Human Movement Learning.**

Analysis of selected variables which influence the learning of skills.

Mr. Cratty

**231. Environmental Kinesiology.**

Modifications of human movement and kinesiological adaptations to physical environments.

Mr. Morehouse

**235. Evaluation Procedures.**

Analysis of kinesiological data.

Mr. Massey

**240A-240B. History of Human Movement Programs.**

240A. U. S. History; 240B. World History. Historical development of physical education from the national and international perspectives. Mr. B. Miller

**241. Comparative Physical Education and Sports.**

(Formerly numbered 280G.)

Mr. B. Miller

**275. Research in Human Movement.**

Application of research designs to problems in human movement.

Miss Latchaw

**280A-280F. Advanced Topics in Kinesiology.**

The subject matter of these courses will be in a field of kinesiology in which the staff member giving the course has developed special proficiency owing to his research interest.

280A. Biochemistry of Exercise.

Mr. Lamb

280B. Biomechanic Kinesiology.

Miss Hunt

280C. Studies of Children with Movement Problems.

Mr. Keogh

280D. Underwater Kinesiology.

Mr. Egstrom

280E. Kinesthesia and Gross Action Patterns.

Mr. Cratty

280F. Leisure and Recreation Modifiers.

Mrs. Arnold

Professional Courses

**370. Teaching of Physical Education.**

Lecture, two hours; laboratory, five hours. Prerequisite: upper division standing and consent of the instructor. Class management, organization of teaching materials and methods of subject matter presentation. Mr. Handy

**401. Curriculum in Physical Education.**

(Formerly numbered 201.) The identification of subject matter for elementary, secondary and college programs in physical education.

Miss Brown, Mr. Handy, Miss Saurborn

**402. Administration of Physical Education.**

(Formerly numbered 256.) Principles and policies applied to the unique organizational problems of physical education. Mr. Snyder

Individual Study and Research

**596A-596ZZ. Directed Individual Study or Research.**  
(½ to 2 courses)

To be arranged with the member of the faculty who will direct the study or research. May not be used to fulfill any course requirements for the master's degree. The member of the faculty directing the study or research will be identified by a two-letter code as follows: S. E. Arnold, 596SE; C.

Brown, 596CB; B. J. Cratty, 596BC; G. H. Egstrom, 596GE; G. W. Gardner, 596GG; D. T. Handy, 596DH; V. V. Hunt, 596VH; J. F. Keogh, 596JK; D. R. Lamb, 596DL; M. Latchaw, 596ML; L. W. Loy, 596JL; W. W. Massey, 596WM; B. W. Miller, 596BM; N. P. Miller, 596 NM; L. E. Morehouse, 596LM; J. B. Saurborn, 596JS; R. A. Snyder, 596RS. Graded on a satisfactory/unsatisfactory basis. The Staff

**597. Preparation of Master's Comprehensive Examination.** (½ to 2 courses)

Prerequisite: consent of the Department of Physical Education Adviser. Course 597 may not be used to fulfill any of the course requirements for the master's degree. Graded on a satisfactory/unsatisfactory basis.

The Physical Education Graduate Adviser

**598A-598ZZ. Research for and Preparation of the Master's Thesis.** (½ to 4 courses)

Each member of the faculty supervises research of master's students and holds research group meetings, seminars, and discussions with students that take his master's research course which is identified by the same two-letter code used to identify the 596 course. Course 598 may not be used to fulfill any of the course requirements for the master's degree. Graded on a satisfactory/unsatisfactory basis.

The Staff

**PHYSICAL SCIENCES**

**1. Physics.**

Lecture and demonstration, three hours; quiz and discussion, one hour. Prerequisite: two years of high school mathematics which are acceptable as mathematics for admission to UCLA. This course is a part of a one-year sequence which satisfies the College of Letters and Science E requirement in the physical sciences for nonphysical science majors. Course 1 is to be followed by Course 2. An introductory survey course in classical and modern physics. This portion of the College of Letters and Science E requirement may be satisfied by examination. Students must arrange in advance through the Physics Department Undergraduate Affairs Office (Knudsen Hall 3-145R) to take the final examination in a regular section of the course. Entering students may arrange to take the examination any time after they have received official notification of admission.

Mr. Kaplan and Staff

**2. Chemistry.**

Lecture and quiz, four hours. Prerequisite: course 1. This course is designed to meet part of the College of Letters and Science requirements for non-science majors and similar requirements in other colleges. The course deals with the concept of the submicroscopic world of chemistry, and ranges from protons to proteins in subject matter. This course is not open to students who have received credit for Chemistry 1A. This portion of the College of Letters and Science E requirement may be satisfied by examination. To obtain exemption continuing students may arrange in advance to take the final examination in any section of Physical Sciences 2. Entering students may take a special exemption examination given each September. Information regarding the

arrangements for taking either examination must be obtained in advance through the office of the Chemistry. Undergraduate Adviser (Chemistry 1037).

Mr. Farrington, Mr. Hardwick, Mr. Knobler

**3A. Astronomy.**

Lectures three hours, discussion one hour. Prerequisite: course 2. Not open to students who have taken or are taking Astronomy 101 or 103A. An introductory survey course in the general principles and the fundamental facts of astronomy, designed primarily for students not majoring in a physical science or mathematics. The Staff

**3B. Geology.**

Lecture, three hours; laboratory, two hours; field trips. Prerequisite: course 2, or equivalent. Elements of earth science; study of earth materials; the nature and interpretation of geologic evidence; study of geologic processes; historical aspects of geology. The Staff

**3M. Meteorology.**

Lecture, three hours; laboratory, two hours. Prerequisite: courses 1 and 2 or equivalent. Introduction to the phenomena and processes which occur in atmospheric environment.

Mr. Bonner, Mr. Edinger, Mr. Neiburger

Professional Course in Methods

**370. The Teaching of Physics.**

Prerequisite: consent of the instructor. A study of the physics laboratory experiments and demonstrations available today for secondary school physics courses. Mr. Powers, Mr. Watson

## ■ PHYSICS

(Department Office, 3174 Knudsen Hall)

Alfredo Baños, Jr., Dr. Eng., Ph.D., *Professor of Physics*.  
 Hans E. Bömmel, Ph.D., *Professor of Physics*.  
 Rubin Braunstein, Ph.D., *Professor of Physics*.  
 Nina Byers, Ph.D., *Professor of Physics*.  
 Robert J. Finkelstein, Ph.D., *Professor of Physics*.  
 A. Theodore Forrester, Ph.D., *Professor of Physics and Engineering*.  
 Burton Fried, Ph.D., *Professor of Physics*.  
 Christian Fronsdaal, Ph.D., *Professor of Physics*.  
 Theodore Holstein, Ph.D., *Professor of Physics*.  
 Joseph Kaplan, Ph.D., Sc.D., L.H.D., *Professor of Physics*.  
 \*\*Leon Knopoff, Ph.D., *Professor of Physics and Geophysics*.  
 Kenneth R. MacKenzie, Ph.D., *Professor of Physics*.  
 William B. Mims, Ph.D., *Professor of Physics*.  
 Steven A. Moszkowski, Ph.D., *Professor of Physics*.  
 Raymond L. Orbach, Ph.D., *Professor of Physics*.  
 J. Reginald Richardson, Ph.D., *Professor of Physics*.  
 Isadore Rudnick, Ph.D., *Professor of Physics*.  
 Robert A. Satten, Ph.D., *Professor of Physics*.  
 David S. Saxon, Ph.D., *Professor of Physics*.  
 Donald H. Stork, Ph.D., *Professor of Physics*.  
 Harold K. Ticho, Ph.D., *Professor of Physics*.  
 Norman A. Watson, Ph.D., *Professor of Physics*.  
 Byron T. Wright, Ph.D., *Professor of Physics*.  
 Carl M. York, Ph.D., *Professor of Physics*.  
 Leo P. Delsasso, Ph.D., *Emeritus Professor of Physics*.  
 Laurence E. Dodd, Ph.D., *Emeritus Professor of Physics*.  
 Vern O. Knudsen, Ph.D., LL.D., *Emeritus Professor of Physics*.  
 Marvin Chester, Ph.D., *Associate Professor of Physics*.  
 W. Gilbert Clark, Ph.D., *Associate Professor of Physics*.  
 Roy P. Haddock, Ph.D., *Associate Professor of Physics*.  
 Charles Kennel, Ph.D., *Associate Professor of Physics*.  
 Richard E. Norton, Ph.D., *Associate Professor of Physics*.  
 Philip A. Pincus, Ph.D., *Associate Professor of Physics*.  
 Peter Schlein, Ph.D., *Associate Professor of Physics*.  
 William E. Slater, Ph.D., *Associate Professor of Physics*.  
 Eugene Wong, Ph.D., *Associate Professor of Physics*.  
 Ernest S. Abers, Ph.D., *Assistant Professor of Physics*.  
 Louis Balazs, Ph.D., *Assistant Professor of Physics*.  
 C. Y. Chien, Ph.D., *Assistant Professor of Physics in Residence*.  
 John Cornwall, Ph.D., *Assistant Professor of Physics*.  
 John DeGroot, Ph.D., *Assistant Professor of Physics in Residence*.  
 Martin Epstein, Ph.D., *Assistant Professor of Physics in Residence*.  
 Richard Ferguson, Ph.D., *Assistant Professor of Physics in Residence*.  
 Harold R. Fetterman, Ph.D., *Assistant Professor of Physics in Residence*.  
 Martin V. Goldman, Ph.D., *Assistant Professor of Physics in Residence*.  
 Jerome Helland, Ph.D., *Assistant Professor of Physics*.  
 Robert Huff, Ph.D., *Assistant Professor of Physics in Residence*.

\*\* Member of the Institute of Geophysics and Planetary Physics.

Brian Jones, Ph.D., *Assistant Professor of Physics.*  
 Reynold S. Kagiwada, Ph.D., *Assistant Professor of Physics in Residence.*  
 Walter Kündig, Ph.D., *Assistant Professor of Physics.*  
 Donald Levy, Ph.D., *Assistant Professor of Physics in Residence.*  
 Moises Levy, Ph.D., *Assistant Professor of Physics.*  
 Chuan-Sheng Liu, Ph.D., *Assistant Professor of Physics in Residence.*  
 Giovan Natale, Ph.D., *Assistant Professor of Physics in Residence.*  
 Bernard Neffens, Ph.D., *Assistant Professor of Physics.*  
 Jules W. Sunier, Ph.D., *Assistant Professor of Physics.*  
 Roscoe White, Ph.D., *Assistant Professor of Physics in Residence.*  
 Charles A. Whitten, Ph.D., *Assistant Professor of Physics.*  
 Alfred Wong, Ph.D., *Assistant Professor of Physics.*  
 Chun-Wa Wong, Ph.D., *Assistant Professor of Physics in Residence.*  
 Michael Woolf, Ph.D., *Assistant Professor of Physics.*



Guy Paic, Ph.D., *Visiting Assistant Professor of Physics.*  
 Petar Tomás, Ph.D., *Visiting Associate Professor of Physics.*



Edward Teller, Ph.D., Sc.D., *Professor of Physics at Large.*

### Preparation for the Major in Physics

Required: Physics 1A†-1B-1C-1D (to be taken in the order listed); Chemistry 1A-1B-1C; Mathematics 11A-11B-11C, 12A-12B-12C.

### The Major in Physics‡

The required courses are Physics 105A, 105B, 110A, 110B, 112A, 115A, 115B, 131, three courses from the Physics 180 series, four additional upper division physics courses (excluding 121 and 199), and Mathematics 132 or at least one other upper division course in mathematics which must be approved by an adviser. A C average is required in the above courses. A reading knowledge of Russian, German, or French is recommended. This major leads to the Bachelor of Science degree.

Students preparing for graduate school should take additional courses in physics and mathematics. Physics 113, 122, 124A, 126, and 140A are recommended.

*Transition to the Quarter System for Students Who Entered Before Fall, 1966.* Students must satisfy the requirements stated above. In applying semester courses toward these requirements, students who have credit for the following semester courses will be deemed to have satisfied the corresponding quarter courses indicated in parentheses:

† See explanation of lower division courses on page 396.

‡ A mimeographed brochure giving more detailed information than is contained in this bulletin is obtainable from the Office of Undergraduate Affairs, Department of Physics.

Chemistry 1A (1A); Chemistry 1A-1B (1A-1B-1C); Mathematics 11A (11A), 11B (11B-11C), 12A (12A), 12B (12B-12C); Physics 1A (1A), 1B (1B), 1C (1C), 1D (1D), 105 (105A-105B), 108B (108), 110A (110A), 110B (110B), 112 (112A), 113 (113), 114 (114A-114B), 115 (115A-115B), 122 (122), 124A (124A), 124B (124B), 126 (126), 131 (131), 140 (140A). The equivalences listed above are for the purpose of determining which quarter courses a student must take to meet the B.S. degree requirements in Physics. A student who has completed any two of the laboratory courses Physics 108C, 113C, 114C, 116C, 124C will be deemed to have satisfied the laboratory requirement of the Physics 180 series. A student who has completed one of the former semester laboratory courses will be required to take two laboratory courses from the 180 series.

### Requirements for the Standard Secondary Credential

For the requirements, consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### Requirements for the Degree of Master of Science§

*Prescribed Courses.* The University requires a total of nine courses for the M.S. degree. The Physics Department requires

§ A brochure giving additional information of interest to graduate students in physics is obtainable from the Office of Graduate Affairs, Department of Physics.

that a minimum of six of the nine be graduate courses in physics of which the student must pass any four of the five fundamental courses: 231A, 220A, 210A, 215A, and 221A. The remaining three courses may be satisfied by upper division or graduate courses, not necessarily in physics, which are acceptable to the Physics Department. No more than two of the three courses may be chosen from Physics 596 or seminar courses. Physics 597 and Physics 598 are not acceptable courses for the M.S. degree.

**Comprehensive Examination.** A passing grade on a written comprehensive examination is required. It is required that it be taken during the first year by UCLA graduates in physics or not later than the fourth quarter of residence by other students. This examination is given twice a year in the Fall and Spring Quarters.

Although this Department operates under the "comprehensive examination plan," rather than the "thesis plan," arrangements generally can be made for a student to write a master's thesis, provided he has a particularly interesting research problem, and provided some professor is willing to undertake the guidance of his work. In this case the student must petition the Departmental Committee of Graduate Advisers for permission to pursue the "thesis plan." The comprehensive examination requirement is waived if the petition is approved.

**Scholarship Requirements.** A B average is required in physics as well as an overall B average in all courses taken in graduate status.

**Transition to the Quarter System for Students Who Entered Before Fall 1966.** Students who have completed five semester lecture courses by June 30, 1966, will be required to complete a total of eight courses for the M.S. degree instead of nine. Other students will be required to complete nine courses.

#### **The Master of Arts in Teaching (M.A.T.) Degree**

This degree leads to qualification for teaching credentials at the junior college, secondary school or elementary school level. For details, consult the Department of Physics.

#### **Requirements for the Degree of Doctor of Philosophy**

For the general requirements see pages 140-142. The foreign language requirement follows: completion of course 5, or five quarters of study, or its equivalent in one of French, German or Russian with a minimum

grade of C in each course, or a score of at least 500 in the Educational Testing Service examination in one of the three languages. The qualifying examinations for candidates for the Ph.D. degree in physics include (1) a written comprehensive examination; (2) final written examinations in each of the courses 220A, 210A, 221A, 215A, and 231A; (3) a comprehensive departmental oral examination; and (4) a qualifying oral examination in the student's chosen field conducted by a committee appointed by the Graduate Council, upon nomination by the Department Chairman. The same committee guides the candidate's research, approves his dissertation, and conducts a final examination.

#### **Lower Division Courses**

Physics 1A-1B-1C-1D form a sequence of courses in general physics for majors in physics. All or part of the sequence is also required or recommended as first choice for major students in: astronomy, chemistry, engineering, geology, mathematics, meteorology, zoology, and certain interdepartmental fields of concentration.

The Department desires to take into account prior preparation in physics. Students who feel their background would permit acceleration may take 1A, 1B, 1C, or 1D by examination with a class at the end of any quarter. Qualified students are urged to discuss such possibilities with their advisers.

Physics 2A-2B-2C form a one-year sequence of courses in general physics (with laboratory) primarily for students in the biological and health sciences but open to any student who meets the prerequisites. The sequence is essentially equivalent to the old two-semester sequence 2A-2B, but lays more emphasis on modern physics.

Credit for a maximum of four courses will be permitted for any combination of courses in the Physics 1A-1B-1C-1D and 2A-2B-2C series.

Physical Sciences 1 is a one quarter, non-laboratory course which surveys the whole field of physics. It is designed for the liberal arts student and is part of a one-year sequence satisfying the College of Letters and Science E requirement in the Physical Sciences for nonphysical science majors.

#### **Lower Division**

#### **Physical Sciences 1. Physics.**

See Physical Sciences, page 393.

§ A brochure giving additional information of interest to graduate students in physics is obtainable from the Office of Graduate Affairs, Department of Physics.

**†1A. General Physics: Mechanics of Solids.**

Lecture and demonstration, four hours; discussion, one hour. Prerequisite: high school physics or chemistry, preferably both; Mathematics 11A completed and 11B concurrent with Physics 1A; or equivalent courses.

**1B. General Physics: Mechanics of Fluids, Heat, and Sound.**

Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: course 1A; Mathematics 11B completed and 11C concurrent with Physics 1B; or equivalent courses.

**†1C. General Physics: Electricity and Magnetism.**

Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: course 1A; Mathematics 11C completed and 12A concurrent with Physics 1C; or equivalent courses.

**†1D. General Physics: Light and Modern Physics.**

Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: courses 1A and 1C; Mathematics 12A completed and 12B concurrent with Physics 1D; or equivalent courses.

**2A. General Physics: Mechanics of Solids and Fluids.**

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: three years of high school mathematics including trigonometry, or two years of high school mathematics and one one-term college course in mathematics with trigonometry included in the group of courses; or the equivalent courses. Physics 2A is not open for credit to students who have credit for Physics 1A or the equivalent.

**2B. General Physics: Heat, Sound, and Light.**

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: course 2A or 1A or equivalent.

**2C. General Physics: Electricity and Magnetism, Atomic and Nuclear Physics.**

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: course 2B or 1B or equivalent.

**Upper Division Classes**

Prerequisite for all upper division courses: Physics 1A–1B–1C–1D; Mathematics 11A–11B–11C, 12A–12B, and (except for Physics 105A and 116) 12C; or consent of the instructor. Students must complete one quarter of upper division physics before enrolling in the 180 laboratory series.

**105A. Analytic Mechanics.**

Newtonian, Lagrangian, Hamiltonian, and relativistic mechanics. One, two and many particle systems, gravitational potentials, linear and nonlinear oscillations.

† Life science majors required to take Physics 1A, 1C, and 1D may use Mathematics 3A, 3B, and 3C as prerequisites as follows: Mathematics 3A completed and 3B concurrent with Physics 1A; Mathematics 3B completed and 3C concurrent with Physics 1C; Mathematics 3C completed for Physics 1D.

**105B. Mechanics.**

Prerequisite: course 105A. Central force motion, two-particle collisions, non-inertial reference frames, rigid bodies, coupled oscillators, normal modes of oscillation, and mechanics of continuous media.

**108. Physical Optics.**

Prerequisite: courses 110B and 131. Interference, diffraction, dispersion, molecular scattering, absorption of radiation. Anisotropic media; crystal optics, optical activity, Faraday and Kerr effects. Non-linear optics. Theory of spectral line width. Coherence and partial coherence.

**110A. Electricity and Magnetism.**

Prerequisite: course 131. Electrostatics, magnetostatics and direct current circuit theory.

**110B. Electricity and Magnetism.**

Prerequisite: course 110A. Faraday's law and Maxwell's equations. Alternating current theory. Propagation of electromagnetic radiation. Fresnel's laws, wave guides. Multipole radiation and radiation from an accelerated charge. The special theory of relativity.

**112A. Thermodynamics.**

Fundamentals of thermodynamics including the first, second, and third laws. The statistical mechanical point of view and its relation to thermodynamics. Some simple applications of the foregoing.

**112B. Thermodynamics.**

Applications of thermodynamics and statistical mechanics to particular systems.

**113. Atomic Structure.**

Prerequisites: courses 131 and 115B. The theory of atomic structure. Interaction of radiation with matter.

**114A–114B. Mechanics of Wave Motion and Sound.**

Prerequisite: course 131. Mechanical systems, propagation of compressional waves, 3-dimensional wave equations, circular pistons, radiative loudspeakers, propagation of sound, acoustic waves, architectural acoustics.

**115A. Elementary Quantum Mechanics.**

Prerequisites: courses 105B and 131 (may be taken concurrently). The classical background, basic ideas and methods of quantum mechanics.

**115B. Elementary Quantum Mechanics.**

Prerequisite: course 115A. Development of the methods and concepts of quantum mechanics.

**115C. Elementary Quantum Mechanics.**

Prerequisite: course 115B. The elements of group representation theory and their application to the quantum mechanics of atoms, molecules and solids.

**116. Electronics.**

Three hours of lecture and three hours of laboratory. Alternating current circuits, vacuum tube characteristics and parameters, transistor characteristics and parameters, amplifiers, oscillators, non-linear tube and transistor circuits.

**121. Modern Physics.**

Not open for credit to physics majors. The atomic nature of matter and atomic composition. The propagation of electromagnetic waves and their interaction with matter. Special relativity. Atomic spectra and electron distribution. Basic concepts of wave mechanics.

**122. Plasma Physics.**

Prerequisite: course 110A. Atomic processes and particle motions; equilibrium and shielding; fluid and kinetic descriptions; transport properties; m waves and instabilities; electromagnetic interaction. Production, confinement, heating and diagnostics. Application to fusion and space.

**124A. Nuclear Physics.**

Prerequisite: course 115B (may be taken concurrently). Interaction of charged particles and gamma radiation with matter; nuclear charge, mass, radii, statistics, spin and moments; liquid drop, shell and collective models; nuclear forces—the deuteron and nucleon-nucleon scattering. Special study assignments will be made.

**124B. Nuclear Physics.**

Prerequisite: course 124A. Theories of alpha, beta and gamma emission; nuclear reaction mechanisms; optical and Fermi gas models; neutrons. Special study assignments will be made on detection techniques, particle accelerators, reactors, fusion and/or other topics.

**126. Introduction to High Energy Physics.**

Prerequisite: course 115B. Experimental determination of the properties of elementary particle states. Relativistic kinematics and phase space; angular momentum and isotopic spin formalism; elastic and inelastic scattering; invariance principles and conservation laws; strong electromagnetic and weak interactions. Survey of important experiments.

**131. Mathematical Methods of Physics.**

Review of vector calculus; differential equations of physics; techniques of solution. Fourier series, special functions, statistics, probability and error theory.

**140A. Solid State Physics.**

Prerequisites: courses 115B, 110B, and 112A. The study of the nature of the crystalline solid state of matter. Electrical, magnetic, thermal, optical and other macroscopically observable behavior of metals, insulators and semiconductors discussed with respect to contemporary understanding of the microscopic processes underlying this behavior.

**140B. Solid State Physics.**

Prerequisite: course 140A. Special topics utilizing the principles studied in 140A, which will include: magnetic processes in materials, superconductivity, the Mössbauer Effect, tunneling, magnetoresistance and other topics of contemporary interest.

**#180A. Nuclear Physics Laboratory. (½ course)****#180B. Physical Optics and Spectroscopy Laboratory. (½ course)****#180C. Solid State Laboratory. (½ course)****#180D. Acoustics Laboratory. (½ course)****#180E. Plasma Laboratory. (½ course)****198. Special Courses in Physics.**

(½ to 1½ courses)

**199. Special Studies in Physics. (½ to 1 course)**

May be repeated, but not more than three courses may be applied toward the bachelor's degree.

**Graduate Courses****210A. Electromagnetic Theory.**

Boundary value problems in electrostatics and magnetostatics. Multipole expansions; dielectrics and macroscopic media. Maxwell's equations and conservation laws. Wave guides and resonators; simple radiating systems.

**210B. Electromagnetic Theory.**

The electromagnetic potentials and the Hertz vectors. Cylindrical waves. Spherical waves. The Debye potentials. Multipole radiation. Classical relativistic electrodynamics. Radiation from moving charges.

**213A. Advanced Atomic Structure.**

Group representation theory. Angular momentum and coupling schemes. Interaction of radiation with matter.

**213B. Advanced Atomic Structure.**

The n-j symbols, continuous groups, fractional parentage coefficients, n electron systems.

**213C. Molecular Structure.**

Application of group theory to vibrational and electronic states of molecules. Molecular orbital theory. Raman effect. Angular momentum and coupling in molecules.

**214A. Advanced Acoustics.**

Propagation of waves in elastic and fluid media. Reflection, refraction, diffraction, and scattering of waves in fluids. Attenuation mechanisms in fluids.

**214B. Advanced Acoustics.**

Propagation in nonhomogeneous fluids and in moving fluids. Radiation pressure, acoustic streaming, and attenuation in large amplitude sound fields. Propagation of sound in liquid helium. Mechanisms resulting in attenuation for elastic waves in solids.

**215A. Thermodynamics.**

Thermodynamics and statistical mechanics with applications.

**215B. Nonequilibrium Statistical Mechanics.**

Probability theory, Markov processes, equations of change, BBGKY hierarchy and its consequences, Boltzmann equation, Chapman-Enskog method, transport coefficients, fluctuation-dissipation theorems, density matrix, H-theorems.

**215C. Quantum Statistical Mechanics and the Many Body Problem.**

Classical methods for interacting systems; quantum field theory techniques in statistical mechanics; Greens-function approach; the Coulomb gas; the imperfect Bose gas; electron-phonon interaction; superconductivity; phase transitions; theory of Fermi liquid.

† Enrollment is limited and controlled. For details consult the Office of Undergraduate Affairs.

## 220A. Foundations of Classical and Quantum Mechanics.

An integrated presentation of the foundations of classical and quantum mechanics.

### \*220B. Mechanics of Continuous Media.

Stress-strain relations. Dynamic elasticity. Hydrodynamic equations for compressible viscous fluids. Elastodynamic wave motion. Fluid flow past boundaries. Hydrodynamic wave motion. Turbulence. Stability.

### 221A. Quantum Mechanics.

Foundation of quantum mechanics with applications. Perturbation theory. Theory of scattering.

### 221B. Quantum Mechanics.

Formal theory of scattering. Introduction to relativistic quantum mechanics.

### 222A-222B-222C. Plasma Physics.

Properties of a Coulomb gas, with and without a magnetic field: equilibrium, oscillations, instabilities, fluctuations, collective phenomena, transport properties, and radiation. Description via single-particle orbit theory, magnetohydrodynamics, and kinetic equations of various types.

### 224. Introduction to the Strong Interaction.

Evidence concerning the strong interaction, particularly as exemplified in nucleon-nucleon and pion-nucleon systems. Isospin, the scattering matrix, the density matrix and polarization, the properties of pions, the one pion exchange potential, phase shift analysis.

### 225A. Advanced Nuclear Physics.

An advanced course in the structure of complex nuclei, nuclear models, and nuclear reactions. Normally preceded by course 224.

### 225B. Advanced Nuclear Physics.

Nuclear beta decay, neutrino experiments, parity violation, conserved vector current theory, interaction between nucleons and the electromagnetic field.

### 226A. Elementary Particle Physics.

Prerequisite: courses 221B and 224. Relativistic kinematics and phase space calculations; S-matrix theory, cross-section and decay-rate calculations; C,P,T invariance; survey of elementary particles, determination of quantum numbers, higher symmetries; inelastic scattering and K-matrix theory; low energy scattering experiments, peripheral model; nonleptonic decays.

### 226B. Elementary Particle Physics.

Review of Feynman rules, nucleon form factors; gamma decay; universal Fermi interaction, nucleon and muon decay, muon capture, nonconservation of parity; survey of nonleptonic and leptonic decays of baryons and mesons, the KK system; conserved vector current theory, SU(3) and weak interactions; high energy scattering.

### 227A. Magnetic Properties of Solids: Resonance.

An advanced course in the magnetic resonance properties of solids, both nuclear and electronic. Topics covered will include crystalline field theory,

spin-Hamiltonian formalism, the Bloch equations, spin-spin and spin-lattice interactions and relaxation, and theory of spin-echo.

### 227B. Magnetic Properties of Solids: Collective Phenomena.

An advanced course on collective effects in magnetic media. Origin of the exchange interaction, ferromagnetism and antiferromagnetism. Theory of localized magnetic moments in metals. Ferro- and antiferromagnetic resonance and relaxation, spin-wave theory, and saturation effects in ordered magnetic materials.

### 230A-230B-230C. Relativistic Quantum Theory.

Quantum electrodynamics, general quantum field theory, S-matrix theory.

### 231A. Methods of Mathematical Physics.

(Same as Mathematics 266A.) Students may not receive credit for both Physics 231A and Mathematics 266A. Linear operators, review of functions of a complex variable, integral transforms, partial differential equations.

### 231B. Methods of Mathematical Physics.

(Same as Mathematics 266B.) Students may not receive credit for both Physics 231B and Mathematics 266B. Ordinary differential equations, partial differential equations, and integral equations. Calculus of variations.

### 231C. Methods of Mathematical Physics.

(Same as Mathematics 266C.) Students may not receive credit for both Physics 231C and Mathematics 266C. Perturbation theory. Singular integral equations. Numerical methods.

### 232. Relativity.

The special and general theories with applications to elementary particles and astrophysics.

### 240A. Advanced Solid State Physics.

Lattice vibrations. Thermodynamics of solids. Brillouin zone effects. Nearly free and tight binding approximations. Density of state effects. Bloch electron in an electric field. Zener tunneling. Wigner-Seitz approximation, cohesive energy of metals. Quantum defect theory, orthogonalized plane waves, pseudo potential.

### 240B. Advanced Solid State Physics.

Prerequisite: course 240A. Collective effects in solids, Hartree-Fock and random phase approximations. Specific heat and susceptibility of interacting free electron gas. Electron-phonon interaction, screening effects. Frohlich Hamiltonian, superconductivity.

### 240C. Advanced Solid State Physics.

Prerequisite: course 240B. Transport properties of solids. Bloch electron in a magnetic field. Thermal and electrical resistivity, giant quantum oscillations. Cyclotron resonance in metals, helicon propagation. Ultrasonic attenuation. Thermal transport properties of dielectric media.

### 260. Seminar: Problems in Plasma Physics.

### 261A. Seminar in Special Problems in Theoretical Physics.

\* Not to be given, 1968-1969.

**261B. Seminar in Special Problems in Theoretical Physics.**

**262. Seminar in Physics of the Solid State.**

**264. Seminar in Advanced Acoustics.**

**266. Seminar in Propagation of Waves in Fluids.**

**266. Seminar in Spectroscopy.**

**269A. Seminar in Nuclear Physics.**

**269B. Seminar in Elementary Particle Physics.**

**281. Experimental Techniques in Nuclear Physics.**

A laboratory course with some lectures on the theory of the techniques currently in use and on the statistical treatment of data. An effort is made to develop a critical research attitude on the part of the student.

**\*284. Advanced Laboratory in Acoustics and Cryogenics.**

Selected advanced experiments in acoustics and cryogenics designed to train the student in the techniques and instrumentation used in acoustic research and low temperature physics.

Individual Study and Research

**596. Directed Individual Studies.** (½ to 2 courses)

**597. Preparation for Master's Comprehensive Examinations and Doctoral Qualifying Examinations.**

**598. Master's Thesis Research and Writing.**

**599. Doctoral Research and Writing.**

Courses in Related Fields

A number of courses of interest to physicists are also listed under Astronomy, Geophysics, Meteorology, and Planetary and Space Science in particular: Astronomy 117A-117B-117C; Geophysics 241; Meteorology 223A-223B-223C, 225C, 228A-228B, 229, 242, 243, and 244; Planetary and Space Science 101, 225A-225B, 260A-260B, and 265.

Professional Course in Method

See Physical Sciences, page 393.

## ■ PHYSIOLOGY

(Department Office, 53-247 Center for the Health Sciences)

W. Ross Adey, M.D., *Professor of Physiology and Anatomy.*

Nicholas S. Assali, M.D., *Professor of Physiology and Obstetrics and Gynecology.*

Allan J. Brady, Ph.D., *Professor of Physiology in Residence.*

Mary A. B. Brazier, B.Sc., Ph.D., D.Sc., *Professor of Physiology, Anatomy, and Biophysics in Residence.*

John Field, Ph.D., *Professor of Physiology and Medical History.*

Morton I. Grossman, M.D., Ph.D., *Professor of Physiology and Medicine.*

Allan Hemingway, Ph.D., *Professor of Physiology.*

Donald B. Lindsley, Ph.D., *Professor of Physiology and Psychology.*

Wilfried F. H. M. Mommaerts, Ph.D., *Professor of Physiology and Medicine and Director of the Los Angeles County Heart Association Cardiovascular Research Laboratory (Chairman of the Department).*

Hans Simmer, M.D., *Professor of Physiology, Obstetrics and Gynecology and Medical History in Residence.*

Daniel H. Simmons, M.D., Ph.D., *Professor of Physiology and Medicine.*

Ralph R. Sonnenschein, M.D., Ph.D., *Professor Physiology (Vice-Chairman of the Department).*

Victor E. Hall, M.D., *Emeritus Professor of Physiology.*

Claude F. Baxter, Ph.D., *Associate Professor of Physiology in Residence.*

Jennifer S. Buchwald, Ph.D., *Associate Professor of Physiology in Residence.*

Jared M. Diamond, Ph.D., *Associate Professor of Physiology.*

Glenn A. Langer, M.D., *Associate Professor of Physiology and Medicine (Vice-Chairman of the Department).*

Leonard M. Linde, M.D., *Associate Professor of Physiology and Pediatrics.*

William D. Odell, M.D., Ph.D., *Associate Professor of Physiology and Medicine in Residence.*

Donald O. Walter, Ph.D., *Associate Professor of Physiology in Residence.*

\* Not to be given, 1968-1969.

Bernice M. Wenzel, Ph.D., *Associate Professor of Physiology.*

Fred N. White, Ph.D., *Associate Professor of Physiology.*

M. Peter Amacher, Ph.D., *Assistant Professor of Physiology and Medical History in Residence.*

Henry L. Batsel, Ph.D., *Assistant Professor of Physiology in Residence.*

Michael W. Bradbury, B.M., B.Ch., D.M., *Assistant Professor of Physiology in Residence.*

Douglas Junge, Ph.D., *Assistant Professor of Physiology and Oral Biology.*

Louis C. Lax, M.D., Ph.D., *Assistant Professor of Physiology and Surgery in Residence.*

Michael K. Reedy, M.D., *Assistant Professor of Physiology in Residence.*

Gordon Ross, M.D., *Assistant Professor of Physiology and Medicine.*

Eduardo Rubinstein, M.D., Ph.D., *Assistant Professor of Physiology in Residence.*

Maurice B. Sterman, Ph.D., *Assistant Professor of Physiology and Anatomy in Residence.*

John M. Tormey, M.D., *Assistant Professor of Physiology in Residence.*

Ernest M. Wright, Ph.D., *Assistant Professor of Physiology in Residence.*

Leonard R. Johnson, Ph.D., *Instructor in Physiology in Residence.*

Frank C. Hale, B.A., *Lecturer in Physiology.*

Sigmund T. Rich, D.V.M., *Lecturer in Physiology.*

#### Admission to Graduate Status

Candidates for admission to graduate status in the Department of Physiology must conform to the general requirements set by the Graduate Division for admission to such status and candidates must also submit to the Department the scores achieved on the Graduate Record Examination (both the Aptitude Test and the Advanced Test). In addition to meeting these requirements, the student must have received the bachelor's degree in a biological or physical science or in the premedical curriculum. Undergraduate courses must include nine quarter units of college mathematics, 12 quarter units of physics, 16 units of chemistry (including quantitative analysis and organic chemistry), and 16 quarter units of biology or zoology (including comparative vertebrate anatomy). Students must either have completed courses in mathematics through calculus and physical chemistry or must take these in their first year of graduate work, but preferably the former. In certain cases, at the discretion of the Department, students with less than the above requirements may be admitted to graduate status, provided that all deficiencies are removed by satisfactory completion of the appropriate courses within a specified time after admission. Those seeking the Ph.D. degree should note that the language requirement for that degree (discussed later) can, to the student's great advantage, be satisfied prior to admission.

#### Requirements for the Master of Science Degree

**General University Requirements.** Candidates for the Master of Science degree in physiology must conform to the general requirements set by the Graduate Division for this degree (pages 137). The candidate may elect either the Thesis Plan or the Comprehensive Examination Plan as set forth in the general section on "Requirements for the Master's Degree."

**Departmental Requirements.** Satisfactory completion of the following courses is required for the M.S. degree in physiology.

1. Physiology 200. (Introduction)
2. Physiology 101. (Cardiovascular Physiology)
3. Physiology 102. (Respiratory, Gastrointestinal, and Renal Physiology)
4. Physiology 103. (Basic Neurology) or Anatomy 206.
5. Physiology 104. (Physiology of Excitation and Contraction)
6. At least three of the following courses: Physiology 201 (Physiological Methods); Physiology 202 (Physiology of Active Transport); Physiology 204 (Cardiovascular Physiology). Physiology 205A (Theory and Nature of Excitation and Conduction); Physiology 205B (Biophysics of Muscular Contraction); Physiology 205C (Molecular Physiology and Thermodynamics of Muscular Contraction); Physiology 206 (Gastrointestinal Physiology); Physiology 207B (Neurophysiology); Zoology 271 (Seminar in Endocrinology).

7. Sufficient additional courses to make a total of nine in upper division and graduate courses, of which at least five must be at the graduate level.

8. Mathematics to and including one year of calculus.

9. A thesis or a comprehensive final examination.

Courses substantially similar in subject matter and scope may be substituted for the specific courses listed above, at the discretion of the Department.

Requirements for the M.S. degree may be satisfied by successful completion of three summer sessions, provided that the student has been admitted to graduate status prior to the beginning of the summer quarter, and has successfully completed Physiology 200, 101, 102, 103 or Anatomy 206, and Physiology 104, or their equivalent.

#### Requirements for the Doctor's Degree

*General University Requirements.* Candidates for the doctorate in physiology must conform to the general requirements set by the Graduate Division for this degree (pages 140-142).

*Departmental Requirements.* Sequence of graduate studies: each graduate student will normally pass through three phases of work in the Department, each occupying approximately one year. In the *first phase*, he will complete the basic departmental courses (Physiology 200, 101, 102, 104, and 103 or Anatomy 206) and as many of the other required courses as possible. By the end of the first phase, the student must choose his area of specialization for dissertation research and the staff member who will be his supervisor. The Department will appoint a guidance committee of staff members for him. In the *second phase* he will complete his required courses and such additional studies as his guidance committee may require, begin work on his dissertation, and prepare himself for the departmental examinations in his area. These examinations are both written and oral. When these (and the language examinations) have been successfully completed, he will take the University qualifying examination. The *third phase* will be devoted almost exclusively to completion of the dissertation. It should be noted that the doctorate in physiology is not granted merely upon completion of routine requirements as to examinations, courses, and dissertation. While fulfillment of such requirements is a prerequisite, the

doctor's degree will be granted only to students who have clearly demonstrated both an adequate grasp of a broad field of knowledge and their ability to contribute to that field of knowledge by original and independent research.

*Course Requirements.* Three routes to the Ph.D. degree exist in this Department, involving specialization in: (a) general and cellular physiology; (b) maintenance physiology (i.e., the physiology of the cardiovascular, respiratory, digestive, endocrine, and excretory systems); and (c) neurophysiology. The *first phase* is identical in these routes, the requirements ordinarily being: (1) Physiology 200 (Introduction); (2) Physiology 101 (Cardiovascular Physiology); (3) Physiology 102 (Respiratory, Gastrointestinal, and Renal Physiology); (4) Physiology 103 (Basic Neurology) or Anatomy 206; (5) Physiology 104 (Physiology of Excitation and Contraction); (6) Biological Chemistry 101A, 101B, and 101C or Chemistry 152 (General Biochemistry); (7) Anatomy 101 (Microscopic Anatomy) or Zoology 111 (Functional Ultrastructure of Cells); (8) a course in physical chemistry; (9) courses in differential and integral calculus; (10) a course in statistical methods. The *second* and *third* phases will comprise: (1) any of the above courses not already completed; (2) Physiology 599, in which dissertation research will be carried on; (3) such additional courses as the student's adviser or guidance committee may require, including graduate courses in the student's area of specialization.

Courses substantially similar in subject matter and scope may be substituted for the specific courses listed above, at the discretion of the Department.

*Foreign Language Requirement.* A sound reading knowledge of the foreign language which will be of greatest value in the student's special field of study. This requirement may be fulfilled either by completion of five quarters of study in that language (with a grade of C or better) or by passing an examination administered by the Graduate Division.

*Student's Responsibilities.* Prospective candidates for the doctor's degree are responsible for completion of all technical requirements for this degree. Careful study of the requirements set by the Graduate Division (see pages 140-142) of this bulletin will be necessary to accomplish this.

**Upper Division Courses**

**100. Elements of Human Physiology. (1½ courses)**

Prerequisite: enrollment in School of Dentistry or consent of the instructor. Required course for first-year dental students. Lectures, laboratories, and demonstration—discussions concerning functional activities of the living body in terms of both cellular and systemic functions. Examples will be presented, where possible, on the basis of information relevant to oral function. Mr. Ross and Staff

**101. Cardiovascular Physiology.**

Lectures, laboratory, and conferences. Prerequisites: basic courses in chemistry, physics, and either biology or zoology, at least one year each; organic chemistry; a course in microscopic anatomy, human or comparative. Primarily for first year medical students, but open to other students with consent of the instructor. An analysis of the function of the mammalian cardiovascular system.

Mr. Sonnenschein and Staff

**102. Respiratory, Gastrointestinal and Renal Physiology. (1¼ courses)**

Lectures, laboratory, and conferences. Prerequisites: same as for course 101. A continuation of course 101, primarily for first-year medical students but open to other students with consent of the instructor. An analysis of the function of the mammalian respiratory and gastrointestinal systems, and of the kidney, including the metabolism of fluids and electrolytes with special reference to man.

Mr. Sonnenschein and Staff

**103. Basic Neurology.**

Prerequisites: same as for course 101. A survey of the structure and function of the receptors, peripheral and central nervous system. Given jointly with the Department of Anatomy. Enrollment limited to medical students.

Mrs. Buchwald

**104. Physiology of Excitation and Contraction. (¾ course)**

Lectures and conferences. Prerequisites: same as for course 101. An analysis of the mechanisms underlying excitation of nerve and muscle and contraction of muscle.

Mr. Mommaerts and Staff

**109. Special Studies. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. Special studies in physiology, including either reading assignments or laboratory work or both, designed for appropriate training of each student who registers in this course.

The Staff

**Graduate Courses**

**200. Introduction to Mammalian Physiology. (¾ course)**

Prerequisite: consent of the instructor. A survey of certain aspects of cellular and molecular physiology essential to the understanding of the function of organs. The topics to be considered include biological energetics, electrolyte distribution, transport through membranes, and the colloidal state in biological systems.

Mr. Mommaerts and Staff

**201. Physiological Methods. (½ course)**

Prerequisite: consent of the instructor. Lectures and demonstrations concerning the theory and opera-

tion of modern instruments for cardiovascular and respiratory research. Mr. Assali, Mr. Hemingway

**202. Physiology of Active Transport. (½ course)**

(Formerly numbered 205C.) Prerequisite: consent of the instructor. Consideration of the theory and nature of active transport in biological systems, including kinetic and thermodynamics consideration and biological significance.

Mr. Diamond

**204. Cardiovascular Physiology. (½ course)**

Prerequisite: course 101 and consent of the instructor. Advanced consideration of special topics in the physiology of the circulatory system.

Mr. Sonnenschein, Mr. White

**205A. Theory and Nature of Excitation and Conduction. (½ course)**

Prerequisite: consent of the instructor. Consideration of some kinetic and thermodynamic problems in cell physiology, electrical potentials, and concentration gradients across interfaces, cable properties of cells, volume conduction, and ionic hypotheses of nerve impulse propagation and special excitatory phenomena.

Mr. Brady

**205B. Biophysics of Muscular Contraction. (½ course)**

Prerequisite: consent of the instructor. Consideration of the contraction of skeletal and cardiac muscle; including mechanical features, feedback mechanisms, energetics of contraction, and the mechanisms of excitation-contraction coupling.

Mr. Brady

**205C. Molecular Physiology and Thermodynamics of Muscular Contraction. (½ course)**

Prerequisite: consent of the instructor. Organization of the muscle cell, molecular basis of contractility; energetics and biochemical mechanisms of contraction.

Mr. Mommaerts

**206. Gastrointestinal Physiology. (½ course)**

Prerequisites: courses 101 and 102, a course in biochemistry, and consent of the instructor. Selected topics in normal and abnormal function of the gastrointestinal tract, including mechanisms of motility, secretion, absorption, and activities of the liver.

Mr. Grossman

**207A. Neurophysiology.**

Prerequisite: course 103 or its equivalent. The electrical activity of nervous tissue and its relation to the basic organization of sensory, motor, integrative, and regulatory systems of the brain.

The Staff

**207B. Neurophysiology.**

Prerequisite: consent of the instructor. Seminar and laboratory course designed to acquaint the student with behavioral techniques and concepts relevant to research problems encountered in modern neurophysiology, and to consider means of integrating them with neurophysiological methods.

Miss Wenzel

**208. Theoretical Physiology. (½ course)**

Prerequisite: consent of the instructor. A series of seminar-discussions concerning various theoretical and philosophical problems facing physiologists.

The Staff

**209A. Mathematical Modeling of Physiological Systems.**

Prerequisite: consent of the instructor. Mathematical analysis and modeling of physiological systems, with emphasis on applications of linear systems theory to problems in cardiovascular, respiratory, and cellular physiology. Mr. Walter

**209B. Mathematical Modeling of Physiological Systems. (¾ course)**

Prerequisite: consent of the instructor. Mathematical analysis of neuronal systems, with emphasis on stochastic models of nervous activity. Mr. Walter

**210. Advanced Endocrinology. (½ course)**

Prerequisites: courses 101, 102; Biological Chemistry 101A-101B-101C. A consideration of recent advances in endocrinology. Biosynthesis, secretion, transport, action, metabolism and excretion of each of the hormones. Major emphasis on basic concepts of endocrine physiology with lesser emphasis on pathophysiology. Mr. Odell, Mr. Simmer

**211. Orientation in Biomedical Research. (¼ course)**

Prerequisite: consent of the instructor. A course for graduate and postdoctoral students in biomedical sciences. Lectures deal with method and logic of science, scientific writing, use of library facilities, professional career planning, public relations and the like. The Staff

**212. Critical Topics in Physiology. (¼ to 1 course)**

Prerequisite: consent of the instructor. Advanced treatment of critical topics in physiology by staff and guest lecturers for graduate and postdoctoral students in the biomedical sciences. The Staff

**221. Graduate Commentary on Physiology of the Cardiovascular System and of Contraction and Excitation. (½ course)**

Prerequisites: same as for course 101. For graduate students. An advanced supplementation of the topics being presented in course 101.

Mr. Mommaerts and Staff

**222. Graduate Commentary of Respiratory, Digestive, Renal and Endocrine Physiology. (½ course)**

Prerequisite: course 101. For graduate students. An advanced supplementation of the topics being presented in course 102. Mr. Mommaerts and Staff

**223. Graduate Commentary on the Physiology of the Nervous System. (½ course)**

Prerequisites: same as for course 101. For graduate students. An advanced supplementation of the topics being presented in basic neurology.

Mr. Mommaerts and Staff

**251A-251B-251C. Seminar in Physiology. (¼ course each)**

Prerequisite: consent of the instructor. Review and discussion of current physiological literature, research in progress, and special topics. The Staff

**252A-252B-252C. Cardiorespiratory Seminar. (¼ course each)**

Prerequisite: consent of the instructor. Weekly discussion of cardiovascular and respiratory problems, including review of current literature, research in progress, and special topics. Mr. Hemingway

**255. Seminar in the History of Physiology. (½ course)**

Prerequisites: courses 101, 102, 103 (or Anatomy 206) and 104. The consideration in detail of several selected topics in the history of physiology. Each student will present one or more topics to the seminar. Mr. Amacher

**Professional Course****301. The Use of Animals in Research. (½ course)**

Lecture, two hours; demonstration or laboratory, three hours. Prerequisite: consent of the instructor. An introductory course for graduate students in the medical and biological sciences, covering principles and practical problems in the handling and use of common laboratory animal species. Mr. Rich

**Individual Study and Research****596. Directed Individual Study or Research. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. The Staff

**597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. The Staff

**598. Thesis Research for Master's Candidates. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. The Staff

**599. Dissertation Research for Ph.D. Candidates. (¼ to 1½ courses)**

Prerequisite: consent of the instructor. The Staff

**■ PLANETARY AND SPACE SCIENCE**

(Department Office, 3684 Geology Building)

**\*\*Robert E. Holzer, Ph.D., Professor of Geophysics (Chairman of the Department).**

**\*\*William M. Kaula, M.S., Professor of Geophysics.**

**\*\*Leon Knopoff, Ph.D., Professor of Geophysics and Physics.**

**\*\*Willem V. R. Malkus, Ph.D., Professor of Mathematics and Geophysics.**

**\*\*Clarence E. Palmer, D.Sc., Professor of Geophysics.**

**\*\* Member of the Institute of Geophysics and Planetary Physics.**

**\*\*George W. Wetherill, Ph.D.,** *Professor of Geophysics and Geology.*  
**David W. Cummings, Ph.D.,** *Assistant Professor of Planetary Physics.*  
**Alan C. Newell, Ph.D.,** *Assistant Professor of Mathematics and Planetary Physics.*  
**\*\*Stanton J. Peale, Ph.D.,** *Assistant Professor of Astronomy and Geophysics.*  
**Gerald Schubert, Ph.D.,** *Assistant Professor of Planetary Physics.*



**Paul J. Coleman, Jr., Ph.D.,** *Acting Associate Professor of Planetary Physics.*  
**Thomas A. Farley, Ph.D.,** *Lecturer in Planetary Physics.*



**Lawrence H. Aller, Ph.D.,** *Professor of Astronomy.*  
**\*\*David T. Griggs, M.A.,** *Professor of Geophysics.*  
**\*\*George C. Kennedy, Ph.D.,** *Professor of Geochemistry and Geology.*  
**\*\*Willard F. Libby, Ph.D.,** *Professor of Chemistry.*

#### **Admission to Graduate Status**

Students entering the Department should have bachelor's or master's degrees in physics, mathematics, or astronomy, or in a few cases, degrees in geophysics, chemistry, engineering, geology or meteorology with a strong emphasis on appropriate courses in physics and mathematics.

#### **Program of Study**

The program of study is designed to provide students with a firm background in physics and mathematics, together with basic knowledge in one or more areas of planetary and space science. Initially, it is expected that the four principal areas of study will be physics of planetary interiors, including magnetic and gravitational fields; geophysical fluid dynamics, including nonlinear wave phenomena and turbulence; physics of the upper atmosphere, including ionospheric physics and the physics of the radiation belts; and physics of the interplanetary medium, including the solar wind and magnetic fields. The program for the individual student will be developed through consultation with the graduate adviser.

#### **Requirements for the Degree of Master of Science**

For general University requirements see pages 136-140.

