

UCLA

General Catalog

1967 1968 issue



UNIVERSITY OF CALIFORNIA
LOS ANGELES

UCLA

PUBLISHED AT LOS ANGELES, CALIFORNIA

Volume 7 • May 10, 1967 • Number 10

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. Fifteen a year—one issue in July, two issues in April and October, three issues in January and February, four issues in 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.

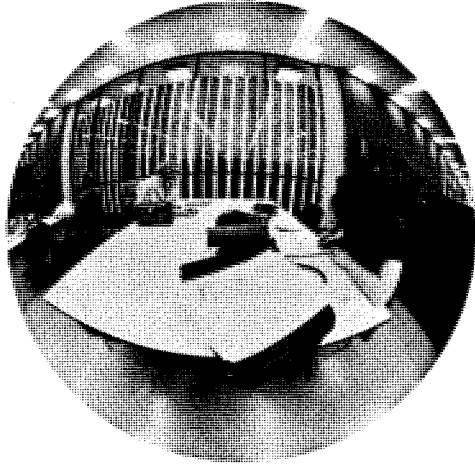
Letters of inquiry concerning the University in general should be addressed to the Registrar, University of California, Berkeley, California 94720.

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.





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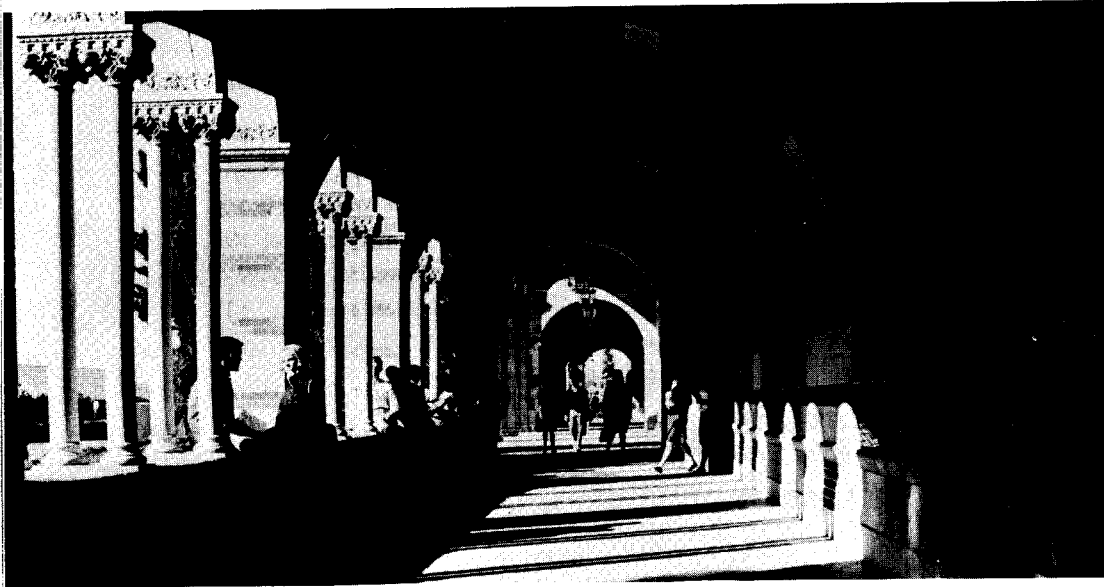
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PRICE: FIFTY CENTS