**Prescribed Courses.** The University requires nine courses for the M.S. Degree. The Department requires a minimum of five courses in the 200 series, no less than half of which are in the student's field of specialization. The remaining courses must include Planetary and Space Science 200A-200B-200C and may include additional 100 series courses approved by the student's graduate adviser.

**Comprehensive Examination.** The Department follows the Comprehensive Examination Plan of the M.S. program. The candidate must pass a written comprehensive examination offered at the end of each quarter. The examination must be taken not later than the fifth quarter of residence.

**Residence Requirements.** The minimum residence requirement is three quarters.

#### **Requirements for the Degree of Doctor of Philosophy**

For the general University requirements, see pages 140-142.

Each student seeking candidacy for a Ph.D. degree will be required to meet the following departmental requirements. (1) Final examinations in at least three of the four fundamental physics courses: Physics 210A, Physics 215A, Planetary and Space Science 201 (or Physics 220A), Planetary and Space Science 202. It is also recommended that first-year graduate students take the fundamental course in planetary and space physics, 200A-200B-200C. (2) The comprehensive written examination of the Department of Planetary and Space Science. (3) Upon completion of (1) and one foreign language, the student may arrange for a preliminary oral examination, which will be mainly on the major field of specialization.

Each student seeking a Ph.D. degree is required to fulfill the following University requirements: (1) the foreign language requirement as follows: a minimum score of 500 in the Educational Testing Service examination in one of either Russian or German, or completion of course 5, or five quarters of study, or its equivalent in one of either Russian or German with a minimum

**\*\* Member of the Institute of Geophysics and Planetary Physics.**

grade of B in each course; those students whose native tongue is not English will also be expected to meet this requirement; (2) a qualifying oral examination; (3) a dissertation on a subject chosen by the candidate with the approval of his doctoral committee; (4) a final oral examination conducted by the doctoral committee.

#### Upper Division Courses

### 101. Introduction to Planetary and Space

#### Physics.

Prerequisites: Physics 1A-1B-1C and Mathematics 11A-11B, or their equivalents. A survey of geophysics, the physics of the planets, their atmospheres, and the interplanetary medium, with emphasis on topics of current research interest. The course is designed primarily for students majoring in a physical science or mathematics. The Staff

### 199. Special Studies in Planetary and Space

#### Physics. (½ to 1 course)

Prerequisites: any two of Physics 105A, Physics 110A, Physics 112A, Physics 131, or their equivalents. Directed individual study for upper division students majoring in a physical science or mathematics. The Staff

#### Graduate Courses

### 200A. Fundamentals of Planetary and Space Physics

#### 1: Solids: Planetary Interiors.

The earth's interior: geology, gravity, seismology, heat flow; planetary magnetism; dynamics of the solar system; optical, thermal, and radio observations of planetary surfaces; meteorites and their chemistry; origin and evolution of the terrestrial planets. Mr. Kaula

### 200B. Fundamentals of Planetary and Space

#### Physics 2: Fluids: Oceans and Atmospheres.

Origin, evolution, and structure of oceans and atmospheres. Mr. Palmer

### 200C. Fundamentals of Planetary and Space

#### Physics 3: Plasmas: Aeronomy and the Interplanetary Medium.

Solar surface features, heating and expansion of corona, solar wind, plasma and magnetic fields, interaction of the solar wind with the earth, magnetospheric phenomena. Mr. Cummings

### 201. Classical Mechanics.

Kinematics, variational principles and Lagrange's equations, rigid body equations, Hamilton equations of motion, canonical transformations, Hamilton-Jacobi Theory, small oscillations, perturbation theory. Mr. Knopoff

### 202. Physics of Continuous Media 1.

Continuum derivation of conservation principles: Navier-Stokes stress formulation and Fourier heat conduction, approximations to the equations (dimensionless parameters). Microscopic derivation of conservation principles: Boltzmann's equation, moment equations, Chapman-Enskog expansion technique, low temperature approximation, Chew, Goldberger, and Low approximation Mr. Schubert

### 210. Stability Theory.

Studies in laminar fluid dynamics: characteristic value problems of shear flow and thermal convection; variational estimation techniques; finite-amplitude theories of post-instability flow and finite-amplitude instabilities; gyroscopic constraints due to rotation and magnetic fields; boundary layer theory. Mr. Malkus

### 214. Physics of Continuous Media 2.

Prerequisite: course 202. Theory of waves (linear and nonlinear), compressible flows, shocks, bores, flows in conducting and rotation fluids applied to geophysical and astrophysical situations. Mr. Newell

### 218. Statistical Hydrodynamics.

(Same as Geophysics 241.) An introduction to the nonlinear fluid processes of planetary physics: aperiodic motion and statistical stability; similarity theory: upper bounds for the turbulent transport of heat and momentum; mean field equations; quantitative theories of turbulent flow; the problem of statistical closure. Mr. Malkus

### 220A. Planetary and Orbital Dynamics 1.

Theory of rotating fluids; external gravitational fields of a planet; analysis of gravity anomalies; effects of the gravitational field on a close satellite orbit and determination of the field from orbital perturbations. Mr. Kaula

### 220B. Planetary and Orbital Dynamics 2.

Gravitational, mechanical and thermal aspects of planetary interiors; dynamics of the earth-moon system; variations in rotation, tidal friction; dynamics of the solar system: energy dissipating effects, spin-orbit couplings. Mr. Kaula

### 222. Introduction to Seismology.

Types of seismic waves; travel-time seismology; epicenter location; amplitude variations; seismograph theory; explosion seismology; seismicity; focal conditions; surface wave analysis; microseisms and tsunamis. Mr. Knopoff

### 224A. Theoretical Seismology.

(Same as Engineering 258C.) Prerequisite: consent of the instructor. Elastic wave equations and elementary solutions; wave motions in elastic half-spaces; reflection and refraction of elastic waves; surface waves; vibration of rods and plates. Mr. Knopoff, Mr. Mal

### 224B. Theoretical Seismology.

(Same as Engineering 258D.) Prerequisite: course 224A. Elastic waves in layered media; Green's functions for various geometries; scattering and diffraction of elastic waves; attenuation; inversion problems. Mr. Knopoff, Mr. Mal

### 225A. Physics and Chemistry of Planetary

#### Interiors 1.

Chemical constituents of earth inferred from geochemistry, sun, and meteorites; pressure, temperature, and other physical properties of the interior inferred from seismic, geomagnetic, geothermal, and radiogenic data; effects of pressure and temperature on crustal structure, melting, mechanical properties, thermal and electrical conductivities, etc. Mr. Knopoff, Mr. Wetherill

### 225B. Physics and Chemistry of Planetary

#### Interiors 2.

Physical properties of iron and silicates at very high pressures; Thomas-Fermi theory; the earth's

core; astronomical data pertaining to planetary interiors; construction of models of the earth's interior, and of the moon and inner planets; equations of state of hydrogen and helium; models of major planet interiors. Mr. Knopoff, Mr. Wetherill

#### 228A. Magnetic Fields of the Earth and Planets 1.

Observations of the earth's magnetic field; spherical harmonic analysis, time-varying quantities; analysis of the field in terms of components of internal and external origins; macroscopic equations governing the behavior of a conducting fluid. Mr. Coleman, Mr. Cummings

#### 228B. Magnetic Fields of the Earth and Planets 2.

Magnetohydrostatic equilibria; thermal generation of planetary magnetic fields; dynamo mechanisms; possible sources of energy, including precessional torques; consideration of fields on other planets and the sun. Mr. Coleman, Mr. Cummings

#### 240. Dynamics of the Upper Atmosphere.

Composition and structure of the upper atmosphere; steady motion; the co-rotation of the atmosphere and earth; waves in an isothermal atmosphere without and with rotation; effects of electric and magnetic fields; propagation of energy from lower to upper atmosphere; irregular and totally driven motions.

#### 260A-260B-260C. Particles and Fields in Space.

(Formerly numbered 260A-260B and 262A-262B.) An advanced course covering our current knowledge of particles and fields in space. Sources, acceleration mechanisms, energy spectra, orbit theory, particle trapping, dynamics of the Van Allen belts, interactions with the solar wind, etc. Mr. Cummings, Mr. Holzer, Mr. Schubert

#### 265. Experimental Techniques in Space Physics.

Design criteria and environmental requirements for spacecraft experiments; photomultipliers and semiconductor diodes for charged particle detection; fluxgates, search coils, and resonance devices for magnetic field measurements; plasma probes; micro-meteorite detectors; special laboratory techniques for checkout and calibration of space experiments; use of necessary general-purpose instrumentation. Mr. Farley

#### 282. Seminar in Hydromagnetics.

Topics from the continuum theory; Alfvén waves in bounded regions; the dynamo problem; the role of the magnetic field as an inhibitor and instigator of fluid instability; theories of the solar magnetic field; theories of geomagnetism. Mr. Malkus

#### 285. Seminar on the Origin of the Solar System.

(Same as Astronomy 285.) Dynamical problems of the solar system; chemical evidences from geochemistry, meteorites, and the solar atmosphere; nucleosynthesis; formation of the solar nebula; solar contraction; hydromagnetic processes in the nebulae, condensation of the planets; origin of satellite systems. The Staff

#### 287A-287B-287C. Seminar in Seismology.

Mr. Knopoff

Individual Study and Research

Courses in the 500 series may be applied in place of 200-level courses toward the requirements for the master's degree *except*

for the minimum number required in a field of specialization. Courses 596 and 599 have no limit on the number of times they may be repeated; course 597 may be taken only once. Letter grades will be given in 596; courses 597 and 599 will be taken on a satisfactory/unsatisfactory basis.

#### 596. Research in Planetary and Space Science.

(½ to 1½ courses)

Directed individual study or research in: experimental and theoretical work on magnetic fields, energetic particles and plasmas in space (Mr. Holzer, Mr. Coleman, Mr. Farley, Mr. Cummings); hydrodynamics and hydromagnetism (Mr. Malkus, Mr. Schubert); orbital dynamics and planetary mechanics (Mr. Kaula); seismology and the earth's interior (Mr. Knopoff); geochronology and meteorites (Mr. Wetherill); climatology (Mr. Palmer).

#### 597. Preparation in Planetary and Space Science for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. (½ to 1 course)

Review of introductory course 101 in preparation for the written comprehensive examination for the master's degree, or study and research in the area selected for a possible dissertation topic prior to the Ph.D. qualifying examination. The Staff

#### 599. Research for and Preparation of the Doctoral Dissertation in Planetary and Space Physics.

(½ to 3 courses)

Research for and preparation of the doctoral dissertation in planetary and space physics. The Staff

Related Courses in Other Departments

#### Providing Fundamental Techniques Engineering 260A-260B. Celestial Mechanics.

#### Physics 210A-210B. Electromagnetic Theory. 215A. Thermodynamics.

#### 220A. Foundations of Classical and Quantum Mechanics.

#### 220B. Mechanics of Continuous Media.

#### 221A-221B. Quantum Mechanics.

#### 222A-222B-222C. Plasma Physics.

#### 231A-231B-231C. Methods of Mathematical Physics.

#### Pertaining to the Natural Environment

#### Astronomy 201A-201B-201C. Astrophysics of the Solar System.

#### Geology 150. Problems in Earth History.

#### Geophysics 131. Geochemistry.

#### Meteorology 242. Upper Atmospheric Structure.

#### 243. Radiation Dynamics of the Upper Atmosphere.

#### 244. Solar and Geomagnetic Influences.

#### 245. Atmospheric Applications of Plasma Physics.

## ■ PLANT SCIENCE

See Department of Botanical Sciences.

## ■ POLITICAL SCIENCE

(Department Office, 4289 Social Sciences Building)

Irving Bernstein, Ph.D., *Professor of Political Science*.  
 † John C. Bollens, Ph.D., *Professor of Political Science*.  
 Bernard Brodie, Ph.D., *Professor of Political Science*.  
 David T. Cattell, Ph.D., *Professor of Political Science*.  
 † James S. Coleman, Ph.D., *Professor of Political Science*.  
 Winston W. Crouch, Ph.D., *Professor of Political Science*.  
 Ernest A. Engelbert, Ph.D., *Professor of Political Science*.  
 J. A. C. Grant, Ph.D., *Professor of Political Science*.  
 Malcolm H. Kerr, Ph.D., *Professor of Political Science (Chairman of the Department)*.  
 Richard P. Longaker, Ph.D., *Professor of Political Science*.  
 † Dwaine Marvick, Ph.D., *Professor of Political Science*.  
 † Robert G. Neumann, Ph.D., *Professor of Political Science*.  
 Charles R. Nixon, Ph.D., *Professor of Political Science*.  
 Foster H. Sherwood, Ph.D., LL.D., *Professor of Political Science*.  
 † H. Arthur Steiner, Ph.D., *Professor of Political Science*.  
 Hans H. Baerwald, Ph.D., *Associate Professor of Political Science*.  
 David G. Farrelly, Ph.D., *Associate Professor of Political Science*.  
 William P. Gerberding, Ph.D., *Associate Professor of Political Science*.  
 Andrzej Korbonski, Ph.D., *Associate Professor of Political Science*.  
 David C. Rapoport, Ph.D., *Associate Professor of Political Science*.  
 John C. Ries, Ph.D., *Associate Professor of Political Science and Public Health*.  
 Harry M. Scoble, Ph.D., *Associate Professor of Political Science*.  
 † Howard R. Swearer, Ph.D., *Associate Professor of Political Science*.  
 David A. Wilson, Ph.D., *Associate Professor of Political Science*.  
 Charles E. Young, Ph.D., *Associate Professor of Political Science*.  
 Ciro Zoppo, Ph.D., *Associate Professor of Political Science*.  
 Richard E. Ashcraft, Ph.D., *Assistant Professor of Political Science*.  
 L. Blair Campbell, Ph.D., *Assistant Professor of Political Science*.  
 Louis J. Cantori, Ph.D., *Assistant Professor of Political Science*.  
 Robert C. Fried, Ph.D., *Assistant Professor of Political Science*.  
 Robert S. Gerstein, Ph.D., *Assistant Professor of Political Science*.  
 Edward Gonzalez, Ph.D., *Assistant Professor of Political Science*.  
 † James F. Guyot, Ph.D., *Assistant Professor of Political Science*.  
 Douglas S. Hobbs, Ph.D., *Assistant Professor of Political Science*.  
 Michael F. Lofchie, Ph.D., *Assistant Professor of Political Science*.  
 Richard M. Merelman, Ph.D., *Assistant Professor of Political Science*.  
 Lynn H. Miller, Ph.D., *Assistant Professor of Political Science*.  
 Lawrence Scheinman, Ph.D., *Assistant Professor of Political Science*.  
 Duane E. Smith, Ph.D., *Assistant Professor of Political Science*.  
 † Leo M. Snowiss, Ph.D., *Assistant Professor of Political Science*.  
 Steven L. Spiegel, Ph.D., *Assistant Professor of Political Science*.  
 C. Sylvester Whitaker, Ph.D., *Assistant Professor of Political Science*.  
 David O. Wilkinson, Ph.D., *Assistant Professor of Political Science*.

† Absent on leave, 1968–1969.

E. Victor Wolfenstein, Ph.D., *Assistant Professor of Political Science.*



Leonard Freedman, Ph.D., *Lecturer in Political Science.*

Marvin Hoffenberg, M.A., *Lecturer in Political Science and Public Health.*

Karen J. Orren, M.A., *Acting Assistant Professor of Political Science.*

### Preparation for the Major

#### Course 1.

#### The Major

Nine upper division political science courses (for a total of 36 units) numbered from 110 to 199, and four upper division courses in one or more of the other social sciences.

Upper division courses are organized into six groups, each including "core" courses designed to expose the student to material of fundamental importance. All students majoring in the Department must take (1) Political Science 110, Early Modern Political Theory, (2) a core course in either Group II (International Relations) or Group IV (Comparative Government), (3) a core course in each of two additional groups (II, III, IV, V, VI), and (4) in any one of the four groups, as a major field of interest, two additional courses. Courses 197, 198, and 199 are not applicable to fulfillment of group distribution requirements. In Group II (International Relations) only one of the defense studies courses, 138A, B, C, may be counted toward group distribution requirements.

Group distribution requirements will thus account for six courses: one core course in each of four fields, plus two other courses in one of those fields. The remaining units needed to reach the required total of nine courses (36 units) may be chosen at large from the offerings of the Department. The core courses are as follows: Group I (Political Theory), course 110; Group II (International Relations), courses 120, 121; Group III (Politics), courses 141, 145; Group IV (Comparative Government), course 150; Group V (Public Law), courses 170, 171; Group VI (Public Administration and Local Government), courses 180, 181.

Core courses are not prerequisites for other courses in the group, but students majoring in the Department will ordinarily give priority to completing core course requirements during their junior year. Core courses are open to sophomores as well as upper division students, and students expecting to major in political science are encouraged to take one core course during the sophomore year.

*The Honors Program.* Students wishing to qualify for graduation with honors (see catalog description of "Honors with the Bachelor's Degree" under section entitled "College of Letters and Science") should enroll in one honors proseminar, listed as Political Science 197, in two quarters of their senior year. Third-quarter juniors may apply for enrollment if unusual scheduling problems so warrant. At least four (16 units) upper division courses in political science, and a 3.0 overall grade-point average, are required for enrollment.

Several proseminars will be offered each quarter. Each proseminar will be devoted to a selected theme suitable for individual research and group discussion, not necessarily confined to any one of the six departmental fields. The name of the instructor and the subject of each proseminar will be announced in the preceding quarter. Application for enrollment must be made at the Department office before the last day of instruction of the preceding quarter.

*Related Curricula.* For the curricula in international relations and public service, see pages 72 and 76 of this bulletin.

For those students of politics who wish to acquire for future professional use a background in modern quantitative methods of data generation, handling and analysis, an information sheet is available in the undergraduate adviser's office.

### Admission to Graduate Status

Students wishing to enroll in graduate studies in the Department of Political Science should be aware of the two parts involved in their application: One, UCLA Graduate Division requirements, and two, Departmental requirements.

*Graduate Division.* See pages 28-31 of this catalog or the UCLA announcement of the Graduate Division.

*Department of Political Science.* The Department ordinarily requires a minimum grade point average of 3.0; two letters of recommendation; and test scores from the Graduate Record Examination (the Aptitude Test and the Advanced Government Test);

(The Law School Aptitude Test may be used in place of the G.R.E.). These letters and test scores should be sent to the Department of Political Science, Graduate Adviser.

The Aptitude Test and the Advanced Government Test of the Graduate Record Examination are given four times a year in various locations in the United States and foreign countries. Applications may be secured by applying to the Educational Testing Service, 1947 Center Street, Berkeley, California 94704, (for those living in the West) and to Educational Testing Service, 20 Nassau Street, Princeton, New Jersey 08540 (for those living in the East).

An undergraduate major in Political Science is desirable but not mandatory.

### **Graduate Fields of Study**

Six fields of study are offered to graduate students in the Political Science Department: *Political Theory; International Relations; Politics; Comparative Government; Public Law; Public Administration and Local Government.*

Normally candidates for the M.A. degree are given a written examination at the end of their first three quarters in residence in one field, chosen from the six basic fields listed above. Candidates for the Ph.D. degree are examined in three fields, two of which must be within the six fields offered by the Department.

Ph.D. candidates may take one of their three fields outside the Department with the approval of the Department. It should be noted that outside fields are not permitted for the M.A. degree program.

The Department offers three types of graduate courses in each of six fields of study.

1. The 210 series of general courses.
2. The 220 through 240 series of specialized substantive courses.
3. The 250 through 270 series of seminars. Seminars will ordinarily be taken by advanced graduate students.

In addition, the Department offers the 401 course, Internship in Public Service, for M.P.A. candidates, and the 590 series of individual study and research courses. The 590 courses are designed primarily for graduate students on a limited basis.

### **The M.A. Program**

The Department normally operates under the Comprehensive Examination Plan (a one-field examination and overall evaluation), although the Thesis Plan may be followed in rare cases with the approval of the Department.

*One foreign language (or a research-tool substitute program) and nine quarter courses taken while the student is in graduate status are required for M.A. degree.* A student will take a minimum of five (5) graduate courses, distributed among three (3) fields of study offered in the Department of Political Science. The remaining four courses may be chosen by the student at his discretion, in or out of the Political Science Department. Lower division courses, however, do not count toward meeting this requirement. No more than two courses in satisfaction of this requirement may be taken in one field of study. The 500 series courses will not normally meet this five course requirement. Exceptions will be considered on petition to the Graduate Studies Committee. During the first three quarters in residence a candidate must normally complete a minimum of seven courses.

*The language requirement must be met within the first five quarters in residence, or further graduate work will not be permitted until the requirement is satisfied.* All prospective graduate students are strongly urged to prepare for examination before beginning the first quarter of graduate work.

For the master's degree, all students will be required *either* to pass one foreign language reading examination (*at the "standard" level of performance, passing the E.T.S. examination with a score of 500 or above*) *or* to fulfill the requirements for a research tool substitute program, such program to be approved in each case by a member of the faculty and the Department's Graduate Studies Committee. Languages must be approved by the Department's Graduate Studies Committee.

Foreign language requirements fulfilled at other institutions by students entering with a master's degree may or may not be accepted. Such cases will be acted upon by the Graduate Studies Committee.

Foreign students for whom English was the language of instruction in secondary school may not offer English as a foreign language. Such students may offer their native language as a foreign language if (1) they demonstrate by examination a fluency in their native language *and* (2) the Graduate Committee accepts the language as one in which academic research is likely to be pursued by these students.

*Full-time Program.* Students are encouraged to carry a full time program which consists of three full courses per quarter.

*Graduate Work at Other Campuses of the University of California.* Work completed while in graduate standing on other campuses of the University of California may be used to satisfy part of the total course requirement; up to four courses may be transferred toward the nine courses required for the M.A. Two graduate courses completed at another U.C. campus may be used toward the requirement of five graduate courses.

*Graduate Work Completed Elsewhere.* With the approval of the Department and the Graduate Division, credit for a maximum of two quarter courses completed at another institution (other than a U.C. campus) can be applied toward the nine course requisite for the M.A.

Extension courses are not accepted by the Department for graduate work.

The M.A. comprehensive examinations (written and oral) are given twice a year: near the end of the fall quarter, and near the end of the spring quarter. Normally, a candidate for the M.A. degree is examined at the end of his first three quarters in residence. The written examination is in one of the six fields. The oral examination will be taken emphasizing three fields of political science chosen by the candidate. The oral examination is conducted by a panel of faculty members and is held approximately two weeks after the written examination. The Oral Committee makes an overall evaluation of the student's capabilities and qualifications, based on the written examination, the oral examination, grades, and confidential faculty reports. The Oral Committee then recommends one of the following: (1) That the student receive the M.A. degree and be encouraged to proceed toward the Ph.D. (when all departmental and University requirements are met). (2) That the student receive the M.A. degree (when all departmental and University requirements are met) and that his status as a graduate student in the Department be thereafter terminated. (3) That the student not be awarded the M.A. degree and that his status as a graduate student in the Department be terminated. *Candidates are allowed to take the M.A. examinations one time only.*

*Special M.A. Sequence.* In special cases, and then only for exceptional reasons, graduate students may follow a special sequence of study. The Committee on Graduate Studies must approve any special sequence of study. In such cases, the evaluation examination will be taken near the end of the quarter in which nine courses will be completed.

## The Ph.D. Program

An M.A. in Political Science or the equivalent is a prerequisite. A student entering with an M.A. from another university must pass the M.A. written and oral screening examinations during his first year in residence, before he can be considered a Ph.D. candidate in the Department.

*Foreign Language.* As one condition for advancement to candidacy for the doctorate, graduate students will—in addition to fulfilling the requirements for the M.A. degree—fulfill one of the following three requirements: (1) Pass a reading examination at the "standard" level of performance in a second foreign language (a score of 500 or above on the E.T.S. examination). (2) Pass an examination in the same foreign language offered for the master's degree at an "advanced" level of performance suitable for field research. This level and the manner of examination will be determined for each language by the Department of Political Science. Ordinarily passing at an "advanced" level consists of passing the E.T.S. examination with a score of 650, and demonstrating oral proficiency at a level equivalent to Foreign Service 3. (3) Fulfill the requirements for a research-tool substitute program, such program to be approved in each case by the Graduate Committee. This option may not be selected at both the master's and Ph.D. levels.

Each graduate student will be required to get the approval of his doctoral adviser regarding his choice among these three requirements.

*Course Requirements.* A student will take a minimum of fourteen (14) courses, including three (3) seminars, prior to taking the Ph.D. preliminary examinations. The nine courses taken in the M.A. program will be included in this total. A minimum of nine courses must be taken within the Department of Political Science. Of the fourteen required courses, a total of no more than five courses may be taken in the 500 series and at the undergraduate level. No more than two 500 series courses may be taken with the same Political Science professor. Students may not fulfill their required courses with lower division courses. A student admitted to the Department with graduate work completed elsewhere may petition the Graduate Committee for permission to apply course credits to the Departmental requirements. A student must take a minimum of three courses (including two graduate courses) in a field other than his three preliminary examination fields. If

one of the preliminary examination fields is taken outside the Department of Political Science, the three courses must be taken in a field within the Department of Political Science.

**Preliminary Examinations.** Within one to three years after the M.A. field or screening examinations, a student going on for the Ph.D. will be required to take preliminary written examinations in three fields, two of which must be within the Department, and an oral examination. These are administered by the Department twice a year, in the fall and spring, and all three are taken within a two week period.

Upon satisfactory completion of his written examinations as well as course work, the student will be authorized to proceed to the oral examination by decision of an *ad hoc* committee composed of (a) the student's adviser, (b) the chairmen of the committees administering the three written field examinations taken by the student, and (c) the Graduate Adviser.

In case of unsatisfactory performance, the *ad hoc* committee may direct the student to retake one or more field examinations, or declare his graduate work in the Department terminated.

If a student fails one or more Ph.D. preliminary examinations, and is allowed to retake them the next time they are given, he must pass all examinations he takes for the second time or further graduate work in the Department will not be permitted.

**Third Field.** For one field, a student may request a substitution of a field outside the Department. The student together with his adviser and the instructor under whom he wishes to do his work outside the Department will draft a written proposal for the third field. The proposal must state the substantive material to be covered, the course program, and why the outside field is being proposed. A minimum of three courses, including two graduate courses, must be taken in the chosen field. In exceptional cases, the outside field may include some course work within the Department of Political Science, provided that it is distinct from course work offered for examination in other departmental fields. The proposal must be signed by the student's adviser and the outside instructor, submitted three quarters in advance of the time the student expects to take the preliminary examinations, and approved by the Graduate Studies Committee.

**Doctoral Committee.** Immediately upon

the successful completion of the written preliminary examinations, the Department will request the appointment of a Doctoral Committee by the Graduate Council.

The Doctoral Committee will hold an oral examination as soon as feasible to determine whether or not the student should be advanced to candidacy.

Upon being advanced to candidacy, the student will submit to his Doctoral Committee for its approval a research design for the dissertation. The Doctoral Committee will approve and forward copies of the research design to the Department for its information.

#### **Pre-Arrival Information**

(See pages 50 and 136-142 of this catalog or the announcement of the Graduate Division.

#### **Master of Public Administration**

The program leading to the degree of Master of Public Administration is organized both for those who have earned a bachelor's degree and wish to prepare for a career in governmental administration, and for more advanced public servants who wish to supplement knowledge already obtained and increase their level of competence in theoretical and practical aspects of public administration. The program is administered by the Department of Political Science but offers an opportunity for the student to do work in departmental and nondepartmental fields related to public administration, such as economics, sociology, or area studies programs (Africa, Latin America, Middle East). Specific inquiries regarding this program should be addressed to: Director, Master of Public Administration Program, Department of Political Science.

**General Requirements.** See page 137 of this bulletin.

**Admission to the Program.** (a) The student shall have received the degree of Bachelor of Arts with a major in public service or political science or a combination of undergraduate work and experience which the Master of Public Administration degree committee evaluates as satisfactory preparation. (b) Applicants must file a special application with the Director of the M.P.A. Program in the Department of Political Science, in addition to the application for admission to graduate status to be filed with the Graduate Division.

**Course Requirements.** The candidate must complete an approved program of at least

nine courses of upper division and graduate work (36 units), consisting of not less than five graduate courses in the 200 series, distributed among the three fields of the program. In addition to these requirements, candidates must complete an approved internship in accordance with the internship requirement described below.

**Program.** Programs for each candidate will be prepared in consultation with the Program Director. Candidates must demonstrate competence in three fields: (1) administrative theory and processes; (2) political environment and institutions; and (3) a program specialty.

1. Administrative Theory and Processes. (Competence in all categories required.) Administrative theory; governmental organization and relations; staff and management processes; legislative and legal controls.

2. Political Environment and Institutions. (One option to be chosen.) State and local government; national government; international and comparative government.

3. Program Specialties. (One option to be chosen; listing is illustrative, not all inclusive.) Defense; business regulation; economic development; education; employment and labor; finance and budgeting; foreign policy administration; housing and redevelopment; information and communication systems; natural resources; personnel; planning; public health; public relations; public welfare; science and technology; and transportation.

**Comprehensive Examinations.** Written examinations are conducted in each of the three fields of study. An oral examination follows successful completion of the written examinations.

**Internship.** Each candidate is required to complete an approved internship by working in a public agency or a government-related private organization before receiving the degree. In some instances, similar experience gained before entering the program may be substituted. In either case, an analytical report must be written and accepted. In the quarter when the report is to be completed, the candidate must be enrolled in course 401.

#### Lower Division Courses

##### 1. Introduction to American Government.

Lecture, three hours; discussion, one hour. An introduction to the principles and problems of government with particular emphasis on national government in the United States. This course fulfills the requirement of American History and Institutions, and is required of all students majoring in political science. The Staff

##### 2. World Politics.

Lecture, three hours; discussion, one hour. There are no prerequisites for this course. An introduction to recent and contemporary international relations and the foreign policies, policy-making institutions, and politics of selected foreign states. This course does not count toward requirements for the major. The Staff

#### Upper Division Courses

Prerequisite for all upper division courses: upper division standing, except the core courses which may be taken in the sophomore year.

#### GROUP I. POLITICAL THEORY

##### 110. Early Modern Political Theory.

(Formerly numbered 112.) Lecture, three hours; discussion, one hour. Core Course. An exposition and critical analysis of the major political philosophers and schools from Hobbes to Bentham. The Staff

##### 111. Ancient and Medieval Political Theory.

An exposition and critical analysis of the major political philosophers and schools from Plato to Machiavelli.

Mr. Campbell, Mr. Rapoport, Mr. Wolfenstein

##### 112. Nature of the State.

(Formerly numbered 110.) A systematic analysis of modern concepts and problems of political association. The Staff

##### 113. Late Modern and Contemporary Political Theory.

An exposition and critical analysis of the major political philosophers and schools from Hegel to the present. The Staff

##### 114. American Political Thought.

A survey of the development of American ideas concerning political authority from Cotton and Williams to the present. Mr. Smith

##### 115. Theories of Political Change.

Prerequisite: course 110 or consent of the instructor. A critical examination of theories of political change, the relation of political change to changes in economic and social systems, and the relevance of such theories for the experience of both western and nonwestern societies. Mr. Lofchie, Mr. Nixon

##### 117. Jurisprudence.

This course may be counted in either Group I or Group V. Development of law and legal systems; consideration of fundamental legal concepts; contributions and influence of modern schools of legal philosophy in relation to law and government. Mr. Gerstein

##### 119. Special Studies in Political Theory.

Prerequisites: course 110 and one additional course in Group I, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to political theory. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

**GROUP II. INTERNATIONAL RELATIONS****120. Foreign Relations of the United States.**

Lecture, three hours; discussion, one hour. Core Course. A survey of the factors and forces entering into the formation and implementation of American foreign policy, with special emphasis on contemporary problems. Mr. Brodie, Mr. Gerberding

**121. International Relations.**

Lecture, three hours; discussion, one hour. Core Course. An introduction to the politics, theory, and institutions of international relations with emphasis on contemporary practice.

Mr. Cattell, Mr. Spiegel, Mr. Wilkinson

**123. International Organization and Administration.**

A general survey of the institutions, political and administrative, of international organization, with emphasis on the United Nations. Mr. Miller

**124. International Law.**

This course may be counted in either Group II or Group V. A study of the nature and place of international law in the conduct of international relations.

Mr. Miller, Mr. Scheinman

**127. The Atlantic Area in World Politics.**

A contemporary survey of the foreign policies of the North Atlantic countries and of cooperative efforts to attain political, economic, and military coordination on a regional basis. Mr. Scheinman

**128. The Soviet Sphere in World Politics.**

A contemporary survey of the foreign policies and aspirations of the Soviet Union and other states in the Soviet bloc; analysis of content and effects of Communist doctrine affecting relations between the Soviet and democratic spheres.

Mr. Cattell, Mr. Korbonski, Mr. Swearer

**130. New States in World Politics.**

An analysis of the foreign policies and the role in world politics of new states.

Mr. Coleman, Mr. Wilson

**131. Latin American International Relations.**

The major problems of Latin-American international relations and organization in recent decades.

Mr. Gonzalez

**132. International Relations of the Middle East.**

A study of the relations among the countries of the Middle East with special reference to the policies of the Great Powers.

Mr. Kerr

**135. International Relations of East Asia.**

The relations of the countries of the East Asian seaboard, especially China, with their neighbors and the other powers, with emphasis on contemporary interests and policies of the United States vis-à-vis China.

Mr. Steiner

**136. International Relations of the Western Pacific Area.**

The foreign policies of Japan, and the interests and policies of other countries, particularly the United States, in the Western Pacific Area.

Mr. Baerwald

**138A-138B-138C. Defense Studies.**

(Formerly numbered 139A-139B-139C.)

**138A. Defense Strategy and Policies.**

The problems of national defense strategy in an age of nuclear weapons and missiles; appropriate objectives of military policy, the role of strategic retaliatory forces, limited war, civil defense, maintaining coalitions and related problems.

Mr. Brodie

**138B. The Conduct of Modern War.**

A study of World War II and the Korean War with special emphasis on problems of coalitions of nations in planning and operations.

The Staff

**138C. Military Policy and Organization.**

This course may be counted in either Group II or Group VI. A study of the institutional and policy framework in the national military field.

Mr. Ries

**139. Special Studies in International Relations.**

Prerequisites: course 120 or 121 and one additional course in Group II, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to international relations. Sections will be offered on a regular basis with topics announced in the preceding quarter.

The Staff

**GROUP III. POLITICS****141. Public Opinion and Propaganda.**

Lecture, three hours; discussion, one hour. Core Course. A study of the nature and the means of formation of public opinion. Public opinion as a factor in popular government and as a control device in the modern state, with special reference to current conditions in American democracy.

Mr. Marvick, Mr. Merelman, Mr. Scoble

**142. The Politics of Interest Groups.**

A systematic investigation of the role of political interest groups in the governmental process, with attention directed to the internal organization, leadership, and politics of such groups; to the goals and functions of various types of groups, and to the strategy and tactics of influence.

Mr. Scoble

**143. Legislative Politics.**

A study of those factors which affect the character of the legislative process and the capacity of representative institutions to govern in contemporary society.

Mr. Gerberding, Mr. Snowiss

**144. The American Presidency.**

A study of the nature and problems of presidential leadership, emphasizing the impact of the bureaucracy, congress, public opinion, interest groups, and the party system upon the presidency and national policy-making.

Mr. Longaker, Mr. Snowiss

**145. Political Parties.**

Lecture, three hours; discussion, one hour. Core Course. Organization functions, and practices of political parties primarily in the United States, with attention to campaign functions, membership problems, political finance, and policy-formation practices.

The Staff

**146. Political Behavior Analysis.**

The use of quantitative methods in the study of political behavior, especially in relation to voting patterns, political participation, and techniques of political action.

Mr. Marvick, Mr. Scoble

**149. Special Studies in Politics.**

Prerequisites: course 141 or 145 and one additional course in Group III, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to politics. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

**GROUP IV. COMPARATIVE GOVERNMENT****150. Introduction to Comparative Government and Politics.**

Lecture, three hours; discussion, one hour. Core Course. The structure and dynamics of the principal types of political systems of the world. Contemporary states will be studied for purposes of illustration. The Staff

**152. British Government.**

The government and politics of the United Kingdom; the British constitution, parliament, parties and elections, foreign policies, administrative problems, and local governments. Mr. Neumann

**153. Governments of Western Europe.**

The constitutional and political structure and development of France and other states of continental Western Europe, with particular attention to contemporary problems. Mr. Fried, Mr. Neumann, Mr. Scheinman

**154. Governments of Central Europe.**

The constitutional and political structure and development of Germany and other Central European states, with particular attention to contemporary problems. Mr. Korbonski, Mr. Neumann

**156. The Government of the Soviet Union.**

An intensive study of the political and institutional organization of the Soviet Union and its component parts, with special attention to contemporary political issues, as well as party and governmental structures. Mr. Cattell, Mr. Swearer

**157. Governments of Eastern Europe.**

A study of the political and governmental organization of the Communist countries of Eastern and Central Europe (exclusive of the U.S.S.R.) with special reference to the institutions, practices and ideologies including interregional relations. Mr. Korbonski

**159. Chinese Government and Politics.**

Organization and structure of Chinese government with particular attention to the policies, doctrines, and institutions of Chinese Communism; political problems of contemporary China. Mr. Steiner

**160. Japanese Government and Politics.**

The structure and operation of the contemporary Japanese political system, with special attention to domestic political forces and problems. Mr. Baerwald

**161. Government and Politics in Southeast Asia.**

The institutional structures and political processes of states in Southeast Asia (Burma, Thailand, Malaya, Laos, Cambodia, Vietnam, Indonesia, the Philippines) attending principally to problems of institutional transformations and political stabilization. Mr. Guyot, Mr. Wilson

**162. Government and Politics in South Asia.**

The political experiences and institutions of the Indian subcontinent since 1947, with particular attention to the Republic of India, but also with reference to Pakistan and Ceylon. Mr. Steiner

**164. Government and Politics in the Middle East.**

A comparative study of government in the Arab States, Turkey, Israel and Iran. Mr. Kerr

**165. Government and Politics in North Africa.**

A comparative study of the government and politics of the North African states, including the relationship between political development, political organization and social structure. Mr. Cantori

**166. Government and Politics in Tropical Africa.**

The governments of the independent states and dependent territories of Africa south of the Sahara and north of the Union of South Africa, with special reference to comparative colonial policies, nationalism and the problems of nation building. Mr. Coleman, Mr. Lofchie, Mr. Whitaker

**168A. Government and Politics in Latin America.**

A comparative study of governmental and political development, organization and practices in the states of Middle America. Mr. Gonzalez

**168B. Government and Politics in Latin America.**

A comparative study of governmental and political development, organization and practices in the states of South America. Mr. Gonzalez

**169. Special Studies in Comparative Government.**

Prerequisites: course 150 and one additional course in Group IV, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to comparative government. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

See also Course 188.

**GROUP V. PUBLIC LAW****170. The Anglo-American Legal System.**

Lecture, four hours; discussion, one hour. Core Course. Evolution of the English common law courts and their legal system, with special emphasis on the contributions made by canon law, the law merchant and equity; the theory of *stare decisis* as illustrated by the evolution of modern rules of negligence. Mr. Grant

**171. The Supreme Court.**

Lecture, four hours; discussion, one hour. Core Course. The history, procedures, and role of the Supreme Court in its legal-constitutional and political aspects. Emphasis will be given to the current and recent activities of the Court. Decisions of the Court, historical and current commentaries, and judicial biography will be utilized. Mr. Farrelly, Mr. Hobbs, Mr. Longaker

**172A. American Constitutional Law.**

Constitutional questions concerning the separation of powers, federalism, and the relationship between government and property. Mr. Gerstein, Mr. Hobbs

**172B. American Constitutional Law.**

The protection of civil and political rights and liberties under the Constitution. Mr. Gerstein, Mr. Hobbs

**173. Government and Business.**

(Formerly numbered 173.) This course may be counted in either Group V or VI. The nature of the corporation; the regulation of competition; government promotion of economic interests; regulation of industries clothed with a public interest; government ownership and operation. Mr. Bernstein

**174. Government and Labor.**

(Formerly numbered 179.) This course may be counted in either Group V or VI. The labor force and the nature of the trade union; regulation of labor relations; programs to encourage full employment and to mitigate unemployment; protective labor legislation. Mr. Bernstein

**179. Special Studies in Public Law.**

Prerequisites: course 170 or 171 and one additional course in Group V, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to public law. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

See also Courses 117, 124, and 187.

**GROUP VI. PUBLIC ADMINISTRATION AND LOCAL GOVERNMENT****180. State and Local Government.**

Lecture, three hours; discussion, one hour. Core Course. Development of state constitutions; the political, administrative, and judicial systems of state and county government; and relations between the state and local government, with special reference to California. Mr. Bollens, Mr. Crouch

**181. Introduction to Public Administration.**

Lecture, three hours; discussion, one hour. Core Course. An introduction to modern theories of administration; the relation of administration to the political process; and the analysis of administrative organization and processes, including planning, personnel, finance, and law. The Staff

**182. Municipal Government.**

A study of the modern municipality in the United States; legal aspects of city government; local election problems; types of municipal government; problems of metropolitan areas; relationship of the cities to other units; problems bearing on city government today. Mr. Bollens, Mr. Crouch

**183. Administration of International Agencies and Programs.**

(Formerly numbered 189.) An examination of the administrative patterns and practices of the United Nations agencies and overseas development programs, including distinctive characteristics of organization and management selection of personnel, and methods of financing. The Staff

**184. Metropolitan Area Government.**

An analysis of the problems, politics, organization, and functions of government in metropolitan areas. Mr. Bollens, Mr. Crouch

**185. Public Personnel Administration.**

The process of formulating and administering public personnel policies; concepts and principles utilized in selected governmental personnel systems. Focus will be primarily upon governmental systems in the United States (national, state, local, foreign service, military) but also comparisons will be made with selected other governmental systems. Mr. Crouch, Mr. Guyot

**186. National Policy and Administration.**

A study of the major policies and programs of the national government and their administration as illustrated in such areas as national defense, social welfare, agriculture, etc. Particular attention will be paid to the role of the President and other administrators in formulating public policy and in maintaining a responsible bureaucracy. Mr. Engelbert, Mr. Ries

**187. Regulatory Policy and Administration.**

This course may be counted in either Group V or Group VI. A study of the process of policy formulation by administrative agencies in regulatory fields. Particular attention will be given to the independent regulatory commissions and boards. Mr. Crouch, Mr. Hobbs

**188. Comparative Public Administration.**

This course may be counted in either Group IV or Group VI. An analysis of bureaucratic structures and functions in the United States, other industrialized, and less developed countries. Special attention is paid to methods of comparative analysis and the utility of various models. Mr. Fried, Mr. Guyot

**189. Special Studies in Public Administration.**

Prerequisites: course 180 or 181 and one additional course in Group VI, and any special requirements. Permission of the instructor is required for enrollment. Members of the faculty will take up for intensive examination one or more special problems appropriate to public administration. Sections will be offered on a regular basis with topics announced in the preceding quarter. The Staff

**190. Administrative Theory.**

An examination of the theoretical framework of public administration, with emphasis upon ideologies, values, behavioral patterns, and concepts of organization. Particular attention will be paid to the locus and control of administrative power. Mr. Engelbert, Mr. Fried

**191. Urban and Regional Planning and Development.**

A comparative study of governmental policies, procedures, and agencies involved in the planning and development of urban and regional communities and areas. Mr. Bollens, Mr. Engelbert

**192. Science and Public Policy.**

An examination of the role of science and scientists in public affairs with emphasis upon the policies and administration of science programs. Particular attention will be paid to the values and behavioral patterns of science groups and professions. Mr. Engelbert

See also Courses 138C, 173, and 174.

**UNGROUPED****197A-197D. Undergraduate Honors Preseminars.**

Prerequisite: four upper division courses of political science and a general grade-point average of 3.0. Several preseminals will be offered each quarter, dealing with selected research topics to be announced during the preceding quarter. Admission by consent of the Department and the instructor. No pre-enrollment permitted. See additional information in statement of requirements for the major in political science. The Staff

**198. Special Studies in Political Science.**

(½ to 1 course)

Prerequisite: credit for two upper division courses in political science and consent of the instructor. The Staff

**199. Readings in Political Science. (½ to 1 course)**

Prerequisite: senior standing and consent of the instructor. The Staff

**Graduate Courses****203. Scope and Methods.**

The scope, methods, techniques, interrelationships and literature of political science as a whole. The course includes an examination of: historical development of political science, its relation to other social sciences, methods of dealing with problems of political science, and techniques of research. The Staff

**211. Political Theory.**

An analysis of the central problems of political theory and their relation to allied disciplines. Mr. Nixon, Mr. Rapoport

**212. International Relations.**

An analysis of contemporary international relations including international organizations and an examination of contemporary theories and methodologies in international relations. The Staff

**214A. Politics and Society.**

(Formerly numbered 224.) An analysis of attitude formation, electoral behavior, political socialization and political recruitment, with special emphasis upon American materials. The Staff

**214B. The Study of Politics.**

An analysis of the major approaches to the study of the American political system, with special emphasis upon the character of decision-making processes. The Staff

**215A-215B. Comparative Government.**

Credit and grade will be given only upon completion of 215B. An intensive and systematic analysis, employing the comparative approach, of the basic principles and problems of government of the major states and areas. The Staff

**218. Public Law.**

A systematic analysis of the scope and nature of public law, with particular attention given to its materials and methods as illustrated in concepts and doctrines drawn from various of its subject fields. The Staff

**218A. Public Administration and Local Government.**

An analysis of the nature and scope of public administration and its role in modern political systems. An introduction to the problems of government of local subsystems. The Staff

**218B. Administrative Behavior.**

An analysis of public administrative agencies in light of contemporary bureaucratic and decision theories, with special emphasis upon the conditions of rational behavior in large, complex organizations. The Staff

**220. Special Studies in Political Theory.**

Directed work in the history of political theory for students preparing for the M.A. or Ph.D. examination in political theory. Mr. Ashcraft, Mr. Nixon, Mr. Rapoport

**221. Selected Texts in Political Theory.**

A critical examination of major texts in political theory with particular attention to their philosophic system, their relations to the contemporary political and intellectual currents, and the importance of the system for present-day political analysis. The Staff

**222. Selected Topics in Political Theory.**

A critical examination of a major problem in political theory. The Staff

**224. Studies in Politics.****224A. Quantitative Applications.**

A survey of quantitative research techniques and their application to the study of political phenomena. Mr. Marvick

**224B. Political Recruitment.**

Intensive and critical evaluation of behavioral literature concerned with the provenance and *curriculum honorum* of public men, and with the screening and sponsoring mechanisms affecting their careers and political perspectives. Mr. Marvick

**224C. Political Sociology.**

A consideration of problems common to Political Science and Sociology, with special attention to the applicability of selected sociological theories to political phenomena. Mr. Merelman, Mr. Snowiss

**224D. The Group Process.**

Critical appraisal of "group theory" approaches to the study of political decision making, with special attention to empirical research problems and findings. Mr. Scooble

**224E. Legislative Behavior.**

The analysis of the major approaches to the study of representative institutions, with special emphasis upon the assumptions, concepts, methods, and theoretical implications associated with each approach. Mr. Snowiss

**224F. Political Leadership.**

An analysis of political leaderships, with emphasis on the American presidency and its relation to various aspects of American politics, including Congress, political parties, elections, and public opinion. Mr. Longaker

**228A. Personnel and Human Relations.**

An analysis of the policies, processes, organizations, and interrelationships involved in manning the public services. Mr. Crouch, Mr. Guyot

**228B. Public Planning, Programming, and Budgeting.**

Public budgeting processes within a political and organizational framework. Special emphasis on the Federal program-budgeting system and the interplay between contemporary bureaucratic and decision theory of rational allocation of resources.

Mr. Hoffenberg, Mr. Ries

**229. Urban Government.**

An analysis of the policies, processes, interrelations, and organization of governments in heavily populated areas.

Mr. Bollens

**230. Comparative Development Administration.**

An analysis of the administration of development programs and the development of administrative institutions, with special attention to ecology. Comparisons are made both between countries and within countries.

Mr. Fried, Mr. Guyot

**231. Studies in International Relations.****231A. Contemporary Problems in United States Foreign Policy.**

An intensive analysis of the policy-formulation process and the substance of selected contemporary problems in foreign policy. Political and institutional factors affecting foreign policies will be stressed along with the analysis of policy options.

Mr. Gerberding

**231B. National Defense Problems.**

(Formerly numbered 264.) This course analyzes various national security problems in both their military-technical and political dimensions. It seeks to develop in some depth issues likely to be raised in Political Science 138A, which, however, is not a prerequisite.

Mr. Brodie

**231C. International Law and Organization.**

This course emphasizes the role of law and organization in the conduct of contemporary international politics. International organization is considered as an integral process within the contemporary international legal system whose characteristics are explored in depth.

Mr. Miller

**238. Studies in Public Law.****238A. Evolution of Anglo-American Law Books.**

Surviving early records. Case reporting, from the year books to the modern reports. Legal treatises from Glanvill to today. Statutes and how to find them. The language of the law. Although emphasis will be placed upon American materials the entire English speaking world will be covered.

Mr. Gerstein, Mr. Grant

**238B. Making of the Constitution.**

An examination of the development of constitutional law during selected periods of American history, such as Founding, the Marshall and Taney eras, and the New Deal. The focus will be on both judicial and nonjudicial materials.

Mr. Hobbs, Mr. Longaker

**238C. The Bill of Rights and the States.**

An examination of the problems surrounding the application to the states of Amendments 1-9.

Mr. Grant, Mr. Hobbs

**238D. Current Problems in Public Law.**

A discussion of selected contemporary problems in jurisprudence, the judicial process, judicial behavior, and legal controls on social conduct.

Mr. Gerstein, Mr. Longaker

**Graduate Seminars**

Prerequisite for all graduate seminars: advance consent of instructors.

**250. Seminars in Regional and Area Political Studies.****250A. Latin-American Studies.**

The Staff

**250B. Russian and Slavic Studies.**

Mr. Cattell, Mr. Korbonski, Mr. Swearer

**250C. Chinese and East Asian Studies.**

Mr. Steiner

**250D. Japanese and Western Pacific Studies.**

Mr. Baerwald

**250E. African Studies.**

Mr. Coleman, Mr. Lofchie, Mr. Whitaker

**250F. Middle Eastern Studies.**

Mr. Kerr

**250G. Commonwealth Studies.**

The Staff

**250H. Western European Studies.**

Mr. Fried, Mr. Neumann, Mr. Scheinman

**250J. Southeast Asian Studies**

Mr. Wilson

**250K. North African Studies.**

Mr. Cantori

**252. Seminar in Public Law.**

The Staff

**253. Seminar in International Relations.**

The Staff

**254. Seminar in Public Administration.**

The Staff

**256. Seminar in Comparative Government.**

The Staff

**257. Seminar in Political Theory.**

The Staff

**259. Seminar in Political and Electoral Problems.**

Prerequisite: two graduate courses in Politics, including at least one in the 214 sequence.

The Staff

**262. Seminar in Municipal Government.**

The Staff

**263. Seminar in Political and Administrative Aspects of Planning.**

The Staff

**271. Seminar in Political Change.**

An interdisciplinary seminar directed toward the analysis of political change. To be offered by members of the Department of Political Science.

The Staff

**Professional Course****401. Internship in Public Service. (½ to 1 course)**

Directed work in applying the techniques of public administration during a period of service in a governmental agency. A required course for students enrolled in the Master of Public Administration program. Open to other properly qualified graduate students upon application.