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Calendar

	Fall '67	Winter '68	Spring '68	Summer '68
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.	Mar. 1 Wednesday	Nov. 1 Wednesday	Jan. 1 Monday	May 1 Wednesday
*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.	May 15 Monday	Oct. 15 Sunday	Jan. 15 Monday	Apr. 15 Monday
Last day to file applications with the Registrar for readmission in undergraduate standing or with the Graduate Division for readmission in graduate standing.	Aug. 15 Tuesday	Nov. 24 Friday	Feb. 15 Thursday	May 15 Wednesday
Counseling of students by appointment.	Sept. 20– Sept. 27 Wednesday– Wednesday	Dec. 26– Dec. 28 Tuesday– Thursday	Mar. 18– Mar. 22 Monday– Friday	June 13– June 19 Thursday– Wednesday
Entrance Examination in English as a Second Language.	Sept. 20 Wednesday	Jan. 2 Tuesday	Mar. 18 Monday	June 14 Friday
Examination in Subject A.	Sept. 20 Wednesday	Jan. 2 Tuesday	Mar. 18 Monday	June 14 Friday
Quarter begins.	Sept. 25 Monday	Jan. 2 Tuesday	Mar. 25 Monday	June 20– <i>Opening Wed</i> Thursday
†Late Registration begins. Fee \$10.	Sept. 25 Monday	Jan. 2 Tuesday	Mar. 25 Monday	June 20 Thursday
Special examination in Subject A.	Sept. 29 Friday	—	Mar. 25 Monday	June 21 Friday
Instruction begins.	Oct. 2 Monday	Jan. 4 Thursday	Mar. 28 Thursday	June 24 Monday
Last day to file applications for advancement to candidacy for the master's degree to be conferred 1967–1968.	Oct. 9 Monday	Jan. 12 Friday	April. 3 Wednesday	July 1 Monday
Last day to file registration packets or to change study lists <i>without fee</i> .	Oct. 13 Friday	Jan. 17 Wednesday	Apr. 9 Tuesday	July 8 Monday
Last day to add courses to study lists. Normally, no registration packet will be accepted after this date. Before 4:00 p.m.	Oct. 18 Wednesday	Jan. 22 Monday	Apr. 11 Thursday	July 11 Thursday
Last day to file <i>without fee</i> notice of candidacy for the bachelor's degree to be conferred 1967–1968.	Oct. 18 Wednesday	Jan. 22 Monday	Apr. 11 Thursday	July 11 Thursday
Last day for undergraduate students to drop courses from study lists without penalty of grade F (failure). Before 4:00 p.m.	Oct. 31 Tuesday	Feb. 1 Thursday	Apr. 26 Friday	July 25 Thursday

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

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

	Fall '67	Winter '68	Spring '68	Summer '68
Last day to file <i>with fee</i> notice of candidacy for the bachelor's degree to be conferred 1967-1968. Before 4:00 p.m.	Nov. 1 Wednesday	Feb. 5 Monday	Apr. 26 Friday	July 25 Thursday
Last day to file in final form with the committee in charge dissertations for the doctor's degree to be conferred in 1967-1968.	Nov. 8 Wednesday	Feb. 9 Friday	May 2 Thursday	Aug. 1 Thursday
Last day for graduate students to drop courses from study lists without penalty of grade F (failure). Before 4:00 p.m.	Nov. 13 Monday	Feb. 13 Tuesday	May 13 Monday	Aug. 6 Tuesday
Last day to file in final form with the committee in charge theses for the master's degree to be conferred 1967-1968.	Nov. 27 Monday	Feb. 26 Monday	May 24 Friday	Aug. 20 Thursday
Last day to file with the Dean of the Graduate Division completed copies of theses for the master's degree and dissertations for the doctor's degree to be conferred 1967-1968.	Dec. 8 Friday	Mar. 8 Friday	June 4 Tuesday	Aug. 29 Thursday
Instruction ends.	Dec. 9 Saturday	Mar. 9 Saturday	June 4 Thursday	Aug. 29 Thursday
Final examinations.	Dec. 11-16 Monday-Saturday	Mar. 11-16 Monday-Saturday	June 7-13 Friday-Thursday	Aug. 30- Sept. 6 Friday-Friday
Quarter ends.	Dec. 16 Saturday	Mar. 16 Saturday	June 13 Thursday	Sept. 6 Friday <i>let</i>
Last day to file applications for fellowships and graduate scholarships tenable at Los Angeles for 1968-1969.	Jan. 31 Wednesday			
Last day for continuing students to file applications for undergraduate scholarships for 1968-1969.	Jan. 10 Wednesday			
Academic and Administrative Holidays.	Nov. 23-24 Thursday-Friday	Feb. 12 Monday	May 3 Friday	July 4 Thursday
	Dec. 22, 25 Friday and Monday		May 30 Thursday	Sept. 2 Monday
	Dec. 29, Jan. 1 Friday and Monday			

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 23, 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, 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 151 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 Bachelor of Laws.

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 Nursing, Master of Public Administration, Master of Public Health, 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 two million 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 Building.