Mr. Bollens

**Individual Study and Research****596. Directed Individual Study or Research. (½ to 1 course)**

A letter grade (A, B, C, D, or F) will be assigned by the professor supervising the study or research. May apply toward the minimum course requirement for the master's degree, and it may be used for this requirement only once.

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examinations for the Ph.D. (½ to 2 courses)**

This course is ordinarily taken only during the quarter in which the student is being examined. A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the Department on the basis of the student's performance in the examination(s).

**598. Research for and Preparation of the Master's Thesis. (½ to 2 courses)**

A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the master's thesis. (This course will rarely be taken

in the Department because students normally receive their master's degree under the Comprehensive Examination Plan.)

**599. Research for and Preparation of the Doctoral Dissertation. (½ to 2 courses)**

A grade of Satisfactory (S) or Unsatisfactory (U) will be assigned by the professor supervising the dissertation.

Only course 598 may apply toward the minimum course requirement for the master's degree, and it may be used for this requirement only once. There is no restriction on the number of times an individual student may enroll in any of the 590 series courses.

## ■ PSYCHIATRY

(Department Office, B8-262 Center for the Health Sciences)

- Norman Q. Brill, M.D., *Professor of Psychiatry.*  
 Joaquin M. Fuster, M.D., *Professor of Psychiatry in Residence.*  
 James T. Marsh, Ph.D., *Professor of Medical Psychology.*  
 Ivan N. Mensh, Ph.D., *Professor of Medical Psychology.*  
 George J. Popjak, M.D., *Professor of Psychiatry and Biological Chemistry.*  
 Frank F. Tallman, M.D., *Professor of Psychiatry and Public Health.*  
 Arnold B. Scheibel, M.D., *Professor of Psychiatry and Anatomy.*  
 Robert J. Stoller, M.D., *Professor of Psychiatry.*  
 George Tarjan, M.D., *Professor of Psychiatry and Public Health in Residence.*  
 Charles W. Tidd, M.D., *Professor of Psychiatry.*  
 Frederic G. Worden, M.D., *Professor of Psychiatry.*  
 Henry H. Work, M.D., *Professor of Psychiatry and Public Health (Acting Chairman of the Department).*  
 Justin D. Call, M.D., *Associate Professor of Psychiatry.*  
 Pietro Castelnuevo-Tedesco, M.D., *Associate Professor of Psychiatry in Residence.*  
 Samuel Eiduson, Ph.D., *Associate Professor of Biological Chemistry and Psychiatry in Residence.*  
 Frank M. Hewett, Ph.D., *Associate Professor of Medical Psychology in Residence and Associate Professor of Education.*  
 Edward J. Kollar, M.D., *Associate Professor of Psychiatry.*  
 Henry Lesse, M.D., *Associate Professor of Psychiatry in Residence.*  
 Arnold J. Mandell, M.D., *Associate Professor of Psychiatry in Residence.*  
 Lowell H. Storms, Ph.D., *Associate Professor of Medical Psychology in Residence.*  
 Charles W. Wahl, M.D., *Associate Professor of Psychiatry.*  
 Frederick D. Abraham, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 William C. Beckwith, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Martha E. Bernal, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Robert J. Bonkowski, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Alexander B. Caldwell, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 J. Alfred Cannon, M.D., *Assistant Professor of Psychiatry and Public Health in Residence.*  
 Roberta Crutcher, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Robert B. Edgerton, Ph.D., *Assistant Professor of Anthropology in Residence.*  
 Louise D. Epps, Ph.D., *Assistant Professor of Psychiatry in Residence.*  
 Edward Geller, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*  
 Joshua S. Golden, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Roderic Gorney, M.D., *Assistant Professor of Psychiatry and Social Welfare in Residence.*

- Frederick Gottlieb, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Roger L. Gould, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Peter B. Gruenberg, M.D., *Assistant Professor of Psychiatry in Residence.*  
 John Hanley, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Lewis L. Judd, M.D., *Assistant Professor of Psychiatry and Psychology in Residence.*  
 Anthony Kales, M.D., *Assistant Professor of Psychiatry in Residence.*  
 John G. Kennedy, Ph.D., *Assistant Professor of Anthropology and Psychiatry in Residence.*  
 Boyd M. Krout, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Calista V. Leonard, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Gayle G. Marsh, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Thelma S. Moss, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Edward M. Ornitz, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Robert O. Pasnau, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Morris J. Paulson, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Walter J. Raine, Ph.D., *Assistant Professor of Medical Psychology in Residence.*  
 Edward R. Ritvo, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Rita R. Rogers, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Alexander C. Rosen, Ph.D., *Assistant Professor of Medical Psychology and Psychology in Residence.*  
 Robert T. Rubin, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Paul F. Slawson, M.D., *Assistant Professor of Psychiatry in Residence.*  
 John M. Suarez, M.D., *Assistant Professor of Psychiatry in Residence.*  
 J. Thomas Ungerleider, M.D., *Assistant Professor of Psychiatry in Residence.*  
 Arthur Yuwiler, Ph.D., *Assistant Professor of Biological Chemistry in Residence.*  
 Leila Beckwith, Ph.D., *Instructor in Medical Psychology in Residence.*  
 Bertram Goldstein, M.D., *Instructor in Psychiatry in Residence.*  
 Joyce V. Kasmar, Ph.D., *Instructor in Medical Psychology in Residence.*  
 Douglas R. Schiebel, Ph.D., *Instructor in Medical Psychology in Residence.*  
 Charles B. Stone, M.D., *Instructor in Psychiatry in Residence.*  
 Roland C. Summit, M.D., *Instructor in Psychiatry in Residence.*



- Marvin Brown, M.S.W., *Lecturer in Social Work.*  
 Keith S. Ditman, M.D., *Lecturer in Psychiatry.*  
 Hanna Fenichel, Ph.D., *Associate in Psychiatry.*  
 Barbara S. Frederich, M.S.W., *Associate in Social Work.*  
 Florence Frisch, M.S.W., *Associate in Social Work.*  
 Nancy L. Glick, M.S.W., *Associate in Social Work.*  
 Betty L. Harker, M.S.S., *Lecturer in Social Work.*  
 Nancy W. Kirshberg, M.S.W., *Associate in Social Work.*  
 Norma E. Lappen, M.S.W., *Associate in Social Work.*  
 Perry C. Lessin, M.S.W., *Associate in Social Work.*  
 Irene Paulson, M.S.W., *Associate in Social Work.*  
 Frederick R. Penrose, M.S.W., *Associate in Social Work.*  
 Dolores I. Rodriguez, M.S.W., *Associate in Social Work.*  
 Margarete Ruben, *Associate in Psychiatry.*  
 Barbara R. Salkin, M.S.W., *Associate in Social Work.*  
 Beverly Sanborn, M.S.W., *Associate in Social Work.*  
 Anne D. Stevenson, M.S.W., *Associate in Social Work.*

## Program

The Department of Psychiatry in cooperation with the Departments of Anthropology and Sociology offers an advanced training program in social and community psychiatry leading to the new degree of Master of Social Psychiatry (M.S.P.). The Department cooperates with the School of Public Health in offering courses leading to the degree of Master of Public Health. Curriculum requirements are described in the UCLA ANNOUNCEMENT OF THE SCHOOL OF PUBLIC HEALTH and on page 132 of this bulletin. In addition the Department participates in an interdisciplinary program of mental health research training.

### Master of Social Psychiatry Degree

The two-year program for the Master of Social Psychiatry degree, largely funded by the National Institute of Mental Health, includes training in statistical methods, interdisciplinary research, pertinent social science training, mental health consultation and group dynamics. Also included is training in organization and administration of community mental health services with appropriate field placement. Special emphasis is given to the interdisciplinary team approach in attempting to understand the crucial variables in community structure and in seeking solutions to mental health problems of populations particularly associated with poverty, minorities, and related urban crises.

### Admission Requirements for the Master of

#### Social Psychiatry Degree

Requirements for admission are acceptance by the UCLA Graduate Division, approval of the staff of the Division of Social and Community Psychiatry, an M.D. degree and completion of at least two years of psychiatric residency training at a center approved by the American Board of Psychiatry and Neurology.

Three types of applicants are eligible for admission to the degree program: 1) applicants who have completed three years of an approved psychiatric residency and who are funded by two-year stipends from the National Institute of Mental Health, 2) third year psychiatric residents at UCLA who may combine their last year of residency with the first year of the degree program and complete the program the following year, and 3) selected applicants in the UCLA child psychiatry training program who combine training in child psychiatry and social and community psychiatry.

## Degree Requirements

With the consent of his faculty adviser, each candidate must pursue one of the following plans for the Master of Social Psychiatry degree. Under either plan, all requirements for the degree must be satisfied within one calendar year from the time of completion of course requirements.

**Thesis Plan.** At least 9 courses in the graduate or upper division level and a thesis are required. No less than 5 of the 9 courses must be in the graduate level 400 or 500 series of social psychiatry. After these requirements are met, the candidate may select any course in the 100 or 200 series (a minimum of three courses in the Departments of Anthropology or Sociology is required), subject to approval by the graduate adviser.

**Comprehensive Examination Plan.** A minimum of 11 courses of graduate and upper division level are required, of which at least 6 courses must be in the graduate level 400 or 500 series of social psychiatry. After these requirements are met, the student may select any course in the 100 or 200 series (a minimum of three courses in the Departments of Anthropology or Sociology is required), subject to approval by the graduate adviser. The comprehensive written and oral examination will cover the following subject areas: (a) Community psychiatry administration theory and practice; (b) Mental health consultation theory and application; (c) The social sciences in psychiatry; (d) Research methods in social psychiatry.

**Required Courses.** Mandatory courses for the Master of Social Psychiatry degree are: (a) Social Psychiatry in Theory and Practice (Psychiatry 454A-454B); (b) Statistics (Psychiatry 461, Public Health 160A, Sociology 110A, or Psychology 250A); (c) Concepts of Mental Health Consultation (Psychiatry 456A-456B); (d) Research Methods in Social Psychiatry (Psychiatry 457A-457B); (e) Administration in Community Psychiatry (Psychiatry 460A-460B).

### Upper Division Courses

#### 105. The Social Sciences in Psychiatry.

(Same as Anthropology 101.) Prerequisite: consent of the instructor. An introduction to the fields of social psychology, sociology, cultural anthropology, and ethology. Mr. Kennedy

### Graduate Courses

#### 200. Basic Concepts in Psychiatry. (½ course)

The psychiatric disorders are studied to aid the research worker. Problems of behavior evaluation and symptom development are considered. Mr. Kales

## 201. Contemporary Problems in Behavioral Experimentation. (½ course)

Animal and human research in the behavioral sciences will be reviewed. Specific subject matter will vary according to the interests of the students.  
The Staff

### Professional Courses

## 454A-454B. Social Psychiatry in Theory and Practice. (½ course each)

(Formerly numbered 255A-255B.) Prerequisite: graduate standing in social science discipline and consent of the instructor. Introduction to problem areas of social and community psychiatry.  
Mr. Cannon

## 455. Introduction to Community Structure. (½ course)

Prerequisite: graduate standing in social science discipline and consent of the instructor. Coordinated field visits and seminars to provide an understanding of the relationship between institutions observed and the mental health field.  
Mr. Cannon

## 456A-456B. Concepts of Mental Health Consultation.

(Formerly numbered 251.) Lecture, two hours; field placement, six hours. Prerequisite: graduate standing in social science discipline and consent of the instructor. Course 456A is prerequisite for course 456B. Review of major theories of consultation and presentation of techniques for dealing with common problems of consultant-client interactions.  
Mr. Cannon

## 457A-457B. Research Methods in Social Psychiatry. (½ course each)

Prerequisite: graduate standing in social science discipline and consent of the instructor. Course 457A is prerequisite for course 457B. Emphasis upon in-

terdisciplinary evolution of social psychiatric research methods.  
Mr. Kennedy

## 458. Problems in Culture and Mental Health. (½ course)

(Formerly numbered 250.) Prerequisite: graduate standing in social science discipline and consent of the instructor. Study of the mental health patterns of various ethnic and social class groups.  
Mr. Kennedy

## 460A-460B. Administration in Community Psychiatry.

(Formerly numbered 253A-253B.) Lecture, two hours; field placement, six hours. Prerequisite: graduate standing in social science discipline and consent of the instructor. Review of administrative practices in operating community-based mental health programs, including psychiatric hospitals, outpatient services, and community clinics.  
Mr. Tallman

## 461. Statistical Methods in Social Psychiatry. (½ course)

Lecture, two hours; laboratory, two hours. Prerequisite: graduate standing in Social and Community Psychiatry. Statistical methods appropriate for community mental health research. Problems in measurement of human behavior, descriptive statistics, parametric and nonparametric tests of group differences, correlation and partial correlation. Emphasis on appropriate use of statistical techniques especially in field study designs.  
Mrs. Epps

### Individual Study and Research

## 596. Special Studies in Social Psychiatry. (½ to 1 course)

Prerequisite: advanced graduate standing in Social and Community Psychiatry. A course of independent study designed for advanced graduate students in social psychiatry who desire to specialize in an area involving supervised research and study. The Staff

# ■ PSYCHOLOGY

(Department Office, 1283 Franz Hall)

William E. Broen, Jr., Ph.D., *Professor of Psychology.*  
Harry W. Case, Ph.D., *Professor of Psychology and Engineering.*  
Richard Centers, Ph.D., *Professor of Psychology.*  
James C. Coleman, Ph.D., *Professor of Psychology and Education.*  
Andrew L. Comrey, Ph.D., *Professor of Psychology.*  
Seymour Feshbach, Ph.D., *Professor of Psychology.*  
Joseph A. Gengerelli, Ph.D., *Professor of Psychology.*  
Milton E. Hahn, Ph.D., *Professor of Psychology.*  
Wendell E. Jeffrey, Ph.D., *Professor of Psychology.*  
F. Nowell Jones, Ph.D., *Professor of Psychology (Chairman of the Department).*  
Harold H. Kelley, Ph.D., *Professor of Psychology.*  
George F. J. Lehner, Ph.D., *Professor of Psychology.*  
Donald B. Lindsley, Ph.D., *Professor of Psychology and Physiology.*  
O. Ivar Lovaas, Ph.D., *Professor of Psychology.*  
John H. Lyman, Ph.D., *Professor of Engineering and Psychology.*  
Irving Maltzman, Ph.D., *Professor of Psychology.*  
Allen Parducci, Ph.D., *Professor of Psychology.*  
Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and Psychology.*

- Bertram H. Raven, Ph.D., *Professor of Psychology.*  
 Eliot H. Rodnick, Ph.D., *Professor of Psychology.*  
 John P. Seward, Ph.D., *Professor of Psychology.*  
 Joseph G. Sheehan, Ph.D., *Professor of Psychology.*  
 Marion A. Wenger, Ph.D., *Professor of Psychology.*  
 Roy M. Dorcus, Ph.D., *Emeritus Professor of Psychology and Emeritus Professor of Psychology in the School of Medicine.*  
 Howard C. Gilhousen, Ph.D., *Emeritus Professor of Psychology.*  
 Richard P. Barthol, Ph.D., *Associate Professor of Psychology.*  
 Edward C. Carterette, Ph.D., *Associate Professor of Psychology.*  
 Kent Dallett, Ph.D., *Associate Professor of Psychology.*  
 Morton P. Friedman, Ph.D., *Associate Professor of Psychology.*  
 Michael J. Goldstein, Ph.D., *Associate Professor of Psychology.*  
 James B. MacQueen, Ph.D., *Associate Professor of Psychology and Business Administration in Residence.*  
 George E. Mount, Ph.D., *Associate Professor of Psychology.*  
 Charles Y. Nakamura, Ph.D., *Associate Professor of Psychology.*  
 Donald Novin, Ph.D., *Associate Professor of Psychology.*  
 Jessie L. Rhulman, Ed.D., *Associate Professor of Psychology.*  
 David O. Sears, Ph.D., *Associate Professor of Psychology.*  
 Thomas R. Trabasso, Ph.D., *Associate Professor of Psychology.*  
 S. Carolyn Fisher, Ph.D., *Emeritus Associate Professor of Psychology.*  
 Armand A. Alkire, Ph.D., *Assistant Professor of Psychology in Residence and Assistant Research Psychologist.*  
 Peter M. Bentler, Ph.D., *Assistant Professor of Psychology.*  
 Bradley D. Bucher, Ph.D., *Assistant Professor of Psychology.*  
 Barry E. Collins, Ph.D., *Assistant Professor of Psychology.*  
 Walter J. Dowling, Ph.D., *Assistant Professor of Psychology.*  
 Allen E. Edwards, Ph.D., *Assistant Professor of Psychology in Residence.*  
 Caylord D. Ellison, Ph.D., *Assistant Professor of Psychology.*  
 James E. Gardner, Ph.D., *Assistant Professor of Psychology and Public Health in Residence.*  
 Edward Gould, Ph.D., *Assistant Professor of Psychology in Residence and Assistant Research Psychologist.*  
 Barbara A. Henker, Ph.D., *Assistant Professor of Psychology.*  
 Eric W. Holman, Ph.D., *Assistant Professor of Psychology.*  
 John P. Houston, Ph.D., *Assistant Professor of Psychology.*  
 Ian Hunter, Ph.D., *Assistant Professor of Psychology in Residence.*  
 Allan L. Jacobson, Ph.D., *Assistant Professor of Psychology.*  
 Margaret A. Jacobson, Ph.D., *Assistant Professor of Psychology in Residence.*  
 Lewis L. Judd, M.D., *Assistant Professor of Psychology and Psychiatry in Residence.*  
 Franklin B. Krasne, Ph.D., *Assistant Professor of Psychology.*  
 John C. Liebeskind, Ph.D., *Assistant Professor of Psychology.*  
 Donald C. MacKay, Ph.D., *Assistant Professor of Psychology.*  
 Millard C. Madsen, Ph.D., *Assistant Professor of Psychology.*  
 Albert Mehrabian, Ph.D., *Assistant Professor of Psychology.*  
 Ira A. Nathanson, Ph.D., *Assistant Professor of Psychology in Residence.*  
 Alexander C. Rosen, Ph.D., *Assistant Professor of Psychology and Medical Psychology in Residence.*  
 Robert Schwitzgebel, Ed.D., Ph.D., *Assistant Professor of Psychology.*  
 Manuel J. Smith, Ph.D., *Assistant Professor of Psychology in Residence and Assistant Research Psychologist.*  
 James P. Thomas, Ph.D., *Assistant Professor of Psychology.*  
 Crayton C. Walker, Ph.D., *Assistant Professor of Psychology.*

Bernard Weiner, Ph.D., *Assistant Professor of Psychology.*



Howard S. Adelman, Ph.D., *Lecturer in Psychology.*

Albert J. Ahumada, Ph.D., *Assistant Research Psychologist.*

Dorothy V. Anderson, Ph.D., *Assistant Clinical Professor of Psychology.*

Gertrude Baker, Ph.D., *Associate Clinical Professor of Psychology.*

Alan A. Benton, Ph.D., *Assistant Research Psychologist.*

Frances B. Berres, Ph.D., *Supervisor in the Fernald School.*

Florry P. Bowen, Ph.D., *Lecturer in Psychology.*

Daphne E. Bugental, Ph.D., *Assistant Research Psychologist.*

Edward L. Burke, Ph.D., *Lecturer in Psychology and Supervisor of Teaching in the Fernald School.*

Matthew W. Buttiglieri, Ph.D., *Associate Clinical Professor of Psychology.*

William M. Cannon, Ph.D., *Lecturer in Psychology.*

Maury T. Carlin, Ph.D., *Lecturer in Psychology.*

Phillip M. Carman, Ph.D., *Associate Clinical Professor of Psychology.*

James T. Culbertson, Ph.D., *Visiting Research Psychologist.*

Thomas D. Cullen, Ph.D., *Assistant Research Psychologist.*

Carl A. Faber, Ph.D., *Lecturer in Psychology.*

Linda Fleischer, M.A., *Acting Assistant Professor of Psychology.*

Harry M. Grayson, Ph.D., *Clinical Professor of Psychology.*

Charlyne T. Herbert, Ph.D., *Associate Clinical Professor of Psychology.*

Evelyn Gentry Hooker, Ph.D., *Research Psychologist.*

Harrington V. Ingham, M.D., *Associate Clinical Professor of Psychiatry and Psychology.*

Newton L. P. Jackson, Jr., Ph.D., *Assistant Research Psychologist.*

Margaret Hubbard Jones, Ph.D., *Research Psychologist in Education and Psychology.*

F. Monroe Ledyard, Ph.D., *Lecturer in Psychology.*

Leonore Rice Love, Ph.D., *Lecturer in Psychology.*

Charles D. McCarthy, Ph.D., *Associate Clinical Professor of Psychology.*

John H. McCormack, Ph.D., *Associate Clinical Professor of Psychology.*

Anstiss McIver, Ph.D., *Assistant Research Psychologist.*

John W. McKelligott, Ph.D., *Associate Clinical Professor of Psychology.*

Wilbur E. Morley, Ph.D., *Lecturer in Psychology.*

James O. Palmer, Ph.D., *Assistant Clinical Professor of Medical Psychology and Psychology.*

Thomas W. Richards, Ph.D., *Clinical Professor of Psychology.*

Bruce D. Rubenstein, Ph.D., *Lecturer in Psychology.*

George F. Seacat, Ph.D., *Clinical Professor of Psychology.*

David Shapiro, Ph.D., *Visiting Assistant Professor of Psychology.*

Zanwil Sperber, Ph.D., *Lecturer in Psychology.*

George Sperling, Ph.D., *Acting Associate Professor of Psychology.*

Leonard V. Wendlund, Ph.D., *Associate Clinical Professor of Psychology.*

Barbara Stewart Wilbur, Ph.D., *Associate Clinical Professor of Psychology.*

Kenneth Ziedman, Ph.D., *Lecturer in Psychology.*

**Extra-Departmental Requirements.** Biology 1A-1B-1C or Biology 2; Mathematics 3A or Mathematics 3A.

**Premajor Courses.** Psychology 10.

**Major Courses.** Psychology 110, 115, 120, 125, 135, 141, either 111 or 121, and one of 116, 126, or 136, plus upper division courses to total nine.

**Related Courses.** Six upper division courses are required, divided among not more than two related departments, with the related departments being anthropology, chemistry, linguistics, mathematics, philosophy, physics, political science, sociology, and zoology.

**Preparation for Graduate Work in Psychology.** Although specific requirements for ad-

mission to graduate programs in most universities will be met by the general major, the student should realize that his graduate work may be impeded or prolonged in certain areas of psychology if special preparation is not obtained at the undergraduate level. For this reason, students who plan to continue academic work in psychology beyond the bachelor's degree are urged to consult with their advisers very early in their college careers.

Three particularly specialized areas require emphasis. The first is psychobiology in which strong preparation in biology, chemistry and physics should be obtained. With the permission of an adviser, students indicating an interest in psychobiology will be permitted to substitute two advanced courses in zoology for two of the elective courses in psychology required for the major. These courses would not count as work in a related department although they would not preclude additional work in zoology to meet that requirement. The second is quantitative psychology. Students interested in quantitative psychology are referred to the joint psychology-mathematics major or, with the consent of an adviser, may substitute two advanced courses in mathematics for two of the elective courses in psychology required for the major. In addition they may elect to take additional courses in mathematics which would count toward the satisfaction of the course requirements in a related department. The third is social psychology. Students interested in this area may, with the consent of an adviser, offer two advanced courses in anthropology, political science, or sociology in place of two elective courses in psychology required for the major, and may in addition offer courses in these areas toward the course requirements in related departments.

Students who expect to study for the Ph.D. would be well advised to devote as many elective courses as possible to the area which is most germane to their field of research interest. They should also plan to give some time to the acquisition of a reading knowledge of one or two foreign languages which might be required for the Ph.D. Our Department currently requires one language or a substitute program, but at many universities two languages are required.

*Transfer Students and Those Changing to Psychology.* Such persons should consult an adviser regarding a program of study designed to absolve extra-departmental and premajor requirements. Psychology 101 is acceptable in lieu of Psychology 10.

*Prerequisites to Courses.* These are listed for each course. For a limited number of courses (see page 426), course 10 or 101 is the only prerequisite.

*Honors Program in Psychology.* Students who have distinguished themselves in the premajor courses and in other academic work will be considered for participation in the honors program. Admission into the program is based upon recommendations by the Honors Program Committee; students are selected usually at the beginning of their junior year. Participation in the program entails permission to enroll in the honors seminar in psychology and to pursue self-study and research in the area of the student's choice under the tutorial guidance of one or more members of the committee.

*Psychology-Mathematics Curriculum.* This curriculum is described on page 76.

#### Graduate Requirements

All students should obtain from the departmental office a statement of the graduate requirements in psychology.

The Department offers the M.A. and Ph.D. degrees in psychology. For the Ph.D. degree, all students are required to obtain thorough grounding in research methodology and psychological theory. Specialized training is available in such areas of psychology as child development, clinical, comparative, counseling, engineering, human and animal learning, industrial, mathematical, measurement, perception and psychophysics, personality and psychopathology, physiological, psychometrics and social psychology.

#### Admission to the Graduate Program

In addition to meeting the general graduate requirements listed on page 28 of this bulletin, students must be admitted to the Department by a selection committee within the Department. Graduate enrollment is limited and candidates will be chosen on the following bases: (1) prior scholastic performance; (2) ratings and recommendations by professors and other individuals; (3) autobiographical material; (4) scores on the Graduate Record Examination (verbal, quantitative and psychology subtests) and on the Miller Analogies Test. Application materials may be obtained by writing to the Department of Psychology, Admissions Committee, University of California, Los Angeles, California 90024. The completed departmental forms and transcripts must be received by February 15 for consideration for the following fall quarter. Normally, all applicants will

have had an undergraduate major in psychology, but outstanding students who have majored in other areas will be considered. Late applications will be considered but preference must be given to those who meet the February 15 deadline.

#### Requirements for the M.A. and Ph.D. Degrees

All entering graduate students must during their first year take certain core courses and otherwise prepare themselves for comprehensive examinations in a number of specified areas. Evaluation of the student's total performance during his first year will determine whether he will be permitted to continue his studies toward the Ph.D. degree. A student entering graduate work with an M.A. degree or advanced graduate standing from another university will not automatically be exempted from any part of our graduate program. He may petition to substitute prior course work for departmental requirements or to demonstrate equivalent knowledge through examinations.

**M.A. Degree.** The Department does not admit candidates for the M.A. degree only, and the M.A. degree is not required of candidates for the Ph.D. degree; however, graduate students preparing for the Ph.D. normally qualify and apply for the M.A. degree after satisfactory completion of the core courses and area examinations. The Department follows the Comprehensive Examination Plan. See page 138. A thesis is not required for the M.A. degree.

**Ph.D. Degree.** Eligibility for an oral qualifying examination and admission to candidacy requires prior qualification in the departmental core courses, qualification in comprehensive examinations in areas of the candidate's specialization, and the passing of a reading comprehensive examination in one approved foreign language. Some students may substitute a course program in research methods for the language requirement. The oral qualifying examination is administered by a committee of not less than five persons, three from the Department and two from other departments. Each student must complete a satisfactory doctoral dissertation approved by his adviser and other members of the doctoral committee, after which he must pass a final oral examination on the dissertation and its implications.

#### Fellowships, Scholarships, Assistantships, and Stipends

At the present time almost all graduate students obtain work in the profession as

assistants or trainees, or receive one of the many fellowships available within and without the University. Graduate students may also receive some financial assistance by serving as course readers.

#### Lower Division Courses

##### 10. Introductory Psychology.

(Formerly numbered 1A.) A general introduction including the topics of learning, perception, thinking, intelligence and personality.

Mr. Gengerelli, Mr. Parducci, Mr. Trabasso

##### 12. Introductory Physiological Psychology.

An introduction to psychobiological problems.

Mr. Ellison, Mr. Gengerelli, Mr. Liebeskind

##### 70. Psychology of Human Relations.

An introduction to the theory and principles of personal growth and interpersonal effectiveness. Both intra- and interpersonal dynamics are reviewed.

Mr. Lehner

#### Upper Division Courses

Psychology 10 or 101 is prerequisite to all courses except 149.

##### 101. Principles of Psychology.

Open to upper division students who do not have credit for course 10. A critical discussion of the basic topics in psychology.

Mr. Gengerelli

##### 102. History and Systems of Psychology.

(Formerly numbered 120.) Prerequisite: senior standing or consent of the instructor. An historical and systematic analysis of psychological thought and points of view.

Mr. Jones

##### 110. Fundamentals of Learning.

(Formerly numbered 137.) Experimental findings on animal and human conditioning; retention and transfer of training; the relation of learning and motivation. The course is intended to provide an empirical basis for theory and research in this area.

Mr. Houston, Mr. Jacobson, Mr. Seward

##### 111. Learning Laboratory. (½ course)

Prerequisite or concurrent: course 110. Laboratory experience with techniques in the study of learning, especially with animals.

Mr. Houston, Mr. Jacobson, Mr. Seward

##### 112A-112E. Preseminars in Learning.

Prerequisite: course 110. May be taken independently and in any order. Advanced topics in learning, detailed analyses of theories and research in selected areas, for example:

###### 112A. Human Learning.

Acquisition, retention, and transfer of verbal and nonverbal human learning.

Mr. Dallett

###### 112B. Theories of Learning.

Critical discussion of the major theories in the light of experimental evidence.

Mr. Seward

###### 112C. Thinking.

(Formerly numbered 135.) An analysis of experimental studies of problem solving, reasoning, insight, concept formation, and related topics.

Mr. Maltzman

###### 112D. Motivation.

Theories and experimentally determined facts concerning drives, needs, preferences, and desires.

Mr. Seward

**112E. Applications of Behavioral Principles.**

Prerequisite: consent of the instructor. A consideration of some of the problems of education, therapy, and related endeavors, and of the contributions that reinforcement principles offer to solution of these problems. Mr. Jacobson

**115. Physiological Psychology.**

(Formerly numbered 108.) Prerequisite: Biology 1A-1B-1C or Biology 2 or consent of the instructor. Integrative activities, receptor and effector processes in relation to neuromuscular structure and function. Facts, problems, and methods.

Mr. Ellison, Mr. Gengerelli, Mr. Liebeskind

**116. Physiological Psychology Laboratory.**

(½ course)

Prerequisite or concurrent: course 115. Laboratory experience with various topics in physiological psychology.

Mr. Ellison, Mr. Liebeskind, Mr. MacKay

**117A-117B. Preseminars in Physiological Psychology.**

(Formerly numbered 138 and 150A.) Prerequisite: course 115 or Zoology 109. May be taken independently and in any order. Advanced topics in physiological psychology, for example:

**117A. Feeling and Emotion.**

The nature and basis of the affective factor in life with particular emphasis on the critical evaluation of affective theory. Mr. Wenger

**\* 117B. Comparative Psychobiology.**

A survey of the determinants of species-specific behavior including genetic influences and learning. Mr. Krasne

**120. Perception.**

(Formerly numbered 131.) Methods and approaches to the study of perception. Experimental results, theoretical interpretations, and demonstrations. Mr. Carterette, Mr. Dowling, Mr. Friedman

**121. Perception Laboratory. (½ course)**

Prerequisite or concurrent: course 120. Laboratory experience with various topics in perception.

Mr. Carterette, Mr. Dowling, Mr. Friedman

**122. Language and Communication.**

(Formerly numbered 142.) Prerequisite: course 141 or consent of the instructor. A survey of language behavior, communication and speech perception, including acquisition, sequential structure, and semantic aspects. Recent developments in linguistics, theory of information transfer, analysis and synthesis of speech. Social communication. Aphasia and speech pathology. Animal communication.

Mr. Carterette, Mr. Mehrabian

**123. Psycholinguistics.**

(Same as Linguistics 123.) A survey of current theory and research in Psycholinguistics: the description of language in generative grammars; the acquisition of language by children; experiments on speech recognition, production and comprehension; errors in speech perception and production; speech physiology and pathology. Mr. MacKay

**\*124. Preseminars in Perception.**

Advanced consideration of special topics. May be repeated for credit.

**125. Personality.**

(Formerly numbered 148.) The physiological, behavioral, and cultural role of perception, learning, and motivation in personality. These topics will be discussed in the context of current research and major theories.

Mr. Comrey, Mr. Mehrabian, Mr. Weiner

**126. Personality Laboratory. (½ course)**

Prerequisite or concurrently with special permission: course 125. Laboratory experience with various topics in personality. Mr. Mehrabian

**127. Abnormal Psychology.**

(Formerly numbered 168.) Study of the dynamics and prevention of abnormal behavior, including neuroses, psychoses, character disorders, psychosomatic reactions and other abnormal personality patterns. Mr. Goldstein, Miss Henker

**128. Structure of Individual Differences.**

(Formerly numbered 188.) The logical and experimental approaches to human aptitudes, abilities, and interests as used in counseling. Mental organization, physiological and psychological traits, individual and group educational-vocational-personality characteristics, derivation of interest and ability pattern, pattern analysis and its counseling applications. (Nonmajors see course 428.) Mr. Hahn

**\*129. Preseminars in Personality.**

Advanced topics in personality. May be repeated for credit.

**130. Developmental Psychology.**

(Formerly numbered 112.) An elaboration of the developmental aspects of physical, mental, social, and emotional growth from birth to adolescence.

Mr. Madsen, Mr. Schwitzgebel

**\*131. Developmental Psychology Laboratory.**

(½ course)

Prerequisite or concurrent: course 130. Observation and experimentation in developmental psychology.

**132A. Learning Disorders.**

(Formerly numbered 167A.) An examination of the psychological factors underlying the understanding, diagnosis and treatment of reading and other learning disorders in children, adolescents and young adults. Mr. Adelman

**132B. Learning Disorders: Laboratory.**

(½ to 1 course)

(Formerly numbered 167B.) Prerequisite or concurrently: course 132A. This course provides supervised laboratory experience with remedial cases in the Fernald School. May be repeated for credit to a maximum of two courses. Mr. Rubenstein

**133A-133B-133C. Preseminars in Developmental Psychology.**

Prerequisite: course 130 or consent of the instructor. May be taken independently and in any order. Treatment of special and advanced topics in developmental psychology, for example:

**133A. Adolescence.**

(Formerly numbered 113.) The physical, psychological and social development of the adolescent.

Miss Rhulman

\* Not to be given, 1968-1969.

\*133B. Exceptional Children.  
(Formerly numbered 161.) An analysis of psychological factors pertaining to the etiology and treatment of deviant behavior in children. Emphasis will be on learning theory analysis of psychotic children. Mr. Lovaas

\*133C. Aging.  
The psychological problems of later maturity and old age.

### 134. Educational Psychology.

(Formerly numbered 110.) A general survey of the basic principles of psychology that are pertinent to education. Includes a study of growth and development, abilities, intelligence, social and emotional factors, and principles of learning. Miss Ruhlman

### 135. Social Psychology.

(Formerly numbered 145.) The interrelationships between the individual and his social environment. Social influences upon motivation, perception and behavior. The development and change of attitudes and opinions. Psychological analysis of small groups, social stratification and mass phenomena.

Mr. Centers, Mr. Collins, Mr. Raven

### 136. Social Psychology Laboratory. (½ course)

Prerequisite or concurrent: course 135. Laboratory experience with such topics as small group behavior, attitude measurement, and interpersonal influence.

Mr. Kelley, Mr. Raven

### 137A-137B-137C. Preseminars in Social Psychology.

Prerequisite: course 135. Advanced topics in social psychology. May be taken independently and in any order.

137A. Group Behavior.  
Psychology of interdependence, group membership, leadership, and social influence. Mr. Kelley

137B. Attitude Formation and Change.  
Effects of propaganda, personal influence, socialization and social structure on private attitudes and public opinion. Mr. Sears

137C. Survey Research in Psychology.  
The nature of attitudes and opinions, and their measurement by means of attitude scales and public opinion surveys. Class projects and field work.

Mr. Centers

### 141. Elementary Statistics in Psychology.

(Formerly numbered 105.) Prerequisite: Mathematics 2A or 3A. Students who have credit for any other course in statistics will normally receive one-fourth course credit for the course. Full course credit may be granted by petition where it is judged that the overlap of contents is insignificant. Measures of central tendency, variability and correlations. Applications of statistical inference to research in psychology. Reliability and validity of psychological tests and measurements.

Mr. Comrey, Mr. Trabasso, Mr. Walker

### 142. Advanced Psychometric Methods.

(Formerly numbered 107.) Prerequisite: course 141. The application of higher statistical methods to psychological data.

Mr. Comrey, Mr. Trabasso, Mr. Walker

### 143. Foundations of Psychological Investigation.

(Formerly numbered 106.) Prerequisite: course

141. Outline and examination of concepts associated with psychological investigation and the interpretation of results. Readings, discussions and reports, individual and class projects. Mr. Mount

### 144. Psychological Tests and Evaluation.

(Formerly numbered 111.) Prerequisite: course 141. Further study of the principles of measurement, stressing basic concepts. Application to problems of test construction, administration, and interpretation. Mr. Broen

### 148. Personnel and Industrial Psychology.

(Formerly numbered 185 and 187.) Students who have credit for either the courses formerly numbered 185 or 187 will receive one-half course credit for this course. Introduction to the applications of psychology in industry and business. Mr. Case

### 149. Problems in Human Relations.

(Formerly numbered 181.) Understanding human relations problems and developing skills in interpersonal relations. Topics include the effective use of human resources; group management and leadership skills; interviewing, counseling, and conference techniques. Mr. Barthol

### 184. Disorders of Human Communication.

(Formerly numbered 162.) A clinical approach to speech problems with emphasis on stuttering and neurological disorders and their treatment.

Mr. Sheehan

### 188A-188B-188C. Psychology of Music.

(Formerly numbered 172A-172B.) A study of the psychological factors and problems in music from the points of view of the listener, a performer, and composer. Mr. Petran

### 189. Psychological Approaches to the Social Sciences.

(Formerly numbered 147.) An analysis of the contribution of current psychological theory and research to the understanding of selected historical, social, and political problems. Mr. Sears

### 190A-190B-190C. Honors Course.

Prerequisite: invitation by departmental honors committee. Opportunity for the development of creative ideas and their implementation by experimental research. Mr. Houston, Mr. Sears

### \*198. Senior Seminars in Psychology.

Prerequisite: senior standing in psychology and consent of the instructor. Seminars on special topics according to staff interests.

### 199. Special Studies in Psychology. (½ to 1 course)

Prerequisite: senior standing and consent of instructor. May be repeated for total of two full courses. Individual study. The Staff

### Graduate Courses

### 200. Learning.

An intensive study of experimentation on the fundamental processes: reinforcement, extinction, generalization, and discrimination. The Learning Staff

### 201. Advanced Learning.

(Formerly numbered 219.) A critical analysis of contemporary theory and research. The Staff

\* Not to be given, 1968-1969.

**202. Verbal Behavior and Thinking.**

(Formerly numbered 218.) Experimental research and theories dealing with such topics as meaning, verbal conditioning, problem solving, originality, and normal and schizophrenic thinking.

Mr. Maltzman

**204A-204B-204C. Seminar in Critical Problems in Learning.**

(Formerly numbered 290.) May be taken independently and in any order. Critical problems will be drawn from such as the following:

**\*204A. Conditioning.**

Consideration of selected empirical topics relevant to operant and respondent conditioning paradigms.

Mr. Jacobson

**204B. Human Learning.**

Acquisition, retention, and transfer of verbal and nonverbal human learning.

Mr. Dallett

**204C. Behavior Theory.**

Theoretical and experimental analyses of orienting and defensive reflexes, and their implications for theories of learning, motivation, and abnormal behavior.

Mr. Maltzman

**205. Physiological Correlates of Behavior.**

(Formerly numbered 204.) Prerequisite: Section 1: graduate standing; Section 2: course 115 or equivalent and consent of the instructor. The physiological substrate of behavior and the neural and endocrine mechanisms which underlie psychological phenomena and behavior. New concepts of structural and functional organization in the nervous system and the ways these relate to behavioral and neurological dysfunction.

The Physiological Staff

**206. Psychophysiology of Brain Function.**

(Formerly numbered 228.) Modern concepts of the functional organization of the brain with particular reference to psychological phenomena and behavior. Recent advances in neurophysiology and electroencephalography bearing on perception, attention, drive, sleep-wakefulness, levels of consciousness, etc. Some emphasis on pathology of behavior resulting from brain injury.

Mr. Lindsley

**207A-207B-\*207C. Seminar in Physiological Psychology.**

(Formerly numbered 253A-253B.) Prerequisite: course 115 or the equivalent.

Mr. Ellison, Mr. Gengerelli

**\*208. Seminar in Comparative Psychobiology.**

Mr. Krasne

**211. Perception.**

(Formerly numbered 201.) Basic experiments and theories of perception and judgment, with applications to learning, motivation, and personality. Laboratory demonstrations and individual experiments.

The Perception Staff

**212. Advanced Perception.**

Advanced study of topics in perception with emphasis on theories of perception.

Mr. Carterette

**213. Psychology of Vision.**

An advanced treatment of psychophysiology and psychophysics of vision with special attention to modern theories.

Mr. Thomas

**214. Psychology of Audition.**

An advanced treatment of the psychophysiology and psychophysics of audition with special attention to modern theories.

Mr. Carterette

**\*215. Psychology of Somesthesia and the Chemical Senses.**

Prerequisite: course 211. A consideration of the current status of research on the senses other than vision and audition.

Mr. Jones

**216. Critical Problems in Perception.**

(Formerly numbered 282.)

Mr. Friedman

**220. Social Psychology.**

(Formerly numbered 205.) An intensive consideration of the concepts, theories, and major problems in social psychology.

The Social Staff

**221. Seminar in Attitude Formation and Change.**

(Formerly numbered 263A-263B.) Social psychological research and theories on opinions and attitudes. Effects of mass communication, social factors in assimilation of information and influence.

Mr. Sears

**222A-\*222B. Seminar in Group Behavior.**

(Formerly numbered 264A-264B.) Special topics in interpersonal relations and group dynamics. Power control, structure and organization, group functioning.

Mr. Raven

**223. Survey Methods in Psychology.**

(Formerly numbered 266.) A critical review of the theory and practice of large-scale sampling, measurement, and analysis of beliefs, attitudes, and other psychological variables.

Mr. Centers

**224. Experimental Methods in Social Psychology.**

(Formerly numbered 268.) A critical review of laboratory techniques and problems of experimental control and measurement encountered in research on social psychological phenomena.

Mr. Collins

**225. Seminar: Critical Problems in Social Psychology.**

(Formerly numbered 267.) May be repeated for credit with consent of the instructor.

Mr. Centers, Mr. Kelley

**\*226. Seminar in Behavioral Science and the Law.**

(Same as Law 333.) Prerequisite: consent of the instructor. Critical examination of selected issues of mutual concern to behavioral scientists and legal scholars such as decision-making processes, criminal sentencing, effect of deterrents, privacy and consent in experimentation.

Mr. Sager, Mr. Schwitzgebel

**231. Seminar in Language and Communication.**

(Formerly numbered 283.)

Mr. Dowling, Mr. MacKay

**232. Seminar in Judgment.**

Consideration of topics in human judgment.

Mr. Parducci

**235. Personality.**

(Formerly numbered 202.) A survey of cognitive, analytic, and learning theory approaches to the study of personality. Emphasis will be on the intensive exploration of selected concepts and related research.

The Personality Staff

\* Not to be given, 1968-1969.

**236. Personality Theories.**

(Formerly numbered 222A-222B.) A survey of the theoretical views of Freud, Jung, Adler, Rank, and various modern writers, including Allport, Lewin, Murray and Murphy. Mr. Lehner

**\*237. Survey of Projective Methods in Personality Assessment.**

(Formerly numbered 224.) Survey of theories and fields of application of projective methods, and supervised practice in techniques. For nonclinical psychology students. Mr. Sheehan

**238. Seminar in Mental Measurements.**

(Formerly numbered 252.) Mr. Comrey

**239. Experimental Research in Personality.**

Prerequisite: course 202. A detailed analysis of some of the current research in personality. The relation of personality to the process areas will be stressed. Students will conduct independent research projects. Mr. Weiner

**240. Developmental Psychology.**

(Formerly numbered 231.) A consideration of the special problems of the control and measurement of the behavior of children as well as the young of other organisms with emphasis on providing basic research relevant to both clinical and research work with children. Mr. Jeffrey

**241. Growth and Development During Adult Years.**

Theory and research of the adult age group—21 to senility. Social stratification; genetics; motivational changes by age and sex; changes in aptitudes and abilities; cultural and subcultural influences. Mr. Hahn

**242. Seminar in Developmental Psychology.**

(Formerly numbered 254.)

Mr. Jeffrey, Mr. Madsen

**243A-243B. Seminar in Practical Issues in Developmental Psychology.**

(Formerly numbered 255A-255B.) Prerequisite: course 240 or equivalent, and consent of the instructor. Credit and grade to be given only upon completion of 243B. Mr. Nakamura

**245. Mathematical Psychology.**

(Formerly numbered 208.) Construction and analysis of mathematical models of behavior. Emphasis on applications to research in learning, perception, social, and other areas. Mr. Holman

**\*246. Seminar in Advanced Mathematical Psychology.**

(Formerly numbered 280.)

Mr. Trabasso

**247A-247B. Computer Techniques in the Behavioral Sciences.**

(Formerly numbered 292.) Introduction to statistical and mathematical techniques applicable to behavioral sciences which would not be feasible without digital computers. Topics discussed will include special statistical methods, Monte Carlo simulation, and information processing models. Mr. Walker

**250A. Advanced Psychological Statistics.**

(Formerly numbered 203A.) Review of fundamental concepts. Basic statistical techniques as applied to the design and interpretation of experimental and observational research. Mr. Bucher

**250B. Advanced Psychological Statistics.**

(Formerly numbered 203B.) Advanced experimental design and planning of investigations. Mr. Bucher

**251A-251B. Research Methods.**

(Formerly numbered 206.) Students will design and conduct original research projects under the supervision of the instructor in charge. The Staff

**252. Quantitative and Laboratory Methods in Psychology.**

(Formerly numbered 207.) Fundamentals of measurement, laboratory techniques and instruments, sources and types of error, treatment and presentation of data, problems in the design and interpretation of experiments in representative areas of laboratory investigation. Mr. Mount

**253. Factor Analysis.**

(Formerly numbered 209.) Theory and practice of factor analysis in psychological research. Methods of factor extraction and rotation. Applications of computers to computations in factor analysis. Mr. Comrey

**\*254. Seminar in Psychological Scaling.**

(Formerly numbered 210.) Theory of measurements, law of comparative judgment, methods of unidimensional scaling, multidimensional scaling, and related topics of current interest. Mr. Comrey

**255. Quantitative Aspects of Assessment.**

(Formerly numbered 211.) Fundamental assumptions and equations of test theory. Current problems in assessment. Mr. Bentler

**256. Seminar in Critical Problems in Psychological Measurement.**

(Formerly numbered 281.) Critical examination of issues in the major approaches to psychological measurement; relation of psychological methods and data to a general theory of measurement. Mr. Mount

**260A. Psycholinguistics I. Seminar.**

(Same as Linguistics 260A.) Prerequisite: Linguistics 230. Current psycholinguistic theory and research problems; coding and decoding, psycholinguistic parameters in language learning; speech recognition and perception. Mr. Kelley, Mr. MacKay

**260B. Psycholinguistics II. Seminar.**

(Same as Linguistics 260B.) Prerequisite: course 260A. Continuation of course 260A. Mr. Dowling, Mr. MacKay

**261A-261B-261C. Advanced Industrial Psychology.**

(Formerly numbered 235A-235B.) Selection and training of employees, factors influencing efficiency of work. Mr. Barthol

**\*262. Special Problems in Industrial Psychology.**

(Formerly numbered 235.) Mr. Barthol

**270. Issues and Concepts of Clinical Psychology.**

(Formerly numbered 217A.) Mr. Broen

\* Not to be given, 1968-1969.

**271A-271B-271C. Clinical Psychological Methods.**

(Formerly numbered 230A-230B.) Advanced study of tests in clinical diagnostic study, including individual and group tests of intelligence, structured personality tests, and projective techniques. Emphasis will be placed on application in the clinical situation. The Clinical Staff

**272A-272B-272C. Psychotherapy.**

(Formerly numbered 257A-257B.) Course 401 must be taken concurrently, except with consent of instructor.

272A. Introduction. Mr. Sheehan  
272B. Psychotherapy with Adults. Mr. Ingham  
272C. Psychotherapy with Children. Mrs. Love

**273. Advanced Clinical Interpretation.**

(Formerly numbered 225.) Mr. Goldstein

**274A-274B. Group Therapy Dynamics.**

(Formerly numbered 257C.) Mr. Lehner

**\*275A-275B. Seminar in Abnormal Psychology.**

(Formerly numbered 258A-258B.) Mr. Coleman

**276A-276B. Seminar in Learning Disorders.**

Formerly numbered 259 and same as Education 263B-263C. Mr. Coleman

**277. Seminar in Clinical Psychology and Speech Pathology.**

(Formerly numbered 262.) Mr. Sheehan

**\*278A-278B. Seminar in Motivation, Conflict and Neurosis.**

Mr. Feshbach

**279A-279B. Seminar in Experimental Research in Psychopathology.**

(Formerly numbered 293.) Mr. Rodnick

**\*280. Seminar in Experimental Psychodynamics.**

Mr. Broen

**\*281. Seminar in Behavior Therapy.**

Mr. Lovaas

**298. Special Problems in Psychology.**

The content will depend upon the interests of the particular instructor. The Staff

**Professional Courses**

**401. Field Work in Clinical Psychology.**

(1 or 2 courses)

(Formerly numbered 279A-279B, Section 1.) Prerequisite: courses 271A-271B-271C. Students on practicum assignments are required to register for this course each quarter. Exception with consent of Clinical Program Committee. The Clinical Staff

**402. Field Work in Speech Pathology.**

(1 or 2 courses)

(Formerly numbered 279A-279B, Section 2.) Prerequisite: consent of the instructor. Practical work in hospitals and clinics in diagnostic testing and psychotherapy with speech disorders. Mr. Sheehan

**403. Field Work in Counseling Psychology.**

(1 or 2 courses)

(Formerly numbered 277A-277B.) Prerequisite: consent of the instructor. Internship in the Student

Counseling Center, which includes psychometrics, observation of counseling, preparation of case materials for counselors, record keeping, test scoring, case discussions, and participation in other service activities. Minimum of ten hours per week, including one or two hours of staff meetings and conferences. The Staff

**410. Problems in Professional Communication.**

(Formerly numbered 227B.) Study of the theoretical and practical problems arising from the use of psychological methods and instruments on case work material. Emphasis on psychoevaluation and nonverbal communication. For graduate students in psychology and related disciplines: enrollment limited. Consent of the instructor required. Mr. Hahn

**411. Personal Evaluation.**

(Formerly numbered 227A.) Prerequisite: consent of the instructor. Seniors and graduate students with appropriate backgrounds in psychology. Assessment, evaluation, and psychoevaluation of individuals in a case study setting. Includes 30 hours of volunteer hospital services. Mr. Hahn

**\*412. Psychological Interviewing and Case Study Methods.**

(Formerly numbered 144.) Procedures, methods, and problems in the collection of personal data in the interview situation.