The Department of Special Collections, in the College 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 College 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 College 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 College Library Building, contains books, journals, newspapers, and other materials in Chinese, Japanese, and Korean languages.

The Education and Psychology Library, in the College 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 Thursday, 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.

The Space Science Center is a part of the Institute of Geophysics and Planetary Physics. It 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 provided for space-related research in the physical and biological sciences and engineering. The Atmospheric Research Laboratory is an important facility of the Center. Graduate students enrolled in the astronomy, chemistry, geology, meteorology, or physics master's and Ph.D. programs may engage in research and advanced studies at the Center on the characteristics of the interplanetary medium, the structure of the moon and planets, radiation belt physics, atmospheric structure and dynamics, geomagnetism and solar physics and many other areas.

W. F. Libby, Director

The **Institute of Transportation and Traffic Engineering** covers a broad range of research relating to transportation, including analysis and design of transportation systems (land, air, water), mathematical theory of traffic flow, application of high-speed computers to traffic analysis and control, collision injury research, driver behavior and characteristics, highway safety and accident data analysis, urban transportation and related land use planning.

H. W. Case, Associate Director

The **Brain Research Institute** provides facilities for research in the neurological and behavioral sciences for investigators from the 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 training in brain research investigation for independent careers; (3) to develop and disseminate information about brain function in the interest of the social and scientific communities.

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 **Jules Stein Eye Institute** is a comprehensive facility located within the University of California 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 other research and teaching facilities in the graduate and undergraduate schools of UCLA is maintained.

B. R. Straatsma, Director

The **Molecular Biology Institute** was established to serve various 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 which is 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. **Norman Q. Brill, 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. The Institute does not offer courses in industrial relations for academic credit or degrees. It offers a series of courses through University Extension leading to a Certificate in Industrial Relations. **B. Aaron, Director**

The **Western Management Science Institute** was established in 1959 under a Ford Foundation grant to foster research and advanced training in the management sciences. The research program emphasizes mathematical studies in decision making, information economics, organization, production systems and mathematical programming. The Institute also sponsors the Interdisciplinary Colloquium on Mathematics in the Behavioral Sciences. Overall policy guidance is provided by an interdepartmental Advisory Committee representing the Departments of Business Administration, Economics, Engineering and Mathematics. **J. Marschak, Director**

The **Institute of Government and Public Affairs** is an interdepartmental research unit. Its main objectives 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. To this end, the Institute seeks cooperation among various disciplines—such as sociology, economics, law, history, medicine, public health, political science, engineering, etc.—in research in many areas. Of particular interest are the manifold problems brought about by the growth of our cities and metropolitan centers. Creative research on urban problems is carried out within the setting of an urban observatory. Other research focuses on regional development, looking to California in general and Los Angeles in particular as a unique laboratory for its work. In recognition of the complex interface between knowledge and society, major research programs are investigating the need for, and development of, educational innovations. Other research projects consider the interrelationship of science, technology, and society, probing into key elements involved in national science policy formulation.

W. Z. Hirsch, Director

The **Institute of Ethnomusicology** was established to encourage interdisciplinary collaboration among musicologists and other specialists, and its program is designed to facilitate an interdisciplinary approach to major research problems. The broad research objectives carry an overriding concern with the techniques required to define and describe on an international and comparative basis the norms of style as this term may relate both to music as an object of study itself and to music studied within its social context. The program includes studies directed toward fundamental concepts germane to the entire world of music as well as to new laboratory methods and techniques. Specific projects with a balanced emphasis on musical 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, as well as 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

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 University-wide 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

Centers

The **Western Data Processing Center (WDPC)** is an integral part of the Graduate School of Business Administration to advance research and education with particular reference to problems faced by business organizations in the thirteen western states. A secondary objective of the WDPC is to make available its services and facilities for machine computation and data processing for research in business, economics and related areas at UCLA and in academic disciplines at participating institutions. Current equipment includes IBM 7044/7094 Direct Coupled and IBM 360, Model 40 systems, as well as an IBM 1620 Student Computer Laboratory. In addition, the complex includes various kinds of tele-processing equipment to facilitate data transmission between WDPC, classrooms and laboratories on this campus and other university campuses.

Neil H. Jacoby, 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 science 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 also undertakes to provide on a continuous basis full information to members of the faculty and to 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 some 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 fields of 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 also conducts its own program of systematic multidisciplinary research. The latter is implemented by the faculty and graduate students involved in the interdisciplinary seminar, and is conducted on the UCLA campus as well as in the regional research and training centers operated by the Latin American Center in Brazil, Venezuela, Colombia, 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** assists individual and group researches by members of the faculty and stimulates graduate training. The Center is concerned with analysis and interpretation of the developing patterns of Western civilization during its formative periods. To this end it emphasizes the interplay of influence not only among the peoples of the West but also among those of Byzantium, the Slavic lands, Islam, the minor Christian communities of the Near East, and the scattered centers of Jewish activity. It strives to clarify the continuities and mutations of the Greco-Roman tradition in these variant cultures, and their significance for the West. The Center arranges research colloquia, conferences and lectures, and sponsors two series of publications.
Lynn White, Jr., Director

The **Center for Near Eastern Studies** was established to encourage 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 lecturers, seminars and conferences on various topics falling within the scope of Near Eastern studies.
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 and participates, with other universities, in academic exchange programs with the countries of Eastern Europe.
K. E. Harper, Acting Director

The **Center for Research in Languages and Linguistics** plans, initiates and coordinates research projects and interdisciplinary programs in the whole field of language study, linguistics and philology. Specific tasks and activities include the expansion of language coverage at UCLA in departmentally overlooked areas, supervision and guidance of library growth in relevant fields, cooperation with the University Press in publishing books and monographs, liaison with governmental agencies and private foundations, aid to visiting faculty, organization of conferences on linguistics or philological research with published proceedings, and frequent arrangement of lectures and seminars.
J. Puhvel, 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 have also become a part of the work of the Center. There is an attempt 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

The **Water Resources Center** is a universitywide research organization which conducts research in all aspects of water resources on all campuses of the University. The headquarters of the Center is located at UCLA in Engineering 2066. The Center conducts research at UCLA in water resources engineering and sea water conversion in the Department of Engineering, as well as related studies in political science, meteorology, agriculture, botany, library science (oral history) and geophysics. Water resources engineering at UCLA emphasizes the systems approach to water resources design and planning through simulation and optimization procedures. In addition both hydraulics and hydrology and water quality management are available as fields of study. A Carbon 14 dating facility is maintained by the Water Resources Center under the supervision of the Nuclear Engineering Laboratory.

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 institute which undertakes or underwrites social studies involving use of large scale or complex surveys for their basic data. The service bureau can provide such services as study design, questionnaire construction, interviewing, coding and data processing. The laboratory is available for faculty having an interest in and need for its equipment and other facilities 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

Bureau

The **Bureau of Business and Economic Research** was established to facilitate faculty research into business and economic problems, particularly those of California and the Pacific Coast, but not to the exclusion of problems of wider import. The Bureau acts as a service organization for faculty members. The main results of its researches are generally published in three forms: (1) Monograph Series, (2) Occasional Papers, and (3) Reprint Series.

R. Cassady, Jr., Director

Museums and Special Collections

The **Museum and Laboratories of Ethnic Arts and Technology** preside over a growing collection of objects which exemplify the range of the material culture and, specifically, of the arts of peoples who lived, until recently, at the margin of or beyond the orbits of the major oriental and occidental civilizations. In addition, its collecting activities include: 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 age; Latin American folk arts from the time of the Conquest to the present, and selected facets of European and Oriental folk arts such as puppetry. It serves many departments, as an aid to instruction, a training ground for research, a resource in developing seminars or in setting up exhibitions geared either to students or the general public. It initiates research programs, field work, exhibitions and publications; and promotes the study of arts and artifacts as one of the most promising avenues leading toward an understanding of man.

The Museum makes the organized material in the collections available not merely to the departments at UCLA, but to visiting scholars from other institutions drawn here by this resource. It conducts programs and symposia for which internationally known scholars are invited; and the results of the researches it sponsors will be projected in a series of scholarly publications.

R. C. Altman, Chief Curator

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 Willits 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 print study room, the home of the Grunwald Graphic Arts Foundation which includes primarily modern German, French and Italian prints and drawings with competent examples of earlier works: Schongauer, Durer, Rembrandt, Mantegna. 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 Lipchitz, Moore, Calder, Laurens, David Smith, Etrog, Muller, Consagra, Rosenthal, Andrews, Anna Mahler, Zajac and Zorach. They are gifts of the David E. Bright Estate, Mrs. Anna Bing Arnold and the UCLA Art Council.