**\*428. Assessment of Individual Differences.**

(Formerly numbered 188.) Open to nonmajors only. The logical and experimental approaches to human aptitudes, abilities and interests as used in counseling. Mental organization, physiological and psychological traits, individual and group educational-vocational-personality characteristics, derivation of interest and ability patterns, pattern analysis and its counseling applications.

**451A-451B-451C. Internship in Clinical Psychology.**

(Formerly numbered 401A-401B, Section 1.) Prerequisite: course 401. Open only to students who have passed departmental qualifying examination. The Clinical Staff

**452. Internship in Counseling Psychology.**

(Formerly numbered 401A-401B, Section 2.) The Staff

**454. Internship in Industrial Psychology. (½ to 1 course)**

(Formerly numbered 401A-401B, Section 3.) The Staff

**Individual Study and Research**

**596. Directed Individual Research and Study in Psychology. (½ to 2 courses)**

One course required during second year of graduate study. One course in 596 or 599 required during each succeeding year of graduate study. (Terminal M.A. candidates are excused from these requirements.) The Staff

**597. Individual Studies. (½ to 1 course)**

Intended primarily for preparation for Ph.D. qualifying examinations. May be required by some area committees as prerequisite for taking qualifying examinations. The Staff

\* Not to be given, 1968-1969.

**599. Research on Dissertation. (½ to 2 courses)**

Prerequisite: Satisfactory performance in qualifying examinations. One course required during each year following passing of qualifying examinations.

The Staff

**Psychology Clinic**

The Psychology Clinic was established in 1949 in Franz Hall by the Department of Psychology as a training and research center in clinical psychology. It has specialized facilities for the investigation, assessment and treatment of a variety of psychological disabilities and adjustment problems of children, adolescents and adults of the greater Los Angeles community.

The Clinic provides a broad range of psychological services to clients including individual, group and family therapy, behavior modification procedures and consultation to agencies in the community. The emphasis on systematic research investigation in the Clinic leading to new knowledge and the improvement of clinical psychological procedures is in keeping with a primary function of a University-based clinic. The number and types of clients served are consonant with this goal. Apart from those investigations related directly to the professional services to the clients, there are a number of research programs in the clinic which reflect the current interests of the staff, such as 1) communication patterns in the family constellation relevant to both the development and the amelioration of behavioral disturbance, 2) the development of innovative techniques of behavior modification which are effective in treating various psychological problems and, 3) exploration of new modes of delivering psychological services to currently unserved segments of the population.

These service and research functions serve as the basis for the professional education and training of clinical psychologists as an integral part of their graduate study in the Department of Psychology. The Clinic also provides training experiences to students of other mental health professions, such as social work. Although the Clinic is staffed primarily by psychologists, some staff members are drawn from other professions, such

as clinical social work, psychiatry, pediatrics and special education.

**Fernald School**

The Fernald School (formerly the Psychology Clinic School), a facility of the Department of Psychology, was established in 1921 as a research and training center for the study, diagnosis, and treatment of learning disabilities.

The uniqueness of the facility lies in its lively experimental atmosphere, in its varied population, in the scope of its training, demonstration and research programs and in its interdisciplinary approaches in which the talents of teachers, clinical psychologists, school counselors, and social workers are integrated and brought to bear upon the student's learning difficulties. The School's current focus is on those children with average or better intelligence who are functioning significantly below grade level in basic school skills and school achievement.

The Fernald School offers observation, classroom participation, research and other training opportunities to graduates and undergraduates in many fields, notably psychology, education and social welfare. Fellowships are available for graduate students in psychology and education. Two courses focusing on learning disabilities, Psychology 132A and 132B, are specifically associated with the Fernald School programs. Psychology 132A provides the opportunity to examine factors underlying the understanding, diagnosis and treatment of learning difficulties. Psychology 132B affords the opportunity to observe and participate, under supervision, in the remediation of the academic deficiencies of Fernald School students.

The Fernald School population includes approximately 100 students, enrolled in regular and small group classroom programs, and an average of 200 children, adolescents and adults who are seen in individual and small group tutoring programs. In addition, another 250 individuals are seen for diagnostic evaluation each year. The research activities, based on these populations, are directed toward an analysis of the processes mediating learning difficulties and toward an evaluation of the effectiveness of various therapeutic and remedial programs.

## ■ PUBLIC HEALTH

(Department Office, 16-068 Center for the Health Sciences)

Roslyn B. Alfin-Slater, Ph.D., *Professor of Nutrition.*

Ruth Boak, Ph.D., M.D., *Professor of Medical Microbiology and Immunology and Professor of Pediatrics.*

Lester Breslow, M.D., M.P.H., *Professor of Health Services Administration.*

Fred A. Bryan, M.D., *Professor of Public Health, Professor of Preventive Medicine and Public Health and Professor of Medicine.*

Albert F. Bush, M.S., *Professor of Sanitary Engineering and Professor of Engineering.*

John M. Chapman, M.D., M.P.H., *Professor of Preventive Medicine and Public Health, Professor of Medical Microbiology and Immunology and Professor of Epidemiology.*

Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics and Professor of Biomathematics.*

Gladys A. Emerson, Ph.D., *Professor of Nutrition.*

†Jean S. Felton, M.D., *Professor of Preventive Medicine and Public Health and Professor of Occupational Health.*

Lenor S. Goerke, M.D., M.S.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*

Ralph Goldman, M.D., *Professor of Medicine and Professor of Public Health.*

Carl E. Hopkins, Ph.D., *Professor of Public Health in Residence.*

Raymond J. Jessen, Ph.D., *Professor of Business Administration and Professor of Public Health.*

Edward B. Johns, Ed.D., *Professor of School Health Education.*

†Alfred H. Katz, M.A., D.S.W., *Professor of Public Health and Professor of Social Welfare.*

John W. Knutson, D.D.S., Dr. P.H., *Professor of Public Health and Professor of Dentistry.*

Frank J. Massey, Jr., Ph.D., *Professor of Biostatistics and Professor of Preventive Medicine and Public Health (Chairman of the Department).*

‡Edward L. Rada, Ph.D., *Professor of Economics in Public Health.*

Leo G. Reeder, Ph.D., *Professor of Public Health and Professor of Sociology.*

\*Milton I. Roemer, M.D., M.P.H., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*

Marian E. Swendseid, Ph.D., *Professor of Nutrition and Professor of Biological Chemistry.*

Frank F. Tallman, M.D., *Professor of Public Health Psychiatry and Professor of Psy-*

*George Tarjan, M.D., Professor of Psychiatry and Professor of Public Health in Residence.*

Daniel M. Wilner, Ph.D., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*

Henry N. Work, M.D., *Professor of Public Health and Professor of Psychiatry.*

Telford Work, M.D., M.P.H., D.T.M.&H., *Professor of Infectious and Tropical Diseases.*

John F. Kessel, Ph.D., *Emeritus Professor of Infectious Diseases and Research Parasitologist.*

H. B. Thompson, Ph.D., *Emeritus Professor of Home Economics.*

A. Ralph Barr, Sc.D., *Associate Professor of Public Health.*

‡ Absent on leave, fall and winter quarters, 1968-1969.

† Absent on leave, 1968-1969.

‡ Absent on leave, winter and spring quarters, 1969.

\* In residence spring quarter only, 1969.

Wen-Pin Chang, M.D., D.M.Sc., M.P.H., *Associate Professor of Public Health in Residence.*

Olive Jean Dunn, Ph.D., *Associate Professor of Biostatistics and Associate Professor of Biomathematics.*

Edward H. Forgotson, M.D., LL.B., *Associate Professor of Public Health in Residence.*

Richard Kalish, Ph.D., *Associate Professor of Public Health in Residence.*

Robert S. Pogrund, Ph.D., *Associate Professor of Public Health in Residence.*

John C. Ries, Ph.D., *Associate Professor of Public Health and Associate Professor of Political Science.*

Harry Sobel, Ph.D., *Associate Professor of Public Health in Residence.*

Elizabeth Stern, M.D., *Associate Professor of Public Health in Residence.*

Guy W. Steuart, Ph.D., M.P.H., *Associate Professor of Public Health and Associate Professor of Preventive Medicine and Public Health.*

Marguerite G. Mallon, Ph.D., *Associate Professor of Home Economics, Emeritus.*

Abdelmonem A. Affi, Ph.D., *Assistant Professor of Biostatistics and Assistant Professor of Biomathematics.*

Lawrence R. Ash, Ph.D., *Assistant Professor of Public Health in Residence.*

Mary Black, Ph.D., *Assistant Professor of Public Health in Residence and Assistant Professor of Anthropology in Residence.*

J. Alfred Cannon, M.D., M.P.H., *Assistant Professor of Public Health in Residence and Assistant Professor of Psychiatry in Residence.*

Alfred J. Clark, Ph.D., *Assistant Professor of Public Health in Residence.*

Virginia A. Clark, Ph.D., *Assistant Professor of Public Health.*

Donn L. Cochran, Ed.D., *Assistant Professor of Public Health in Residence.*

David P. Discher, M.D., *Assistant Professor of Public Health and Assistant Professor of Preventive Medicine and Public Health.*

Donald Du Bois, Dr.P.H., *Assistant Professor of Public Health in Residence.*

Gary M. Fisher, Ph.D., *Assistant Professor of Public Health in Residence.*

James E. Gardner, Ph.D., *Assistant Professor of Public Health in Residence and Assistant Professor of Psychology in Residence.*

Arnold I. Kisch, M.D., M.P.H., *Assistant Professor of Public Health and Assistant Professor of Preventive Medicine and Public Health.*

Miriam Morris, Ph.D., *Assistant Professor of Public Health in Residence.*

Charles E. Schoettlin, M.D., Dr.P.H., *Assistant Professor of Epidemiology and Assistant Professor of Preventive Medicine and Public Health.*

Susan R. Sherman, Ph.D., *Assistant Professor of Public Health in Residence.*

Marsden Wagner, M.D., M.S.P.H., *Assistant Professor of Public Health and Assistant Professor of Pediatrics.*



Lilla Aftergood, Ph.D., *Assistant Research Biochemist.*

Charles I. Barron, M.D., *Associate Clinical Professor of Public Health.*

Arnold R. Beisser, M.D., *Lecturer in Public Health.*

Harold N. Broderson, M.D., M.P.H., *Lecturer in Public Health.*

Harold V. Brown, B.A., M.P.H., *Associate in Occupational Health.*

Richard Call, M.D., *Associate Clinical Professor of Public Health.*

Edith M. Carlisle, Ph.D., *Lecturer in Nutrition.*

Flavio Ciferri, M.D., M.P.H., *Lecturer in Public Health.*

Kenneth M. Eastman, B.S., *Associate Clinical Professor of Public Health.*

† Philip J. Epling, M.A., *Assistant Researcher in Public Health.*

Seymour Fisher, M.D., *Assistant Clinical Professor of Medical Care and Hospital Administration.*

† Absent on leave, 1968-1969.

Toby Freedman, M.D., *Associate Clinical Professor of Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*

Jay W. Friedman, D.D.S., M.P.H., *Associate Researcher in Medical Care Organization.*

Lloyd A. Frost, B.S., M.P.H., *Lecturer in Health Education.*

Ruth Fuhrman, B.S., M.P.H., *Lecturer in Public Health.*

John R. Goldsmith, M.D., M.P.H., *Lecturer in Public Health.*

Gerald A. Heidbreder, M.D., M.P.H., *Lecturer in Public Health.*

Herbert L. Herschensohn, M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health and Associate Clinical Professor of Medicine.*

Robert W. Hetherington, Ph.D., *Lecturer in Medical Care Organization and Assistant Research Sociologist.*

James C. Hitchcock, Jr., Sc.D., *Assistant Research Entomologist.*

Marvin Hoffenberg, Ph.D., *Lecturer in Public Health and Lecturer in Political Science.*

Arthur C. Hollister, M.D., M.P.H., *Lecturer in Public Health.*

Josef Hrachovec, M.D., Sc.D., M.Sc., *Associate Researcher in Public Health.*

Olive G. Johnson, B.A., *Lecturer in Public Health and Lecturer in Preventive Medicine.*

Charles Keeran, M.S.W., *Lecturer in Mental Hospital Administration.*

Benjamin A. Kogan, M.D., Dr. P.H., *Lecturer in Public Health.*

Howard Laitin, Ph.D., *Associate Clinical Professor of Hospital and Medical Care Organization.*

Carl A. Lawrence, Ph.D., M.S., *Lecturer in Public Health.*

Hallett A. Lewis, M.D., *Assistant Clinical Professor of Public Health.*

William P. Lewis, Ph.D., *Lecturer in Public Health and Assistant Research Parasitologist.*

David Littauer, M.D., *Associate Clinical Professor of Medical Care Organization.*

Allen W. Mathies, Ph.D., M.D., *Lecturer in Infectious and Tropical Diseases.*

Harold Mazur, M.D., M.P.H., *Lecturer in Public Health and Lecturer in Preventive Medicine.*

Florence C. McGucken, M.S., *Lecturer in Nutrition.*

Jean J. Mickey, Ph.D., *Lecturer in Public Health.*

Seward E. Miller, M.D., *Lecturer in Public Health and Lecturer in Preventive Medicine and Public Health.*

Donald F. Muhich, M.D., *Lecturer in Public Health.*

David M. Myers, B.A., M.P.A., *Lecturer in Medical Care Organization.*

Agnes A. O'Leary R.N., M.P.H., *Lecturer in Public Health and Associate Professor of Public Health Nursing.*

Harriet B. Randall, M.D., *Lecturer in Public Health.*

Henry A. Renteln, M.D., M.P.H., *Lecturer in Epidemiology.*

Edward R. Reinig, M.P.H., M.A., *Lecturer in Public Health.*

†Donald T. Rice, M.D., M.P.H., *Lecturer in Public Health and Preventive Medicine.*

Shirley W. Rich, B.A., M.P.H., *Associate in Public Health.*

Robert S. Rocke, M.D., M.P.H., *Lecturer in Public Health.*

Jack C. Rogers, B.S., *Lecturer in Occupational Health.*

Edward L. Russell, M.D., M.A., *Lecturer in Public Health.*

Ernest M. Sable, A.B., M.P.H., *Lecturer in Hospital Administration.*

Ralph R. Sachs, M.D., M.P.H., *Associate Clinical Professor of Public Health.*

Helen L. Salmon, R.N., B.S., *Lecturer in Occupational Health and Clinical Instructor in Public Health Nursing.*

David Sanders, M.D., M.P.H., *Lecturer in Public Health.*

† Absent on leave, 1968-1969.

Arthur N. Schwartz, Ph.D., *Lecturer in Public Health.*

Charles L. Senn, M.S., *Lecturer in Public Health.*

Robert L. Smith, M.D., M.P.H., *Associate Clinical Professor of Public Health.*

Marilyn S. Talcott, B.A., LL.B., *Lecturer in Public Health and Researcher in Public Health Law.*

Leo Tepper, M.D., M.P.H., *Lecturer in Public Health.*

Robert E. Thomas, M.D., *Lecturer in Community Mental Health.*

Packard Thurber, Jr., M.D., *Lecturer in Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*

J. Albert Torribio, M.S.S.W., M.S.W., *Lecturer in Health Education.*

Arthur J. Visel tear, Ph.D., *Lecturer, Assistant Research Historian.*

J. Arthur Waites, Ph.D., *Lecturer in Public Health.*

Rosabelle P. Walkley, B.A., *Lecturer in Behavioral Sciences and Associate Research Behavioral Scientist.*

Bruce Walter, M.D., M.P.H., *Lecturer in Hospital Administration.*

Paul F. Wehrle, M.D., *Lecturer in Epidemiology.*

Robert C. Weiss, M.D., M.P.H., *Lecturer in Maternal and Child Health.*

Edward J. Zaik, M.S., M.D., *Lecturer in Public Health, Associate Clinical Professor of Preventive Medicine and Public Health, and Associate Clinical Professor of Medicine.*

## BIOSTATISTICS

### 102A-102B. Health Record Science.

Lectures, three hours; laboratory, three hours. Prerequisite: enrollment as a major in public health. Nosology. Principles and theories of systems and techniques used for organization, analysis, and maintenance of records and reports are studied and evaluated according to their use in varied situations.

Miss Johnson

### 160A. Introduction to Biostatistics.

Lectures, three hours; laboratory, three hours. Prerequisite: upper division standing; courses in the biological or physical sciences. Students who have completed courses in statistics may enroll only with the consent of the instructor. Introduction to methods and concepts of statistical analysis. Sampling situations with special attention to those occurring in the biological sciences. Topics will include: distributions, tests of hypotheses estimation, types of error, significance and confidence levels, sample size.

Mrs. Clark, Mrs. Dunn, Mr. Massey

### 160B. Introduction to Biostatistics.

Lectures, three hours; laboratory, three hours. Prerequisite: course 160A, or consent of the instructor. Introduction to analysis of variance, linear regression, and correlation analysis; sequential analysis in medical trials, distribution free methods and enumeration statistics.

Mrs. Clark, Mrs. Dunn, Mr. Massey

### 160C. Introduction to Biostatistics.

Lectures, three hours; laboratory, three hours. Prerequisite: courses 160A, 160B, or consent of the instructor. Analysis of variance, bioassay, design and analysis of experiments useful in the biological field.

Mrs. Clark, Mrs. Dunn, Mr. Massey

### 160D. Introduction to Biostatistics.

Lectures, three hours; laboratory, three hours. Prerequisite: course 160B or consent of the instructor. Linear and multiple regression analysis, poly-

nomial regression, analysis of covariance, and related topics.

The Staff

### 161. Demography.

Lectures, three hours; laboratory, three hours. Prerequisite: course 160A or consent of the instructor. Sources and evaluation of demographic information. Demographic description of human populations and analysis of changes over time; interrelationships among changes in structure, migration and vital rates. Various uses of the life table in demographic analyses.

Mrs. Mickey

### 239A. Statistical Methods in Clinical Trials and Medical Surveys. (½ course)

Prerequisite: courses 160A, 160B, graduate standing in public health or related field. Design of experiments and statistical analysis appropriate to clinical trials and medical surveys.

Mrs. Clark

### 239B. Statistical Methods in Clinical Trials and Medical Surveys. (½ course)

Prerequisite: Mathematics 12A, 12B, 152A, 152B, and equivalent of six units of statistical methods; course 239A is recommended but not required. Review and development of statistical methodology applicable to clinical trials and medical surveys.

Mrs. Clark

### 240A-240B-240C. Biostatistics.

Prerequisite: courses 160A, 160B, 160C; Mathematics 152A-152B, 12A or the equivalent. With the consent of the instructor, certain of the prerequisites may be taken concurrently. Quantitative methods in public health, medicine, and the biological sciences, statistical theory and application to problems in the design and analysis of experiments and surveys.

Mrs. Clark, Mr. Dixon

### 241A-241B. Linear Statistical Models.

Prerequisite: Mathematics 152A-152B, courses 160A, 160B, 160C or equivalent. Topics in algebra and statistics pertinent to the application of linear

statistical models, especially in the life and medical sciences. These include matrix algebra, quadratic forms, the Gauss-Markov theorem, types of linear models (fixed and random components).

Mr. Aßß, Mrs. Dunn

#### 242A-242B-242C. Multivariate Biostatistics.

Prerequisite: course 241A or equivalent. Multivariate analysis as it is used in biological and medical situations. Topics from component analysis, factor analysis, discriminant analysis, analysis of dispersion, cononical analysis. Mr. Aßß, Mrs. Dunn

#### 243A. Advanced Topics: Stochastic Processes.

(½ course)

Prerequisite: courses in upper division mathematics including statistics and probability. Stochastic processes applicable to medical and biological research. Mrs. Dunn

#### 243B. Advanced Topics: Mathematical Epidemiology.

(½ course)

Prerequisite: course 243A or equivalent and courses in upper division mathematics including statistics and probability. Mathematical theory of epidemiology with deterministic and stochastic models, and problems involved in applying the theory.

Mr. Massey

#### 243C. Advanced Topics: Statistical Genetics.

(½ course)

Prerequisite: courses in upper division mathematics including statistics and probability. Introduction to statistical genetics. Mr. Massey, Mrs. Dunn

#### 269A-269B-269C. Seminar in Biostatistics.

(½ course each)

Prerequisite: consent of the instructor.

Mrs. Clark, Mrs. Dunn, Mr. Massey, Mr. Aßß

#### 290M. Special Group Studies. (½ to 1 course)

Prerequisite: consent of the instructor. Biostatistics. The Staff

#### 402A-402B. Health Records: Planning, Analysis and Research.

Lectures, three hours; laboratory, three hours. Prerequisite: consent of instructor. Health and administrative research, using clinical records. Principles of planning for routine and special studies. Individual investigation in methods of obtaining and processing data to meet needs of programs in institution and agency. Introduction to principles of medical auditing; analysis of medical and health services.

Miss Johnson

#### 444A-444B. Health Record Systems.

(Formerly numbered 244A-244B.) Prerequisites: graduate standing and experience in health record administration. Advanced study of principles and criteria involved in planning, installing and administering systems to record, process, and retrieve data for records and reports in health and medical institutions and agencies.

Miss Johnson

#### 468. Seminar in Health Record Systems.

(½ course each)

(Formerly numbered 268.) Prerequisite: graduate standing. Advanced study of currently evolving health record systems with emphasis on issues, trends and methodology and their effect on services.

Miss Johnson

### EPIDEMIOLOGY

#### 147. Introduction to Epidemiology.

Lectures, three hours; laboratory, three hours. Prerequisite: course 101 or equivalent in biological sciences, and 160A (may be taken concurrently). Introduction to epidemiology including study of factors governing the occurrence of infectious and non-infectious diseases in populations. Laboratory problems illustrative of basic principles of epidemiology. Not open to physicians. Mr. Schoettlin and the Staff

#### 246A. Principles of Epidemiology.

Lectures, three hours; laboratory, three hours. Prerequisite: M.D., D.D.S., or D.V.M., consent of the instructor. An introduction to the principles and methods of epidemiology with examples drawn from both the infectious and chronic disease areas.

Mr. Chapman and the Staff

#### 246B. Advanced Epidemiology.

Lectures, three hours; laboratory, three hours. Prerequisite: courses 160A, 246A; consent of the instructor. Advanced study of epidemiology of acute and chronic diseases including epidemiologic research methods. Primarily for majors in epidemiology.

Mr. Schoettlin and the Staff

#### 248. Epidemiologic Studies in Human Populations.

(½ course)

Prerequisite: course 147 or 246A; consent of the instructor. Studies of the application of epidemiologic methods and principles to a variety of disease situations within human populations. Mr. Chapman

#### 265A-265B. Seminar in Epidemiology.

(½ course each)

Prerequisite: course 147 or 246A, or consent of the instructor. Student presentations of pertinent material examining the methods and principles of epidemiology as applied to specific diseases.

Mr. Chapman, Mr. Schoettlin

#### 290C. Special Group Studies. (½ to 1 course)

Prerequisite: consent of the instructor. Epidemiology of specific diseases. The Staff

### ENVIRONMENTAL HEALTH

#### 110. Environmental Health. (½ course)

Prerequisite: Bacteriology 100A-100B-100C, or Biology 1A and Chemistry 1A. The fundamental objectives, goals and methods of environmental health, including the relationships of physical, biological and social factors of health. Mr. Senn

#### 112. Public Health Engineering.

Prerequisite: course 110, and consent of the instructor. Planning, design, and survey of factors related to the physical aspects of environmental health with particular reference to water, wastes, pollution control, drainage and building design and equipment and environmental health planning.

Mr. Senn

#### 210. Advanced Environmental Health.

Prerequisite: course 110, or equivalent. Theoretical considerations and supporting data requisite for scientific establishment and justification of environmental health standards and requirements, with particular reference to related health factors.

Mr. Senn

**213A. Environmental Science. (½ course)**

Prerequisite: course 112 or equivalent, or consent of the instructor. Advanced study of the relationship of the physical environment to man. Mr. Bush

**213B. Environmental Science. (½ course)**

Prerequisite: course 153 or equivalent, or consent of the instructor. Advanced study of the relationship of the biological environment to man. The Staff

**280A-280B. Seminar in Environmental Health.**

(½ course each)

Prerequisite: consent of the instructor. The Staff

**290B. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Environmental health. The Staff

**OCCUPATIONAL HEALTH****170. Occupational Health.**

A survey of the field of occupational health and hygiene. Discussion of occupational diseases and hazards, their evaluation, and methods of control; plant medical services and other organizations concerned with occupational health problems.

Mr. Bryan, Mr. Felton

**220A-220B. Occupational Health Administration.**

(½ course each)

Prerequisite: consent of the instructor. A detailed consideration of the philosophy, organization, principles and operation of various types of occupational health programs with a review of pertinent literature, and a discussion of record systems, communications and relationships with rehabilitation and insurance programs.

Mr. Felton

**221A-221B. Occupational Hygiene.**

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Identification and measurement of chemical and physical factors in the occupational environment. Advanced analytical techniques, evaluation procedures, and on-site studies are undertaken in course 221B.

Mr. Bryan and the Staff

**222. Physical and Chemical Environmental Stresses.**

Lecture, three hours; laboratory, two hours. Prerequisite: course 221A-221B, 227A-227B, 229, or consent of the instructor. A consideration of the mechanisms by which the many environmental stresses cause disease and disability, with particular emphasis upon the various types of toxic materials found in work establishments and the surrounding communities.

Mr. Bryan, Mr. Pogrund

**223. Occupational Radiologic Safety. (½ course)**

Prerequisite: consent of the instructor. Uses of radioisotopes and various radiation-producing devices in industry. Types of radiation, their sources, detection, measurement, and monitoring. Biologic effects and methods of protection against typical radioactive materials and sources.

Mr. Bryan

**224A-224B. Environmental Toxicology.**

(½ course each)

Prerequisite: courses 221A-221B, 474A-474B or consent of the instructor. A discussion of the many toxic chemicals encountered in man's various work environments with emphasis upon the specific action

of toxic chemicals upon cells, selective affinity of toxic materials for tissues, the toxic manifestations in man, diagnosis and treatment of environmental intoxications.

Mr. Bryan, Mr. Discher

**†225. Occupational Psychiatry. (½ course)**

Prerequisite: Psychology 10 and 70 or equivalent, or Sociology 141, or consent of the instructor. A consideration of the emotional problems of the worker as a factor in his ability to produce satisfactorily. The recognition, control, referral, and emergency treatment of the emotionally disturbed industrial worker.

Mr. Felton, Mr. Tallman

**‡226. Medical Aspects of Workmen's Compensation. (½ course)**

Prerequisite: consent of the instructor. A comprehensive review of the Federal and State Workmen's Compensation legislation and its administration with special emphasis on the medical aspects, the physician's role and the relationship to rehabilitation.

Mr. Felton

**227A-227B. Environmental Physiology.**

(½ course each)

Prerequisite: consent of the instructor. Man's adaptive physiological and biochemical responses to interacting components of the physical and psychosocial environment. Total organism and cellular reaction to temperature, atmospheric gaseous and particle composition, electromagnetic spectra, noise, and to natural resource pollution of the biological food chain within a framework of stressful life situations.

Mr. Pogrund

**228A-228B. Occupational Diseases.**

(½ course each)

Prerequisite: courses 221A-221B, 474A-474B, or consent of the instructor. A detailed consideration of the etiology, pathology, clinical manifestations, diagnosis and treatment of selected occupational diseases with emphasis upon prevention.

Mr. Bryan, Mr. Discher

**229. Control of Health Hazards in the Work Environment. (½ course)**

Prerequisite: course 220A-220B, 221A-221B or consent of the instructor. A consideration of the philosophy and theory of the control of occupationally incurred illnesses and injuries.

Mr. Bryan

**275A-275B-275C. Seminar in Environmental Physiology.**

Prerequisite: courses 227A-227B. Expansion of selected topics in environmental physiology, such as aerospace and undersea environment, natural resource contamination, pesticides, medical geophysics, biometeorology, noise, and application of systems analysis to urban-land management. Student presentation of published papers or own research progress.

Mr. Pogrund

**276A-276B. Introduction to Aerospace Medicine and Health. (½ course each)**

Prerequisite: consent of the instructor. Introduc-

† Given alternate years only. To be given 1968-1969.

‡ Given alternate years only. Not to be given 1968-1969.

tion to current issues in research in and the practice of aerospace medicine and in health problems of aerospace personnel. A detailed consideration of the physiologic factors pertinent to the aerospace environment and instrumentation requirements for physiological monitoring. **The Staff**

#### **277A-277B. Seminar in the Physiology of Work.**

Lecture, two hours; laboratory, two hours. Prerequisite: courses 227A-227B. The quantification of human capacity to tolerate work under a variety of occupational situations; the establishment of criteria for the prediction of work capacity as a function of age, medical history, sensory load, physical environment, rehabilitative training, and task nature. **Mr. Pogrand**

#### **290H. Special Group Studies. (½ to 1 course)**

Occupational health. Prerequisite: consent of the instructor. **Mr. Felton**

#### **474A-474B. Seminar in Occupational Health.**

(½ course each)

(Formerly numbered 274A-274B.) Prerequisite: consent of the instructor. Intended primarily for industrial hygienists and physicians, a study of approximately 10 selected industries covering the materials, processes, techniques, working conditions, health problems, control measures, and organization, and administration of the health programs appropriate to those industries. Assignment of special problems with each industry studied. **Mr. Felton**

### **PUBLIC HEALTH ADMINISTRATION**

#### **5. Introduction to Health and Human Ecology.**

An introduction to the understanding of the equilibrium between the internal forces in man and the external forces in his environment which relate to health, and to the evolution, prevention, and control of disease. **Mr. Torribio**

#### **100. Introduction to Principles of Public Health.**

Prerequisite: twelve units of biology, zoology, and bacteriology, or consent of the instructor. The identification and discussion of the philosophy concepts and principles of public health and the relationship of these to the ecological framework of community organization to meet health service needs. **The Staff**

#### **101. Introduction to Medical Science.**

Prerequisite: one year sequence in biology, zoology or physiology; or consent of the instructor. This course will present an introduction to disease processes. It is intended primarily for students in public health and is not open to premedical students. **Mr. Goldman**

#### **200A. Public Health Organization.**

Prerequisite: consent of the instructor. Organization, structure, programs and relation of local, state, national and international health agencies. **Mr. Forgetson**

#### **200B. Public Health Administration.**

Prerequisite: consent of the instructor. Administrative theory, principles and practices of community health services. Development of leadership and supervisory skills in health administration. **Mr. Forgetson**

#### **203. Maternal and Child Health.**

(Formerly numbered 203A.) Study of the impor-

tant health problems of children and of women of childbearing age and the programs developed to meet these problems. Studies include maternal health, out-of-wedlock and teenage pregnancy, perinatal mortality, child health supervision, school health services, handicapped children, etc. **Mr. Wagner**

#### **208A-208B. Legal Issues in Health Services**

Administration. (½ course each)

(Formerly numbered 208 and 209.) Prerequisite: course 200A and consent of the instructor. Critical legal issues affecting the administration of environmental, preventive and curative health service programs. Emphasis will be given to the scope of the police power, legal aspects of hospital administration, professional licensure and prepaid medical care. **Mr. Forgetson**

#### **263. Seminar in Maternal and Child Health.**

(½ course)

(Formerly numbered 203B.) Study of selected health problems of children and of women of childbearing age and programs developed to meet these problems. Recent advances in medical science relevant to maternal and child health, new ideas in the administration of maternal and child health programs, and international trends in maternal and child health programs. **Mr. Wagner**

#### **281A-281B. Policy Issues in Governmental Health**

Programs Seminar. (½ course each)

Prerequisite: course 200A, and consent of the instructor. Credit and grade to be given only upon completion of 281B. Policy issues affecting governmental health programs in the metropolitan-urban environment. The students explore in depth key legal, political, administrative, and social questions affecting the formulation and implementation of governmental health policy. **Mr. Forgetson**

#### **290F. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Maternal and child health. **Mr. Wagner**

#### **290R. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Public health administration. **Mr. Forgetson**

### **HOSPITAL ADMINISTRATION**

#### **201A. Principles of Hospital Administration.**

Prerequisite: consent of the instructor. Principles of the organization and administration of general hospitals and related facilities. **Mr. Walter**

#### **201B. The Hospital in the Community.**

Prerequisite: course 201A. Relationships of hospitals to the surrounding community, regionalization, governmental controls, and changing concepts of hospital function. **Mr. Walter**

#### **290D. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Hospital administration. **The Staff**

#### **401A-401B-401C. Special Problems in Hospital Administration.**

Prerequisite: completion of one academic year of graduate studies in hospital administration. Seminar exploration of major issues and problems in hospital

organization and management, in relation to administrative residency (40 hours laboratory per week) within various hospital settings. Mr. Walter

#### 406. Principles of Mental Hospital Administration.

(Formerly numbered 201C-201D.) Lecture and discussion, four hours; field visits, three hours. Prerequisite: consent of the instructor. Study of the principles involved in planning, organizing, and administering mental health institutions, including inpatient, outpatient and preventive programs in this field. Mr. Walter

#### 479A-479B-479C. Critical Problems in Hospital Administration. (½ course each)

Lecture, three hours; laboratory three hours. Prerequisite: concurrent enrollment in course 201A-201B or consent of the instructor. The critical examination of the concepts of administration and their application to the hospital organization through field observations correlated with seminars. Emphasis is on the study of critical problems leading to an analytical paper. Mr. Walter

### MEDICAL CARE ORGANIZATION

#### 105. Medical Care in Modern Society. (½ course)

Prerequisite: upper division standing or consent of the instructor. An analysis of the functions of our personal health service systems and the assumptions which underlie and dominate traditional patterns of medical care organization. Mr. Du Bois

#### 106. Economic Problems of Families.

Prerequisite: Economics 1, 2. An analysis of the major economic problems of production, income and consumption affecting individuals and different types of American families. Mr. Rada

#### 109. History of Public Health and Social Medicine. (½ course)

Prerequisite: consent of the instructor. A world history of the ideas, attitudes and institutions of public health and social medicine, with some considerations of changing social, economic and cultural relationships. Mr. Viseltear

#### 154. Economics of Health and Medical Care.

(Formerly numbered 254.) Prerequisite: Economics 1, 2, or equivalent, or consent of the instructor. A study of demand, supply, and price determinants in the private and public sectors of the health and medical care fields. Mr. Rada

#### 155. Financing Health Facilities and Services. (½ course)

Prerequisite: Economics 101 or 135, or consent of the instructor. Sources and costs of funds, conditions of their use and repayment, and analyses of fund allocations to goal attainments. Mr. Rada

#### 202A. Medical Care Organization.

Prerequisite: consent of the instructor. Medical economics, medical care resources, and medical care programs. Features of governmentally sponsored medical care and voluntary health insurance in the United States. Mr. Roemer

#### 202B. Problems of Medical Care Administration.

Prerequisite: course 202A or consent of the instructor. Problems of administration of special ele-

ments of medical care, methods of quality evaluations, and legislative issues. Development and features of medical care programs in other nations. Mr. Kisch

#### 205. Fundamentals of Medical and Hospital Organization. (½ course)

Prerequisite: three courses in sociology, economics, or political science. Philosophical and historical foundations of medical and hospital organization. Social needs (morbidity and disability) and resources (personnel and facilities) for service. Costs and utilization. Mr. Roemer and the Staff

#### 206. Medical Care Systems in International Perspective. (½ course)

Prerequisite: consent of the instructor. Analysis of systems of medical care organization in countries of different stages of economic development and diverse political settings. Comparative approaches to ambulatory, institutional, and preventive services in the private, insurance, and governmental sectors. Mr. Roemer

#### 260. Public Health Aspects of Rehabilitation of the Disabled. (½ course)

The course will focus on the research background for rehabilitation activities in the health-caring professions, and on those current rehabilitation programs and issues of greatest concern to public health. Mr. Katz

#### 290G. Special Group Studies. (½ to 1 course)

Prerequisite: consent of the instructor. Medical Care Organization. The Staff

#### 404. Area-wide Planning of Health Facilities. (½ course)

(Formerly numbered 204.) Prerequisite: consent of the instructor. Examination of methods and experiences of planning health facilities and services for geographic areas, including determination of social needs and adjustment of resource allocations to them. Special reference is made to hospitals, nursing homes and related facilities. Mr. Hopkins

#### 410. Organization of Ambulatory Health Services. (½ course)

Prerequisite: course 202A or consent of the instructor. An analysis of organizations providing health service to ambulatory patients. Mr. Du Bois

#### 453A. Seminar in Medical Care Practice. (½ course)

(Formerly numbered 253A.) Prerequisite: enrollment in course 202A or 202B or consent of the instructor. Advanced study of administrative problems in the social and bureaucratic organization of systems of medical care. Mr. Kisch

#### 453B. Seminar in Medical Care Research. (½ course)

(Formerly numbered 253B.) Prerequisite: consent of the instructor. Analysis of findings of new research on critical problems of medical care organization in different social contexts. Mr. Hopkins

#### 458. Seminar in Social Work in Public Health. (½ course)

(Formerly numbered 258.) Prerequisite: consent of the instructor. Philosophy, methodology and research bases of social work in organized health service programs. Mr. Katz

**COMMUNITY HEALTH EDUCATION****134. Community Health Education.**

The theory, principles and practices of education and community organization involved in promoting motivation of individuals, groups and communities.  
Mr. Steuart, Mr. Torribio

**233. Change Determinants in Health-Related Behavior.**

Prerequisite: minimum of four courses of behavioral science (one of which must be upper division), concurrent enrollment in course 149, or consent of the instructor. A unified behavioral science approach to the natural determinants of change in health-related behavior at the community, group and individual levels, as a foundation for planned change.  
Mrs. Black

**234. Advanced Community Health Education.**

Prerequisite: consent of the instructor. Problems of social, economic, and cultural origin as they apply to sound community organization in the public health field. Examination of the health education activities of professional, voluntary, and official health agencies and analysis of their interrelationships. Mr. Steuart

**235. Health Education in Clinical Settings.**

Prerequisite: consent of the instructor. Analysis of the role, methods, and techniques of health education pertaining to hospitals, clinics, and patient education. Observation and discussion of clinical activities in the medical center in relation to the process of health education.  
Mr. Steuart

**261A-261B. Seminar in Community Health Education. (½ course)**

Prerequisite: consent of the instructor.  
Mr. Steuart and the Staff

**290K. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Community health education.  
The Staff

**SCHOOL HEALTH EDUCATION****44. Principles of Healthful Living.**

Fundamentals of healthful living; designed to provide scientific health information and promote desirable attitudes and practices.  
The Staff

**130A-130B. Health Science for Pre-Adults.**

Theories and principles of health science in schools and colleges; legal aspects, instruction, services, environment, and interrelationships with community resources.  
Mr. Johns

**131. Principles of School-Child Health.**

Prerequisite: course 44 or consent of the instructor. (Not open to school health education majors.) The history, philosophy and principles of health as applied to the needs of school children. The Staff

**230. School Health Program Development and Evaluation.**

Prerequisite: courses 130A-130B, 250. Program components, process, implementation, and evaluation.  
Mr. Johns

**250. Current Problems in School Health Education Seminar.**

Prerequisite: courses 130A, 130B or consent of the instructor. A study of new findings in the health education content areas (such as nutrition, mental health, family health, consumer health, safety, communicable and chronic diseases).  
Mr. Johns

**251. Administrative Relationships in School Health.**

Prerequisite: courses 230 and 250 or consent of the instructor. Responsibility and authority for school health in educational institutions and relationships with other agencies and groups.  
Mr. Johns

**290N. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. School health education.  
The Staff

**BEHAVIORAL SCIENCES****149. Behavioral Sciences and Health. (½ course)**

(Formerly numbered 249A.) Prerequisite: consent of the instructor. Relationship of basic concepts in the behavioral sciences pertinent to health and medical care; cultural and social class variations in health status; health team and community relations; community decision making in public health.  
Mr. Reeder and the Staff

**245A. Research Methods in Community Health.**

Prerequisite: course 160A, 147 or 246A, or consent of instructor. Preparation for planning and conducting research projects; methods and techniques of community health research. This course is designed to provide the basic skills in research methodology for studies.  
Mrs. Morris, Mr. Reeder

**245B. Advanced Research Methods in Community Health. (½ course)**

Prerequisite: course 245A or consent of the instructor. An advanced seminar for doctoral degree candidates preparing for a research career. Focus upon defining problems for research, analyzing research designs, and constructing research designs using a variety of research methods in community health studies, including discussion of student's own research plans.  
Mr. Reeder and the Staff

**249A. Social and Cultural Aspects of Health and Illness. (½ course)**

(Formerly numbered 249B and same as Sociology 249A.) Prerequisite: courses in upper-division social sciences, including sociology, anthropology and psychology. Social and community aspects of health, health behavior and health organizations.  
Mr. Reeder and the Staff

**249B. Social and Cultural Aspects of Health and Illness. (½ course)**

(Same as Sociology 249B.) Prerequisite: course 249A or consent of the instructor. Theoretical and conceptual approaches in the behavioral sciences contributing to an understanding of various health conditions and health behavior.  
Mr. Reeder and the Staff

**252A-252B. Seminar in Community Mental Health. (½ course each)**

Prerequisite: consent of the instructor. Study of community problems in mental disease, retardation, deviations and delinquency, and the social agencies that have been developed to meet them. Covers also such areas as marriage, counseling, divorce, psychological problems of aging, and forensic psychiatry. Emphasis is placed on the role of research in public health psychiatry.

Mr. Sanders

**270. Basic Processes and Medical Aspects of Aging.**

Prerequisite: course 271A or consent of the instructor. Review of basic physiological, medical, and psychiatric aspects of human aging; review of factors in rehabilitation and reeducation of persons in middle and later years.

Mr. Goldman, Mr. Rocke

**271A-271B. Behavioral Science Aspects of Human Aging.**

(Formerly numbered 271A.) Prerequisites: three quarter courses or the equivalent of advanced study in anthropology, psychology or sociology; course 149 (may be concurrent); or consent of the instructor. Behavioral science aspects of the middle and later years, with emphasis upon sociocultural influences and individual differences.

Mr. Kalish, Mr. Wilner

**272. Community Programs and Services for the Elderly. (½ course)**

(Formerly numbered 271B.) Prerequisite: course 271A or consent of the instructor. An analysis of governmental, voluntary and proprietary programs for persons in middle and later life. Emphasis on principles of priority planning, effectiveness and evaluation of programs for the elderly.

Mr. Kalish

**279. Seminar: Advanced Studies in Gerontology. (½ course)**

(Formerly numbered 270B.) Prerequisites: courses 271A-271B. A critical analysis of special problems in aging. May be repeated for credit.

Mr. Kalish, Mr. Wilner

**282A-282B. Community Mental Health.**

(1 course, ½ course)

Prerequisites: three upper division quarter courses in psychology, sociology, anthropology or the equivalent. Research methods background desirable. Principles of community mental health programs. Study of socioenvironmental setting in which mental illness occurs, is detected and is treated. Discussion of prevention of mental illness, program effectiveness, and mental health components of public health programs.

Mr. Sanders, Mr. Wilner

**283. Seminar in Behavioral Sciences and Health.**

(½ course)

Prerequisites: courses 249A-249B or consent of the instructor. Recent significant contributions of the behavioral sciences to the understanding of health and illness, with selected and varying topics each quarter. May be repeated for credit.

Mr. Reeder, Mr. Wilner and the Staff

**290A. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Community and institutions.

Mr. Wilner

**290I. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Community mental health.

The Staff

**290P. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. Gerontology.

The Staff

**INFECTIOUS AND TROPICAL DISEASES****153. Public Health Microbiology.**

Lecture, two hours; laboratory, six hours. Prerequisite: Bacteriology 100A, Chemistry 1A, 1B, 1C, 4A, 4B, 4C, 6A, 6B, 6C, Biology 1A, 1B, 1C or equivalents. Basic principles and laboratory procedures employed in the provision of sanitary elements to the community, including food and milk, water supply and waste disposal, soil, and environmental effluents.

Mrs. Boak

**215. Infectious Diseases in Temperate Regions.**

Prerequisite: course 147 or 246A, or consent of the instructor. Practice of public health related to communicable diseases in the region.

Mr. Mathies

**216A. Infectious Diseases in Tropical Regions.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 147 or 246A or consent of the instructor. Lectures, demonstrations and laboratory exercises dealing with the natural history, epidemiology, diagnosis and prevention of viral, rickettsial, bacterial and fungal diseases encountered in tropical regions.

Mr. Work and the Staff

**216B. Infectious Diseases in Tropical Regions.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 216A. Lectures, demonstrations and laboratory exercises dealing with the natural history, epidemiology, diagnosis and prevention of protozoal and metazoal parasitic diseases encountered in tropical regions.

Mr. Work and the Staff

**217. Public Health Microbiology.**

Lecture, two hours; laboratory, six hours. Prerequisite: Bacteriology 100A or equivalent. Advanced principles and laboratory procedures employed in solution of public health problems in control of infectious diseases with special emphasis on food, milk, water, waste disposal and contamination of soil, water and atmosphere.

Mrs. Boak and the Staff

**219. Arthropods of Medical Importance.**

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. The biology and identification of mites and insects of public health importance involved in the transmission and causation of human diseases.

Mr. Barr and the Staff

**231. Advanced Public Health Microbiology.**

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Advanced studies in mycobacteria, venereal diseases and enteric diseases including cholera.

Mrs. Boak and the Staff

**255. Current Problems with Arthropod-borne Viruses.**

Lecture, two hours; laboratory, six hours. Prerequisite: courses 216B, 418; Medical Microbiology and Immunology 201A, 201B or equivalent, consent of the instructor. For the specialist or advanced student presentation of specific aspects in the etiology, epidemiology, epizootiology, ecology, pathogenesis, clinical manifestations, diagnosis, and control of arthropod-borne virus diseases through lectures and laboratory exercises.

Mr. Work and the Staff

**262. Current Problems with Mosquito Vectors.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 219; Zoology 121B, 123; Bacteriology 100C, or consent of the instructor. Current topics of significance on mosquito biology as related to colonization, disease transmission and control.

Mr. Barr and the Staff

**264. Current Problems with Metazoal Parasites.**

Lecture, two hours; laboratory, six hours. Prerequisite: consent of the instructor. Advanced study of the epidemiology, host-parasite relationships, diagnosis and control of helminths, with special emphasis on morphological and biological aspects of the parasites and research approaches to their study.

Mr. Ash

**266A-266D. Seminar in Infectious and Tropical Diseases. (½ course each)**

Current topics of significance relating to public health microbiology, infectious and tropical diseases. Will be rotated from year to year for seminar discussions.

Mr. Work and the Staff

**290Q. Special Group Studies. (½ to 1 course)**

Infectious and tropical diseases. The Staff

**418. Functions of the Public Health Laboratory. (½ course)**

Lecture, one hour; laboratory, three hours. Prerequisite: consent of the instructor. The organization and administration of services of the public health laboratory will be studied. A lecture and a laboratory session once a week in basic principles and laboratory methods precede participation in procedures at Bureau of Public Health Laboratories, County of Los Angeles Health Department.

Mrs. Boak, Mr. Lawrence and the Staff

**467. Principles of Instrumentation for Public Health Laboratories.**

Lecture, two hours; laboratory, six hours. Prerequisite: Chemistry 1A, 1B, 1C and 4A, 4B, 4C. To familiarize graduate students with medical, electronic, optical and biophysical research instruments currently used in public health laboratories. Lectures and discussions emphasizing principles of design and function. Laboratory work experience in application, operation and maintenance.

Mr. Clark, Mr. Lewis

**INTERNATIONAL HEALTH****256A-256B-256C. Seminar in Comparative and International Health. (½ course each)**

Prerequisite: consent of the instructor. A study of the official and nonofficial organizations engaged in health work in other countries, including specific programs, and of cultural and socioeconomic factors involved.

Mr. Chang

**290E. Special Group Studies. (½ to 1 course)**

Prerequisite: consent of the instructor. International Health.

Mr. Chang

**Special and Individual Studies****198. Special Courses. (½ to 1 course)**

All fields of study. The Staff

**199. Special Studies. (½ to 1 course)**

Prerequisite: senior standing and consent of the instructor. All fields of study. The Staff

**Individual Study and Research****400. Field Studies in Public Health.**

(½ to 1 course)

Field observations and studies in selected community organizations for health promotion or medical care. The Staff

**596. Directed Individual Study or Research.**

(½ to 1 course)

(Formerly numbered 297.) A maximum of one course (four units) will count toward the required graduate course minimum for a master's degree.

The Staff

**597. Preparation for Master's Comprehensive or Doctoral Qualifying Examination. (½ to 1 course)**

Not applicable to either the five graduate course requirement or the nine-course minimum for the master's degree. The Staff

**598. Master's Thesis Research. (½ to 1 course)**

A maximum of one course (four units) will count toward the minimum for a master's degree, but not toward the minimum number of graduate courses. The Staff

**599. Doctoral Dissertation Research. (½ to 1 course)**

The Staff

**Nutritional Sciences****101. Food Analysis.**

Lecture, three hours; laboratory, six hours. Prerequisite: Chemistry 1A, 1B, 1C. The application of quantitative methods to the chemical and microbiological assay of foods. Mrs. Alfin-Slater

**111. Principles of Food and Nutrition. (½ course)**

A survey of the principles of nutrition and their application in normal conditions of growth and development. Food habits in relation to nutritive requirements and health. (For non-majors.)

Mrs. Carlisle

**113. Nutrition.**

Prerequisite: organic chemistry. Biology 1A-1B-1C. The chemistry and biochemistry of carbohydrates, fats, proteins, minerals, and vitamins in relation to human nutrition. Miss Swendsen

**114A. Metabolism. (½ course)**

Prerequisite: courses 101, 113; organic chemistry, one year; Biology 1A, 1B, 1C. The metabolism of lipids, carbohydrates and proteins; the role of hormones and enzymes in metabolism; acid-base regulation. Mrs. Alfin-Slater

**114B. Analytical Methods of Metabolism. (½ course)**

Laboratory, six hours. Prerequisites: courses 101, 113; organic chemistry, one year; Biology 1A, 1B, 1C. Application of analytical procedures for determining the various constituents of blood and urine. Mr. Clark

**115. Nutritional Requirements. (½ course)**

Prerequisite: consent of instructor. The experimental basis for the establishment of recommended

dietary allowances and a critical study of the methods used to assess the nutritional adequacy of various foods and the nutritional status of individuals.

Mrs. Albin-Slater, Mrs. Emerson

#### 116. Therapeutic Nutrition.

Lecture, two hours; laboratory, two hours. Prerequisite: course 113 or equivalent and consent of the instructor. A study of recent findings in the field of diet and disease and modifications made in the normal diet to meet these conditions. Mrs. Carlisle

#### 142. The World's Food.

Prerequisite: Economics 1, 2. The world's food sources, major food groups; human food requirements and consumption; food in developing economies; the international movement of foods; interrelations of food; population, and economic progress. Mr. Rada

#### 143. The World's Food. (½ course)

Lecture, one hour; laboratory, three hours. Prerequisite: Economics 1, 2; course 142. The world's food sources; major food groups, human food requirements and consumption; food in developing economies; the international movement of foods; interrelations of foods, population, and economic progress. Mr. Rada

#### 211A-211B-211C. Advanced Nutrition.

(½ course each)

(Formerly numbered 253, 254 and 255.) Prerequisite: Biological Chemistry 101A-101B-101C or equivalent and consent of the instructor. Biochemical aspects of nutrition; metabolic and nutrient interrelationships.