As a policy 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 **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

The **Dickey Collection**, maintained by the Department of Zoology, is a research collection of marine fishes, amphibians and reptiles, and birds and mammals. The geographic regions most fully represented are western United States, western Mexico and Central America. The Department also maintains a more limited collection of fossil vertebrates. Through a cooperative arrangement, with the Los Angeles County Museum, **graduate students also have access to large zoological collections for research purposes.**

Laboratories

The **Cardiovascular Laboratory** offers training to qualified MD's in the fields of pediatric and adult cardiology. Detailed study of patients is emphasized, utilizing numerous modern techniques of physiological measurement. Heart cath-

terization, electrocardiography, phonocardiography, exercise capacity testing, indicator-dilution curves, and long-term monitoring are among the methods employed. Many patients are studied before and after heart surgery. Research on experimental animals parallels the study of patients with heart disease.

Albert A. Kattus, Director, Adult Cardiology

Forrest Adams, Director, Pediatric Cardiology

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

Other Research Activities

Air Pollution Research Program

Archaeological Survey Program

Archaeology Program

Business Administration Research Division

California Institute for Cancer Research

Cancer Research Committee, Southern
Section

Center for the Study of the Evaluation of
Instructional Programs

Committee on International and
Comparative Studies

Computing Facilities

Cyclotron Laboratory

ERIC (Educational Research Informa-
tion Center) Project: Clearinghouse for
Junior College Information

Exceptional Child Research Program

Health Science Computing Facility

Housing, Real Estate, and Urban Land
Studies Program

Japanese-American Project

Law Science Research Center

Nuclear Reactor Facility

Numerical Analysis Research Program

Oral History Program

Security Studies Project

University Elementary School and Related
Programs

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.

The Department of Music offers each quarter evening concerts presented by the A Cappella Choir, the Symphony Orchestra, the Opera Workshop, the Chamber Music Ensemble, the Collegium Musicum, the Chorus, the Concert Band, the Madrigal Singers, and the various ethnic study groups. Individual student artists and members of the faculty of the Department of Music and the Institute of Ethnomusicology present free weekly Tuesday Noon Recitals and Thursday Noon Programs.

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. The Galleries are open from 12:30 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 October 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 and serves also as a source of information on all types of educational exchange experiences.

In 1967-1968 the University will continue the operation of its study centers in Colombia*, France, Germany, Greece, Hong Kong, Italy, Japan, Spain, Sweden, and the United Kingdom and is negotiating to open new centers in Israel and Lebanon. The Study Centers' primary purpose is to provide a sound academic experience in a different educational system. They also enable the Uni-

* The Colombia Study Center will not be in operation in 1967-1968.

versity 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 Greece, Hong Kong, Japan, 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 Greece, Israel, Japan, Lebanon, and the United Kingdom), a full academic year in the university of their choice, and some vacation travel. The program in Delphi, Greece is for the spring and summer 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 1968-1969 will be accepted from October 16, 1967 through January 15, 1968. (Applications for Greece and the United Kingdom must be filed no later than November 17, 1967.)

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 Sessions

The University conducts at Los Angeles one eight-week summer session. In 1967 the Summer Session will begin on Monday, June 26. The Summer Session bulletin is obtainable after February 17 of each year 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 Extension office on any campus of the University or at the following additional locations: 1100 South Grand Avenue, Los Angeles 90015 (Tel.: 747-4321); San Francisco Extension Center, 55 Laguna Street, San Francisco 94102 (Tel.: 861-6833); 3620B West 182nd Street, Torrance 90504 (Tel.: 323-4773).



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.

The requirements outlined below should be regarded as necessary but not sufficient conditions of entrance; the enrollment of applicants who fulfill these requirements may have to be limited.

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 1967-1968 are: Fall Quarter, 1967—October 1, 1966 through March 1, 1967. Winter Quarter, 1968—May 1, 1967 through November 1, 1967. Spring Quarter, 1968—August 1, 1967 through February 1, 1968. Summer Quarter, 1968—December 1, 1967 through May 1, 1968.