Mrs. Albin-Slater, Mrs. Emerson, Miss Swendsen

#### 212A-212B. Laboratory Techniques in Nutrition.

(½ course each)

Laboratory, six hours. Prerequisite: consent of the instructor. Instrumentation and methodology including animal nutrition experiments. Mr. Clark

#### 251. Seminar in Nutrition. (½ course)

Recent advances in the science of nutrition and in the dietetic treatment of diseases. (May be repeated for credit.) Mrs. Albin-Slater, Miss Swendsen

#### 252. Nutritional Diagnosis. (½ course)

Prerequisite: course 113, Chemistry 152, or Biological Chemistry 101A-101B. (May be repeated for credit.) Nutrition in the maintenance of health and treatment of disease. Problems in public health nutrition. Mrs. Emerson

#### 256. Nutritional Problems in Developing Areas.

(½ course)

Prerequisite: consent of the instructor. Manifestations and dietary treatment of nutritional deficiencies. Mrs. Emerson

#### 290L. Special Group Studies. (½ to 1 course)

Public Health nutrition.

The Staff

Special and Individual Studies

#### 199. Special Studies in Nutritional Science.

(½ to 1 course)

Prerequisite: senior standing and consent of the instructor. The Staff

Individual Study and Research

#### 596. Directed Individual Study or Research.

(½ to 1 course)

(Formerly numbered 297.) A maximum of one course (four units) will count toward the required graduate course minimum for a master's degree. The Nutrition Staff

#### 597. Preparation for Master's Comprehensive or Doctoral Qualifying Examination.

(½ to 1 course)

Not applicable to either the five graduate course requirement or the nine-course minimum for the master's degree. The Nutrition Staff

#### 598. Master's Thesis Research. (½ to 1 course)

One course (4 quarter units) may be counted toward the required graduate course minimum or two courses may be counted if credit has not been received for course 596. The Nutrition Staff

#### 599. Doctoral Dissertation Research.

(½ to 1 course)

The Nutrition Staff

## ■ RADIOLOGY

(Department Office, B5-117 Center for the Health Sciences)

Leslie R. Bennett, M.D., *Professor of Radiology.*

Andrew H. Dowdy, M.D., D.Sc., *Professor of Radiology.*

Moses A. Greenfield, Ph.D., *Professor of Radiology.*

William N. Hanafee, M.D., *Professor of Radiology (Chairman of the Department).*

Raymond L. Libby, Ph.D., *Professor of Radiology.*

Norman S. MacDonald, Ph.D., *Professor of Radiology and Biophysics in Residence.*

Amos Norman, Ph.D., *Professor of Radiology.*

Richard E. Ottoman, M.D., *Professor of Radiology and Anatomy.*

Leo G. Rigler, M.D., *Professor of Radiology in Residence.*

Justin J. Stein, M.D., *Professor of Radiology and Director, Cancer Research Institute.*

George V. Taplin, M.D., *Professor of Radiology in Residence.*

J. Michael Criley, M.D., *Associate Professor of Radiology and Cardiology in Residence.*

DeLores E. Johnson, M.D., *Associate Professor of Radiology and Medicine in Residence.*

Edward A. Langdon, M.D., *Associate Professor of Radiology.*

Richard F. Riley, Ph.D., *Associate Professor of Radiology.*

Milo M. Webber, M.D., *Associate Professor of Radiology.*

W. Bruce Anderson, M.D., *Assistant Professor of Radiology in Residence.*

Donald T. Desilets, M.D., *Assistant Professor of Radiology.*

Aaron G. Fingerhut, M.D., *Assistant Professor of Radiology in Residence.*

Julius H. Grollman, M.D., *Assistant Professor of Radiology.*

Michael T. Gyepes, M.D., *Assistant Professor of Radiology.*

Michael Hayes, M.D., *Assistant Professor of Radiology in Residence.*

James W. Lecky, M.D., *Assistant Professor of Radiology.*

Lawrence S. Myers, Jr., Ph.D., *Assistant Professor of Radiology and Biophysics in Residence.*

Joseph A. Parks, M.D., *Assistant Professor of Radiology in Residence.*

Norman D. Poe, M.D., *Assistant Professor of Radiology in Residence.*

Richard J. Steckel, M.D., *Assistant Professor of Radiology.*

Edgar L. Surprenant, M.D., *Assistant Professor of Radiology in Residence.*

Manuel Tubis, Ph.D., *Assistant Professor of Radiology in Residence.*

Marvin Weiner, M.D., *Assistant Professor of Radiology.*

Gabriel H. Wilson, M.D., *Assistant Professor of Radiology.*

John R. Bentson, M.D., *Instructor of Radiology in Residence.*

James D. Collins, M.D., *Instructor of Radiology in Residence.*

Gerald K. Dayton, M.D., *Instructor of Radiology in Residence.*

Gerald Hassan, M.D., *Instructor of Radiology in Residence.*

Barbara M. Kadell-Wootton, M.D., *Instructor of Radiology in Residence.*

David C. Levin, M.D., *Instructor of Radiology in Residence.*

James T. O'Dea, M.D., *Instructor of Radiology in Residence.*

Philip C. Shiu, M.D., *Instructor of Radiology in Residence.*



Marvin Abrams, M.D., *Assistant Clinical Professor of Radiology.*

William E. Adolph, M.D., *Assistant Clinical Professor of Radiology.*

Sol R. Baker, M.D., *Associate Clinical Professor of Radiology.*

Edwin N. Barnum, M.D., *Clinical Instructor in Radiology.*

Larry P. Bilodeau, *Assistant Clinical Professor of Radiology.*

Harry A. Bishop, M.D., *Assistant Clinical Professor of Radiology.*

Louis J. Bonann, M.D., *Assistant Clinical Professor of Radiology.*

John D. Buckley, M.D., *Clinical Instructor in Radiology.*

Albert B. Cole, M.D., *Clinical Instructor in Radiology.*

Robert L. Cook, M.D., *Clinical Instructor in Radiology.*

James G. Davis, M.D., *Associate Clinical Professor of Radiology.*

Harold L. Endlich, M.D., *Assistant Clinical Professor of Radiology.*

Karl H. Falkenbach, M.D., *Assistant Clinical Professor of Radiology.*

Bernard H. Feder, *Clinical Professor of Radiology.*

E. W. L. Fletcher, M.D., *Visiting Assistant Professor of Radiology.*

Ross Golden, M.D., *Lecturer in Radiology.*

Richard B. Hanchett, M.D., *Assistant Clinical Professor of Radiology.*

Oscar Harvey, M.D., *Assistant Clinical Professor of Radiology.*

Maurice M. Haskell, M.D., *Assistant Clinical Professor of Radiology.*

Samuel B. Haveson, M.D., *Assistant Clinical Professor of Radiology.*

John W. Horns, M.D., *Assistant Clinical Professor of Radiology.*

Margaret A. Ingram, M.D., *Clinical Instructor in Radiology.*  
 John J. Jares, M.D., *Associate Clinical Professor of Radiology.*  
 William C. Johnson, M.D., *Assistant Clinical Professor of Radiology.*  
 Tom A. Kendig, M.D., *Assistant Clinical Professor of Radiology.*  
 Ian Langbein, M.D., *Visiting Assistant Professor of Radiology.*  
 Robert A. Ledner, M.D., *Assistant Clinical Professor of Radiology.*  
 Kenneth W. Lewin, M.D., *Assistant Clinical Professor of Radiology.*  
 Joseph F. Linsman, M.D., *Associate Clinical Professor of Radiology.*  
 Paul S. Mahoney, M.D., *Assistant Clinical Professor of Radiology.*  
 James E. Massman, M.D., *Lecturer in Radiology.*  
 Harry A. Morewitz, Ph.D., *Lecturer in Radiology.*  
 Jasper E. Morgan, Ph.D., *Clinical Professor of Radiology.*  
 Michael W. Ormiston, M.D., *Clinical Instructor in Radiology.*  
 Ronald J. O'Reilly, M.D., *Clinical Instructor in Radiology.*  
 Theodore T. Ott, R.T., *Lecturer in Radiology.*  
 Harry Pearlman, Ph.D., *Associate Clinical Professor of Radiology.*  
 Hyman Peck, M.D., *Clinical Instructor in Radiology.*  
 William L. Pogue, M.D., *Assistant Clinical Professor of Radiology.*  
 David I. Rabinov, M.D., *Assistant Clinical Professor of Radiology.*  
 Burton I. Rein, M.D., *Assistant Clinical Professor of Radiology.*  
 Josef Rosch, M.D., *Visiting Professor of Radiology.*  
 Joseph E. Scallon, M.D., *Assistant Clinical Professor of Radiology.*  
 Arthur F. Schanche, M.D., *Assistant Clinical Professor of Radiology.*  
 Alfred L. Schmitz, M.D., *Associate Clinical Professor of Radiology.*  
 Daniel H. Simmons, M.D., *Professor of Medicine.*  
 Alan B. Skorneck, M.D., *Assistant Clinical Professor of Radiology.*  
 Richard L. Smith, M.D., *Clinical Professor of Radiology.*  
 Harry T. Vanley, M.D., *Clinical Instructor in Radiology.*  
 Henry S. Williams, M.D., *Clinical Instructor in Radiology.*  
 Alan C. Winfield, M.D., *Clinical Instructor in Radiology.*  
 Norman Zheutlin, M.D., *Associate Clinical Professor of Radiology.*

#### **Requirements for Admission to Graduate Status**

Candidates for admission to graduate status in the Department of Radiology must meet the general requirements set by the Graduate Division for admission to such status.

**Areas of Study.** Study in the fields of radiation physics, radiation biology and radiation chemistry will be open to qualified candidates.

#### **Requirements for the Degree of Master of Science in Medical Physics (Radiology)**

**General University Requirements.** Candidates for the Master of Science degree in the radiological sciences must meet the general requirements set by the Graduate Division for this degree. The candidate must elect either the Thesis Plan or the Comprehensive Examination Plan as set forth in this bulletin.

**Departmental Requirements.** The student must complete radiology courses 200, 202, 204, 206, 208 and Public Health 160A-160B

(Biostatistics). He should have an appropriate background in physics, chemistry, biology and mathematics. At the end of the first year the student will be required to pass a written screening examination based on the material covered in the required radiology courses.

#### **Requirements for the Doctor's Degree in Medical Physics (Radiology)**

**General University Requirements.** Candidates for the doctorate in medical physics (radiology) must meet the general requirements set by the Graduate Division for this degree. The foreign languages requirement may be satisfied by demonstrating a reading knowledge of two languages or one language and an approved substitute program. It should be noted that the student must pass a series of written and oral examinations before admission to candidacy.

**Departmental Requirements.** (1) Admission to Candidacy. Admission to candidacy is granted only after the student has passed

a preliminary written screening examination and a qualifying oral examination in the physical, biological, and chemical foundations of medical physics. This examination may not be taken more than twice. The student's guidance committee will be appointed by the Chairman of the Department upon admission to regular status in the Department. (2) Normally graduate students will be expected to take courses 200, 202, 204, 206, 208, 260 and 262. The guidance committee may recommend the completion of additional courses as appropriate for the development of the student.

It should be noted that the doctorate in medical physics (radiology) is not granted merely upon completion of routine requirements as to examinations, courses and dissertation; fulfillment of such requirements is a prerequisite. The doctor's degree will be granted only to students who have clearly demonstrated both an adequate grasp of a broad field of knowledge and an ability to contribute to that field of knowledge by original and independent research.

#### Graduate Courses

#### 200A-200B-200C. Radioactivity-Principles and Measurements.

(Formerly numbered 200 and 201.) Lecture, one hour; laboratory, three hours. Natural and induced radioactivity, interactions of nuclear radiations with matter, decay schemes, counting statistics, nuclear reactions; isotope methodology, instrumentation, and radiation safety.

Mr. Greenfield, Mr. Libby, Mr. Norman

#### 202A-202B. Clinical Radioisotopes.

Laboratory, four hours. Application of radioisotopes to clinical problems. Course intended for physicians and radiation physicists.

Mr. Bennett

#### 204. Introductory Radiation Biology.

Lecture, three hours. Effects of ionizing radiation on chemical and biological systems.

Mr. Riley

#### 206A-206B-206C. Radiological Physics.

(½ course each)

Lecture, one hour. Production and properties of X-rays, interaction of X-rays with a scattering medium, radium and radium dosage, radiation protection, clinical applications.

Mr. Greenfield

#### 207A-207B-207C. Dosimetry and Health Physics.

Lecture, three hours. Prerequisite: consent of the instructor. The dosimetry of ionizing radiations, the interpretation of physical measurements and dosimetric units, and the philosophy of protection design.

The Staff

#### 208A-208B. Medical Physics Laboratory.

(½ to 1 course each)

(Formerly numbered 206C-206D.) Laboratory, four to eight hours. Techniques for measuring ioniz-

ing radiation; applications to X-ray and isotope dosimetry, radiation surveys.

Mr. Greenfield

#### 209. The Quantitative Culture of Mammalian Cells.

(½ course)

Prerequisite: consent of the instructor. Laboratory, four hours. Techniques for quantitative studies on mammalian cells in vitro with applications to radiation biology, genetics and virology.

Mr. Norman

#### 260A-260B-260C. Seminar in Medical Physics.

(½ course each)

(Formerly numbered 260A-260B and 205.) One hour. Joint critical study by students and instructors of the fields of organized knowledge pertaining to radiology. Periodic contributions are made by visiting scientists. Research in progress is discussed.

Mr. Norman

#### 262A-262B. Seminar in Radiation Biology.

(½ course each)

(Formerly numbered 260A-260B and 205.) One hour. Prerequisite: course 204. (May be taken concurrently.) Graduate student seminar on current progress in radiobiological research.

Mr. Riley

#### 263A-263B-263C. Seminar in Space Radiation Problems.

(½ course each)

(Formerly numbered 260A-260B.) Two hours. Prerequisite: courses 207A-B-C. A comprehensive survey of the space radiation environment will be examined in light of the implications for manned space flight. Dosimetry problems associated with radiobiological investigations in addition to those pertinent for radiation monitoring during flight will be examined. Shielding considerations and flare warning systems will be discussed.

The Staff

#### 265A-265B-265C. Seminar in Dosimetry.

(½ course each)

(Formerly numbered 260A-260B.) One hour. Specific problems associated with the measurement of absorbed dose on both a macro and a micro basis will be discussed. The influence of ionization density and its spatial distribution will be considered.

The Staff

#### 268A-268B-268C. Seminar in Nuclear Medicine.

(½ course each)

(Formerly numbered 260A-260B.) One hour. Topics of current interest in nuclear medicine. Seminar intended for physicians, radiation physicists, and graduate students.

Mr. Webber, Mr. MacDonald

#### Professional Courses

#### 403. Roentgen Diagnostic Conference.

(Formerly numbered 403A-403B.) Presentation of cases to illustrate general problems in X-ray diagnosis.

Mr. Rigler and the Staff

#### 404A-404B-404C. Radiation Therapy Conference.

(½ course each)

Presentation of selected current therapeutic problem cases of general interest.

Mr. Stein and the Staff

#### 405A-405B-405C. Consultative Tumor Board.

(½ course each)

Presentation of tumor cases for diagnosis and appropriate therapy with discussion of differential

diagnosis and combinations of theory such as surgery, X-ray, radium therapy, and isotopes.

Mr. Stein

#### 413. Radiation Safety. (½ course)

This course is designed to instruct graduate students, residents, technicians and others in methods of safely handling and confining radioactive materials.

Mr. Libby and the Staff

#### 439. Forensic Radiology, History and Ethics.

(½ course)

The history of radiology up to the present. Forensic and ethical problems in radiology. Special attention will be given to the radiologist's relations with his patient, his colleagues, and the state.

Mr. Golden and Mr. Rigler

#### 440A-440B-440C. Radiology Conference.

(½ course each)

Conducted for credit for candidates for the M.S. and Ph.D. degrees and for noncredit for third-year medical students and radiology residents. The diagnosis, treatment and complications of the radiologic treatment of cancer, particularly of the head and neck are considered. Special emphasis is placed upon the fundamental principles involved in the clinical applications of ionizing and penetrating radiation.

Mr. Stein

#### 452. Radiation Therapy. (½ course)

A survey of basic principles of radiobiology, with special attention to reactions of neoplastic and inflammatory processes of ionizing radiation of various types. The distribution and summation of radiation effects and their relationship to the growth of cancer will be intensively studied. The systematic effects of radiation, radiation sickness, and the pharmacological problems posed will be of particular interest.

Mr. Stein

#### 454A-454D. Roentgenoscopy. (½ course each)

Technique and practical application of the fluoroscopic method to the roentgen diagnosis of diseases of thoracic and abdominal organs including image amplification, cine-radiography and television recording.

Mr. Weiner, Mr. Steckel

#### 456A-456D. Applied Roentgen Diagnosis.

(Formerly numbered 456.) Practical procedures in the roentgen examination of patients including X-ray technique, film analysis and interpretation.

Mr. Hanafee and the Staff

#### 458A-458D. Pediatric Radiology.

(Formerly numbered 458A-458B.) Practical application of roentgenoscopy, angiography and other techniques to the diagnosis of diseases of children including roentgen film interpretation.

Mr. Desilets and the Staff

#### 460A-460D. Roentgen Diagnostic Methods and Signs. (½ course each)

(Formerly numbered 460A-460H.) Lectures and demonstrations of the basic elements of roentgen diagnosis of the entire anatomy. Included are methodology, techniques and specific signs in roentgen diagnosis.

Mr. Rigler and the Staff

#### 461A-461D. Neuroradiology Procedures.

(½ course each)

(Formerly numbered 460A-460H.) Practical applications of roentgen techniques, diagnostic procedures and film interpretation of the diseases of the brain and nervous system.

Mr. Wilson and the Staff

#### 462. Roentgen-Pathology Correlations. (½ course)

(Formerly numbered 462A-462B.) Analysis of the relationship of roentgen findings to the pathology exhibited in surgical or autopsy specimens will be presented. The pathogenesis of disease processes as exhibited in the roentgenogram will be reviewed. The identification of factors of error in roentgen diagnosis will be made.

Mr. Rigler and the Staff

#### 463. Neuroradiology Conference. (½ course)

(Formerly numbered 460A-460H.) Case presentations to illustrate problems in the roentgen diagnosis of neurological abnormalities.

Mr. Wilson and the Staff

#### 464A-464B-464C. Roentgen Diagnosis of Cardiovascular Diseases. (½ course each)

(Formerly numbered 460A-460H.) Practical application of roentgenoscopy, including image amplification, cine-radiography and television techniques to the diagnosis of diseases of the heart and blood vessels. Methods of cardiac and vascular catheterization, angiocardiology and angiography will be applied.

Mr. Grollman and the Staff

#### 465. Roentgen Diagnosis in Otolaryngology.

(½ course)

(Formerly numbered 460A-460H.) Roentgen techniques in the diagnosis and management of diseases of the upper respiratory regions with special emphasis on the temporal bone and larynx.

Mr. Hanafee and the Staff

#### 466. Roentgen Diagnosis in Body Joint Abnormality.

(½ course)

(Formerly numbered 460A-460H.) Roentgen techniques in joint arthrography in normal and abnormal bony articulations.

Mr. Collins and the Staff

#### 467. Roentgen Diagnosis of the Urinary Tract.

(½ course)

(Formerly numbered 460A-460H.) Practical application of roentgen methods and film interpretation to diseases of the genitourinary tract.

Mr. Lecky and the Staff

#### 468. Neuroradiology—Diagnostic Methods and Film Interpretation. (½ course)

(Formerly numbered 460A-460H.) A comprehensive review of neuroanatomy and neuroradiologic techniques.

Mr. Schmitz

#### 469. Regional Roentgen Diagnosis. (½ course)

(Formerly numbered 460A-460H.) A comprehensive review of roentgen anatomy of those regions not covered in courses 468 and 470.

Mr. Mahoney, Mr. O'Reilly, Mr. Zheutlin

#### 470. Roentgen Diagnosis of Diseases of the Gastrointestinal Tract. (½ course)

(Formerly numbered 460A-460H.) A comprehensive review of roentgen diagnosis in the gastrointestinal tract.

Mr. Ledner and Mr. Linsman

#### 472. Roentgen Diagnostic Seminar. (½ course)

(Formerly numbered 460A-460H.) Presentation of problems in roentgen diagnosis and research programs.

Mr. Rigler and the Staff

#### 474. Conference on Diseases of the Chest.

(½ course)

(Formerly numbered 460A-460H.) Case presentations in the diagnosis, medical and surgical management of diseases of the lungs and mediastinum with emphasis on the role of roentgen diagnosis.

Mr. Rigler, Mr. Simmons

#### 476. Arteriography Conference. (½ course)

The interesting arteriographic studies performed during the previous week are selected by the faculty and house staff performing the procedures and reviewed at this weekly session.

Mr. Wilson

Individual Study and Research

#### 596. Research in Medical Physics. (½ to 1 course)

(Formerly numbered 297.) Lecture, one to two hours; laboratory, three to six hours. Directed individual study or research. May be taken any number of times for letter grades; only one course may be used for M.S. credit.

The Staff

#### 597. Preparation for the Comprehensive

Examination for the Master's Degree or the Qualifying Examination for the Ph.D.

Lecture, one to two hours. May be taken for one quarter only, on a "Satisfactory" (S) or "Unsatisfactory" (U) basis, and is not creditable for the M.S. degree.

The Staff

#### 598. Research for the Preparation of the

Master's Thesis.

(Formerly numbered 297.) May be taken any number of times on a "Satisfactory" (S) or "Un-

satisfactory" (U) basis. A maximum of two courses, for 598 and 596 combined, may be used for M.S. credit.

The Staff

#### 599. Research on Dissertation. (1 to 3 courses)

(Formerly numbered 299.) Prerequisite: advancement to candidacy. Research for and preparation of the doctoral dissertation. May be taken any number of times on a "Satisfactory" (S) or "Unsatisfactory" (U) basis.

The Staff

#### Residency Training and Postdoctoral Graduate Work

A four-year residency training program in straight diagnosis or combined diagnosis and therapy is offered in the Department of Radiology. A three-year residency training program in therapeutic radiology is offered. These programs lead to a certificate awarded by the School of Medicine and the Department of Radiology. Requests for information concerning prerequisites and application for appointment may be addressed to the office of the Chairman, Department of Radiology, University of California, Los Angeles, California 90024.

#### Research

Investigative activities are encouraged throughout the Department, and other departments are encouraged to make use of the personnel and facilities of the Department of Radiology in research pertaining to radiology.

## ■ ROMANCE LANGUAGES AND LITERATURES

Candidates for the degree of Doctor of Philosophy in Romance languages and literatures will be accepted with major fields in French, Italian or Spanish. The requirements listed below should be regarded as minimum requirements; guidance committees may supplement those listed.

#### Minimum Prerequisites for Admission to the

Program

1. An A.B. degree, or the equivalent, with a major in one of the following fields: French, Italian, or Spanish.

2. An M.A. degree at the University of California, or the passing of the Qualifying Examination, Part I in French, or Italian, or Spanish, and the recommendation of his Department to enter the program.

3. A grade-point average of at least 3.0 in all his graduate work taken prior to the Qualifying Part I examination.

4. A reading knowledge of at least one of the two Romance languages chosen as minors. (To enter the program with emphasis

on philology, the student must have completed Latin 3 or the equivalent.)

#### Minimum Requirements for the Degree

1. The completion of a program of study which will satisfy the general prescriptions of the "Requirements for the Degree of Doctor of Philosophy," as set forth on pages 140 of this bulletin.

2. Within the general field of Romance Languages and Literatures, specialization is required in either literature or philology.

3. *The program with emphasis on literature* will consist of one major field, and three minor fields of which two, together with the major field, must be concentrated in one period of literature.

4. *The program with emphasis on philology* will comprise one major field, and three minor fields of which at least two must be other Romance languages. The major field will normally coincide with the body of studies represented by the masters degree held by the student.

5. During the first year of graduate study, the student entering the program will be re-

quired to pass the standard reading examination in German. Substitution of another language for German will be accepted, if ap-

proved by the Guidance Committee, only in the case of students entering the program with emphasis on literature.

## ■ RUSSIAN AND EAST EUROPEAN AREA STUDIES

The Certificate Program in Russian and East European Studies is intended to provide a broad interdisciplinary area background to supplement the Master of Arts degree in a discipline. It is for those graduate students who plan to go on to the doctorate and specialize in the Russian and east European area within a discipline, as well as for those who want to prepare for such careers as secondary or junior college teaching, library work, journalism or government service, formal preparation for which is sufficiently met by a master's degree and for which a knowledge of Russia and eastern Europe is useful. The student in the program is expected to develop a good general knowledge of the culture, history, economy, geography, government and politics of Russia and eastern Europe, and a considerably greater knowledge in at least two of these fields, one of which is in his major discipline.

### Admission to the Certificate Program

A student for admission into the certificate program must be accepted into a graduate degree program in a department or professional school. A student may apply to the Committee on Russian and East European Studies at the same time he applies for admission into a department (his admission into the program is conditional on his acceptance into the department of his choice) or any time up to the date he files his candidacy for the M.A. The student who is working directly for a Ph.D. may apply for the certificate program any time in the first two years of his graduate study. Application blanks may be secured from the Chairman of the Committee on Russian and East European Studies.

### Requirements for the Certificate in the Russian and East European Area

**Foreign Language.** As a minimum requirement, the student must have a reading knowledge of the Russian language or (on approval of the Committee on Russian and East European Studies) another east European language. The reading examination, administered by the Language Examiner of the Graduate Division, should ordinarily be passed before the student enrolls in 200-series courses in this program.

**Course of Study.** The course of study is interdisciplinary. (a) As a minimum, the student must have completed, with a grade of B or better, 10 upper division courses (40 quarter units) with a Russian and east European content either during his undergraduate or graduate course of study. They should normally be distributed as follows: two courses in Russian history before 1917; two courses in political science, one of which must be Soviet government; two courses in Russian literature, one of which must be Soviet literature; one course on Soviet economics; and one course in geography, sociology or anthropology. (b) The student must satisfactorily complete three courses (12 units) of 200-series courses outside of his major department, one of which must be Russian and East European Area Studies 250, Interdisciplinary Seminar. The student must have his specific program approved by the Chairman of the Committee on Russian and East European Studies.

**Examination or Thesis.** The student must pass an oral examination administered by the Committee on Russian and East European Studies and representing at least three disciplines. The examination will be based on a reading list drawn up by the Committee and revised periodically. The oral examination must be taken within a year of satisfactorily completing the M.A. examinations within the student's major department or before taking the Ph.D. preliminary examination in case of those students going directly to the Ph.D.

In lieu of an oral examination a student may submit his M.A. thesis, if it has a Russian and east European content, for approval by the Committee on Russian and East European Studies.

### Graduate Courses

#### 250. Interdisciplinary Seminar in Russian and East European Studies.

Required of all students in the Certificate Program in Russian and East European Studies. May be taken by graduate students in other departments with the permission of the instructor. This seminar, offered by the staff of the Russian and East European Area Program, will integrate the approaches employed by various disciplines in the study of Russian and East European societies and politics. Direction of the seminar will rotate among members of departments offering work in the Russian and east European area.

## ■ SLAVIC LANGUAGES

(Department Office, 5288 Social Sciences Building)

Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*

Thomas Eekman, Ph.D., *Professor of Slavic Languages (Chairman of the Department).*

Kenneth E. Harper, Ph.D., *Professor of Slavic Languages (Vice-Chairman of the Department).*

Vladimir Markov, Ph.D., *Professor of Slavic Languages.*

Dean S. Worth, Ph.D., *Professor of Slavic Languages.*

Gerta H. Worth, Ph.D., *Professor of Slavic Languages.*

Alexander Albin, Ph.D., *Assistant Professor of Slavic Languages.*

Goldie Meyerstein, Ph.D., *Assistant Professor of Slavic Languages.*

Michael Shapiro, Ph.D., *Assistant Professor of Slavic Languages.*



Edward Denzler, M.A., *Lecturer in Slavic Languages.*

Michael S. Flier, M.A., *Acting Assistant Professor of Slavic Languages.*

Margarita Gisetti, M.A., *Lecturer in Slavic Languages.*

Peter C. L. Hodgson, M.A., *Acting Assistant Professor of Slavic Languages.*

Halyna Karpiw, Diploma, *Lecturer in Slavic Languages.*

Rochelle Stone, M.A., *Lecturer in Slavic Languages.*

### Preparation for the Major

Required courses: Russian 11, 12, 13, 14, 15, 16, Slavic 99. Note: courses Russian 119 and 120A-120B may be taken in the sophomore year.

### The Major

Required courses: Russian 101A-101B-101C, 119, 120A-120B, 121, 122, 123 and five courses chosen from Russian 130A-130B, 140A-140B-140C-140D, 150, Polish 152A-152B, Czech 155A-155B, Serbocroatian 154A-154B. Note: not more than one eight-unit course in Polish, Czech or Yugoslav literature may apply toward the major.

Students intending to continue into graduate school should note that several graduate courses (numbered below 220) may be taken by qualified seniors with permission of the instructor and the graduate adviser.

### Admission to Graduate Status

The completion of the undergraduate major or its equivalent is required. Students entering from other institutions will be asked to make up any deficiencies before being admitted to most graduate courses and may be required to take a placement examination in Russian language and literature before enrolling in courses.

### Requirements for the Master's Degree

1. For the general requirements, see pages 136-140. The Department follows the Comprehensive Examination Plan. The M.A. is

weighted towards either Linguistics or Literature, but all candidates are expected to have a sound general knowledge of both Russian linguistics and Russian literary history.

2. Application for advancement to candidacy may be made when the student has passed the reading examination in French or German. This examination must be passed no later than during the first month of the quarter in which the candidate expects to take his examinations.

3. *Course requirements.* Required of all M.A. candidates: Russian 102A-102B-102C, 200, 204, 212, 213 and History 206 (Russian Intellectual History). In addition, candidates for the M.A. (Linguistics) must take Slavic 201 and 202, and candidates for the M.A. (Literature) must take Russian 211 and one other literature course in the Department. Note: most of the courses required for the M.A. are open to qualified seniors with the permission of the instructor and the graduate adviser.

4. A written examination, based on course work and the departmental reading list, will cover either (a) Linguistics, including a thorough knowledge of Russian phonology and grammar and an acquaintance with Comparative Slavic Linguistics, Old Church Slavic, and the history of the Russian literary language; or (b) Literature, including an acquaintance with the entire history of Russian literature from its origins to the present and a thorough knowledge of the major develop-

ments and figures of the nineteenth and early twentieth centuries.

5. A final oral examination will test the student in the fields of his major interest and on his general background. Students who have not done well in Russian 200 will be examined in Russian linguistics at the M.A. examinations. The oral examination may be conducted partly in Russian.

6. *Statute of limitations.* The Department does not encourage part-time or non-resident M.A. candidates. The M.A. examinations must be taken within two calendar years from the time of admission to the Graduate Division (time spent in removing deficiencies, to a maximum of one year, does not count toward this two-year period).

7. Students who fail either the written or the oral examination may retake it once, not later than one calendar year after the first attempt.

8. A grade of "High Pass" on the M.A. examinations is one of the conditions for admission to the Department's doctoral program (see below). M.A. candidates who intend to continue toward the Ph.D. should note that courses numbered 220-239, which are required for the Ph.D., may be taken before completion of the M.A.

#### Requirements for the Doctor's Degree

1. For the general requirements, see pages 140-142. The Department's program envisages specialization in either Linguistics or Literature, with Russian as the principal language and literature respectively. By special arrangement, students can specialize in a language or literature other than Russian.

2. *Admission to the doctoral program.* Students may make formal application to the Department for admission to the doctoral program when they have: (1) passed the UCLA M.A. examinations with a grade of "High Pass"; (2) passed the reading examinations in both German and French; (3) taken one year (or the equivalent) of a second Slavic language. Students who received a grade lower than "High Pass" on the UCLA M.A. examinations, and entering students with an M.A. from other institutions, must (re)take the M.A. examinations within one year as a doctoral screening examination success on which is required for admission to the doctoral program.

3. *Course requirements.* For candidates in Linguistics: Slavic 222, 223, 224, 240, 241A, 242A-242B, Russian 241, 242, 243A-

243B. For candidates in Literature: Slavic 201, 230A-230B, 250, Russian 251. All candidates, regardless of specialization, are required to take at least one seminar. Recommended preparation: candidates specializing in Linguistics are advised to take or audit courses 100, 110, 150 in the Department of Linguistics; candidates specializing in Literature are advised to acquire a sound general knowledge of the literatures of England, France and Germany in the eighteenth and nineteenth centuries.

4. *Qualifying examinations.* The nature and scope of a series of written qualifying examinations will be prescribed for each candidate. All candidates are expected to have a sound general knowledge of both Slavic philology and Russian literary history, at least equivalent to that required for the M.A. at UCLA. In addition, candidates specializing in Linguistics and Literature, respectively, will be expected to demonstrate a more detailed mastery of either: (a) Linguistics, including Old Church Slavic, Comparative Slavic Linguistics, and the structure, history and dialectology of one major and two minor Slavic languages (one from each of the Eastern, Western and Southern groups), which presupposes a reading knowledge equivalent to one year's study of a third Slavic language (in addition to Russian and the second language presented for admission to the doctoral program); or (b) Literature, including the entire body of Russian literature from its origins to the present, and a basic knowledge of comparative Slavic literary history, which presupposes a knowledge of the major figures and developments in the literature of at least one Slavic country other than Russia.

Students who fail either the written or the oral qualifying examination may retake it once, not later than one calendar year after the first attempt.

5. *Statute of limitations.* The qualifying examinations must be taken within two years of the date of admission to the doctoral program. The dissertation must be completed within three calendar years of the date when the qualifying examinations are passed.

## Slavic

### 99. Slavic Peoples and Cultures.

Four hours weekly. Mr. Birnbaum, Mr. Worth

### 199. Special Studies.

No scheduled hours. Prerequisite: senior standing or consent of instructor. The Staff

## Graduate Linguistic Courses

**201. Introduction to Old Church Slavic.**

(Formerly numbered 220A.) Three hours weekly. Introduction to phonology and grammar; readings. Required for the M.A. (Linguistics) and Ph.D. (Linguistics, Literature). Mr. Birnbaum, Mrs. Worth

**202. Introduction to Comparative Slavic Linguistics.**

(Formerly numbered 222A.) Three hours weekly. Introduction to the comparative phonology and grammar of the Slavic languages. Required for the M.A. (Linguistics) and Ph.D. (Linguistics).

Mr. Birnbaum, Mr. Worth

**222. Introduction to Western Slavic Languages.**

(Formerly numbered 226A.) Three hours weekly. Prerequisite: course 202. Recommended preparation: Czech 102A-102B-102C or Polish 102A-102B-102C. Introduction to the structure and history of the Western Slavic languages. Required for the Ph.D. (Linguistics). Mr. Birnbaum, Mrs. Meyerstein

**223. Introduction to Southern Slavic Languages.**

(Formerly numbered 228A.) Three hours weekly. Prerequisite: course 202. Recommended preparation: Serbocroatian 103A-103B-103C. Introduction to the structure and history of the Southern Slavic languages. Required for the Ph.D. (Linguistics).

Mr. Albin

**224. Introduction to Ukrainian and Belorussian.**

(Formerly numbered 227C.) Three hours weekly. Prerequisite: course 202. Introduction to the history and structure of Ukrainian and Belorussian as contrasted to Russian. Required for the Ph.D. (Linguistics).

Mrs. Worth

**225. Typology of Slavic Languages.**

(Formerly numbered 222C and same as Linguistics 225C.) Three hours weekly. Introduction to structural typology of Slavic languages; comparison with non-Slavic languages.

Mr. Birnbaum, Mr. Worth

**240. Bibliography and Research Methods (Linguistics).**

(Formerly numbered 201.) Three hours weekly. Classes and individual consultation. Required for the Ph.D. (Linguistics). Recommended especially for students who have decided on the general area of their dissertation topic.

The Staff

**241A-241B. Advanced Old Church Slavic.**

(Formerly numbered 220B.) Three hours weekly. Prerequisite: course 201. 241A. Advanced readings in canonical texts. 241B. East, West and South Slavic recensions of Church Slavic. Course 241A only is required for the Ph.D. (Linguistics).

Mr. Birnbaum, Mrs. Worth

**242A-242B. Comparative Slavic Linguistics.**

(Formerly numbered 222A-222B.) Three hours weekly. Prerequisite: course 202. 242A. Indo-European to Common Slavic. 242B. Development of Common Slavic and divergence into East, West, and South Slavic groups. Required for the Ph.D. (Linguistics).

Mr. Birnbaum

**261. Slavic Paleography.**

(Formerly numbered 220C.) Three hours weekly. Prerequisite: course 201. Introduction to Slavic

paleography: inscriptions, birchbark letters, Glagolitic and Cyrillic texts.

Mr. Birnbaum

**262A-262B. Western Slavic Linguistics.**

(Formerly numbered 226B.) Three hours weekly. Prerequisite: course 222. 262A. Lekhitic. 262B. Czechoslovak, Sorbian

Mr. Birnbaum, Mr. Worth

**263A-263B. Southern Slavic Linguistics.**

(Formerly numbered 228B.) Three hours weekly. Prerequisite: course 223. 263A. Serbocroatian and Slovene. 263B. Bulgarian and Macedonian.

Mr. Albin

**281. Seminar in Slavic Linguistics.**

(Formerly numbered 260.) Three hours weekly. Selected topics in comparative and historical Slavic linguistics. May be repeated for credit with consent of the instructor and graduate adviser.

Mr. Birnbaum, Mrs. Worth

**282. Seminar in Structural Analysis.**

(Formerly numbered 271.) Three hours weekly. Selected topics. May be repeated for credit with consent of the instructor and graduate adviser.

Mr. Shapiro, Mr. Worth

## Graduate Literature Courses

**230A-230B. Comparative Slavic Literature.**

Three hours weekly. Recommended preparation: upper division courses in Czech, Polish, Russian and Yugoslav literatures. 230A. From the Middle Ages through Classicism. 230B. From Romanticism through the interwar period. Required for the Ph.D. (Literature).

Mr. Birnbaum, Mr. Eekman

**250. Bibliography and Research Methods (Literature).**

(Formerly numbered 201.) Three hours weekly. Classes and individual consultations. Required for the Ph.D. (Literature). Recommended especially for students who have decided on the general area of their dissertation topics.

The Staff

**290. Seminar in Comparative Slavic Literature.**

(Formerly numbered 230C.) Three hours weekly. Prerequisites: courses 230A-230B. Selected topics. May be repeated for credit with consent of the instructor and the graduate adviser.

Mr. Eekman

**295. Seminar in Literary Analysis.**

Three hours weekly. Selected topics.

Mr. Eekman, Mr. Harper, Mr. Markov

## Individual Study and Research

**597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.**

(½ to 2 courses)

The Staff

**599. Research for Dissertation. (½ to 2 courses)**

The Staff

**Russian**

## Language Courses

Courses 1 through 6 are designed for non-majors; courses 11 through 16 are required of majors.

**1. Elementary Russian.**

Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**16. Elementary Russian. (No credit)**

Five hours weekly. Reading course for graduate students. Mr. Denzler in charge

**2. Elementary Russian.**

Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**26. Elementary Russian. (No credit)**

Five hours weekly. Reading course for graduate students. Mr. Denzler in charge

**3. Elementary Russian.**

Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**4. Intermediate Russian.**

Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**5. Intermediate Russian.**

Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**6. Intermediate Russian.**

Five hours weekly plus one hour per week in laboratory. Mr. Denzler in charge

**11. Elementary Russian (Intensive). (1½ courses)**

Nine hours weekly: five conversation drills, two grammar lectures, two laboratory sessions. Mr. Hodgson in charge

**12. Elementary Russian (Intensive). (1½ courses)**

Nine hours weekly: five conversation drills, two grammar lectures, two laboratory sessions. The Staff

**13. Elementary Russian (Intensive). (1½ courses)**

Nine hours weekly: five conversation drills, two grammar lectures, two laboratory sessions. The Staff

**14. Intermediate Russian (Intensive). (1½ courses)**

Nine hours weekly: five conversation drills, three grammar lectures, one laboratory session. The Staff

**15. Intermediate Russian (Intensive). (1½ courses)**

Nine hours weekly: five conversation drills, three grammar lectures, one laboratory session. The Staff

**16. Intermediate Russian (Intensive). (1½ courses)**

Nine hours weekly: five conversation drills, three grammar lectures, one laboratory session. The Staff

**101A-101B-101C. Advanced Russian.**

Prerequisite: course 16. Two hours of reading and composition; one hour of conversation drill; two lectures in Russian on cultural and intellectual history. Mr. Worth in charge

**102A-102B-102C. Russian Composition and Stylistics.**

Prerequisite: course 101C. Emphasis on vocabulary building and writing fluency; reading and linguistic *explication de texte* of largely non-fictional material coordinated with English-Russian translation. Mr. Shapiro in charge

**121. Russian Phonology. (½ course)**

Prerequisite: course 16. Introduction to articulatory phonetics, phonemics, morphophonemics. Mr. Shapiro, Mr. Worth

**122. Russian Morphology. (½ course)**

Prerequisite: course 16. Introduction to the flexional and derivational morphology of Russian. Mr. Shapiro, Mr. Worth

**123. Historical Commentary to Modern Russian. (½ course)**

Prerequisite: course 16. Historical explanation of the phonological and morphological anomalies of modern Russian. Mrs. Worth

**Literature Courses****119. Survey of Russian Literature to Pushkin. (½ course)**

Prerequisite: upper division standing. (Slavic majors should take this course during their sophomore year.) Lectures and readings in English. Mr. Harper, Mr. Hodgson

**120A-120B. Survey of Russian Literature.**

Prerequisite: upper division standing. (Slavic majors should take this course during their sophomore year.) Lectures and readings in English. 120A. Nineteenth Century. 120B. Twentieth Century. Mr. Harper, Mr. Hodgson

**124. Dostoevsky.**

(Formerly numbered 144.) Four hours weekly. A study of Dostoevsky's principal novels and short stories. Lectures and readings in English. Mr. Harper, Mr. Hodgson

**125. Tolstoy.**

(Formerly numbered 145.) Four hours weekly. A study of Tolstoy's principal novels, short stories, and plays. Lectures and readings in English. Mr. Harper

**130A-130B. Russian Poetry.**

Prerequisite: course 16. Lectures and readings in Russian. 130A. From mid-eighteenth century through precursors of symbolism. 130B. From late nineteenth century through contemporary Soviet verse. Mr. Markov

**140A-140D. Russian Prose.**

Four hours weekly. Prerequisite: course 16. Lectures and reading in Russian. 140A. Major writers from Karamzin to Turgenev; 140B. Dostoevsky to Gorky; 140C. Contemporary writers; 140D. Advanced readings in Russian prose. Mr. Eekman, Mr. Harper, Mr. Markov

**150. Russian Folk Literature.**

(Formerly numbered 138 and same as Folklore 150.) Four hours weekly. Prerequisite: course 16. Lectures and readings in Russian. Mr. Markov

**199. Special Studies.**

No scheduled hours. Prerequisite: senior standing and consent of instructor. The Staff

**Graduate Linguistics Courses****200. Russian Linguistics. (½ course)**

Prerequisites: courses 101A-101B-101C, 121, 122, 123. Review of Russian phonology and grammar for M.A. candidates. Must be taken in quarter in which M.A. examination is to be taken. Required for the M.A. (Linguistics, Literature). The Staff

## 204. Introduction to the History of the Russian Literary Language.

(Formerly numbered 228.) Prerequisites: course 123, Slavic 99. Introductory survey of literary Russian in its cultural and historical setting. Required for the M.A. (Linguistics, Literature).  
Mrs. Worth

## 241. Russian Phonology.

(Formerly numbered 225A.) Prerequisites: courses 102A-102B-102C, 121. Survey of taxonomic and generative theories of Russian phonology. Required for the Ph.D. (Linguistics). Mr. Shapiro, Mr. Worth

## 242. Russian Morphology.

(Formerly numbered 225B.) Prerequisites: courses 102A-102B-102C, 122. Advanced study of flexion and derivation. Required for the Ph.D. (Linguistics).  
Mr. Shapiro, Mr. Worth

## 243A-243B. Historical Phonology and Morphology of Russian.

(Formerly numbered Slavic 227A-227B.) Prerequisite: course 123. Credit and grade to be given only upon the completion of 243B. Evolution of the Russian phonological and grammatical systems from the eleventh to the twentieth century. Mrs. Worth

## 263. Russian Dialectology.

Three hours weekly. Prerequisites: courses 243A-243B. Introduction to the phonology and grammar of modern Great Russian dialects. Mr. Shapiro

## 264A-264B. The Evolution of Literary Russian.

(Formerly numbered 229A-229B.) Three hours weekly. Prerequisites: course 204, Slavic 201. Lectures and analysis of texts. 264A. Eleventh to seventeenth century. 264B. Eighteenth to twentieth century. Mrs. Worth

## 265. Russian Syntax.

(Formerly numbered 225C.) Three hours weekly. Prerequisites: courses 102A-102B-102C, 121, 122. Survey of traditional and generative approaches to Russian syntax. Mr. Worth

### Graduate Literature Courses

## 211. Eighteenth Century Russian Literature.

(Formerly numbered 243.) Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Literature).  
Mr. Markov

## 212. Nineteenth Century Russian Literature.

(Formerly numbered 241.) Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Linguistics, Literature).  
Mr. Harper, Mr. Markov

## 213. Twentieth Century Russian Literature.

(Formerly numbered 242.) Three hours weekly. Lectures and readings in major and secondary writers. Required for the M.A. (Linguistics, Literature).  
Mr. Harper, Mr. Markov

## 251. Old Russian Literature.

(Formerly numbered 240A-240B.) Three hours weekly. Lectures and readings, eleventh through seventeenth centuries. Required for the Ph.D. (Literature).  
Mr. Birnbaum, Mr. Worth

## 270. Russian Poetics.

Three hours weekly. Prerequisites: courses 130A-130B. Introduction to the technical study of Russian poetics and versification. Recommended as preparation for course 290. Mr. Markov

## 290. Seminar in Russian Poetry.

(Formerly numbered 256.) Three hours weekly. Prerequisites: courses 130A-130B. Recommended preparation: course 270. Selected authors and works. May be repeated for credit with consent of the instructor and the graduate adviser. Mr. Markov

## 291. Seminar in Old Russian Literature.

(Formerly numbered 240C.) Three hours weekly. Prerequisite: course 251. Mr. Birnbaum, Mr. Worth

## 292. Seminar in Nineteenth Century Russian Literature.

(Formerly numbered 254.) Three hours weekly. Prerequisite: course 212. Selected authors and works. May be repeated for credit with consent of the instructor and the graduate adviser.  
Mr. Eckman, Mr. Harper

## 293. Seminar in Twentieth Century Russian Literature.

(Formerly numbered 258.) Three hours weekly. Prerequisite: course 213. Selected authors and works. May be repeated for credit with consent of the instructor and the graduate adviser. Mr. Markov

## 294. Seminar in Russian Literary Criticism.

(Formerly numbered 252.) Three hours weekly. Prerequisites: courses 211, 212, 213. Selected topics. May be repeated for credit with consent of the instructor and the graduate adviser. Mr. Harper

### Individual Study and Research

## 597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.

(½ to 2 courses)

The Staff

## Polish

### 102A-102B-102C. Elementary Polish.

(Formerly numbered 101A-101B-101C.) Five hours weekly. Basic course in the Polish language. Mrs. Stone

### 102D-102E-102F. Advanced Polish.

(Formerly numbered 101D-101E-101F.) Four hours weekly. Prerequisite: course 102C.

### 152A-152B. Survey of Polish Literature.

(Formerly numbered 150.) Four hours weekly. Lectures and readings in English. 152A. From the Middle Ages to Romanticism. 152B. From Realism to the present. Mr. Birnbaum, Mr. Eckman

## 199. Special Studies.

No scheduled hours. Prerequisite: senior standing and consent of instructor. The Staff

## Individual Study and Research

- 597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.**  
(½ to 2 courses)

The Staff

## Czech

**102A-102B-102C. Elementary Czech.**

(Formerly numbered 101A-101B-101C.) Five hours weekly. Basic course in the Czech language.

Mrs. Meyerstein

**102D-102E-102F. Advanced Czech.**

(Formerly numbered 101D-101E-101F.) Four hours weekly. Prerequisite: course 102C.

Mrs. Meyerstein

**155A-155B. Survey of Czech Literature.**

Four hours weekly. Lectures and reading in English. 155A. From the Middle Ages to Romanticism. 155B. From Realism to the present. Mrs. Meyerstein

**199. Special Studies.**

No scheduled hours. Prerequisite: senior standing and consent of instructor.

The Staff

## Individual Study and Research

- 597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.**  
(½ to 2 courses)

The Staff

## Serbocroatian

**103A-103B-103C. Elementary Serbocroatian.**

(Formerly numbered 101A-101B-101C.) Five hours weekly. Basic course in the Serbocroatian language.

Mr. Albin

**103D-103E-103F. Advanced Serbocroatian.**

(Formerly numbered 101D-101E-101F.) Four hours weekly. Prerequisite: course 103C.

Mr. Albin

**154A-154B. Survey of Yugoslav Literature.**

(Formerly numbered 160.) Four hours weekly. Lectures and readings in English. 154A. From the Middle Ages to Romanticism. 154B. From Realism to the present, including folk literature.

Mr. Albin, Mr. Eekman

**199. Special Studies.**

No scheduled hours. Prerequisite: senior standing and consent of instructor.

The Staff

## Individual Study and Research

- 597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D.**  
(½ to 2 courses)

The Staff

## Related Courses in Other Departments

History 146A-146B-146C; Folklore 126, Linguistics 100, 110, 120, 150, 220B, as well as several of the graduate courses in linguistics.

## ■ SOCIAL WELFARE

(Department Office, 238 Social Welfare Building)

Nathan E. Cohen, Ph.D., *Professor of Social Welfare (Chairman of the Department)*.

Donald S. Howard, Ph.D., L.H.D., *Professor of Social Welfare*.

Alfred H. Katz, *Professor of Social Welfare and Professor of Public Health*.

Eileen Blackey, D.S.W., *Emeritus Professor of Social Welfare*.

Karl de Schweinitz, L.H.D., *Emeritus Professor of Social Welfare*.

Olive M. Stone, Ph.D., *Emeritus Professor of Social Welfare*.

Jerome Cohen, D.S.S., *Associate Professor of Social Welfare*.

Maurice F. Connery, D.S.W., *Associate Professor of Social Welfare*.

Warren Haggstrom, Ph.D., *Associate Professor of Social Welfare*.

Harry H. L. Kitano, Ph.D., *Associate Professor of Social Welfare*.

Roderic Gorney, M.D., *Assistant Professor of Social Welfare and Assistant Professor of Psychiatry in Residence*.

Helen L. Olander, D.S.W., *Assistant Professor of Social Welfare*.

Mary Margaret Thomes, Ph.D., *Assistant Professor of Social Welfare*.

Harry Wasserman, D.S.W., *Assistant Professor of Social Welfare*.

———, *Assistant Professor of Social Welfare*.

Rosalyn Benitez, M.S.W., *Field Work Consultant*.

Ester Bentley, M.S.W., *Field Work Consultant*.

Robert Brockman, M.S.W., *Field Work Consultant*.

Jane Bullions, M.S.W., *Field Work Consultant*.

William Clarke, M.S.W., *Field Work Consultant*.

Barbara Costigan, D.S.W., *Field Work Consultant*.  
 Arthur Duning, M.A., *Lecturer in Social Welfare*.  
 Elsie Giorgi, M.D., *Lecturer in Human Behavior*.  
 Florence Goldy, M.S.W., *Field Work Consultant*.  
 Katherine M. Kolodziejski, M.S.W., *Field Work Consultant*.  
 Myra Koplin, M.S.W., *Field Work Consultant*.  
 George A. Mouton, Jr., M.S.S.W., *Field Work Consultant*.  
 Peter Sandi, M.S.W., Jur.D., *Field Work Consultant*.  
 Doris Seder, Ph.D., *Acting Associate Professor of Social Welfare*.  
 Edith Shapiro, M.S.W., *Field Work Consultant*.  
 Winifred E. Smith, M.S.W., *Coordinator of Field Work*.  
 Sherry Stein, M.S.W., *Field Work Consultant*.

#### Graduate Courses

#### 201A-201B-201C. Dynamics of Human Behavior I, II, III. (½ course each)

Lecture, two hours; laboratory, one hour. Credit to be given at the completion of the sequence 201A-201B; 201C will be graded separately. Biopsychosocial factors associated with individual and group behavior and development as applicable in the social functioning of individuals and groups. Emphasis is on theoretical issues and research evidence which contribute to a unified theory of human development. Mr. J. Cohen, Mr. Connery, Miss Giorgi

#### 202A-202B. Dynamics of Human Behavior: Deviance IV, V. (½ course each)

Credit to be given only at the completion of the sequence. Prerequisite: courses 201A-201B-201C. This course deals with deviations and pathologies or stresses in the physical, emotional and social areas of human functioning as those problems relate to the role and function of the social worker. Mr. J. Cohen, Miss Seder, Mr. Wasserman and Staff

#### 203. Integrative Theory and Research in Human and Social Behavior. (½ course)

An integrative course which brings together the preceding courses in the human behavior and the social environment series, by examination at an advanced level of the major theoretical strands and the identification of problem areas requiring further research. The Staff

#### 204A. Social Systems in Social Welfare. (½ course)

The application of social system theory to the problems of social welfare and social work. Analysis of the network of community relationships, values, stratification, institutions and subcultures as related to the premises and services of social work. Miss Thomes

#### 204B. Small Groups in Social Welfare. (½ course)

Application of theory and knowledge of small group functioning to problems of working with groups in social work settings. Analysis of group formation, structure of interaction and communication patterns, and of leadership and morale problems. Application to family, peer and special-purpose groups. Miss Thomes

#### 205. Group Conflict and Change. (½ course)

Study of the phenomena of group conflict and change as they appear in the social welfare matrix of

groups, communities and social institutions; relationship between conflict and social and cultural change; major research contributions in understanding of these phenomena. The Staff

#### 220. History and Philosophy of Social Welfare. (½ course)

The history of social work as a field: body of knowledge, method and process, and point of view analyzed within the context of the economic, political, social, philosophical and scientific climate of the period. Mr. N. Cohen, Mr. Wasserman

#### 221A. Social Welfare Policy and Services I. (½ course)

Nature, roles and history of welfare institutions in different societies; applicable social system theory with special reference to values as seen by different components of the welfare system; theory and research about needs met and not met, about various welfare policies and organizational forms, and about social change to prevent needs. Mr. Howard

#### 221B. Social Welfare Policy and Services II. (½ course)

Prerequisite: consent of the instructor. Study of income-maintenance policy and services. Introduces theory and research about selected levels of living, regularity and source of income, and their relevance for family and social well-being; analysis of various income-maintenance policies and services; causes and nature of poverty. Current antipoverty legislation. Mr. Howard

#### 222. Social Welfare Administration. (½ course)

Study of methods by which welfare policies are formulated and translated into action; the nature of organizational and research process involved in welfare administration; role of welfare agency personnel in policy formulation, implementation and evaluation. Mr. Howard and Staff

#### 223. Seminar on the Social Work Profession. (½ course)

The nature and role of social work in contemporary society; relationships with other professions; probable future trends in the profession; social work ethics, professional organizations, certification licensing; professional responsibility for continued self-criticism and improvement of the profession. The Staff

**230A-230B-230C. Theory of Social Work Method (Individuals and Small Groups) I, II, III.**  
(½ course each)

Credit to be given only at the completion of the sequence. Concurrent social work practicum is required. An introduction to the theory of social work with individuals and small groups and to the principles of practice which are derivative of this and related theory.

Mrs. Costigan, Miss Olander, Mr. Wasserman

**231A-231B. Advanced Theory of Social Work Method (Individuals and Small Groups) IV, V.**  
(½ course each)

Credit to be given only at the completion of the sequence. Required: Concurrent social work practicum. Advanced-level, critical analysis of theories, concepts and principles underlying social casework practice. Specific attention to deviation and stress as conditions affecting functioning of individuals and groups; and to diagnostic knowledge and competence required in rehabilitation and prevention.

Mr. Connery and Staff

**240A-240B-240C. Theory of Social Work Method (Community Organization) I, II, III.**  
(½ course each)

Credit to be given only at the completion of the full sequence. Concurrent practicum in social work required. Covers historical and theoretical developments in community organization; understanding the community as a social system; role of the practitioner in identification, analysis and evaluation of needs, existing programs, policies, structure and strategies of intervention.

Mr. Haggstrom

**241A-241B. Advanced Theory of Social Work Method (Community Organization) IV, V.**  
(½ course each)

Credit to be given only at the completion of the sequence. Concurrent practicum in social work required. Emphasis on various patterns of community action for attaining social welfare objectives; research and field experience directed toward study of social problems within the context of community planning; emerging patterns of physical, economic and social planning within the framework of social change theory.

Mr. N. Cohen, Mr. Haggstrom

**280. Social Welfare Research. (½ course)**

Sources, nature and uses of social work theory and research-based knowledge and of broader social data relevant to social welfare activities. Critical analysis of major methods of developing scientific knowledge.  
The Research Staff

**281A-281B-281C. Advanced Social Welfare Research. (½ course each)**

Credit to be given only at the completion of the sequence. Group research projects requiring intensive examination and analysis of a social problem area directed toward the development of research knowledge and techniques for social work practice.

The Research Staff

**290A-290B-290C. Seminar in Social Work.**  
(½ course each)

A series of seminars dealing with trends in social work and social welfare, with the focus on current social problems affecting individuals, groups, and communities and new patterns of intervention based on recent demonstrations and research.

The Staff

**Professional Courses**

**401A-401B-401C. Practicum in Social Work.**

Credit to be given only at the completion of the full sequence. Educationally directed practicum conducted in selected health, welfare and educational facilities. The major objective is to provide opportunities for the student to test his theoretical knowledge and to acquire a disciplined practice foundation in his profession.

The Field Instruction Staff

**402A-402B-402C. Advanced Practicum in Social Work. (1 ½ courses each)**

Credit to be given only at the completion of the full sequence. Practicum in social work is arranged for the student in keeping with his major field of study.

The Field Instruction Staff

**Individual Study and Research**

**596. Directed Individual Study or Research.**  
(½ course)

Individual programming for selected students to permit pursuit of a subject in greater depth.

## SOCIOLOGY

(Department Office, 264 Haines Hall)

Ralph L. Beals, Ph.D., *Professor of Anthropology and Sociology.*

Melville Dalton, Ph.D., *Professor of Sociology.*

Harold Garfinkel, Ph.D., *Professor of Sociology.*

Walter R. Goldschmidt, Ph.D., *Professor of Anthropology and Sociology.*

C. Wayne Gordon, Ph.D., *Professor of Sociology and Education.*

Leo J. Kuper, Ph.D., *Professor of Sociology.*

Richard T. Morris, Ph.D., *Professor of Sociology (Chairman of the Department).*

Leo G. Reeder, Ph.D., *Professor of Sociology and Public Health.*

Svend Riemer, Ph.D., *Professor of Sociology.*

Georges Sabagh, Ph.D., *Professor of Sociology.*

Melvin Seeman, Ph.D., *Professor of Sociology.*

Ralph H. Turner, Ph.D., *Professor of Sociology and Anthropology.*  
 Charles R. Wright, Ph.D., *Professor of Sociology.*  
 Eshref Shevsky, Ph.D., *Emeritus Professor of Sociology and Anthropology.*  
 Oscar Grusky, Ph.D., *Associate Professor of Sociology.*  
 John E. Horton, Ph.D., *Associate Professor of Sociology.*  
 Gene N. Levine, Ph.D., *Associate Professor of Sociology (Vice-Chairman of the Department).*  
 Samuel J. Surace, Ph.D., *Associate Professor of Sociology.*  
 Richard P. Boyle, Ph.D., *Assistant Professor of Sociology.*  
 Howard Elinson, Ph.D., *Assistant Professor of Sociology.*  
 George A. Miller, Ph.D., *Assistant Professor of Sociology.*  
 Jerome Rabow, Ph.D., *Assistant Professor of Sociology.*  
 Gerald T. Slatin, Ph.D., *Assistant Professor of Sociology.*  
 Warren D. TenHouten, Ph.D., *Assistant Professor of Sociology.*  
 Andrea Tyree, Ph.D., *Assistant Professor of Sociology.*  
 ———, *Assistant Professor of Sociology.*  
 ———, *Assistant Professor of Sociology.*  
 ———, *Assistant Professor of Sociology.*



Kenneth D. Bailey, M.A., *Acting Assistant Professor of Sociology.*  
 Guy Barbichon, Ph.D., *Visiting Lecturer in Sociology.*  
 Tamar Becker, Ph.D., *Assistant Research Sociologist.*  
 Phillip Bonacich, B.A., *Acting Assistant Professor of Sociology.*  
 John D. Brewer, M.A., *Acting Assistant Professor of Sociology.*  
 Samuel Farber, M.A., *Acting Assistant Professor of Sociology.*  
 Samuel R. Friedman, M.A., *Acting Assistant Professor of Sociology.*  
 Anthony Giddens, Ph.D., *Visiting Assistant Professor of Sociology.*  
 Sydney W. Holloway, *Visiting Lecturer in Sociology.*  
 Ivan H. Light, M.A., *Acting Assistant Professor of Sociology.*  
 Peter McHugh, Ph.D., *Visiting Assistant Professor of Sociology.*  
 Melvin Pollner, M.A., *Acting Assistant Professor of Sociology.*  
 Hari Prakash Sharma, Ph.D., *Lecturer in Sociology.*  
 Basil J. Sherlock, Ph.D., *Assistant Research Sociologist.*  
 Philip H. Stamworth, M.A., *Visiting Lecturer in Sociology.*  
 Patricia Thompson, M.A., *Lecturer in Sociology.*

#### **Preparation for the Major**

Required: courses 1 or 101, 17, 18, and 19, and fulfillment of the general requirements of the University and the College of Letters and Science. Mathematics 50, Economics 140, Psychology 141, or Public Health 160A may be substituted for Sociology 18. Transfer students who have two or more quarters of introductory level courses in sociology at the time of transfer will not be required to take Sociology 1 or 17. Recommended: Anthropology 1A or 11, and 22 or 5A-5B-5C; Economics 1 and 2; English 2; Geography 1A-1B; Mathematics 2A-2B-2C, and 12A, or Mathematics 100; Philosophy 6 and 7, or 20 and 21; Political Science 1 and 2; Psychology 10. The student should consult a detailed statement of requirements and recommendations available at the de-

partmental office. Each student must apply to the Department for the assignment of an adviser.

#### **The Major**

A total of 14 upper division courses, ten in the Department not including course 101 and four outside, are required for the major. The 14 courses must include the following: (1) at least two courses in each of three core areas; (2) course 111, 112, or 113, which may also be counted as one of the courses in core area I; (3) four courses chosen from one or more of the following fields: anthropology, economics, geography, history, political science, psychology.

#### **Social Welfare**

A student whose primary interest is in social welfare may either fulfill the require-

ments of the major in sociology or of the curriculum in presocial welfare. (See page 75.) Students planning for graduate training in social welfare at this University should consult the UCLA ANNOUNCEMENT OF THE SCHOOL OF SOCIAL WELFARE.

### Requirements for the Master's Degree

For the M.A. degree in sociology, the student is required (1) to complete an acceptable program of a minimum of nine upper division and graduate level courses (the equivalent of 4 quarter units each) of which at least six courses must be graduate level (200 series) in sociology; (2) to pass two departmental examinations in statistics or complete courses 110A-110B with grades of C or better; (3) to complete one of the two-quarter methodology sequences in the series numbered 211-218; and (4) to pass a written comprehensive examination. Those students who plan to seek the Ph.D. are advised to pass the foreign language examination some time during their first year of graduate study. The M.A. degree is especially intended to qualify students who plan to become junior college teachers. Students are encouraged to plan their programs so as to fulfill the requirements for the junior college or secondary teaching credentials. Details on credential matters may be obtained from the Credentials Counselor in the School of Education.

### Requirements for the Ph.D. Degree

Candidates for the doctor's degree must conform to the general requirements set by the Graduate Division for the Ph.D. degree. It should be emphasized that the granting of the doctor's degree does not depend alone upon the satisfactory completion of a specified number of courses. The candidate must demonstrate his competence as a research scholar and his ability to give instruction in his field.

In addition to the general requirements set by the Graduate Division, every prospective candidate for the doctor's degree must: (1) pass a reading examination in French, German, Spanish, Italian, Russian, or other language approved by the Department; (2) pass two departmental examinations in statistics or complete courses 110A-110B with grades of C or better; (3) complete two of the two-quarter methodology sequences in the series numbered 211-218; (4) pass a written comprehensive examination; (5) pass written examinations in two special fields; (6) pass a qualifying oral examination; (7) prepare a satisfactory doctoral dissertation embodying

the results of original research; (8) pass a final oral examination. Details of these requirements are described in a syllabus which may be secured from the office of the Department.

The dissertation and the final oral examination will be in accordance with the requirements of the Graduate Division. Before the dissertation is begun, the subject must be approved in writing by the student's graduate advisers.

### Lower Division Courses

#### 1. Introductory Sociology.

Survey of the characteristics of social life, the processes of social interaction, and the tools of sociological investigation. The Staff

#### 17. Sociological Analysis.

(Formerly numbered 12.) Prerequisite: course 1 or 101. Required of majors. Development and application of the basic tools and concepts of course 1 by means of an examination of selected monographic works. The Staff

#### 18. Interpretation of Quantitative Data.

Prerequisite: course 1 or 101, or may be taken concurrently. Satisfies the statistics requirement for the major in sociology. The interpretation of statistical measures, tables, and graphs of the types most frequently encountered in sociological literature.

Mr. Slatin, Mr. TenHouten

#### 19. Introduction to Sociological Research Methods.

(Formerly numbered 117.) A systematic treatment of the logic of qualitative and semiquantitative skills of use in sociological research, e.g., classification, questionnaire and schedule design, content analysis, critical analysis of studies, conceptual analysis of case material.

Mr. TenHouten

### Upper Division Courses

Course 1 or 101, or the equivalent, and upper division standing are prerequisite to all upper division courses in sociology unless otherwise stated.

#### 101. Principles of Sociology.

No credit will be given for this course if course 1 has been completed. For upper division students who have not taken Sociology 1. A more intensive introduction to sociology than is given in course 1. May not be counted as fulfilling the requirements of the field of concentration. The Staff

### CORE AREA I: THEORY AND METHOD

#### 110A. Intermediate Quantitative Methods I.

(Numbered 110 in 1966-67.) Prerequisite: courses 17 and 19, and course 18, Mathematics 50, or some other courses in statistics approved by the Department. Required for the M.A. and Ph.D. degrees in sociology. A brief systematic course in the logic and practice of statistical methods of use to sociologists.

Mr. Bonacich, Mr. TenHouten

#### 110B. Intermediate Quantitative Methods II.

(Numbered 210 in 1966-67.) Prerequisite: course 110A and consent of the instructor. Required for

the M.A. and Ph.D. degrees in sociology. A continuation of 110A. Analysis of variance, correlation, regression analysis, non-parametric methods.

Mr. Boyle, Mr. TenHouten

### 111. Backgrounds of Sociological Thought.

(Formerly numbered 170.) Survey of attempts, from early literate societies to the twentieth century, to understand the nature of man and society; the social origins of this intellectual background; the course of these ideas in the development of sociological theory.

Mr. Dalton

### 112. Development of Sociological Theory.

(Formerly numbered 171.) A comparative survey of basic concepts and theories in sociology, 1850-1920; the codification of analytic schemes; a critical analysis of trends in theory construction.

Mr. Horton, Mr. Morris

### 113. Contemporary Sociological Theory.

(Formerly numbered 172.) A critical examination of significant theoretical formulations, 1920 to the present; an analysis of the relation between theoretical development and current research emphasis.

Mr. Morris

## CORE AREA II: SOCIAL STRUCTURE AND CHANGE

### 120. Social Change.

(Formerly numbered 122.) A study of patterns of social change, resistance to change, and change-producing agencies and processes.

### 121. Formal Organizations.

(Formerly numbered 128.) Institutional analysis of administrative structures and voluntary associations; informal organization, ideology, bureaucracy, decision-making and morale.

Mr. Brewer, Mr. Grusky, Mr. Surace

### 122. Mass Communications.

(Formerly numbered 129.) Formal organization, functions, and development of the mass media; communications as a social process; cultural patterns; audience characteristics; communications and bureaucracy. Aspects of the American media are compared with other systems, e.g., Soviet, British, Arabic.

Mr. Wright

### 123. Social Stratification.

(Formerly numbered 135.) An analysis of American social structure in terms of evaluational differentiation. Topics to be considered include criteria for differentiation, bases for evaluation, types of stratification, the composition of strata and status systems, mobility, consequences of stratification and problems of methodology.

Mr. Baker, Miss Tyree

### 124. Ethnic and Status Groups.

(Formerly numbered 190.) The characteristics of the "visible" ethnic groups, e.g., Japanese, Mexican and Negro; their organization, acculturation, and differentiation. The development, operation and effects of selective immigration and population mobility. The status of the chief minorities in the continental U. S., with comparative materials drawn from Jamaica, Hawaii, and other areas.

Mr. Farber, Mr. Kuper, Mr. Orleans

### 125. Urban Sociology.

(Formerly numbered 143.) Urban and rural cultures, the characteristics of cities in Western civilization, with emphasis on the American metropolis.

Mr. Riemer

### 126. Population Problems.

(Formerly numbered 186.) Implications for social organization and social policy of population size and composition, birth and death rates. Consideration of social problems related to population increase, population redistribution, and other trends.

Mr. Sabagh, Miss Tyree

### 127. Language and Society: Introduction to Sociolinguistics.

(Same as Linguistics 170.) Prerequisites: course 1 or 101 or Anthropology 5A or 22. Study of the patterned covariation of language and society; social dialects and social styles in language; problems of multilingual societies.

Mr. Bright

## CORE AREA III: COMPARATIVE SOCIETIES

### 130. Social Processes in Africa.

(Formerly numbered 191A.) A course in comparative sociology. A study of selected processes in African societies, primarily in the fields of urban sociology, social structure and social change, involving an interdisciplinary approach.

Mr. Kuper

### 131. Latin American Societies.

(Formerly numbered 150 and same as Anthropology 121.) A descriptive survey of the major Latin American societies, emphasizing their historical backgrounds and their emergent characteristics, with special attention to the relations between rural and urban life.

Mr. Beals

### 132. Population and Society in the Middle East.

(Formerly numbered 166.) Prerequisite: upper division standing and consent of the instructor. A survey of the Middle Eastern societies; their historic and environmental bases; the contemporary demographic and cultural situation.

Mr. Sabagh

### 133. Comparative Sociology of the Middle East.

Prerequisite: upper division standing and consent of the instructor. A review of the unity of Middle Eastern societies in Islam and their diversity exemplified by such nomadic peoples as the Bedouin, countries in process of rapid modernization such as Turkey and Israel, colonial situations as in Algeria and Morocco, and underdeveloped areas as Iran and the Arabian countries.

Mr. Sabagh

## CORE AREA IV: INSTITUTIONS

### 140. Political Sociology.

(Formerly numbered 187.) The contributions of sociology to the study of politics including the analysis of political aspects of social systems, the social context of action, and the social bases of power.

Mr. Friedman, Mr. Surace

### 141. Industry and Society.

(Formerly numbered 131.) A sociological analysis of industry. Attention given to factors in the status group awareness and occupational role-learning of workers and managers; interaction between technological and social system; the interplay between official and unofficial action, and between industry and community.

Mr. Dalton, Mr. Light

**142. Sociology of the Family.**

Theory and research dealing with the modern family, its structure and functions, including historical changes, variant family patterns, family as an institution, and the influence of the contemporary society on the family.

Mr. Riemer

**143. Sociology of Education.**

(Formerly numbered 180 and same as Education 108.) Studies of social processes and interaction patterns in educational organizations, the relationships of such organizations to aspects of society, social class and power, social relations within the school, formal and informal groups, school culture, roles of teachers, students, and administrators.

Mr. Gordon

**144. Social Aspects of Housing and City Planning.**

(Formerly numbered 147.) Prerequisite: course 125. Implications for family and urban social relationships of housing floor plans and plans for neighborhoods and cities.

Mr. Riemer

**145. Sociology of Deviant Behavior.**

(Formerly numbered 120.) An examination of the leading sociological approaches to the study of deviation and a general survey of the major types of deviation in American society.

Mr. Horton, Mr. Rabow, Mr. Slatin

**146. Criminology.**

(Formerly numbered 182.) Theories of the genesis of crime; factors in the organization of criminal behavior from the points of view of the person and group; criminal behavior systems.

Mr. Britson, Mr. Rabow

**147. Control of Crime.**

(Formerly numbered 184.) Theories of punishment; methods of dealing with convicts; social organization of police, courts, prisons, probation, and parole.

Mr. Rabow

**148. Normal Environments.**

(Formerly numbered 178.) Structural interpretation of the concerted production, management, and alteration of preceivedly normal interpersonal environments.

Mr. Garfinkel, Mr. Pollner

**149. A Study of Norms.**

(Formerly numbered 179.) Properties of norms, of normatively governed conduct, of lay and professional methods for describing, producing, using, and validating norms in contrasting settings of socially organized activities; relevance of these properties for the programmatic problems of analytic sociology.

Mr. Garfinkel, Mr. Pollner

**CORE AREA V: SOCIAL PSYCHOLOGY****150. Collective Behavior.**

(Formerly numbered 124.) Characteristics of crowds, mobs, publics, social movements, and revolutions. Their relation to social unrest and their role in developing and changing social organization.

Mr. Seeman, Mr. Turner

**151. Culture and Personality.**

(Formerly numbered 126.) Theories of the relation of variations in personality to culture and group life, in primitive and modern societies, and the influence of social role on behavior.

Mr. Sacks, Mrs. Thompson, Mr. Turner

**152. Group Processes.**

(Formerly numbered 161.) Systematic study of the formation, structure, and functioning of groups; analysis of group processes and group products from a variety of theoretical viewpoints; implications of various research techniques.

Mr. Bonacich, Mr. Morris

**153. Process and Socialization in the Family.**

(Formerly numbered 162.) Examination of the processes of interaction, decision-making, role differentiation, conflict, integration, and socialization within the family and their interrelations with society.

Mr. Turner, Mrs. Wellisch

**154. Social Psychology: Sociological Approaches.**

(Formerly numbered 183.) A survey of the contribution of sociologists to theory and research in social psychology including theories of social control; conformity and deviation; reference groups; and interaction process.

Mr. Grukky, Mr. Miller, Mr. Rabow

**155. Intergroup Conflict and Prejudice.**

(Formerly numbered 189.) A study of the causes and consequences of group conflict, with emphasis upon majority-minority relations, prejudice and discrimination. Special attention is given to alternative sociological and psychological theories of prejudice; the effects of minority status upon the individual; and the possibilities for attitude and behavior change.

Mr. Seeman

**Advanced Studies****198. Special Courses. (½ to 2 courses)**

Prerequisite: upper division standing, special requirements necessary for the field selected, and consent of the instructor. Special topics or problems to be offered to the extent justified by student demand.

The Staff

**199. Special Studies. (½ to 2 courses)**

Prerequisite: senior standing and consent of the instructor. A course of independent study designed for graduate or senior undergraduate students who (a) desire a more advanced or specialized treatment of an area covered in the regular course list and who present that course as a prerequisite; or (b) desire work in an area of sociological analysis currently not covered by an upper division course.

The Staff

**Graduate Courses****201A-201B. Preseminar in Sociology.**

Prerequisite: graduate status. A comprehensive survey of basic concepts and theories in the major fields of sociology. Designed primarily for graduate students in the first year of residence.

Mr. Horton, Mr. Morris

**213A-213B. Techniques of Demographic and Ecological Analysis.**

Prerequisite: course 110A or equivalent. Procedures and techniques for the collection, evaluation, and analysis of demographic and ecological data; models of population and ecological structure and change; applications to the study of social structure and social change.

Mr. Sabagh

**214A-214B. The Measurement of Sociological Variables.**

Prerequisite: courses 110A-110B and consent of the instructor. Theory and technique of measure-

ment in sociology and social psychology; construction, application, and evaluation of measurement techniques, especially the forms of scaling.

Mr. Miller

#### 215A-215B. Experimental Sociology.

Prerequisite: course 110A or equivalent and consent of the instructor. A course designed to provide students with the basic fundamentals of the experimental method, particularly as it is used in social psychology.

Mr. Grusky, Mr. Rabow, Mr. Slatin

#### 216A-216B. Survey Research Methods.

(Formerly numbered 216 and 217.) Course in methodology and techniques: formulation of research problem; study design; hypotheses; sampling; measurement; questionnaire and schedule construction; interviewing and data collection; processing and tabulation; analysis and interpretation; presentation of findings; cross-national, replicative, panel and other complex survey designs. Students participate in survey research project.

Mr. Levine

#### 218A-218B. Ethnomethodological Methods.

Prerequisite: consent of the instructor. Examination of techniques used in ethnomethodological research, practice in the critical evaluation of research, and directed experience in the conduct of an extended investigation employing ethnomethodological procedures.

Mr. Garfinkel

#### 219. Theory of Sociological Inquiry.

Prerequisite: course 110A and consent of the instructor. A general review of procedures followed by social scientists in attempts to achieve valid theoretical knowledge. Focuses on inductive inference and theory testing: control and randomization, experimental and nonexperimental research designs, association and causality, models, measurement theory, sampling theory.

Mr. TenHouten

#### 220. Role Theory.

Prerequisite: graduate status and consent of the instructor. A review of theories and research dealing with social roles, with special emphasis on roles in social interaction and in formation of the social self.

Mr. Turner

#### 222. The Sociology of Adolescence.

Prerequisite: graduate status and consent of the instructor. An examination of the historical development of adolescent subcultures in primitive, familialistic, and modern societies; the transition to adulthood, involving socialization by parents, siblings, peers, and teachers; academic performance, and educational and occupational plans of American youth.

Mr. TenHouten

#### 224. Problems in Social Psychology.

Survey of theories and problems in social psychology with emphasis on the major sociological contributions to this area.

Mr. Grusky, Mr. Seeman

#### 226. Leadership and Comparative Social Structure.

A comparative analysis of types of leadership in different social structures with particular attention to the recruitment and career patterns of leaders.

Mr. Surace

#### 227. The Sociology of Knowledge.

Prerequisite: graduate status or consent of the instructor. A survey of theories and research concerning social determinants of systems of knowledge and the role of intellectual and artistic elites in Western societies.

Mr. Horton

#### 230. Theories of Deviance.

An examination of various sociological approaches to the study of deviant behavior with emphasis on anomie theory as the major orientation today. Special attention given to the problems of defining deviance and the articulation of sociological and psychological levels of explanation.

Mr. Slatin

#### 234. Sociology of Community Organization.

Prerequisite: graduate status and consent of the instructor. A survey of recent and classical research and literature dealing with predominantly political institutions, the problem of order, and the organization of communal life in the village and the metropolis.

Mr. Orleans

#### 235. Social Structure and Social Movements.

Prerequisite: graduate status or consent of the instructor. A survey of some social science theories bearing on the analysis of large scale social movements and upheavals. The causes, course and consequences of selected social movements, insurrections and revolutions will be examined.

Mr. Kuiper, Mr. Sharma

#### 236. Social Change in the Middle East.

An analysis of the sources, extent, and types of social change in the Middle East with an emphasis on the origin and consequences of industrialization and urbanization.

Mr. Sabagh

#### 237. Social Stratification in the Middle East.

Modes of social differentiation in traditional Middle Eastern societies, localism and tribalism, the counter influence of processes leading to the recurrent emergence of societies of large scale and their distinctive structural characteristics.

Mr. Sabagh

#### 245. Urban Spatial Structure and Social Organization.

Traditional ecological theory and research will be examined, evaluated, and contrasted with recently developed analytical procedures. An approach to the organization of the metropolis through the analysis of spatially distributed and socially differentiated aggregates will be considered.

Mr. Orleans

#### 249A. Social and Cultural Aspects of Health and Illness.

(Same as Public Health 249A.) Prerequisites: courses in upper division social sciences, including sociology, anthropology and psychology. Social and community aspects of health, health behavior and health organizations.

Mr. Reeder and the Staff

#### 249B. Social and Cultural Aspects of Health and Illness.

(Same as Public Health 249B.) Prerequisites: course 249A or consent of the instructor. Theoretical and conceptual approaches in the behavioral sciences contributing to an understanding of various health conditions and health behavior.

Mr. Reeder and the Staff

#### Seminars

#### 250. Methodological Problems.

Mr. Boyle, Mr. Seeman

#### 251. Topics in the Problems of Social Order.

Mr. Garfinkel

252. Criminology.
253. Quantitative Methods in Sociology. Mr. Bonacich, Mr. Levine
254. Penology.
255. Systematic Sociological Theory. Mr. Boyle, Mr. Kuper
256. Demography. Mr. Sabagh
257. Sociology of the Arts. Mr. Horton
258. Sociology of Religion. Mr. Kuper
259. Social Structure and Economic Change: Historical and Comparative Perspectives. Mr. Surace
260. Industry and Society. Mr. Dalton
261. Ethnic Minorities. Mr. Seeman
262. Selected Problems in Urban Sociology. Mr. Riemer
263. Social Stratification. Mr. Morris
264. Professions in the American Society.
265. Problems in Organization Theory. Mr. Grusky
267. Selected Problems in Communication. Mr. Wright
268. Historical and Interpretive Sociology. Mr. Dalton
269. Collective Behavior. Mr. Turner
270. Selected Problems in Socialization. Mr. Turner
271. Ethnomethodology. Mr. Garfinkel
272. Sociology of Political Movements. Mr. Elinson, Mr. Kuper
273. Attitudes and Social Structure. Mr. Seeman
275. Seminar in Comparative Social Structure: Developed Societies.  
The comparison of social structures among developed societies, including the comparative analysis of the main institutional features, social class arrangements, social mobility characteristics, and the like. Comparisons will involve the U.S. and developed countries in Western Europe, Asia and Oceania.  
The Staff
277. Sociology of Science. Mr. Miller
278. Sociolinguistics. Mr. Bright  
(Same as Linguistics 265B.)
281. Selected Problems in Mathematical Sociology.  
Prerequisite: Mathematics 2C or consent of the instructor. An exploration of some mathematical models of sociological processes. Possible topics include models of small groups, social mobility, kinship relations, organizations, social interaction.  
Mr. Bonacich
- 291A-291B-291C. Critical Studies. The Staff
- 292A-292B-292C. Research Development. The Staff
- 293A-293B-293C. Advanced Research. The Staff  
Individual Study and Research
596. Special Problems in Sociology. The Staff  
(½ to 1 course)
597. Individual Study for Examinations.  
Preparation for the comprehensive examination for the master's degree or the qualifying examination for the Ph.D.  
The Staff
598. Research in Sociology for M.A. Degree Candidates. The Staff
599. Research in Sociology for Ph.D. Degree Candidates. The Staff

## ■ SPANISH AND PORTUGUESE

(Department Office, 5303 Humanities Building)

José R. Barcia, Lic. F. y L., *Professor of Spanish (Chairman of the Department)*.  
 William E. Bull, Ph.D., *Professor of Spanish*.  
 John A. Crow, Ph.D., *Professor of Spanish*.  
 Alberto Machado da Rosa, Ph.D., *Professor of Spanish and Portuguese*.  
 John E. Englekirk, Ph.D., *Professor of Spanish*.  
 Donald F. Fogelquist, Ph.D., *Professor of Spanish (Vice-Chairman of the Department)*.  
 Stanley L. Robe, Ph.D., *Professor of Spanish*.  
 Anibal Sánchez-Reulet, Ph.D., *Professor of Spanish*.  
 Walter Starkie, Ph.D., *Professor of Spanish in Residence*.  
 Hermenegildo Corbató, Ph.D., *Emeritus Professor of Spanish*.  
 Manuel Pedro González, Ph.D., *Emeritus Professor of Spanish American Literature*.  
 Marion Albert Zeitlin, Ph.D., *Emeritus Professor of Spanish and Portuguese*.  
 Claude L. Hulet, Ph.D., *Associate Professor of Spanish and Portuguese*.  
 C. P. Otero, Ph.D., *Associate Professor of Spanish*.

Julio Rodríguez-Puértolas, Ph.D., *Associate Professor of Spanish*.  
 Shirley L. Arora, Ph.D., *Assistant Professor of Spanish*.  
 Joseph P. Bocsi, Ph.D., *Assistant Professor of Spanish*.  
 Edward J. Dudley, Ph.D., *Assistant Professor of Spanish*.  
 Herschel Frey, Ph.D., *Assistant Professor of Spanish*.  
 Carroll B. Johnson, Ph.D., *Assistant Professor of Spanish*.  
 Richard M. Reeve, Ph.D., *Assistant Professor of Spanish*.  
 Jack Roberts, Jr., Ph.D., *Assistant Professor of Spanish*.  
 Paul Smith, Ph.D., *Assistant Professor of Spanish*.  
 Maria L. de Lowther, M.A., *Assistant Professor of Spanish, Emeritus*.  
 ———, *Assistant Professor of Spanish*.  
 ———, *Assistant Professor of Spanish*.



J. M. Aguirre, Ph.D., *Visiting Professor of Spanish*.  
 Virginia G. Baños, Ph.D., *Lecturer in Spanish*.  
 Rubén Angel Benítez, Lic. en Letras, *Lecturer in Spanish*.  
 Enrique G. Cortés, M.A., *Lecturer in Spanish*.  
 E. Mayone Dias, Lic.F.G., *Lecturer in Spanish and Portuguese*.  
 Pedro Duelo, Doctor en Leyes, *Associate in Spanish*.  
 Mariano González, Lic. en Fil., *Associate in Spanish*.  
 Raul N. Gutiérrez, Ed.D., *Lecturer in Spanish*.  
 Isabel L. Herwig, M.A., *Lecturer in Spanish and Portuguese*.  
 Josefina M. Méndez, Ed.D., *Lecturer in Spanish*.  
 Robert S. Rudder, M.A., *Acting Assistant Professor of Spanish*.  
 José M. Cruz Salvadores, *Lecturer in Spanish*.  
 Carmen Sadek, M.A., *Associate in Spanish*.  
 George L. Voyt, J.D., *Lecturer in Spanish*.

## Spanish

### Preparation for the Major

Courses 5, 25, 42, and 44, or their equivalents.

### The Major

Eighteen upper division courses distributed as follows: eight required courses: 100 or 103, 105 or 109, 115 or 118, 120A–120B, 121A–121B and 127; six elective courses: one in language, one in Spanish literature, one in Spanish American literature, and three selected from other Department offerings not including 160A–160B and 162; four courses selected by the student and approved by the Department in history, philosophy, or another language or literature, and for which the student has the necessary prerequisite, or the equivalent.

### General College Regulation

No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

### Honors Program

To qualify for graduation with departmental honors, students must achieve a 3.00 overall grade-point average, and have completed in the Department courses 170A–170B.

### Requirement for Teaching Credentials

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### The Master's Degree

*General Requirements.* See page 136. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See page 138.

*Departmental Requirements—Comprehensive Examination Plan.* (1) Foreign Language Requirements: a reading knowledge of one other foreign language approved by the graduate adviser. This requirement must be met at least one quarter before the awarding of the degree. (2) Course Requirement:

ten courses with a minimum of seven in the 200 series, or which one must be a seminar. With the approval of the graduate adviser, a maximum of two courses may be taken at the graduate level in closely related fields. (3) The Comprehensive Examination: two three-hour written examinations to be given the next-to-the-last week preceding the final examination period of the fall and spring quarters. In the first of these examinations the student will be expected to show a general knowledge of the history and structure of the Spanish language and of Spanish and Spanish American literatures. In the second of these examinations the student will be expected to show a thorough acquaintance with the authors, works and movements of either (a) Spanish literature or (b) Spanish American literature. Reading lists which will constitute the basis for this second examination will be available to the student. Only those students who pass these examinations with distinction will be encouraged to proceed to candidacy for the Ph.D.

*Departmental Requirements—Thesis Plan.*

(1) Guidance Committee: the preparation and examination of each candidate will be the responsibility of a guidance committee composed of three members of the Department. The chairman of the committee will be the instructor under whom the candidate proposes to write his thesis. The other two members will be appointed by the chairman of the Department after consultation with the candidate and the chairman of the committee. The committee members shall be appointed to represent three different fields of interest within the Department. No committee shall be appointed before a candidate has completed one full quarter of work in graduate standing, including no less than two courses in the Department, of which at least one must be in the 200 series. (2) Foreign Language Requirement: the same as the Comprehensive Examination Plan. (3) Course Requirement: nine courses of which a minimum of six must be in the 200 series. With the approval of the guidance committee a maximum of two courses may be taken at the graduate level in closely related fields. (4) Thesis and Examination: the subject and general plan of investigation for the thesis must be approved by the department and the instructor concerned before a guidance committee can be appointed. After completion of the thesis, the candidate must pass a three-hour oral examination testing his knowledge of the field of his thesis and his general competence. A reading list which will constitute

the basis for part of this examination will be available to the student. Only those students who pass these examinations with distinction will be encouraged to proceed to candidacy for the Ph.D.

**Ph.D. Degree in Hispanic Languages and Literatures**

*General Requirements.* See page 140.

Guidance Committee: normally in the fifth quarter of graduate studies a guidance committee will be appointed, composed of five members of the Department, to assist the doctoral candidate in planning his program. The chairman of the committee will be the instructor under whom the student proposes to write his dissertation. The other four members will each represent a minor field. Doctoral candidates entering the Department with an M.A. degree (or an equivalent title) from another institution will not be assigned guidance committees until their second quarter of studies in the Department; such assignment will depend upon a positive recommendation by the instructors already familiar with the candidate's work and potential.

*Foreign Language Requirement.* In addition to Spanish and Portuguese, the candidate must have a reading knowledge of at least two other foreign languages to be chosen with the approval of the guidance committee in the light of the candidate's field of specialization. The candidate must pass the test in one of these two languages not later than in the third quarter of graduate studies and the other not later than in the seventh quarter.

*Fields of Specialization.* The Department recognizes the following fields of specialization, from which one major and four minor fields shall be selected: (a) Medieval and Renaissance Literature; (b) The Golden Age; (c) 18th and 19th Century Spanish Literature; (d) 20th Century Spanish Literature; (e) Colonial and 19th Century Spanish American Literature; (f) 20th Century Spanish American Literature; (g) Luso-Brazilian Literature (h) Spanish and Portuguese Philology and Linguistics. The field in which the candidate intends to present a dissertation will be designated as his major field. The minimum course requirement for the major field will be determined by the candidate's guidance committee. The minimum course requirement for a minor field is one graduate course (series 200-249) followed by a corresponding seminar (series 253-286) or the equivalent.

**Course Requirements.** Three upper division courses in Luso-Brazilian literature and a minimum, after the B.A., of 18 graduate courses and seminars, including Spanish 200, 201, 203, and one additional graduate course in one of the above fields of specialization not chosen as a major or minor. Those students who choose philology and linguistics as their major fields must also include Portuguese 203, and have a specific knowledge of Classical and Vulgar Latin and of Old French or Old Italian.

**Qualifying Examinations.** The qualifying examinations will be given during the fifth and sixth weeks of the Fall and Spring quarters and will consist of: (a) a three-hour written examination in the candidate's major field; (b) four one-hour written examinations in the minor fields; and (c) a two-hour oral examination. The qualifying examinations are normally taken no later than nine quarters after the B.A. and six quarters after receiving the M.A.

**The Dissertation.** The dissertation may be on any subject within the general area of Spanish and Portuguese languages and literatures. After the acceptance of the dissertation in its final form, the candidate is required to pass an oral examination which will cover principally the field within which the dissertation falls. If five years have elapsed since any of the requirements have been taken, these requirements must be revalidated by the department.

#### Lower Division Courses

##### 1. Elementary Spanish.

Meets six hours weekly, including one hour in laboratory. This course corresponds to the first year of high school Spanish. The Staff

##### 16. Reading Course for Graduate Students.

(No credit)

Meets five hours weekly.

The Staff

##### 2. Elementary Spanish.

Meets six hours weekly, including one hour in laboratory. Prerequisite: course 1 or one year of high school Spanish, or equivalent. The Staff

##### 3. Elementary Spanish.

Meets six hours weekly, including one hour in laboratory. Prerequisite: course 2, or two years of high school Spanish, or equivalent. The Staff

##### 4. Intermediate Spanish.

Meets six hours weekly, including one hour in laboratory. Prerequisite: course 3, or three years of high school Spanish, or equivalent. The Staff

##### 5. Intermediate Spanish.

Meets six hours weekly, including one hour in laboratory. Prerequisite: course 4 or four years of high school Spanish, or equivalent. The Staff

##### 8A-8B. Spanish Conversation. (½ course each)

Beginning each quarter. Meets three hours weekly. Prerequisite: course 8A is open to those who have completed course 4, or equivalent. Students who have completed course 3 with grade B or better may be admitted. The Staff

##### 9A-9B. Advanced Conversation. (½ course each)

Beginning each quarter. Meets three hours weekly. Prerequisite: course 8B or equivalent. The Staff

##### 25. Advanced Spanish.

(Formerly numbered 25A-25B.) Prerequisite: course 5 or equivalent. Concentration on the building of vocabulary and the attainment of a high degree of comprehension in preparation for the courses in literature. The Staff

##### 42. Civilization of Spain and Portugal.

(Same as Portuguese 42.) A background course for the study of Peninsular literature.

Mr. Cruz-Salvadores

##### 44. Civilization of Spanish America and Brazil.

(Same as Portuguese 44.) A background course for the study of Spanish American and Brazilian literatures. Mrs. Arora

#### Upper Division Courses

The basic prerequisite to all upper division courses except 160A-160B and 162 is Spanish 25 or the equivalent.

##### 100. Phonetics and Phonemics.

(Formerly numbered 117.) Meets four hours weekly, including one hour laboratory. Analysis of the phonetic and phonemic systems of Spanish with special emphasis on the correlation between the phonemic and graphemic systems. Exercises and drills directed toward individual needs.

Mr. Cruz-Salvadores, Mr. Otero

##### 103. Morphology and Syntax.

(Formerly numbered 100.) A review of the patterns of the Spanish language: the verb system, syntax of preposition, word structure and word distribution.

Mr. Frey, Mr. Otero

##### 105. Intermediate Composition.

(Formerly numbered 101.) Concentration on idiomatic expressions, paraphrasing, summarizing, and transformational systems. Mr. Gutiérrez, Mr. Voyt

##### 109. Advanced Composition.

(Formerly numbered 114.) Correction of student's original compositions and analysis of basic stylistic elements. Mrs. Baños, Mr. Cortés

##### 115. Applied Linguistics.

Meets three hours weekly. The formulation of the problems faced by the teacher of Spanish in view of general linguistic theory. Mr. Bull, Mr. Frey

##### 118. History of the Spanish and Portuguese Languages.

(Same as Portuguese 118.) Meets three hours weekly. Major features of the development of the Spanish and Portuguese languages from the origins in Vulgar Latin to modern times. Contributions of other languages to the formation of Spanish and Portuguese. Mr. Otero, Mr. Smith

**120A-120B. Survey of Spanish Literature.**

Beginning each quarter. An introduction to the principal authors, works and movements of Spanish literature.  
Mr. Bocsi, Mr. Rudder

**121A-121B. Survey of Spanish American Literature.**

Beginning each quarter. An introduction to the principal authors, works, and movements of Spanish American literature.  
Mrs. Arora, Mr. Reeve

**122. Medieval and Renaissance Literature.**

The main genres of Medieval and Renaissance Spanish literature with emphasis on at least one representative work for each.

Mr. Rodriguez-Puértolas

**124. The Golden Age.**

The main genres of the Golden Age with emphasis on at least one representative work for each.

Mr. Johnson

**127. Don Quijote.**

Directed reading and intensive study of the novel.  
Mr. Dudley

**128. Neoclassicism and Romanticism in Spain.**

The main manifestations of thought and literature from 1700 to 1850 with emphasis on representative works.

Mr. Benítez

**130. Spanish Literature from 1850 to 1898.**

The development of post-Romantic literature with emphasis on representative works.

Mr. Smith

**132. Spanish Literature in the 20th Century.**

Spanish poetry, theater, essay and novel since 1898 with emphasis on at least one representative work for each genre.

Mr. Benítez

**137. The Literature of Colonial Spanish America.**

A study of the most important authors and movements in the various regions of Spanish America to 1810.

Mr. Fogelquist

**139. 19th Century Spanish American Literature.**

A detailed study of the important writers and movements from 1810 to 1860.

Mrs. Arora

**143. Spanish American Literature in the 20th Century.**

A detailed study of the important writers and movements since 1880.

Mr. Crow

**147. Literary Analysis.**

An introduction to the study of literary devices, figures of speech and the differentiation of literary genres.

Mr. Benítez

**149. Folk Literature of the Hispanic World.**

(Same as Folklore 149.) A study of the history and present dissemination of the main principal forms of folk literature throughout the Hispanic countries.

Mr. Robe

**151. Folk Song in Spain and Spanish America.**

(½ course)

(Formerly numbered, 108.) Meets three hours weekly. A study of the origins and development of Spanish folk music and of the different types of folk songs and folk poetry peculiar to the various regions of Spain and Spanish America.

Mrs. Méndez

**160A-160B. Hispanic Literatures in Translation.**

(Formerly numbered 150A-150B.) Class readings and analysis of selected works in translation from the literatures of Spain and Portugal (160A-W) and of Spanish America and Brazil (160B-F.)

Mr. Hulet, Mr. Johnson

**162. Cervantes in Translation.**

Class readings and analysis of selections from *Don Quijote* and other major works by Cervantes.

Mr. Starkie

**170A. Honor Course in Spanish.**

Meets three hours weekly. Prerequisite: a minimum of six of the courses required for the major with a 3.25 average. Intensive study of a special topic chosen from a list proposed by the instructor in charge. Discussion, oral and written reports.

Mr. Englekirk

**170B. Honors Course in Spanish.**

Prerequisite: course 170A. No regularly scheduled class meetings. Supervised preparation of an honors essay on a selected special topic.

The Staff

**199. Special Studies. (½ to 1 course)**

Prerequisite: consent of adviser and instructor. A maximum of two full courses may count toward the major.

The Staff

**Graduate Courses****200. Bibliography.**

(Formerly numbered 201A.) Meets three hours weekly. Identification and analysis of bibliographical sources for work by doctoral candidates in their fields of specialization.

Mr. Benítez, Mr. Rodriguez-Puértolas

**201. Literary Criticism.**

(Formerly numbered 201B.) Meets three hours weekly. Definition and discussion of methods of literary criticism.

Mr. Benítez, Mr. Machado

**203. The Development of Spanish Language.**

Prerequisite: course 118 or equivalent. Intensive study of the historical development of the Spanish language, in its phonology, morphology, syntax, and vocabulary.

Mr. Otero

**206. Linguistics.**

Meets three hours weekly. Prerequisite: course 115 or equivalent. A study of theoretical synchronic linguistics as applied to Spanish.

Mr. Bull

**209. Dialectology.**

Meets three hours weekly. Prerequisite: course 100 or 115 or equivalent. The major dialect areas of Peninsular and American Spanish, with the distinguishing features of each. Influence and contribution of cultural and historical features, including indigenous languages, to their formation.

Mr. Robe

**222. Medieval and Renaissance Poetry.**

Meets three hours weekly. Readings and lectures on Spanish poetry from the beginnings to 1550.

Mr. Rodriguez-Puértolas

**223. Medieval and Renaissance Prose.**

Meets three hours weekly. Readings and lectures on Spanish prose from the beginnings to 1550.

Mr. Dudley

**224. The Poetry of the Golden Age.**

Meets three hours weekly. Readings and lectures on the main poets and poetic movements of the Golden Age.  
Mr. Johnson

**225. The Drama of the Golden Age.**

Meets three hours weekly. Readings and lectures on the "comedia."  
Mr. Barcia

**226. Prose of the Golden Age.**

Meets three hours weekly. Readings and lectures on fictional, didactic, religious, and historical writings.  
Mr. Rodríguez-Puértolas

**227. Cervantes.**

Meets three hours weekly. Readings and lectures on the works of Cervantes.  
Mr. Dudley

**230. Neoclassic and Romantic Poetry and Drama.**

Meets three hours weekly. Readings and lectures on representative works of the two genres for the period.  
Mr. Benítez

**231. The 19th Century Novel.**

Meets three hours weekly. Readings and lectures on the novel of the 19th century.  
Mr. Machado da Rosa

**232. The Generation of 1898.**

Meets three hours weekly. Readings and lectures on representative works of the generation.  
Mr. Barcia

**233. Contemporary Spanish Drama.**

Meets three hours weekly. Readings and lectures on the theater since 1898.  
Mr. Barcia

**234. Contemporary Spanish Poetry.**

Meets three hours weekly. Readings and lectures on poetry since 1898.  
Mr. Barcia

**235. Contemporary Spanish Prose.**

Meets three hours weekly. Readings and lectures on the novel, the short story, and the essay since 1898.  
Mr. Barcia

**237. Chroniclers of the Americas.**

Meets three hours weekly. Readings and lectures on the "Cronistas de Indias."  
Mr. Robe

**239. Neoclassic and Romantic Prose and Poetry in Spanish America.**

Meets three hours weekly. Intensive study of Neoclassicism and Romanticism in Spanish America.  
Mr. Sánchez-Reulet

**240. The Modernist Movement.**

Meets three hours weekly. An intensive study of the important writers of this movement during the period 1880-1916.  
Mr. Englekirk

**243. Contemporary Spanish American Poetry.**

Meets three hours weekly. Intensive study of the important poets of Spanish America since 1916.  
Mr. Fogelquist

**244. Contemporary Spanish American Novel and Short Story.**

Meets three hours weekly. A study of the important novelists and short story writers from Modernism to the present.  
Mr. Crow

**245. Contemporary Spanish American Essay.**

Meets three hours weekly. Intensive study of the important essayists of the 20th century.  
Mr. Sánchez-Reulet

**249. Hispanic Folk Literature.**

(Same as Folklore 249.) Meets three hours weekly. An intensive study of folk literature as represented in a) ballad and poetry; b) narrative and drama; c) speech.  
Mr. Robe

**Seminars****253. Studies in Medieval Spanish and Portuguese.**

Meets two hours weekly. Prerequisite: course 208 or Portuguese 203. Problems related to the historical development of Spanish and Portuguese. Directed toward independent research.  
Mr. Otero

**256A-256B. Studies in Linguistics and Dialectology.**

256A. Studies in Linguistics. Prerequisite: course 206.

256B. Studies in Dialectology. Prerequisite: course 209.

Meets two hours weekly. Problems in the analysis and description of the contemporary language. Directed toward independent research.  
Mr. Bull, Mr. Robe

**262A-262B-262C. Studies in Medieval and Renaissance Literature.****262A. Lyric Poetry.**

Meets two hours weekly. Prerequisite: course 222.  
Mr. Rodríguez-Puértolas

**262B. Epic Poetry.**

Meets two hours weekly. Prerequisite: course 222.  
Mr. Rodríguez-Puértolas

**262C. Prose Writers.**

Meets two hours weekly. Prerequisite: course 223.  
Mr. Dudley

**264A-264D. Studies in the Golden Age.****264A. Poetry.**

Meets two hours weekly. Prerequisite: course 224.  
Mr. Johnson

**264B. The "Comedia."**

Meets two hours weekly. Prerequisite: course 225.  
Mr. Barcia

**264C. The Picaresque Novel.**

Meets two hours weekly. Prerequisite: course 226.  
Mr. Rodríguez-Puértolas

**264D. Don Quixote.**

Meets two hours weekly. Prerequisite: course 227.  
Mr. Dudley

**270A-270B. Studies in 18th and 19th Century Spanish Literature.****270A. Poetry and Drama.**

Meets two hours weekly. Prerequisite: course 230.  
Mr. Benítez

**270B. The Novel.**

Meets two hours weekly. Prerequisite: course 231.  
Mr. Machado da Rosa

**272A-272D. Studies in 20th Century Spanish Literature.****272A. The Novel.**

Meets two hours weekly. Prerequisite: course 232 or 235.  
Mr. Barcia

**272B. The Theater.**

Meets two hours weekly. Prerequisite: course 233.  
Mr. Barcia

**272C. Poetry.**

Meets two hours weekly. Prerequisite: course 234.  
Mr. Barcia

**272D. The Essay.**

Meets two hours weekly. Prerequisite: course 235.  
Mr. Barcia

**277. Studies in Colonial Spanish American Literature.**

Meets two hours weekly. Prerequisite: course 237.  
Mr. Robe

**278. Studies in 19th Century Spanish American Literature.**

Meets two hours weekly. Prerequisite: course 239.  
Mr. Sánchez-Reulet

**280A-280D. Studies in Contemporary Spanish American Literature.**

**280A. Modernist Poetry.**  
Meets two hours weekly. Prerequisite: course 240.  
Mr. Englekirk

**280B. Post-Modernist Poetry.**  
Meets two hours weekly. Prerequisite: course 243.  
Mr. Fogelquist

**280C. Novel and Short Story.**  
Meets two hours weekly. Prerequisite: course 244.  
Mr. Crow

**280D. The Essay**  
Meets two hours weekly. Prerequisite: course 245.  
Mr. Sánchez-Reulet

**286A-286B-286C. Studies in Hispanic Folk Literature.**

**286A. The Romancero.**  
Meets two hours weekly. Prerequisite: course 222.  
Mr. Rodríguez-Puértolas

**286B. Narrative and Drama.**  
Meets two hours weekly. Prerequisite: course 239 or 249.  
Mrs. Arora, Mr. Robe

**286C. Ballad, Poetry and Speech.**  
Meets two hours weekly. Prerequisite: course 249.  
Mr. Robe

**Professional Courses**
**310. The Teaching of Spanish in the Elementary School.**

Meets three hours weekly. Prerequisite: course 115.  
Mr. Frey

**370. The Teaching of Spanish in the Secondary School.**

Meets three hours weekly. Prerequisite: course 115.  
Mr. Bull

**372. The Language Laboratory. (½ course)**

Meets three hours weekly. Preparation of materials. Equipment, techniques, and problems related to the operation of the language laboratory. Mr. Otero

**Individual Study and Research**
**596. Directed Individual Studies. (½ to 1 course)**

Prerequisites: graduate status and consent of the graduate adviser. Limited to a maximum of two full courses in any graduate program. Studies on subjects not offered as regular courses.

The Staff (F, W, Sp, Sum)

**597. Directed Individual Preparation for Graduate Degrees. (½ to 1 course)**

Prerequisite: official acceptance of candidacy by the department. May be taken only once. Individual preparation for the comprehensive examination for the master's degree or the qualifying examinations for the Ph.D. degree.

The Staff (F, W, Sp, Sum)

**598. Research on Master's Thesis. (½ to 1½ courses)**

Prerequisite: consent of the guidance committee. Research in preparation of the master's thesis.

The Staff (F, W, Sp, Sum)

**599. Research on Dissertation. (½ to 1½ courses)**

Restricted to those who have passed the qualifying examinations for the doctor's degree. Research for and preparation of the doctoral dissertation.

The Staff (F, W, Sp, Sum)

## Portuguese

**Preparation for the Major**

Courses 3, 25, 42 and 44, or their equivalent.

**The Major**

Thirteen upper division courses distributed as follows: Six required courses: 100 or 103, 101A or 101B, 120A-120B, 121A-121B; three elective courses from other Portuguese offerings in the department; four courses selected by the student and approved by the Department, in history, philosophy, or another language or literature, and for which the student has the necessary prerequisites or the equivalent.

**Lower Division Courses**
**1. Elementary Portuguese.**

Meets six hours weekly, including one hour in laboratory.

The Staff (F,W,Sp)

**2. Elementary Portuguese.**

Meets six hours weekly, including one hour in laboratory. Prerequisite: Course 1 or equivalent.

The Staff (F,W,Sp)

**3. Intermediate Portuguese.**

Meets six hours weekly, including one hour in laboratory. Prerequisite: Course 2 or equivalent.

The Staff (F,W,Sp)

**25. Advanced Portuguese.**

Meets four hours weekly. Prerequisite: Course 3 or equivalent.

The Staff (W,Sp)

**42. Civilization of Spain and Portugal.**

(Same as Spanish 42.) A background course for the study of Peninsular literature.

Mr. Cruz-Salvadores

**44. Civilization of Spanish America and Brazil.**

(Same as Spanish 44.) A background course for the study of Spanish American and Brazilian literatures.

Mrs. Arora

## Upper Division Courses

**100. Phonetics and Phonemics.**

Meets four hours weekly, including one hour in laboratory. Analysis of the phonetic and phonemic systems of Portuguese with special emphasis on the correlation between the phonemic and graphemic systems. Exercises and drills directed toward individual needs. Mr. Dias

**101A. Advanced Reading and Conversation.**

Meets three hours weekly. Reading and discussion of writings by modern Brazilian and Portuguese authors. Mr. Hulet

**101B. Advanced Composition and Style.**

Meets three hours weekly. Correction of student's composition and analysis of basic stylistic elements. Mr. Hulet

**103. Morphology and Syntax.**

Meets four hours weekly. A review of the patterns of the Portuguese language: the verb system, syntax of preposition, word pattern and word distribution. Mr. Dias (W)

**118. History of the Spanish and Portuguese Languages.**

(Same as Spanish 118.) Meets three hours weekly. Major features of the development of the Spanish and Portuguese languages from their origins in Vulgar Latin to modern times. Contributions of other languages to the formation of Spanish and Portuguese. Mr. Otero, Mr. Smith (F,W,Sp)

**120A. Survey of Portuguese Literature.**

Meets four hours weekly. First half of an introduction to the principal movements, authors, and works of Portuguese Literature. Mr. Dias (F)

**120B. Survey of Portuguese Literature.**

Meets four hours weekly. Second half of an introduction to the principal movements, authors, and works of Portuguese Literature. Mr. Machado (W)

**121A. Survey of Brazilian Literature.**

Meets four hours weekly. First half of an introduction to the principal movements, authors and works of Brazilian Literature. Mr. Hulet

**121B. Survey of Brazilian Literature.**

Meets four hours weekly. Second half of an introduction to the principal movements, authors, and works of Brazilian Literature. Mr. Hulet (W)

**130. The Portuguese Novel.**

Meets four hours weekly. A study of the most representative currents, authors, and works of Portuguese fiction. Mr. Machado (F)

**131. The Brazilian Novel.**

Meets four hours weekly. A study of the most representative currents, authors, and works of Brazilian fiction. Mr. Hulet (Sp)

**132. Portuguese Poetry.**

Meets four hours weekly. A study of the most representative currents, authors, and works of Portuguese poetry from the Middle Ages to the present. Mr. Dias (W)

**133. Brazilian Poetry.**

Meets four hours weekly. A study of the most representative currents, authors, and works of Brazilian poetry from Colonial times to the present. Mr. Hulet

**199. Special Studies. (½ to 1 course)**

Prerequisite: Senior standing and consent of adviser and instructor. The Staff (F,W,Sp)

## Graduate Courses

**203. The Development of Portuguese Language.**

Meets four hours weekly. The development of the Portuguese Language from its origin in Vulgar-Latin to the present. Phonology, Morphology, syntax, and lexicography. Mr. Dias (Sp)

**222. Camões.**

Meets three hours weekly. An intensive study of the works of Camões, especially the *Lusiads* and the lyric poetry. Mr. Machado (F)

**235. Modern Portuguese Novel.**

Meets three hours weekly. Reading and discussion of the outstanding novels of the XIXth and XXth Century with emphasis on *Eça de Queiroz*. Mr. Machado (Sp)

**236. Modern Brazilian Novel.**

Meets three hours weekly. Reading and discussion of the outstanding novels of the XIXth and XXth centuries with emphasis on Machado de Assis. Mr. Hulet (F)

**253A-253B. Studies in Luso-Brazilian Literature.****253A. Portuguese Authors.**

Meets two hours weekly. Prerequisite: course 222 or 235. Mr. Machado

**253B. Brazilian Authors.**

Meets two hours weekly. Prerequisite: course 236. Mr. Hulet

## Individual Study and Research

**596. Directed Individual Studies. (½ to 1 course)**

Prerequisites: graduate status and consent of the graduate adviser. Limited to a maximum of two full courses in any graduate program. Studies on subjects not offered as regular courses. The Staff (F, W, Sp, Sum)

**597. Directed Individual Preparation for Graduate Degrees. (½ to 1 course)**

Prerequisite: official acceptance of candidacy by the department. May be taken only once. Individual preparation for the comprehensive examination for the master's degree or the qualifying examination for the Ph.D. degree. The Staff (F, W, Sp, Sum)

**599. Research en Dissertation. (½ to 1½ courses)**

Restricted to those who have passed the Qualifying examinations for the doctor's degree. Research for and preparation of the doctoral dissertation. The Staff (F, W, Sp, Sum)

## ■ SPEECH

(Department Office, 4303 Humanities Building)

Charles Wyatt Lomas, Ph.D., *Professor of Speech.*

Waldo Woodson Phelps, Ph.D., *Professor of Speech (Chairman of Department).*

Donald Erwin Hargis, Ph.D., *Associate Professor of Speech.*

Ralph Richardson, Ph.D., *Associate Professor of Speech.*

Daniel Vandraegen, Ph.D., *Associate Professor of Speech.*

Dale Gordon Leathers, Ph.D., *Assistant Professor of Speech.*

Prentice Avery Meador, Jr., Ph.D., *Assistant Professor of Speech.*

Paul Irwin Rosenthal, Ph.D., *Assistant Professor of Speech (Vice-Chairman of Department).*

Ned Alan Shearer, Ph.D., *Assistant Professor of Speech.*

———, *Assistant Professor of Speech.*



Victoria Alexandria Fromkin, Ph.D., *Assistant Professor of Linguistics.*

Patricia Bellamy Long, M.A., *Lecturer in Speech.*

The major in speech studies the process of verbal communication from the formation and perception of speech sounds to the development of complex ideas intended to influence attitudes, beliefs, and actions of others. Lower division courses are designed to provide the student with the basic information and skills relevant to oral communication. Upper division courses are designed to provide students with an understanding of the theory and to develop critical skills. The major provides for both breadth and depth. All students are required to study the communication process both in terms of scientific knowledge and in terms of its significance as a social tool. In addition, each student emphasizes one of the two aspects included in the discipline, and supplements this emphasis with courses in allied disciplines.

### Preparation for the Major

Speech 1, 2 (lower division); or 101 (upper division), with an average grade of C or higher. Students should note that upper division courses in the allied fields used to complete requirements for the major may have prerequisites. In some cases, these may be combined with the breadth requirements of the College of Letters and Science.

### The Major

In Speech: Ten upper division courses, including: 102, 104, 107, 111, and 133; three additional courses from the group selected for specialization; and two additional elective courses from the group other than the one selected for specialization.

**Group I. Rhetorical Criticism and Public Address:** nature of criticism, uses of criticism in evaluating speeches as instruments of decision making in an historical setting, history of public address. 134, 135, 137A, 137B, 138, 197.

**Group II. Persuasion and the Group Process:** logical structure of discourse, interaction of audience and speaker, group interaction, decision making through debate and discussion. 106, 108, 109.

In Allied Fields. Six upper division courses in allied fields related to the above group specialization selected from the following lists in consultation with the departmental adviser.

**Group I. Rhetorical Criticism and Public Address:** English 103, 116, 140, any course from 153, 154, 155, 160, 161, 163, 165, 170, 171, 172, 174; History, any course from 150A–150G, 171A through 188; Political Science 141, 142, 145, 152, 172A, 172B, 180; Psychology 135, 136, 137A, 137B; Sociology 122, 150, 152, 155; Journalism 183, 191.

**Group II. Persuasion and the Group Process:** Linguistics 100; Philosophy 192; Political Science 141, 146, 172A, 172B; Psychology 135, 137A, 137B, 149; Sociology 122, 148, 150, 152, 154; Journalism 183, 191.

The following additional courses, ordinarily taken in the graduate year, complete the speech requirement for the general secondary credential: Speech 370 and three upper division or graduate courses in Speech.

The minor in speech for the general elementary credential will consist of the follow-

ing courses: Speech 1 and 2, or 101; 104; 106; 111; two courses from Speech 102, 107, 112A, or 112B.

The minor in speech for the general secondary credential will consist of the following courses: Speech 1 and 2, or 101; 102; 106; 111; two courses from Speech 104, 107, 112A, 112B, 133, 190A–190B; Speech 370.

The minor in speech for the junior college credential will consist of the following courses: Speech 1 and 2, or 101; 102; 106; 111; 133; 370; one upper division elective.

#### **Requirements for Admission to Graduate Courses**

A bachelor's degree with a major consisting of at least nine upper division quarter courses (or equivalent) in speech. With departmental approval, up to three courses in closely related disciplines may be accepted in lieu of speech courses. This requirement is prerequisite to the nine-course program for the master's degree. If the candidate is deficient in the prerequisite, he must fulfill it by work undertaken as a graduate student. Graduate students in other disciplines may be admitted to graduate speech courses by permission of the instructor.

#### **Requirements for the Master's Degree**

For the general requirements, see page 137. The Department follows the Comprehensive Examination Plan, as described on page 138.

The departmental requirements are as follows: (a) In either upper division or graduate status, the program must include the following courses or their equivalents: two courses from each of the following groups: (1) courses 106, 107, 108, 109; (2) courses 133, 134, 135, 137A, 137B, 138; and one course from each of the following groups: (1) courses 102, 104; (2) courses 111, 112A, 112B. (b) Speech 200, Speech 238, one graduate seminar, and at least one course from each of the following groups: (1) 202, 206, 207; (2) 211, 234, 235, 236, 237. (c) Four elective courses in Speech, either graduate or upper division. (d) The student must pass a comprehensive written examination normally given toward the end of each quarter.

#### **Requirements for the Doctor's Degree**

For the general Graduate Division requirements, see page 140.

Departmental requirements: (a) on entering the Department the student will present the graduate adviser with a written statement of his preparation in modern foreign languages and Greek and Latin. In consultation with the student, the Department will

select the languages best suited to his needs, and the student will include in his program for the first quarter of residence, preparation for one foreign language examination. No student will be permitted to take Part II of the qualifying examination until the second language has been completed. (b) The qualifying examinations for the Ph.D. are in two parts, each of which consists of written and oral sections. Part I is normally taken after one year of full time graduate work, and Part II after a second year. The written portion of Part I is the same as the comprehensive examination for the master's degree, and students taking that degree from this University will have completed this requirement. Students transferring here with a master's degree from another university will normally take this written examination at the end of the first quarter of residence, provided they have completed a program roughly equivalent to that required for the M.A. degree at UCLA. Students who have shown promise of superior achievement on the written qualifying examinations will be permitted to take the Part I oral qualifying examination before a departmental committee. If they do well in this, they will be encouraged to proceed with further graduate study. (c) Beyond the minimum requirements for the UCLA master's program (see above), the candidate for the Ph.D. must complete the following courses: not less than six graduate courses in speech, including at least two seminars; special reading programs (597) and additional courses as needed to prepare for research in his chosen area; at least three courses in fields other than speech, and related to the area of the proposed dissertation. Following the completion of this program he will take Part II of the qualifying examinations, and then may be advanced to candidacy. The written portion of Part II will consist of two five-hour examinations in the major speech area (one covering that area generally and the other related specifically to the student's specialization within the major area). The oral portion of Part II will be a two-hour oral examination, before an interdepartmental committee, in the candidate's special field and such areas as are chosen in consultation with the adviser. (d) A final year will normally be devoted by the candidate chiefly to the preparation of his dissertation, after which he will take his final oral examination, a defense of his dissertation.

If a student has allowed seven years or more to elapse since taking a course or ex-

amination to meet the requirements for a graduate degree, it will be necessary to have such course or examination validated by the Department before he can proceed toward completion of the requirements.

#### Lower Division Courses

### 1. Principles of Oral Communication.

Prerequisite: Subject A. Theory and practice of informal public speaking, including selection of content, organization of ideas, language and delivery; practice in extemporaneous and manuscript speaking; training in critical analysis through reading and listening to contemporary speeches. **The Staff**

### 2. Public Speaking and Discussion.

Prerequisite: course 1. A continuation of course 1, with special emphasis on group discussions, panels, symposia, debates, and formal public speaking. Critical analysis of speeches in both contemporary and historical settings. **The Staff**

#### Upper Division Courses

### 101. Introduction to Public Address.

Analysis of rhetorical principles. Application to informative and persuasive speaking, to problem-solving discussion, and to the criticism of contemporary speeches. Open to upper division students who do not have credit for Speech 1 and 2. May not be counted as part of upper division major. **The Staff**

### 102. Background and Theories of Oral Communication.

The fundamental nature of oral communication; its rhetorical, linguistic, psychological, and social bases. **Mr. Leathers**

### 103. Phonetics of English.

A study of the physical production and acoustic characteristics of the sounds of American English. **Mrs. Fromkin**

### 104. Science of Speech.

(Formerly numbered 122 and same as Linguistics 105.) Prerequisite: Linguistics 100. An introduction to the anatomy and neuro-physiology of the speech organs in relation to the acoustic characteristics of the speech signal. **Mrs. Fromkin**

### 106. Principles and Types of Public Discussion.

Analysis of the purposes, principles, and types of public discussion. Practice in organizing group discussion. **Mr. Leathers**

### 107. Principles of Argumentation.

Prerequisite: course 2, or the equivalent. Analysis of propositions, tests of evidence, briefing. Study of hindrances to clear thinking, ambiguity of terms, and prejudices. The critical analysis of selected argumentative speeches. **Mr. Rosenthal**

### 108. The Deliberative Process.

Prerequisite: course 1 or 101. The nature and function of deliberative speaking in public meetings and parliamentary bodies. Rules of parliamentary speaking. Parliamentary debate on public issues. Critical analysis of selected speeches. **Mr. Rosenthal, Mr. Shearer**

### 109. Principles of Audience Analysis.

Prerequisite: course 2 or the equivalent. Theory of audience analysis and adaptation. Preparation and delivery of the occasional speech. **Mr. Phelps, Mr. Shearer**

### 111. The Oral Tradition in Literature.

Historical and theoretical foundations of oral interpretation from the rhapsodists of ancient Greece to contemporary poets and their interpreters. **Mr. Hargis, Mr. Vandragen**

### 112A-112B. Oral Interpretation of Literature.

Prerequisite: course 1 or 101. A study of the literary, aesthetic, and oral bases for the analysis of communication of (112A.) prose and (112B.) poetry. **Mr. Hargis, Mr. Vandragen**

### 133. Introduction to Rhetorical Criticism.

Analysis and evaluation of speeches in their social settings; critical studies of invention, arrangement, and style, papers and oral reports. **Mr. Lomas, Mr. Rosenthal**

### 134. Classical Public Address.

Prerequisite: course 133, or background in classics or ancient history. A critical study of speeches by leading Greek and Roman orators. **Mr. Meador**

### 135. British Public Address.

Prerequisite: course 133, or background in British history. Critical study of speeches by leading British orators from the eighteenth century to 1930. Relationships of speakers to issues and social movements of their day. **Mr. Lomas**

### 137A-137B. American Public Address.

Prerequisite: course 133, or upper division courses in American history. Critical study of speeches by leading American orators. Relationships of speakers to issues and social movements of their day.

137A. Colonial period to 1865; 137B. 1865-1930.

**Mr. Lomas, Mr. Rosenthal, Mr. Shearer**

### 138. Contemporary British and American Public Address.

Prerequisite: course 133. Critical study of speeches from 1930 to the present, with special emphasis on F. D. Roosevelt and Winston Churchill. **Mr. Phelps, Mr. Shearer**

### 190A-190B. Forensics. (½ course each)

Prerequisite: consent of the instructor. May be repeated once for credit. **Mrs. Long**

### 191. Analysis and Briefing. (½ course)

Prerequisite: consent of the instructor. Intensive study of selected political or social issues; preparation of bibliography; analysis and evaluation of issues and arguments. **Mrs. Long**

### 197. Proseminar in Rhetoric.

Intensive study of the speaking associated with a single major issue. Lectures, discussions, oral reports, and papers. Limited to seniors and graduate students with credit for at least three upper division courses in speech, including at least one course in the history and criticism of public address. **The Staff**

### 199. Special Studies. (½ to 1 course)

Prerequisite: senior standing and consent of instructor. **The Staff**

Graduate Courses

200. Bibliography and Methods of Research.  
Mr. Hargis, Mr. Shearer
202. Theory Testing in Human Communication.  
Mr. Leathers
206. Backgrounds and Theories of Discussion.  
Mr. Leathers
207. Forms and Methods of Argumentation.  
Mr. Rosenthal
211. Theory of Delivery. Mr. Hargis, Mr. Vandraegen
234. Classical Rhetorical Theory. Mr. Meador
235. Medieval Rhetorical Theory. Mr. Meador
236. Renaissance and Early Modern Rhetorical Theory: 1500-1850. Mr. Shearer
237. Modern Rhetorical Theory: 1850 to the Present. Mr. Phelps
238. Rhetorical Criticism. The Staff
- 260A-260B. Seminar in the Criticism of Public Address.  
260A. Historical and Social Settings. Mr. Lomas  
260B. Rhetorical Criticism. Mr. Lomas

266. Seminar in Critical Analysis of Discussion.  
Mr. Leathers
267. Seminar in Critical Analysis of Argumentation.  
Mr. Rosenthal
268. Seminar in Rhetorical Theory.  
Mr. Meador, Mr. Shearer
- Professional Course in Methods
370. The Teaching of Speech.  
Required of candidates for the general secondary credential with the major or minor in speech.  
Mr. Phelps
- Individual Study and Research
596. Directed Individual Study or Research.  
(½ to 1 course) The Staff
- 596X. Directed Individual Study or Research.  
(½ to 1 course)  
Preparation for language examination. The Staff
597. Preparation for the Comprehensive Examination for the Master's Degree or for the Qualifying Examination for the Ph.D.  
(½ to 1 course) The Staff
599. Research for and Preparation of the Doctoral Dissertation. (¼ to 2 courses)  
The Staff

## ■ SUBJECT A: ENGLISH COMPOSITION

(Department Office, 306 Royce Hall)

Philip Durham, Ph.D., *Chairman, Committee on Subject A.*  
Everett L. Jones, M.A., *Supervisor of Instruction in Subject A.*  
Ella O. Hutchins, M.A., *Lecturer in Subject A.*  
Gretchen G. Martin, M.A., *Lecturer in Subject A.*  
Cathleen H. Wheat, Ph.D., *Lecturer in Subject A.*

### Subject A. (No credit)

Fee, \$45.00. Four hours weekly for one quarter. Although this course yields no credit, it displaces 4 units on the student's program. Every student who does not satisfy the Subject A requirement by presenting transfer credit or by passing an acceptable examination is required to take, in the quarter im-

mediately following his admission to the University, the course in Subject A. Sections are limited to thirty students. For further details, see page 38 of this bulletin. Training in correct writing, including drill in sentence and paragraph construction, diction, punctuation, usage, and spelling. Weekly compositions and written tests on the text. The Staff

## ■ THEATER ARTS

(Department Office, 2310 Macgowan Hall)

Walden Boyle, Ph.D., *Professor of Theater Arts.*  
Ralph Freud, *Professor of Theater Arts.*  
†Arthur Friedman, Ph.D., *Professor of Theater Arts.*  
‡Edward Hearn, M.A., *Professor of Theater Arts.*  
John H. Jones, M.A., *Professor of Theater Arts.*  
Walter Kingson, Ed.D., *Professor of Theater Arts.*

‡ In residence fall quarter only, 1968.

† Absent on leave, 1968-1969.

\*George M. Savage, Ph.D., *Professor of Theater Arts*.  
 §Hugh Gray, Ph.D., *Emeritus Professor of Theater Arts*.  
 §William W. Melnitz, Ph.D., *Emeritus Professor of Theater Arts*.  
 Samuel Selden, Litt.D., *Emeritus Professor of Theater Arts*.  
 William Adams, M.A., *Associate Professor of Theater Arts*.  
 Marvin S. Borowsky, A.B., *Associate Professor of Theater Arts*.  
 Robert F. Corrigan, M.A., *Associate Professor of Theater Arts*.  
 Henry Goodman, Ph.D., *Associate Professor of Theater Arts*.  
 Richard C. Hawkins, M.A., *Associate Professor of Theater Arts*.  
 Melvyn Helstien, Ph.D., *Associate Professor of Theater Arts*.  
 Robert H. Hethmon, Ph.D., *Associate Professor of Theater Arts*.  
 James Kerans, Ph.D., *Associate Professor of Theater Arts*.  
 Darrell Ross, M.F.A., *Associate Professor of Theater Arts*.  
 Louis Clyde Stoumen, B.A., *Associate Professor of Theater Arts*.  
 †Abe V. Wollock, Ph.D., *Associate Professor of Theater Arts*.  
 Colin Young, M.A., *Associate Professor of Theater Arts (Chairman of the Department)*.  
 John Cauble, M.A., *Assistant Professor of Theater Arts*.  
 Donald Crabs, M.A., *Assistant Professor of Theater Arts*.  
 William Crocken, *Assistant Professor of Theater Arts*.  
 Frank LaTourette, Litt. M., *Assistant Professor of Theater Arts*.  
 Mark McCarty, M.A., *Assistant Professor of Theater Arts*.  
 William H. Menger, M.A., *Assistant Professor of Theater Arts*.  
 Carl Mueller, Ph.D., *Assistant Professor of Theater Arts*.



Theodore Apstein, Ph.D., *Lecturer in Theater Arts*.  
 Robert Barrows, M.A., *Lecturer in Theater Arts*.  
 John Boehm, M.A., *Lecturer in Theater Arts*.  
 Edgar Brokaw, A.B., *Lecturer in Theater Arts*.  
 Robert Epstein, *Lecturer in Theater Arts*.  
 Burdette Fitzgerald, M.A., *Lecturer in Theater Arts*.  
 Hugh Grauel, M.A., *Lecturer in Theater Arts*.  
 Patricia Hungerland, M.A., *Lecturer in Theater Arts*.  
 John Ingle, M.A., *Lecturer in Theater Arts*.  
 Robert E. Lee, M.A., *Lecturer in Theater Arts*.  
 Douglas Nigh, M.A., *Acting Assistant Professor of Theater Arts*.  
 J. Palmer Schoppe, *Lecturer in Theater Arts*.  
 Ruth Schwartz, Ph.D., *Lecturer in Theater Arts*.  
 William Shull, B.S., *Senior Lecturer in Theater Arts*.  
 Howard Suber, M.A., *Lecturer in Theater Arts*.  
 Lyne S. Trimble, M.S., *Lecturer in Theater Arts*.  
 John W. Young, M.A., *Lecturer in Theater Arts*.  
 Marvin Young, LL.B., *Lecturer in Theater Arts*.  
 ———, *Lecturer in Theater Arts*.

The Department of Theater Arts bases its work in theater, motion pictures, television, and radio on a solid foundation in the liberal arts. The purpose of the curriculum is to develop in its students a scholarly, creative and professional approach to the theater arts. The aim of the Department is to

train graduates who will eventually make original contributions in the field of their work.

The student majoring in theater arts must complete the requirements of the College of Fine Arts (see page 97), and the requirements under one of the following four specializations: theater, secondary teaching credential, motion picture, and television-radio.

\* Absent on leave, fall quarter, 1968.

† Absent on leave, 1968–1969.

§ Recalled to active service.

### Preparation for the Major

**Theater Specialization.** Courses 5A–5B (5A must be taken before 5B)–5C, 20A, 40, 41, 42.

**Secondary Teaching Credential Specialization.** Courses 5A–5B–5C, 20A, 40, 41, 42, 160A, and Humanities 1A–1B–1C, or English 10A–10B–10C.

**Motion Picture Specialization.** Students electing to specialize in motion pictures for their B.A. degree are expected to complete the general University and College requirements before entering the motion picture program, although this would not prevent students from taking lower division film courses or film history courses coincident with their general studies.

**Television-Radio Specialization.** Courses 5C, 20A. Students electing to specialize in television-radio for their B.A. degree must complete the general University and College requirements before entering the Television-Radio program.

### The Major

**Theater Specialization.** Courses 105, 130A, 140A, 141A, 142A, 143A, 160A, 170, 172A–172B, Classics 142, English 103, 167 and five courses or 20 units of approved electives in theater arts, for a total of 15½ courses or 62 units. All students during each quarter of residence are responsible for completing specific production assignments related to production activity of the Theater Division.

**Special Programs in Theater.** In addition to the standard major, the Theater Division provides for three special programs: (1) Acting; (2) Playwriting; and (3) Design/Technical. Students intending to follow one of these programs must follow the usual preparation for the major with the following exceptions: (a) course 43 is required of both Playwriting and Design/Technical specialists; (b) Art 30B is required of Design/Technical specialists; and (c) Acting specialists are not required to course 5C, but do take courses 21A–21E, Dance 20, and Music 3A.

Specialists in all three programs must take the following core of courses: 105, 172A, 172B, Classics 142, English 103, English 167, and one additional course to be selected by the student's adviser. To this core of courses are added the following:

**Special Program in Acting.** Courses 21A–21E, 122, 124A, 124B, 121A–121F, Dance 20, Music 3A. Total units in this program: 86. Lower Division: 32, Upper Division: 54.

**Special Program in Playwriting.** Courses

130A, 130B, 130C, 160A, 170, 106A and 8 units of Dramatic Literature as recommended by the student's adviser. Total units in the program: 80. Lower Division: 24; Upper Division: 56.

**Special Program in Design/Technical Theater.** Courses 130A, 148A–148B–148C, 149A–149B–149C, 160A, 170 and an elective chosen from the following list to bring the total of upper division units to 62 in the major: 140B, 141B, 142B, 143A, 143B, 145, 146A, 146B, 190A–190B, Art 150A–150B–150C (Students in Design/Technical may choose between English 103 and English 167, but need not take both). Total units in this program: 90. Lower Division: 28; Upper Division: 62.

Admission to each of the Special Programs in Theater is by application to the Head of the Theater Division, and continuance in the Programs is by consent of the faculty, subject to review. Admission to the Acting Program is controlled through 20A, or audition, or both. Admission to the Playwriting Program is by consultation with the faculty in that area. Admission to the Design/Technical Program follows completion of course 43 and such other demonstration of competence and promise as the faculty of that area require. In the case of the specialist in Design/Technical, the student enters the program as a junior, having completed the preparation for the major. The course of study is arranged by consultation of the student with his adviser. Within the specialization it is possible to concentrate on set design, costume design, lighting design or technical fields by the nature of the course work or project undertaken in courses 148A–148B–148C and 149A–149B–149C.

**Secondary Teaching Credential Specialization.** Courses 105, 130A, 140A, 141A, 142A, 143A, 160B or 161, 170, 172A–172B, 370, Classics 142, English 103 and 167, and Theater Arts electives to bring unit total to 62.

The Department provides a specialization leading to a General Secondary Teaching Credential. In addition to the above program, the student must interview a credential adviser in the Graduate School of Education concerning required courses in education, a teaching minor and the year of graduate work.

**Motion Picture Specialization.** (21 courses.) (a) *Required Courses* (8 courses): 5B (or 105), 5C, 106A, 106B, 108, 134A and 179A.

(b) *Electives* (3 courses): Three upper divi-

sion courses in the Department as selected in consultation with an adviser.

(c) *General Requirements* (10 courses): Nine upper division courses, selected in consultation with an adviser, in the following areas—*The Arts, Literature, Social Studies*, and *Theory and Criticism*. A minimum of three areas must be selected and two courses taken in each area chosen: the remaining three required courses may be in any of the areas. A list of recommended courses in each area is filed with each Departmental adviser and with College of Fine Arts counselors. Copies can be obtained from the Department secretary.

In addition, each student must enroll in 195 (Senior Seminar) the last term of his undergraduate residence. (The requirement of the course is the preparation of a paper on some aspect of contemporary cinema.)

(d) *Specialized Major Requirements* (10 courses): If the student is selected for a specialized major in film production or writing, he may substitute any of the following courses for the General Requirements listed in (c) above: Production—151, 152, 153A, 153C, 154, 164, 179B, 181A–181B–181C; Writing—134B, 135A, 135B, 135C, 130A, 130B, 130C, 132, 136A, 136B, 136C, 136D, 137 or English 135A–135B–135C.

In addition, any student selected for the Honors Class in film history (109) may substitute it for any one course of the requirements in (c) above.

*Notes on Specialized Majors and Honors Classes.* The following courses are considered, in effect, entrance examinations to the specialized majors: 106A or 106B, 134A and 179A. Doing well (3.0 or better) in these courses allows the student to make a presentation before the Production Faculty for further film projects, or be selected by the Writing Faculty for 134B or 135A–135B–135C, or be invited by a member of the History Faculty to propose a research project for 109, whichever area is of primary interest to the individual student. Continuation in these programs requires maintaining a high level of imaginative thought and work. Those in production are required to perform assignments on each other's projects.

*Television-Radio Specialization.* All television-radio specialization students are required to take courses 5C, 20A, 105, 108, 110, 132, 136A, 153B, 166, and 185A. Upon completion of these courses the student may qualify with faculty approval, for an area concentration in *production-direction* or

*writing*. The *production-direction* concentration requires the satisfactory completion of courses 185B, 185C, and six approved electives for a total of 84 units.

The *writing* area concentration requires the satisfactory completion of 136B–136C–136D plus seven approved electives for a total of 84 units. All junior and senior students during each quarter of residence are responsible for completing specific crew assignments related to production activities of the Television-Radio Division.

### Admission to Graduate Status

In addition to meeting the general requirements of the Graduate Division the student will usually be expected to have completed his bachelor's degree in theater arts or its equivalent. Students whose theater arts preparation is deficient as determined by the appropriate admissions committee, will be required to take work additional to the degree program to make up such deficiencies.

The applicant who has done his preparatory work elsewhere must provide the Department with the results of certain diagnostic tests and letters of reference. Further information should be obtained from the Chairman of the Department at least three months prior to the beginning of the quarter in which the student plans to enroll.

A student pursuing an M.A. degree in theater arts must complete the requirement of one foreign language before advancement to candidacy. However, in the area of motion picture aesthetics or history, a student must satisfy the faculty that he or she has a reading knowledge of French or Italian during the first quarter of graduate residence.

### Requirements for the Master of Arts Degree

The Department of Theater Arts follows the Thesis Plan. The program requires the completion of a minimum of nine courses and a demonstration of the reading knowledge of a foreign language (see above); at least one year (3 quarters) of intensive study and laboratory exercises; and research leading to the completion of a written thesis in the history, aesthetics, criticism or techniques of theater arts. A student in theater and television is required to take an active part in the production program of the Department as partial fulfillment of the degree requirements. In planning his course of study the student will place his emphasis on theater, motion pictures or television.

**Theater.** The required courses are 200, 201, 205A or 205B, 240 and 245. The student will choose the remaining four courses after being advised.

**Motion Pictures.** The required courses are 200, 208A, 208B and either 209A or 209B. The student will choose the remaining five courses after being advised.

**Television-Radio.** The required courses are 200 and 210. The student will choose the remaining seven courses after consultation with his adviser.

### Master of Fine Arts Degree

The Department offers a two-year program leading towards an M.F.A. degree in theater, motion pictures and television-radio. It requires the completion of 36 units (nine courses). (See below for requirements by subject area.) In addition the student must complete certain projects in writing, direction, acting, design or technical supervision.

For admission to the program a student must have completed the UCLA undergraduate program in theater arts in the area of his proposed specialization, or its equivalent, and submit evidence of creative ability and professional intent. However, students may be admitted to the program with deficiencies when an undergraduate degree has been completed in some field other than theater arts, or when an undergraduate degree in theater arts has had different requirements. In such cases the student can anticipate spending some time in limited status while removing the deficiencies.

**Theater.** The M.F.A. projects may be in writing, direction, design, acting, or technical supervision, and a candidate will be advised to arrange a program of courses which best prepares him for the successful completion of his project series.

**Motion Pictures.** The M.F.A. in motion pictures can be taken in either film making or writing. Course requirements will be arranged with a graduate adviser.

1. Film making. The base of this program is a B.A. with successful completion of the animation sequence (181A-181B-181C) or Film Projects 1 and 2 (179A-179B). Course work is intended to provide an opportunity to generalize upon the experience of the undergraduate projects, and to experiment further before embarking on the final film project for the M.F.A.

2. Writing. The base of this program is successful completion of an undergraduate program in writing (see UCLA requirements

under description of undergraduate curriculum). The thesis project will be a feature-length script, or an equivalent amount of writing, in fictional or documentary forms.

**Television.** The M.F.A. in television can be taken in either *production-direction* or *writing*. Course requirements will be arranged with a graduate adviser. Students will be admitted to the M.F.A. Program only after: (1) Completing two quarters of graduate residency and (2) Qualifying for admittance by written application and approval of faculty.

1. Production-Direction. The base of this program is the B.A. in television at UCLA or its equivalent, (see undergraduate concentration above) and the television sequence (185A-185B-185C). Students entering television graduate studies from other disciplines or other institutions may be required to take make-up courses in deficient areas. Additional courses will be determined in consultation with a graduate adviser. The end projects at the graduate level will be a series of productions, demonstrating originality and the creative ability of the student, as well as his professional mastery of the medium.

2. Writing. The base of this program is the successful completion of the writing area concentration for the B.A. at UCLA (see above). Additional courses will be determined in consultation with a graduate adviser. The end project at the graduate level will be an *original series presentation* including a specified number of scripts, synopses, outlines, and script breakdowns appropriate to the scope of the project undertaken. The series may be conceived for fictional, documentary, or educational television.

### Doctor of Philosophy Degree in Theater History

In addition to the general University regulations for the doctor of philosophy degree, including the dissertation and final examinations (see page 140), a candidate must satisfy the following departmental requirements.

**Foreign language.** A reading knowledge of French and German is required for all candidates. In the case of a student specializing in the theater arts of an area requiring a knowledge of a language other than French or German, he may substitute that language for one of the above. The requirements for the first language must be fulfilled by the end of the first year of graduate work; the requirement for the second language, at the end of the second year.

Both language requirements must be satisfied before advancement to candidacy for the degree.

**Qualifying examination.** Preparation for the qualifying examination, which advances the student to candidacy, will include a minimum of four graduate seminars and other courses required by the student's advisers. In addition he will be required to produce evidence of research and scholarly writing. The examination is both written and oral.

#### Lower Division Courses

##### 5A. History of the Theater from Primitive Times to 1700.

Lecture, three hours; quiz section, one hour. Required of theater arts majors with specialization in theater, television, or secondary teaching credential. The history of the influence of different cultures, traditions, and technologies on the development of theater as a social institution.

##### 5B. History of the Theater from 1700 to the Present.

Lecture, three hours; quiz section, one hour. Required of theater arts majors in all specializations. The history of the influence of different cultures, traditions, and technologies on the development of theater as a social institution.

##### 5C. History of Motion Pictures and Broadcasting.

Lecture, four hours; laboratory, two hours. Required of theater arts majors except those in the acting specializations. The history of the development of motion pictures and broadcasting from their beginnings to the present day. Mr. Stoumen

##### 20A. Acting Fundamentals.

Required of theater arts majors with specialization in theater, secondary teaching credential, television-radio. An introduction to the interpretation of drama through the art of the actor. Development of individual insights, skills, and disciplines in the presentation of dramatic material to an audience. Mr. Cauble, Mrs. Fitzgerald

##### 20B. Acting Fundamentals. (½ course)

Lecture-laboratory, four hours. Prerequisite: course 20A or the consent of the instructor. Intensive application of acting techniques through study and performance of selected scenes from stage, motion pictures and television scripts.

##### 20C. Acting Fundamentals. (½ course)

Lecture-laboratory, four hours. Prerequisite: courses 20A-20B, or the consent of the instructor. Study and performance involving problems of style in a wide range of dramatic material.

##### 21A. Intermediate Acting. (½ course)

Lecture, four hours; laboratory, three hours. Prerequisites: course 20A or equivalent and consent of the instructor. Intensive application of acting techniques through study and performance and the learning of basic exercises for the actor.

##### 21B. Intermediate Acting. (½ course)

Lecture, four hours; laboratory, three hours. Study and performance involving problems in a wide range of dramatic material.

##### 21C-21D-21E. Intermediate Acting. (½ course each)

Lecture, four hours; laboratory, three hours. Individual studies and exercises designed to develop freedom and imagination in the preparation of dramatic material.

##### 40. Fundamentals of Stage Scenery. (½ course)

Lecture, two hours; laboratory, two hours. (Courses 40, 41, 42 may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or general secondary teaching credential. The planning and execution of stage scenery; the consideration of design, materials, construction methods, shop procedures and budgeting. Mr. Crabs

##### 41. Fundamentals of Stage Lighting and Sound. (½ course)

Lecture, two hours; laboratory, two hours. (Courses 40, 41, 42 may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or general secondary teaching credential. A basic study of stage lighting with emphasis on the study of instruments, control, color, and procedure. Procedures and techniques related to audio-recording and reproduction for the stage. Mr. Crabs

##### 42. Fundamentals of Stage Costuming. (½ course)

Lecture, two hours; laboratory, two hours. (Courses 40, 41, 42 may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or general secondary teaching credential. Costume analysis and construction techniques. Laboratory practice in the making of a costume from design to performance. Mr. Hungerford

##### 43. Introduction to Basic Principles of Design. (½ course)

Lecture, two hours. Study of the relationship of various elements of total theater design. Required of those specializing in design, technical theater, and playwrighting.

#### Upper Division Courses

#### THEATER AND GENERAL SECONDARY CREDENTIAL AREAS

##### 101. Introduction to the Theater Arts. (½ course)

Not open for credit to theater arts majors. A survey of theater, motion pictures, television and radio, together with critical analysis of their roles in contemporary culture, leading to an appreciation and understanding of the theater arts. A non-technical presentation for the general student. Mr. Freud and Staff

##### 102A. History of the European Theater.

Lecture, three hours. A survey of the development of the theater, with emphasis on the contributions of Europe from the Greeks to the Renaissance, based upon the most authoritative critical studies in the field.

**102B. History of the European Theater.**

Lecture, three hours. Prerequisite: course 102A or consent of the instructor. A survey of the development of the theater, with emphasis on the contributions of Europe from the Renaissance to the twentieth century, based upon the most authoritative studies in the field.

**104. History of the American Theater.**

Lecture, three hours. The history of the American theater from the Revolutionary War to the present.  
Mr. Freud

**105. Main Currents in Theater.**

Lecture, three hours. Required of theater arts majors with specialization in theater or secondary teaching credential. Critical examination of the leading theories of theater from 1887 to the present. Study and discussion of modern styles of production.  
Mr. Goodman

**117A. The Puppet Theater. (½ course)**

Lecture, two hours; laboratory, four hours. Prerequisite: course 40 or consent of the instructor. Study of the history and practice of the art of puppetry. An examination of the materials and methods of construction. Staging of puppet and marionette productions as laboratory practice.  
Mr. Helstien

**117B. The Puppet Theater. (½ course)**

Lecture, two hours; laboratory, four hours. Prerequisite: course 40 or consent of the instructor. Advanced study in the art of puppetry.  
Mr. Helstien

**117C. The Puppet Theater. (½ course)**

Lecture, two hours; laboratory, four hours. Prerequisite: course 40 or consent of the instructor. Advanced study in the staging of puppet and marionette productions.  
Mr. Helstien

**118A. Creative Dramatics.**

Studies of the principles and procedures of the informal approach to children's drama through creative interpretations of literature.  
Mrs. Fitzgerald

**118B. Creative Dramatics. (½ course)**

Lecture, one hour; laboratory, two hours. Prerequisite: course 118A or consent of the instructor. Advanced theory and practice in the art of drama for children.  
Mrs. Fitzgerald

**119. Theater for the Child Audience.**

Lecture, three hours. Theories and principles of production in the formal theater arts for children. Analysis and evaluation of appropriate theatrical forms.  
Mr. Helstien

**120A. Advanced Acting for the Stage.**

Prerequisite: course 20A or consent of the instructor. Advanced study and practice in the art of acting.  
Mr. Freud

**120B. Advanced Acting for the Stage.**

Prerequisite: consent of the instructor. Advanced problems in acting for the stage.

**121A–121B–121C. Advanced Problems in Acting.**

Lecture, six hours; laboratory, six hours. Study and development of characters from the classic plays through the body of contemporary literature.

**121D–121E–121F. Advanced Problems in Acting.**

Lecture, six hours; laboratory, six hours. Advanced problems in acting.

**122. Make-up for the Stage. (½ course)**

The art of make-up and its relation to the production as a whole. History, aesthetics, materials, and procedures of make-up.  
Mr. Jones

**124A–124B. Voice for the Stage. (½ course each)**

Lecture, two hours; laboratory, two hours. Development of the techniques of voice production for the theater.

**130A. Fundamentals of Playwriting I.**

Lecture, three hours. Required of Theater Arts majors with a specialization in theater or secondary teacher's credential. Course designed to stimulate the student's critical and creative faculties through the preparation of original material for the theater. Guidance in the completion of a one-act play.  
Mr. Barrows, Mr. Savage

**130B. Fundamentals of Playwriting II.**

Lecture, three hours. Prerequisite: course 130A. Study in original material for the theater, its preparation and its development. Course is designed to give further insight into critical aspects of the one-act form. Guidance in the completion of a one-act play.  
Mr. Barrows, Mr. Savage

**130C. Intermediate Playwriting.**

Lecture, three hours. Prerequisites: courses 130A and 130B. Further study in original material for the theater—its preparation and its development. Discussion and interpretation of the one-act form—its relation to the full-length structure and form. Guidance in completion of original material as deemed appropriate by the instructor.  
Mr. Barrows, Mr. Savage

**132. Manuscript Evaluation for Theater Arts.**

Lecture, three hours. Prerequisite: course 130A and consent of the instructor. May be repeated for a maximum of two courses credit. Principles and practices in the evaluation of manuscripts for theater, motion pictures, television, or radio production.  
Mr. LaTourette, Mr. Savage

**137. Play Analysis.**

Lecture, four hours. Theory of action as it relates to drama. Study of the determinants of conflict, motive, and action, and of the critical vocabulary appropriate to such a study.

**140A. Scenic Techniques for the Stage. (½ course)**

Lecture, two hours; laboratory, two hours. Prerequisite: course 40 or approved equivalent. (Courses 140A, 141A, 142A may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or secondary teaching credential. An intensive study in the techniques of scenic construction, with emphasis given to dimensional scenic structures.  
Mr. Crocken

**140B. Advanced Scenery for the Stage.**

Lecture, three hours; laboratory, two hours. Prerequisite: course 140A. Advanced study of technical problems in staging theater productions, including design analysis and planning related to rigging, shifting and construction techniques.  
Mr. Crocken

**141A. Lighting Techniques for the Stage.****(½ course)**

Lecture, two hours; laboratory, two hours. Prerequisite: course 41 or approved equivalent. (Courses 140A, 141A, 142A may be taken in any sequence, but not concurrently.) Required of theater arts majors with specialization in theater or secondary teaching credential. The study of stage lighting techniques with emphasis given to lighting plots, instrument schedules, hanging sections, and sequential cue relationships.

Mr. Crocken

**141B. Advanced Lighting for the Stage.**

Lecture, three hours; laboratory, two hours. Prerequisite: course 141A. The detailed study of stage lighting as an art, with emphasis given to design concepts. The interpretation of a script or score through the control of light and color in relation to actor and audience.

Mr. Crocken

**142A. Costuming Techniques for the Stage.****(½ course)**

Lecture, two hours; laboratory, two hours. Prerequisite: course 42 or consent of the instructor. Required of theater arts majors with specialization in theater or secondary teaching credential. Advanced study of historical costume and the interpretation of theatrical costume design through the use of patterns, fabrics, and related costume techniques.

Mrs. Hungerland

**142B. Advanced Costuming for the Stage.**

Lecture, two hours; laboratory, three hours. Prerequisite: course 142A or consent of the instructor. Special problems in the procuring, designing, construction and management of costumes used in theatrical productions.

Mrs. Hungerland

**143A. Scenic Design for the Theater.**

Lecture, two hours; laboratory, two hours. Prerequisites: courses 40, 41, 42. Required of theater arts majors with specialization in theater or secondary teaching credential. Basic principles of design as applied to the interpretation and presentation of the visual aspects of dramaturgy. Study of styles, techniques and methods of design for the theater arts. The translation of ideas into visual forms.

Mr. Jones

**143B. Advanced Scenic Design for the Theater.**

Lecture, two hours; laboratory, two hours. Prerequisites: course 143A and consent of the instructor. Further study of the design of scenery for the theater, and translation of the design into actual visual form. Solving design problems for the complicated play. Consideration of experimental ideas, and the investigation of new materials.

Mr. Corrigan

**145. Costume Design for the Theater.**

Prerequisite: course 42 or consent of the instructor. Design of costumes for theatrical presentations. The study of the use of silhouette, fabrics, color, and decoration as related to theatrical characterizations.

Mr. Jones

**146A. Drafting for the Theater Arts.**

Lecture, one hour; laboratory, three hours. Prerequisite: course 143A or consent of the instructor. A practical course in the technical sketching and drafting of working drawings essential in the development of the design of sets and properties for theater, television and motion picture productions.

Mr. Corrigan

**146B. Scene Painting Techniques. (½ course)**

Laboratory, two hours. Prerequisite: course 40. The study of scenic painting techniques and materials, and their relation to the realization of color design and elevations.

Mr. Corrigan

**149A-149B-149C. Special Courses in Design and Technical Theater.**

Hours to be arranged. Prerequisite: consent of the instructor. Group study of selected subjects in design and technical theater for students in the Design/Technical Theater specialization. 149A is offered in the fall, 149B is offered in the winter, and 149C is offered in the spring.

The Staff

**149A-149B. Special Courses in Design and Technical Theater.**

Hours to be arranged. Prerequisite: consent of the instructor. Group study of selected subjects in design and technical theater for students in the Design/Technical Theater specialization. 149A is offered in the fall and 149B is offered in the winter.

The Staff

**149C. Special Courses in Design and Technical Theater. (2 courses)**

Hours to be arranged. Prerequisite: consent of the instructor. Group study of selected subjects in design and technical theater for students in the Design/Technical Theater specialization. 149C is offered in the spring.

The Staff

**160A. Fundamentals of Play Direction.**

Two two-hour meetings, with outside hours to be arranged. Prerequisite: course 130. Required of theater arts majors with specialization in theater or secondary teaching credential. Basic theories of play direction and their application through the preparation of scenes under rehearsal conditions.

Mr. Helstien, Mr. Hethmon, Mr. Kerans

**160B. Fundamentals of Play Direction. (½ course)**

Three hours on Saturday morning, with outside hours to be arranged. Prerequisite: course 160A and consent of the instructor. Required of theater arts majors with specialization in the secondary teaching credential. A course in the application of stage direction techniques to the one-act play. Each student will direct a one-act play to be performed under rehearsal conditions. Material will be drawn from published sources.

**161. Advanced Play Direction.**

Lecture, four hours; laboratory, as required by one-act program. Prerequisites: course 160A and consent of the instructor. May be substituted for 160B by a theater arts major with specialization in the secondary teaching credential. Special problems in the direction of original one-act plays under production conditions.

Mr. Hearn

**170. Theater Laboratory.**

Lecture, four hours; laboratory, as required by one-act program. Prerequisites: courses 40, 41, 42, 143A. (May not be taken concurrently with courses 140A, 141A, 142A, 172A or 172B.) Required of theater arts majors with specialization in theater or secondary teaching credential. Laboratory in theater production, under supervision. The translation of ideas and concepts into the dramatic form.

Mr. Crabs

**171A. Advanced Theater Laboratory.**

(½ to 1 course)

Hours to be arranged. Prerequisite: consent of the instructor. May be taken for a maximum of one course. Creative participation as an actor or stage manager in the public presentation of departmental productions. **The Staff**

**171B. Advanced Theater Laboratory.**

(½ to 1 course)

Hours to be arranged. Prerequisite: consent of the instructor. May be taken for a maximum of one course. Creative participation in the realization of production elements related to the public presentation of department productions. **The Staff**

**172A-172B. Technical Theater Laboratory.**

(½ course each)

Hours to be arranged. Prerequisites: courses 40, 41, 42. (May not be taken concurrently with courses 140A, 141A, 142A or 170.) Required of theater arts majors with specialization in theater or secondary teaching credential. **The Staff**

**190A-190B. The Role of Management in Theater.**

(½ course each)

Lecture, two hours; laboratory hours to be arranged. A study of the artistic, social and economic criteria for decision-making in theater administration, and the processes for carrying out those decisions. Considerations governing decisions affecting management of the various producing bodies in the theater arts. 190A is offered in the fall and winter quarters and 190B is offered in the winter and spring quarters. Courses must be taken in sequence. **Mr. Cauble**

**MOTION PICTURE AND TELEVISION-RADIO AREAS****106A. History of the American Motion Picture.**

Lecture, four hours; laboratory, two hours; tutorial, one hour. Prerequisite: consent of the instructor. An historical and critical survey, with examples, of the American motion picture both as a developing art form and as a medium of mass communication. **Mr. Suber**

**106B. History of the European Motion Picture.**

Lecture, four hours; laboratory, two hours; tutorial, one hour. Prerequisite: consent of the instructor. An historical and critical survey, with examples, of the European motion picture both as a developing art form and as a medium of mass communication. **Mr. Gray**

**108. History of Documentary Film.**

Lecture, four hours; laboratory, two hours. Prerequisite: consent of the instructor. Required of motion picture and television specializations. The philosophy of the documentary approach in the motion picture. The development of critical standards, and an examination of the techniques of teaching and persuasion used in selected documentary, educational, and propaganda films. **Mr. Suber**

**109. Directed Studies in Film History.**

Hours to be arranged. Prerequisites: courses 5C, 106A-106B, 108. Required of all students specializing in the area of motion picture history. Individual studies in motion picture history, under faculty supervision. May be repeated for a maximum of three courses credit. **Mr. Gray in charge**

**110. History of Television and Radio.**

Lecture, four hours. Prerequisite: course 5C. Required of television specialization. Critical survey of television and radio history here and abroad. Consideration of the social responsibilities and educational implications of broadcasting. **Mrs. Schwartz**

**126A. Advanced Acting for Television, Radio and Motion Pictures.**

Laboratory, six hours. Prerequisite: course 20A or consent of the instructor. Projects in acting for television and motion pictures. Video tapes and playback critiques. **Mr. Friedman**

**126B. Broadcast Speech.**

Laboratory six hours. Intensive study of effective speech for the actor, commentator and announcer in television and radio. Audio and video tape recording of selected acting exercises and readings. **Mr. Kingson**

**134A. Film Writing.**

Lecture, three hours; tutorial, one hour. Required of all students of motion pictures. The course is designed to stimulate the student's critical and creative faculties through the analysis of basic dramatic forms and the preparation of original material. May be repeated for a maximum of two courses credit. **Mr. Borowsky, Mr. McCarty, Mr. Menger**

**134B. Film Writing.**

Seminar, three hours; tutorial, one hour. Prerequisite: courses 179A, 134A and/or consent of the instructor. The preparation and analysis of short scripts for motion pictures. May be repeated for a maximum of two courses credit. **Mr. Adams, Mr. Menger**

**135A-135B-135C. Advanced Film Writing.**

(1, 1½ or 2 courses)

Lecture, three hours; plus additional hours to be arranged. Prerequisites: consent of the instructor. The preparation and analysis of the full-length script for motion pictures. The A, B and C sections may be taken in any order. **Mr. Borowsky, Mr. Menger**

**136A. Fundamentals of Writing for Television.**

Seminar, three hours; tutorial, one hour. Required of all television specialization students. The course is designed to stimulate the student's critical and creative faculties through the analysis of basic dramatic forms and the preparation of original material. **Mr. M. Young**

**136B. Writing for Television.**

Seminar, three hours; tutorial, one hour. Prerequisite: course 136A or consent of the instructor. The preparation and analysis of short scripts for television. **Mr. M. Young**

**136C. Writing for Television.**

Seminar, three hours; tutorial, one hour. Prerequisite: course 136B or consent of the instructor. The preparation and analysis of hour-long scripts for television. **Mr. M. Young**

**136D. Writing for Television.**

Seminar, three hours; tutorial, one hour. Prerequisite: course 136C or consent of the instructor. The preparation and analysis of hour-long scripts for television. **Mr. M. Young**

**151. Design for Motion Pictures and Television.****(½ to 1 course)**

Hours to be arranged. Prerequisites: Film Project 1 (179A) and/or consent of the instructor. May be repeated for a maximum of three course credits. Supervised exercises in design. The Staff

**152. Motion Picture Sound. (½ to 1 course)**

Hours to be arranged. Prerequisites: Film Project 1 (179A) and/or consent of the instructor. May be repeated for a maximum of three course credits. Supervised exercises in sound for motion pictures. The Staff

**153A. Motion Picture Photography. (½ to 1 course)**

Hours to be arranged. Prerequisites: Film Project 1 (179A) and/or consent of the instructor. May be repeated for a maximum of three course credits. Supervised exercises in motion picture photography. The Staff

**153B. Television Camera, Sound, and Lighting.**

Hours to be arranged. May be repeated once for a maximum of two courses. Supervised exercises in camera, sound, and lighting for television. Mr. Wollock

**153C. Color Cinematography.**

Lecture, three hours. Prerequisite: course 153A or consent of instructor. History and theories of color photography with emphasis on present-day methods in motion picture and television production. A comparative study of additive and subtractive systems as employed by Technicolor, Ansco, Kodak, and others. Mr. Trimble

**154. Editing for Motion Pictures. (½ to 1 course)**

Hours to be arranged. Prerequisites: Film Project 1 (course 179A) and consent of the instructor. May be repeated for a maximum of three courses credit. Supervised exercises in editing for motion pictures. The Staff

**164. Direction for Motion Pictures. (½ to 1 course)**

Hours to be arranged. Prerequisites: Film Project 1 (course 179A) and/or consent of the instructor. May be repeated for a maximum of three courses credit. Supervised exercises in motion picture direction. The Staff

**166. Direction for Television.**

Laboratory, six hours. Prerequisite: course 153B or consent of the instructor. May be repeated once for a maximum of two courses credit. Fundamentals of direction for television. Mr. Ross in charge

**179A. Film Project 1. (2 courses)**

Hours to be arranged. Required in the motion pictures and television-radio specializations. May be repeated once for credit, by consent of the faculty. Repetition may be required before admission to Film Project 2 (179B). The completion of a first film, including its writing, production and editing. Mr. Adams in charge

**179B. Film Project 2. (1 to 2 courses)**

Hours to be arranged. Prerequisites: Film Project 1 (course 179A) and consent of the instructor. May be repeated for maximum credit of four courses. The completion of a second film, including its writing, production and editing. The Project Faculty, Motion Pictures

**181A. Animation Design in Theater Arts.**

Lecture, three hours; laboratory, three hours. Prerequisite: consent of the instructor. History and use of speech, rhythm, and graphic design to form effective communication on film. Mr. Shull

**181B. Writing for Animation. (1 to 2 courses)**

Lecture, three hours; laboratory, eight hours. Prerequisite: course 181A and consent of the instructor. Research and practice in creative writing and planning for the animated film. Mr. Shull

**181C. Animation Workshop. (1 to 2 courses)**

Laboratory, eleven hours. Prerequisite: course 181B and consent of the instructor. May be repeated once for credit. Organization and integration of the various creative arts used in animation to form a complete study of a selected topic. Mr. Shull

**185A. Television Projects 1. (2 courses)**

Laboratory, ten hours; plus additional hours to be arranged. Prerequisite: courses 153B and 166 or consent of the instructor. Can be repeated once by consent of the instructor. Required of all television specializations. The preparation, production, and recording of television projects. Mr. Ross

**185B. Television Projects 2. (2 courses)**

Laboratory, ten hours; plus additional hours to be arranged. Prerequisite: course 185A or consent of the instructor. The preparation, production, and recording of television projects. Mr. La Tourette

**185C. Television Projects 3. (2 courses)**

Laboratory, ten hours; plus additional hours to be arranged. Prerequisites: course 185B or consent of the instructor. The preparation, production, and recording of television projects. Mr. Wollock

**195. Senior Seminar in Motion Pictures.**

Lecture, three hours. Prerequisite: senior standing. The preparation of a paper on some aspect of contemporary cinema. The Staff

**SPECIAL STUDIES FOR ALL SPECIALIZATIONS****198A-198F. Special Courses in Theater Arts.****(½ to 1 course)**

Hours to be arranged. Prerequisite: upper division major in theater arts or consent of the instructor. May be repeated for a total of two courses. Group study of selected theater arts subjects. The Staff

**199. Special Studies in Theater Arts.****(½ to 1 course)**

Hours to be arranged. Prerequisites: senior standing and consent of the instructor. May be repeated for a total of two courses. The Staff

**Graduate Courses**

All courses may be repeated for credit upon recommendation of the adviser.

**200. Bibliography and Methods of Research in Theater Arts.**

Section 1. Theater. Section 2. Motion Pictures. Section 3. Television-Radio.

Mr. Hethmon, Mr. Kingson, Mr. Suber

**201. Seminar in Theater History.**

Selected topics from European and American theater studies. Mr. Hethmon

**202A. Seminar in the Classical and Medieval Theater.**

Prerequisite: course 102A or consent of the instructor. Limited to students in the Ph.D. program. Studies in the history of the theaters of Greece, Rome, and the Middle Ages. Mr. Gray

**202B. Seminar in the Renaissance, Baroque and 18th Century Theater.**

Prerequisite: course 102A or consent of the instructor. Limited to students in the Ph.D. program. Studies in English and continental theater from 1485 to 1800. Mr. Goodman, Mr. Hethmon

**202C. Seminar in 19th and 20th Century Theater.**

Prerequisite: course 102B or consent of the instructor. Limited to students in the Ph.D. program. Studies in English and continental theater from 1800 to the present. Mr. Goodman, Mr. Kerans

**202D. Seminar in American Theater.**

Prerequisite: course 104 or consent of the instructor. Limited to students in the Ph.D. program. Studies in American theater from 1665 to the present. Mr. Freud, Mr. Hethmon

**205A. The Background of Theatrical Art.**

An analysis of the aesthetic principles and content of the tragic theater. Mr. Boyle

**205B. The Background of Theatrical Art.**

An analysis of the aesthetic principles and content of the comic theater. Mr. Boyle

**206A. Seminar in European Motion Picture History.**

Prerequisites: course 106B and/or consent of the instructor.

**206C. Seminar in American Motion Picture History.**

Prerequisite: course 106A and consent of the instructor. Mr. Suber

**208A. Seminar in Film Structure.**

Prerequisites: courses 179A-179B and consent of instructor. An examination of various film conventions, both fictional and nonfictional, and of the role of structure in the motion picture. Mr. C. Young

**208B. Film Aesthetics.**

Prerequisite: consent of the instructor. Study and analysis of the film in relation to other art forms. Mr. Gray

**209A. Seminar in Documentary Film.**

Prerequisite: consent of the instructor. The non-fictional film and its relation to contemporary culture. Mr. Hawkins, Mr. C. Young

**209B. Seminar in Fictional Film.**

Prerequisite: consent of the instructor. Film as fiction and its relation to contemporary culture.

**209C. Seminar in Ethnographic Film.**

(Same as Anthropology 270A.) Lecture: three hours; laboratory: three hours. The ethnographic film as a form of realist cinema and its relations to cultural anthropology. Offered in the fall quarter. Mr. Hawkins, Mr. Hockings, Mr. C. Young

**210. Seminar in Radio and Television History.**

(Formerly numbered 277.) Advanced study of world-wide developments and concepts in broadcasting from early wireless communications to international television. Mr. Kingson

**215. Teaching Secondary School Drama.**

Study of current methods and problems of production as related to teaching on the secondary level. Restricted to candidates for teaching certificates and approved theater arts majors.

**220A-220B-220C. Problems in Acting.**

Study of the principal theories of acting and their application in studio exercises and laboratory productions. Mr. Freud, Mr. Goodman

**230A-230B-230C. Advanced Playwriting.**

Prerequisite: course 130, and consent of instructor. Guided completion of a full-length play, or study and preparation for the writing of a thesis play. Mr. Savage

**240. The Contemporary Playhouse.**

Advanced study of the concept, form and function of the contemporary playhouse and its equipment. Mr. Hearn

**241. Research in Technical Theater.**

Laboratory research in technical processes and equipment in theater. Mr. Hearn

**243A-243B-243C. Advanced Problems in Design for the Theater.**

Study and practice in the design of stage productions. Determination of approach and style in setting and costume; solution of engineering problems in multiscene production; coordination of all design elements, including lighting. Mr. Corrigan

**245A-245B. Production Planning in Theater.**

(½ course each)

Lecture, two hours. 245A is offered in the fall and winter quarters and 245B is offered in the winter and spring quarters. The courses must be taken in sequence. Mr. Corrigan and Staff

**247. Production Planning in Television-Radio.**

(Formerly numbered 291.) The Staff

**251. Advanced Design for Motion Pictures. (½ to 1 course)**

Hours to be arranged. Prerequisites: course 151 and/or consent of the instructor. May be repeated for a maximum of three courses credit. Advanced study and practice of techniques and methods of design for motion pictures. Art direction for advanced workshop productions in the project sequence. Mr. Schoppe

**260A-260B-260C. Problems in Stage Direction.**

Special problems in the direction of the full-length play. Mr. Boyle

**265A-265B. Ethnographic Film Direction.**

(1 to 2 courses)

(Same as Anthropology 270B-270C.) Hours to be arranged. Prerequisites: course 209C and consent of the instructor. Advanced study of problems in the production of ethnographic films. 265A is offered in the winter quarter and 265B is offered in the spring quarter. Mr. Hawkins, Mr. Hockings, Mr. C. Young

**288. Workshop in Educational Television-Radio.**

(Formerly numbered 223.) Study of educational and instructional television in the United States. Analysis of international educational television. Field observation at local educational television centers. Problems of writing and production of seminar projects in educational television and radio. Mr. Kingson

**291. The Role of Management in Motion Pictures.**

Lecture, three hours; quiz, one hour. A study of the artistic, social, and economic criteria for decision-making in the production and distribution of motion pictures. Mr. Grauel in charge

**Professional Courses****370. The Teaching of Theater.**

Lecture, three hours. Prerequisites: courses 160A-160B or consent of the instructor. Required of theater arts majors in secondary teaching credential specialization. A study of class management, organization of teaching material, and method of subject matter presentation and play production in secondary schools. Mr. Ingle

**420A. Advanced Techniques in Acting.**

(1 to 2 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparation and presentation of scenes under supervision of faculty and student directors. Restricted to M.F.A. candidates. Offered in the fall quarter.

**420B. Advanced Techniques in Acting.**

(1 to 2 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparation and presentation of scenes under supervision of faculty and student directors. Restricted to M.F.A. candidates. Offered in the winter quarter.

**420C. Advanced Techniques in Acting.**

(1 to 2 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparations and presentation of scenes under supervision of faculty and student directors. Restricted to M.F.A. candidates. Offered in the spring quarter.

**421A. Advanced Projects in Acting.**

(1 to 3 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice, and movement. Preparation and presentation of major role under performance conditions. Restricted to M.F.A. students. Offered in the fall quarter.

**421B. Advanced Projects in Acting.**

(1 to 3 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice and movement. Preparation and presentation of major role under performance conditions. Restricted to M.F.A. students. Offered in the winter quarter.

**421C. Advanced Projects in Acting.**

(1 to 3 courses)

Prerequisite: consent of the instructor. Class exercises in acting, voice and movement. Preparation

and presentation of major role under performance conditions. Restricted to M.F.A. students. Offered in the spring quarter.

**434. Advanced Film Writing. (1 to 2 courses)**

(Formerly numbered 234.) Lecture, three hours; laboratory to be arranged. Prerequisites: courses 134A-134B-134C, 179A and/or consent of the instructor. Advanced problems in the writing of feature-length scripts. May be repeated for a maximum of six courses. Mr. Borowsky, Mr. Menger

**436A-436B. Advanced Television Writing.**

(Formerly numbered 236A-236B.) Prerequisites: courses 136A-136D and/or consent of the instructor. Advanced problems in writing for television. Mr. M. Young

**437. Nondramatic Writing for Television.**

(Formerly numbered 237.) Advanced problems in the field of documentary and special feature programs. Mr. LaTourette

**443. Advanced Problems in Design.**

Prerequisite: consent of the instructor. Study and practice in the design of stage productions. Determination of approach and style in setting and costume; solution of engineering problems in multiscene production; coordination of all design elements, including lighting. May be repeated for a total of three courses. Restricted to M.F.A. candidates. Mr. Corrigan

**448. Production Planning in Motion Pictures.**

(½ or 1 course)

(Formerly numbered 246.) Lecture, 3 hours; laboratory to be arranged. Prerequisite: consent of the instructor. Mr. Grauel

**457. Design for Television.**

(Formerly numbered 257.) Prerequisite: consent of the instructor. Study and practice in design of television productions. Consideration of style as it relates to all elements of design in live and recorded television programs. Mr. Wollock

**460A. Problems in Advanced Direction for the Stage.**

Prerequisite: consent of the instructor. Preparation and presentation of a series of scenes and a one-act play or its equivalent. Discussion and critique of work in progress. Restricted to M.F.A. candidates. Offered in the fall quarter. Mr. Kerans

**460B. Problems in Advanced Direction for the Stage.**

Prerequisite: consent of the instructor. Preparation and presentation of a full length play under rehearsal conditions. Discussion and critique of work in progress. Restricted to M.F.A. candidates. Offered in the winter quarter. Mr. Kerans

**460C. Problems in Advanced Direction for the Stage.**

Prerequisite: consent of the instructor. Preparation and presentation of a full length original play under rehearsal conditions. Discussion and critique of work in progress. Restricted to M.F.A. candidates. Offered in the spring quarter. Mr. Kerans

**462. Production Project in Direction for the Stage.**

Prerequisite: consent of the instructor. Preparation and presentation of an original play under minimal production conditions. Discussion and critique of work in progress. Restricted to M.F.A. students. Offered in the winter quarter. Mr. Kerans

**463. Production Project in Direction for the Stage. (2 courses)**

Prerequisite: consent of the instructor. Preparation and presentation of play under fully produced theater conditions. Restricted to M.F.A. students. Mr. Kerans

**464A-464B. Motion Picture Direction. (1 or 2 courses)**

(Formerly numbered 264A-264B.) Prerequisite: consent of the instructor. Special problems in the direction of fictional and documentary motion pictures. Mr. J. Young in charge

**466A-466B. Advanced Television Direction. (1 or 2 courses)**

(Formerly numbered 266A-266B.) Prerequisite: consent of the instructor. Special problems in the direction of dramatic and documentary television programs. Mr. Wollock

**479A-479B-479C. Film Project 3. (1, 2 or 3 courses)**

Hours to be arranged. Prerequisite: consent of the instructor. The completion of a third film, including its writing, design, production and editing. Mr. J. Young in charge

**482A-482B. Advanced Animation Workshop. (1 or 2 courses)**

(Formerly numbered 282A-282B.) Lecture, three hours; laboratory to be arranged. Prerequisites: courses 181A-181B-181C and consent of the instructor. Organization and integration of various creative arts used in animation, resulting in the production of a complete animated film. Mr. Shull

**485. Production of Nondramatic Television.**

(Formerly numbered 285.) Prerequisite: course 437. The student will originate, plan, and direct a major documentary production under laboratory conditions. Mr. LaTourrette

**Individual Study and Research****596A. Directed Individual Studies: Research. (½ to 3 courses)**

May be repeated for a total of three courses. The Staff

**596B. Directed Individual Studies: Writing. (½ to 3 courses)**

May be repeated for a total of three courses. The Staff

**596C. Directed Individual Studies: Directing. (½ to 3 courses)**

May be repeated for a total of three courses. The Staff

**596D. Directed Individual Studies: Design. (½ to 3 courses)**

May be repeated for a total of three courses. The Staff

**596E. Directed Individual Studies: Acting. (½ to 3 courses)**

May be repeated for a total of three courses. The Staff

**596F. Directed Individual Studies: Production. (½ to 3 courses)**

May be repeated for a total of three courses. The Staff

**597. Preparation for the Qualifying Examination for the Ph.D. in Theater Arts. (½ to 2 courses)**

May be repeated for a total of three courses. The Staff

**598. M.A. Thesis in Theater Arts. (½ to 2 courses)**

Research and writing for the M.A. thesis. Limited to students who have been advanced to candidacy. May be repeated for a total of three courses. The Staff

**599. Dissertation in Theater Arts History. (½ to 2 courses)**

Research and writing for the doctoral dissertation. Limited to students who have been advanced to candidacy. May be repeated for a total of three courses. The Staff

**Required Courses in Other Departments in Theater and/or Secondary Teaching Credential Specializations****Classics 142. Ancient Drama.****English 103. Shakespeare. 167. The Drama, 1842 to the Present.****Humanities 1A-1G. World Literature. or English 10A-10B-10C.****Related Courses in Another Department****Dance 20. Movement for the Stage.****121. Movement for the Stage.****152A-152B. Organization of Dance Performances.****English 112. Children's Literature.****135A-135B-135C. Creative Writing: Drama.****Integrated Arts 1A-1B-1C.****Music 70L. Opera Workshop.****135A-135B-135C. History of Opera.****136. Music for the Legitimate Drama and Dramatic Motion Pictures.****170L. Opera Workshop.****Philosophy 160. Philosophy of Art.**

## ■ ZOOLOGY

(Department Office, 2203 Life Sciences Building)

George A. Bartholomew, Ph.D., *Professor of Zoology*.  
 John N. Belkin, Ph.D., *Professor of Zoology*.  
 Nicholas E. Collias, Ph.D., *Professor of Zoology*.  
 Frederick Crescitelli, Ph.D., *Professor of Zoology*.  
 Roger O. Eckert, Ph.D., *Professor of Zoology*.  
 Herbert Friedmann, Ph.D., *Professor of Zoology in Residence*.  
 Thomas R. Howell, Ph.D., *Professor of Zoology*.  
 Theodore L. Jahn, Ph.D., *Professor of Zoology*.  
 Thomas W. James, Ph.D., *Professor of Zoology*.  
 J. Lee Kavanau, Ph.D., *Professor of Zoology*.  
 Otto H. Scherbaum, Ph.D., *Professor of Zoology*.  
 Richard W. Siegel, Ph.D., *Professor of Zoology*.  
 Fritiof S. Sjöstrand, M.D., Ph.D., *Professor of Zoology*.  
 Clara M. Szego (Mrs. Sidney Roberts), Ph.D., *Professor of Zoology*.  
 Peter P. Vaughn, Ph.D., *Professor of Zoology*.  
 Boyd W. Walker, Ph.D., *Professor of Zoology*.  
 Gordon H. Ball, Ph.D., *Emeritus Professor of Zoology*.  
 Raymond B. Cowles, Ph.D., *Emeritus Professor of Zoology*.  
 Waldo H. Furgason, Ph.D., *Emeritus Professor of Zoology*.  
 Edgar L. Lazier, Ph.D., *Emeritus Professor of Zoology*.  
 Loye Holmes Miller, Ph.D., *Emeritus Professor of Biology*.  
 Albert A. Barber, Ph.D., *Associate Professor of Zoology*.  
 Joseph Cascarano, Ph.D., *Associate Professor of Zoology*.  
 Franz Engelmann, Ph.D., *Associate Professor of Zoology*.  
 John H. Fessler, Ph.D., *Associate Professor of Molecular Biology in Zoology*.  
 Malcolm S. Gordon, Ph.D., *Associate Professor of Zoology*.  
 Alan D. Grinnell, Ph.D., *Associate Professor of Zoology*.  
 Kenneth S. Norris, Ph.D., *Associate Professor of Zoology*.  
 Richard K. Orkand, Ph.D., *Associate Professor of Zoology*.  
 Vladimir Walters, Ph.D., *Associate Professor of Zoology*.  
 Sarah R. Atsatt, Ph.D., *Associate Professor of Zoology, Emeritus*.  
 James H. Brown, Ph.D., *Assistant Professor of Zoology*.  
 Clifford F. Brunk, Ph.D., *Assistant Professor of Zoology*.  
 Martin L. Cody, Ph.D., *Assistant Professor of Zoology*.  
 Paul C. Denny, Ph.D., *Assistant Professor of Zoology*.  
 Donald Landenberger, Ph.D., *Assistant Professor of Zoology*.  
 Robert C. Lasiewski, Ph.D., *Assistant Professor of Zoology*.  
 Austin J. MacInnis, Ph.D., *Assistant Professor of Zoology*.  
 Leonard Muscatine, Ph.D., *Assistant Professor of Zoology*.  
 Dan S. Ray, Ph.D., *Assistant Professor of Molecular Biology in Zoology*.  
 Larry Simpson, Ph.D., *Assistant Professor of Zoology*.



John E. Bleck, B.S., *Museum Scientist, Ichthyology*.  
 Eugene C. Bovee, Ph.D., *Research Zoologist*.  
 James Miller, *Senior Museum Scientist, Ornithology and Mammalogy (Dickey Collection)*.  
 Jowett C. Chao, Ph.D., *Research Zoologist*.  
 Walter Ebeling, Ph.D., *Professor of Entomology*.  
 Wilbur T. Ebersold, Ph.D., *Associate Professor of Botany*.  
 Charles L. Hogue, Ph.D., *Research Associate*.

Bernard John, Ph.D., *Visiting Professor of Zoology*.  
 Alexander Kolin, Ph.D., *Professor of Biophysics*.  
 David R. Krieg, Ph.D., *Associate Professor of Bacteriology*.  
 F. Harlan Lewis, Ph.D., *Professor of Botany*.  
 John B. Loefer, Ph.D., *Research Associate*.  
 Roy J. Pence, *Specialist (Entomology)*.  
 Bernard O. Phinney, Ph.D., *Professor of Botany*.  
 William R. Romig, Ph.D., *Associate Professor of Bacteriology*.  
 Robert Schick, Ph.D., *Assistant Research Zoologist*.  
 Henry J. Thompson, Ph.D., *Professor of Botany*.  
 Bernard Weinstein, M.S., *Associate in Zoology*.

### **Preparation for the Major**

Required: Biology 1A-1B-1C; Chemistry 1A-1B-1C, Chemistry 4A-4B-4C and Chemistry 6A-6B-6C; Mathematics 3A-3B-3C or Mathematics 11A-11B-11C and Mathematics 12A-12B-12C; Physics 1A-1B-1C-1D.

### **Requirements for the Major**

The core curriculum consisting of Zoology 101, 103, 105, 107, 109, 111, 113, 115, and at least three elective courses which may be chosen from among the courses numbered higher than 115 in the zoology list. One upper division course in Mathematics, Physics, or Chemistry may be substituted for one of these electives.

### **Honors in Zoology**

A limited number of students who are qualified to carry out independent research may become candidates for honors in zoology. Candidates must take at least six units of honors research (course 190) during the senior year. At the discretion of the staff, candidates for honors may be exempted from certain courses otherwise required for the major. Prerequisites for admission to candidacy for honors in zoology are the same as those required for admission to the honors program of the College of Letters and Science, including a cumulative grade-point average of 3.25, and permission of the departmental honors committee. Applications for admission to honors work should be made during the second quarter of the junior year.

### **Graduate Study**

The departmental requirements (including those in chemistry, physics, and mathematics) for a bachelor's degree in zoology represent most of the background necessary as preparation for research leading to advanced degrees in zoology, but certain fields of study will require additional training in the basic sciences.

Students who plan to enter a graduate school are urged to seek advice of staff members in their field of interest. Prospective applicants to this Department are invited to visit the campus for this purpose.

The Department offers M.A. and Ph.D. degrees in zoology with specialization in the following fields: animal behavior, biophysics, cell biology, comparative physiology, developmental biology and embryology, cytology, electron microscopy and ultrastructure, endocrinology, entomology, general physiology, genetics, herpetology, history of biology, ichthyology, insect physiology, invertebrate zoology, mammalogy, molecular biology, neuroanatomy, neurophysiology and sense organ physiology, ornithology, parasitology and physiology of parasitism, physiological ecology, population and community ecology, protozoology and protozoan physiology, radiation biology, vertebrate paleontology and vertebrate morphology, and vertebrate physiology.

### **Requirements for the General Secondary Credential**

Consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

### **Requirements for the Master's Degree**

In addition to the general requirements of the Graduate Division, the Department of Zoology requires oral and/or written examinations of any candidate for the master's degree. Although there is no formal foreign language requirement for the master's degree in zoology, a reading knowledge of a foreign language is a prerequisite for admission to certain seminars and advanced courses.

### **Requirements for the Doctor's Degree**

In addition to the general requirements of the Graduate Division, every candidate for the Ph.D. degree is required to pass departmental examinations and to serve as a teaching assistant for at least one year. The language requirements for the Ph.D. degree

in zoology are usually met by examinations in one of the following: French, German, or Russian. Preparation in the languages before application to graduate school is strongly recommended.

#### Upper Division Courses

### 101. Vertebrate Morphology.

(Formerly numbered 106.) Lecture, three hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. A study of vertebrate morphology and evolution from the viewpoint of: comparative anatomy of adult forms, developmental anatomy, and paleontology. Laboratory study of selected vertebrates. Mr. Vaughn, Mr. Walters

### 103. The Natural History of Animals.

(Formerly numbered 112 and 134.) Lecture, three hours; laboratory, four hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Distribution, functional morphology, behavior, and physiological ecology of invertebrate and vertebrate animals, including feeding, locomotor, orienting, reproductive, cyclic, symbiotic, and sensory adaptations. The Staff

### 105. Ecology and Evolution.

(Same as Botany 105.) Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Introduction to the study of mechanisms that control the structure, distribution, and evolution of populations. The Staff

### 107. Comparative Genetics.

(Formerly numbered 136 and same as Bacteriology 107 and Botany 107.) Lecture, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. Mendelian principles; the gene: its structure, function, and chemistry, with emphasis on mutation, coding regulation, and transmission. The Staff

### 109. Animal Physiology.

(Formerly numbered 104A.) Lecture and lecture-discussion, three hours; laboratory, four hours. Prerequisite: Biology 1A-1B-1C, Chemistry 4A-4B-4C and 6A-6B-6C or the equivalent. An introduction to physiological principles with emphasis on organ systems and intact organisms. The Staff

### 111. Functional Ultrastructure of Cells.

(Formerly numbered 107.) Lecture, three hours. Prerequisite: Biology 1A-1B-1C, Chemistry 4A-4B-4C and 6A-6B-6C or the equivalent. The macromolecular and ultrastructural aspects of cells and tissues emphasizing the convergence of structure and function in life phenomena. Mr. Sjöstrand

### 113. General and Cell Physiology.

(Formerly numbered 104B.) Lecture, two hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, Chemistry 4A-4B-4C and 6A-6B-6C or the equivalent. The general physiology of cells and tissues with special emphasis on the physical and chemical nature of specialized activities. The Staff

### 115. Developmental Biology.

(Formerly numbered 100.) Lecture, three hours; laboratory, three hours. Prerequisite: course 107. Developmental processes in animals and other organisms; includes an analysis of structural and chemical differentiation. Mr. Denny

### 116. Advanced Developmental Biology.

(Formerly numbered 209.) Lecture, four hours. Prerequisite: course 115. Advanced discussion of cellular problems in development. Mr. Denny

### 117. Invertebrate Zoology.

(Formerly numbered 112.) Lecture, three hours; laboratory, six hours. Prerequisite: course 103, or the equivalent, or consent of the instructor. Limited enrollment. Systematics, morphology, natural history, physiology, and biochemistry of invertebrates. Emphasis on independent laboratory and field investigations. Mr. Muscatine

### 119. Protozoology.

(Formerly numbered 110.) Lecture, three hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. A survey of the main groups of the protozoa: morphology, physiology, genetics, and ecology.

### 121. Parasitology and Symbiosis.

(Formerly numbered 111 and 111C.) Lecture, three hours; laboratory, six hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. An introduction to the principles, biology, and evolution of infectiousness, symbiosis, and parasitism, emphasizing protozoan, helminth, and arthropod parasites, including those of man. Mr. Belkin, Mr. MacInnis

### 122. Entomology.

Lecture, three hours; laboratory, six hours; several field trips. Prerequisite: course 103 or consent of the instructor. An introduction to the morphology, ecology, and classification of insects. Mr. Belkin

### 123. Terrestrial Arthropods.

Lecture, three hours; laboratory, six hours; several field trips. Prerequisite: course 122 or consent of the instructor. Systematics, distribution, and biodynamics of hexapods and arachnids. Mr. Belkin

### 124. Insect Physiology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 109 or 113 or the equivalent. Survey of the physiology of insects with emphasis on functional adaptations. Mr. Engelmann

### 125. Ichthyology.

(Formerly numbered 135.) Lecture, two hours; laboratory, six hours; field trips. Prerequisite: courses 101 and 103. The systematics, ecology, and behavior of fishes, with special emphasis on local marine forms. Mr. Walker

### 127. Herpetology.

(Formerly numbered 133.) Lecture, two hours; laboratory and field trips, six hours. Prerequisite: course 103. Limited enrollment. The systematics, distribution, physiology, and ecology of amphibians and reptiles. Mr. Norris

### 129. Ornithology.

(Formerly numbered 141.) Lecture, two hours; laboratory, discussion, field trips, six hours. Prerequisite: course 103 and consent of the instructor. Limited enrollment. The systematics, distribution, physiology, behavior, and ecology of birds. Mr. Howell

**130. Mammalogy.**

Lecture, two hours; laboratory and field trips, six hours. Prerequisites: course 103 or the equivalent and consent of the instructor. The evolution, ecology, behavior, and physiology of mammals. Mr. Brown

**139. Analysis of Ecological Data.**

Lecture, three hours; laboratory, three hours. Prerequisite: consent of the instructor. Theory of experimental design and falsifiable hypotheses as applied to field ecology. Numerical and graphical methods of data reduction, with special emphasis on nonparametric procedures. Mr. Landenberger

**141. Physiology of Growth.**

(Formerly numbered 225.) Lecture, two hours; discussion, one hour. Prerequisite: course 113. Principles and theories of growth on the molecular and cellular level, with special emphasis on control of cell growth and cell division. Mr. Scherbaum

**143. Comparative Physiology.**

(Formerly numbered 101.) Lecture, three hours; laboratory, four hours; discussion, one hour. Prerequisite: courses 109 and 113. A detailed analysis of selected aspects of invertebrate and vertebrate physiology. Mr. Gordon

**145. General Physiology.**

(Formerly numbered 101.) Lecture, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent, and a course in organic chemistry. Discussion of certain fundamental principles of living matter, including origin of life, properties of viruses, organization of living matter, nature and properties of cell membranes, cellular mechanisms of secretion and molecular transfer. Mr. Crescitelli

**151. General Endocrinology.**

(Formerly numbered 118.) Lecture, three hours. Prerequisite: biochemistry: course 109 or 113 or the equivalent. Principles of chemical integration in biological systems. Miss Szego

**153. Isotopic Tracers in Biology.**

(Formerly numbered 119.) Lecture, three hours; laboratory, three hours. Prerequisite: course 113 or equivalent, or consent of the instructor. The use of isotopic tracers in the study of biological processes, including methods, problems investigated, interpretation of data. Mr. Barber

**155. Topics in Physical Chemistry for Molecular Biology. (½ course)**

Lecture, two hours. Prerequisite: consent of the instructor; the course is planned to complement Chemistry 113B or equivalent. The application of physical chemistry to specific problems in molecular biology. Mr. Fessler

**157A. Introduction to the Nervous System.**

(Formerly numbered 122.) Lecture, three hours; discussion, one hour. Prerequisite: course 109, or consent of the instructor. Structural and functional principles of the nervous system as a general biological phenomenon. Consideration of nervous elements and processes and of organized systems as communication and control systems. Survey of principal types of organization in invertebrates and vertebrates. Mr. Grinnell

**157B. Introduction to the Nervous System.**

(Formerly numbered 122C.) Lecture, one hour; laboratory, six hours; discussion, one hour. Prerequisite: course 157A or consent of the instructor. Limited enrollment. Practical experience with methods of observation of structure and function of the central and peripheral nervous system, including the use of histological material and electron micrographs, the surgical preparation of nerves, sense organs and ganglia, electrophysiological recording techniques. Pursuit of a minor research project. Theoretical consideration of advanced basic neurology. Mr. Grinnell

**159. Anatomy and Physiology of Sense Organs.**

Lecture, three hours; discussion, one hour. Prerequisite: course 157A, or the equivalent. The anatomy and physiology of the sense organs. Comparative aspects will be emphasized. Mr. Grinnell

**161. Development of Biological Ideas.**

(Formerly numbered 140.) Lecture, three hours. Prerequisite: Biology 2A-2B or Biology 1A-1B-1C, or the equivalent. History of the biological sciences. Mr. Furgason

**163. Cytogenetics.**

(Same as Botany 163.) Lecture, two hours; laboratory, six hours. Prerequisite: course 107. The fundamentals of cytogenetics. Heredity as related to cytogenetical phenomena. Mr. John

**165. Behavior Research Problems.**

Lecture, three hours; laboratory, two hours. Prerequisite: consent of the instructor. Systems controls and non-obtrusive sensing procedures for behavior studies in the laboratory and field. Rationale, design, and limitations of laboratory studies of behavior. Mr. Kavanau

**190. Honors Research in Zoology. (½ to 1 course)**

Prerequisite: senior standing and permission of the departmental honors committee. Individual research designed to broaden and deepen the student's knowledge of some phase of zoology. The Staff

**199. Special Studies. (½ course)**

Prerequisite: senior standing and consent of instructor. May be repeated for a total of one course credit toward the bachelor's degree. The Staff

**Graduate Courses**

The consent of the instructor is required for admission to all graduate courses. Any additional prerequisites are stated in the course descriptions.

**201. Comparative Genetics Laboratory.**

(Formerly numbered 136C and same as Botany 201.) Laboratory, nine hours. Prerequisite: course 107 (may be taken concurrently). Experimental techniques demonstrating recombination, mutagenesis, biochemical pathways, complementation, and cytogenetics of plants, animals, and microorganisms. The Staff

**202. Gene Structure and Function.**

(Formerly numbered 222 and same as Microbiology 202 and Botany 202.) Lecture and discussion, three hours. Prerequisites: course 107 and Chemistry 153 or consent of the instructor. The genetic coding of information and its transfer from DNA through RNA to protein; the operon model and other aspects of regulatory genetics, mutations and genetic fine structure. Mr. Krieg, Mr. Romig, Mr. Siegel

**203. Chromosome Structure and Replication.**

(Formerly numbered 207 and same as Microbiology 203 and Botany 203.) Prerequisites: course 107, Chemistry 152 or 153, Physics 1A-1B-1C-1D or consent of the instructor. A survey of biochemical and biophysical investigations of the structure and replication of chromosomal nucleic acids with emphasis on bacterial and viral systems. Mr. Ray

**204. Evolution and Population Genetics.**

(Formerly numbered 224 and same as Botany 204.) Lecture, two hours; individual study. Prerequisite: courses 105 and 107. Genetic mechanisms of evolutionary change. Mr. Lewis

**205A-205F. Topics in Genetics.**

(Formerly numbered 225 and same as Botany 205A-205F.) Lecture. Prerequisite: course 107. Intensive study of selected topics. The Staff

**206A-206F. Advanced Genetics Laboratory.**

(Formerly numbered 226 and same as Botany 206A-206F.) Laboratory, nine hours. Prerequisite: course 107. A course designed to give the student a working knowledge of a particular group of organisms or concepts. The Staff

**208. Structural Macromolecules.**

Lecture, three hours; discussion, one hour. Prerequisite: consent of the instructor. The comprehensive molecular biology of selected structural proteins and polysaccharides, including cellular synthesis, structure and physical properties, and integrated biological functions. Mr. Fessler

**210. Biochemical Analysis of Development.**

Lecture-discussion. Prerequisite: course 115 and Chemistry 152A-152B or its equivalent. A discussion of current topics and problems in the biochemical analysis of developmental phenomena.

**211. Advanced Laboratory in Developmental Biology. (½ course)**

Laboratory, six hours. Prerequisite: course 115 or 210 and Chemistry 152A-152B or its equivalent. Laboratory problems in developmental biology. Mr. Denny

**212. Advanced Ichthyology.**

Lecture, two hours; laboratory, six hours. Prerequisite: course 125 or consent of the instructor. The higher classification and functional morphology of fishes, from an evolutionary point of view. Mr. Walters

**\*213. Principles of Animal Taxonomy.**

(Formerly numbered 152.) Lecture. Prerequisite: course 103. Taxonomic concepts, principles, and methods. Mr. Belkin

**214. Vertebrate Paleontology.**

(Formerly numbered 137 and same as Geology 214.) Lecture, three hours; laboratory, three hours. Prerequisite: course 101; recommended, a course in general geology. Limited enrollment. Study of the fossil record of the evolution of the vertebrates. Mr. Vaughn

**215. Field Ecology.**

Lecture, two hours; laboratory and discussion, six hours plus required weekend field trips. Prerequisite: course 105 or its equivalent and consent of the instructor. Qualified undergraduates may enroll in

this course. Field and laboratory research in ecology: the collection, analysis, and write-up of numerical data. Mr. Cody

**216. Selected Topics in Population Ecology.**

Prerequisite: course 105.

Mr. Cody, Mr. Landenberger

**217. The Behavior of Animals.**

(Formerly numbered 237.) Lecture, three hours, individual study. Prerequisite: course 103 or consent of the instructor. Ecological significance, underlying mechanisms, and evolution of behavior, with special reference to animal sociology under natural conditions. Mr. Collias

**216. Physiological Ecology. (½ course)**

Lecture. Prerequisite: courses 103, 105, 109. A detailed consideration of the role of physiology and behavior in the autecology of organisms in natural environments. Mr. Bartholomew, Mr. Lasiewski

**219. Advanced General Physiology.**

(Formerly numbered 202A-202B-202C.) Lecture, three hours. Prerequisite: course 113 or 145. Discussion of specific topics such as excitation, conduction, physiology of blood, muscle contraction, etc. Students will participate in giving reports. Mr. Crescitelli

**221A. Advanced Cell Physiology. (½ course)**

(Formerly numbered 201.) Lecture, two hours. Prerequisite: course 113. The physiology of the cell membrane, including permeability, electrical, optical, and mechanical properties, and selective cytoplasmic accumulation of nonelectrolytes and ions. Mr. Jahn

**221B. Advanced Cell Physiology. (½ course)**

(Formerly numbered 201.) Lecture, two hours. Prerequisite: course 221A. Theories of the origin of bioelectromotive force, including active transport of ions; effects of polarizing currents. Mr. Jahn

**222. Experimental Cell Biology.**

(Formerly numbered 205.) Lecture, two hours; laboratory, six hours. Prerequisite: courses 111 and 113. The physiology of control mechanisms and the integration of metabolic systems at the cellular level. Individual experiments will be encouraged. Mr. James, Mr. Scherbaum

**223A. Physiology of the Protozoa. (½ course)**

(Formerly numbered 210.) Lecture, two hours. Recommended: course 119. Protoplasmic structure, locomotion, and behavior, and the mechanisms of environmental effects (light, electricity, ions, etc.) thereon. Mr. Jahn

**223B. Physiology of the Protozoa. (½ course)**

(Formerly numbered 210.) Lecture. Recommended: course 119. Respiration, excretion, metabolism, growth, and nutrition, especially as compared with other groups of organisms.

**226. Advanced Insect Physiology.**

Prerequisite: 124 or consent of the instructor. A detailed discussion of current problems in insect physiology. Advanced laboratory. Mr. Engelmann

**227. The Vertebrate Eye.**

(Formerly numbered 208.) Lecture, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. The gross structure, fine structure, physiology, and biochemistry of the vertebrate eye, with emphasis on the retina and its role in vision. Mr. Crescitelli

\* Not to be given, 1968-1969.

**229. Physiology of Circulation.**

(Formerly numbered 240.) Lecture, four hours. Discussion of the dynamics of blood flow, the regulation and control of the circulation, and the physiology of arteries, veins, and capillaries.

Mr. Cascarano

**233. Biochemistry of Parasitism.**

Biochemical and physiological aspects of parasite-host relationships. Laboratory emphasis on individual research projects. Offered in alternate years.

Mr. MacInnis

**235. Comparative Biochemistry.**

Lecture, two hours; discussion, one hour; laboratory, four hours. Prerequisite: courses 109 and 113 and Chemistry 152A-152B or its equivalent, or consent of the instructor. A detailed consideration of selected biochemical subjects from the comparative viewpoint.

**237. Comparative Biophysics.**

Lecture, two hours; discussion, one hour; laboratory, four hours. Prerequisite: courses 109 and 113 and Biophysics 201A-201B-201C or its equivalent; or consent of the instructor. A detailed consideration of selected biophysical subjects from the comparative viewpoint.

**239. Analytical Microscopy. (½ course)**

(Formerly numbered 129.) Lecture and demonstration. A course designed for students in the biological sciences to acquaint them with light microscopy, including phase contrast, interference, and polarization analyses.

Mr. James

**241A-241B-241C. Electron Microscopy in Molecular Biology.**

(Formerly numbered 234A.) Lecture, two hours; laboratory, ten hours. Prerequisite: courses 111 (can be taken concurrently), 239, and Chemistry 153 and 113A or their equivalents, or consent of the instructor. Students registering will be required to supplement their laboratory with course 290. Principles of electron microscopy and training in methods of high resolution electron microscopy as applied to molecular biology in connection with pursuing a research project.

Mr. Sjöstrand

**\*243. Survey of Animal Biology. (½ course)**

(Formerly numbered 250.) Lecture. Prerequisite: course 161. A review of the basic concepts and theories of biological sciences as viewed with historical perspective and as related to contemporary viewpoints.

**Seminar Courses****250. Seminar in Current Topics in Molecular Biology. (½ course)**

Mr. Fessler, Mr. Ray

**251. Seminar in Genetics. (½ course)**

(Formerly numbered 253A-253B.) Mr. Siegel

**252. Seminar in Developmental Biology. (½ course)**

Mr. Denny

**253. Seminar in Invertebrate Zoology. (½ course)**

(Formerly numbered 268.) Mr. Muscatine

**254. Seminar in Entomology. (½ course)**

(Formerly numbered 271A-271B.) Mr. Belkin

**255. Seminar in Parasitology. (½ course)**

(Formerly numbered 255A-255B.)

Mr. MacInnis

**256. Seminar in Ichthyology. (½ course)**

(Formerly numbered 260A.)

Mr. Walker, Mr. Walters

**257. Seminar in Biology of Reptiles and Amphibians. (½ course)**

(Formerly numbered 251A-251B.) Mr. Norris

**\*258. Seminar in Biology of Birds and Mammals. (½ course)**

(Formerly numbered 251C-251D.)

Mr. Bartholomew, Mr. Howell

**259. Seminar on Aquatic Mammals. (½ course)**

Mr. Norris

**\*260. Seminar in Vertebrate Paleontology. (½ course)**

(Formerly numbered 266.)

Mr. Vaughn

**261. Seminar in Population Biology. (½ course)**

(Formerly numbered 274.)

Mr. Brown, Mr. Cody, Mr. Landenberger

**262. Seminar in Environmental Physiology.**

(½ course)

Mr. Lasiewski

**263. Seminar in Marine Biology. (½ course)**

Mr. Gordon, Mr. Muscatine

**264. Seminar on Animal Behavior. (½ course)**

(Formerly numbered 269.)

Mr. Collins

**265. Seminar on Behavior Research Problems.**

(½ course)

Prerequisite: course 165.

Mr. Kavanau

**266. Seminar in Comparative Physiology.**

(½ course)

(Formerly numbered 257.)

Mr. Gordon, Mr. Grinnell

**267. Seminar in Physiology of Microorganisms.**

(½ course)

(Formerly numbered 263.)

Mr. Jahn

**268. Seminar in Cell Physiology. (½ course)**

(Formerly numbered 261.)

Mr. Jahn

**269. Seminar in the Physiology of Growth.**

(½ course)

(Formerly numbered 270.)

Mr. Scherbaum

**270. Seminar in Insect Physiology.**

(½ course)

(Formerly numbered 259.)

Mr. Engelmann

**271. Seminar in Endocrinology. (½ course)**

(Formerly numbered 252A-252B.)

Miss Szego

**273. Seminar in Comparative Neurology. (½ course)**

Mr. Grinnell

**274. Seminar in Comparative Cell Physiology.**

(½ course)

Mr. Barber, Mr. James

\* Not to be given, 1968-1969.

**275. Seminar in Cardiovascular Problems.**

(½ course)

**Mr. Cascarano**

**276. Seminar in Molecular Biology. (½ course)**

(Formerly numbered 278.)

**Mr. Sjöstrand**

Individual Study and Research

**596. Directed Individual (or Tutorial) Studies.**

(½ to 2 courses)

**The Staff**

**597. Preparation for Comprehensive Examination  
for the Master's Degree or Qualifying  
Examination for the Ph.D. (½ to 1 course)**

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**598. Master's Thesis Research and Writing.**

(½ to 2 courses)

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**599. Doctoral Dissertation Research and Writing.**

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