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 is required to demonstrate an acceptable level of ability in English composition. This requirement, in Subject A, may be met by:

1. Passing the Subject A examination given on campus at the opening of each term, and at testing centers on the last Saturday in April, *or*

2. Making a score of 600 or higher in the College Entrance Examination Board Achievement Test in English composition after completion of the eleventh grade in high school, *or*

3. Entering the University with credit for an acceptable college-level course in composition with a grade of C or better.

Those students who fail to meet the requirement in one of these ways must enroll in the non-credit course in Subject A during the first quarter in residence. A fee of \$45 is charged for the course.

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 certifi-

cate establishing the fact that he has been successfully vaccinated against smallpox 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.

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. Such an applicant may now seek admission either on the basis of his high school record or by examination. But beginning with applications for the Fall Quarter, 1968, all freshman applicants may be required to present scores on aptitude and achievement tests of the College Entrance Examination Board.

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

ADMISSION ON HIGH SCHOOL RECORD

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 be certified by the principal to the effect that the courses included meet the requirements for admission to the University, and further, that this list has been approved by the Director of Admissions of the University. If the high school is not located in California, courses will be considered acceptable if the school is accredited.

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 elementary 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.

If an applicant's deficiency comes only from his having omitted one or more of these required subjects, it is sometimes possible for him to remove the deficiency during the summer; as to courses, he should consult the Office of Admissions in advance.

The subject requirements listed above may be satisfied only by courses in which a grade of C or higher has been assigned. Courses in which the grade is D or lower may be repeated to establish subject credit.*

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 D, E, or F grades. Grades, including those earned in accelerated and advanced courses, are accepted as they appear on the transcript.

Courses taken in the tenth, eleventh, and twelfth years in which a grade of C or lower is received may be repeated to raise grades in an amount not to exceed 2 units of the subject requirements. Only the first repetition may be used to satisfy scholarship requirements, but additional repetitions are allowed to satisfy a subject requirement.*

ADMISSION BY EXAMINATION

An applicant who is ineligible on his high school record 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.

The University does not offer entrance examinations but accepts the results of examinations given by Educational Testing Service for the College Entrance Examination Board.

* The following revised rules concerning the repetition of courses will apply to all applicants for admission for the fall quarter 1968 and thereafter.

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

To qualify by examination, the applicant must present scores in the Scholastic Aptitude Test and three Achievement Tests. The three Achievement Tests are to include English composition and one from each of the following two groups:

1. Social Studies and Foreign Languages.
2. Mathematics and Sciences.

The tests must 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. The total score on the Scholastic Aptitude Test must be at least 1000; the scores on the three Achievement Tests must total at least 1650, and the score on any one Achievement Test must not be less than 500.

For admission of nonresident applicants by examination, see page 27.

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. The applicant may not disregard his college record and apply for admission to freshman standing.

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 27.

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; E and F, 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, and therefore 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; E and F, no points).

ADMISSION BY EXAMINATION

A nonresident applicant who is ineligible for admission on his high school record 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. The requirements for a nonresident applicant are the same as those for a resident except that the total score on the Scholastic Aptitude Test must be at least 1100 and 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 Special or Limited Status

Special students are students of mature years who have not completed a substantial amount of college work and who by reason of special attainments may be prepared to undertake certain courses in the University toward a definite and limited objective. Only cases of unusual merit will be considered. Admission to special status will not be approved for the purpose of making up requirements for admission to the University as a regular student.

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.

An applicant for either limited or special status must submit transcripts 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 object-

tive, 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 of California 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 527 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:

May 15th for the Fall Quarter
 October 15th for the Winter Quarter
 January 15th for the Spring Quarter
 April 15th for the Summer Quarter (1968)

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, in duplicate, 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 from UCLA need submit only one copy of the undergraduate record. Students graduating from other campuses of the University of California need submit two copies of the transcript of record from that campus only, if the junior and senior 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 be submitted to the Admissions Section of the Graduate Division no later than:

May 15th for the Fall Quarter
 October 15th for the Winter Quarter
 January 15th for the Spring Quarter
 April 15th for the Summer Quarter (1968)

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 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 eligibility for graduate admission must first be established. This application is submitted as outlined on page 29, with supporting papers. 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 applicant 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.

General Regulations

READMISSION

A student who wishes to return to the University after an absence of more than one quarter (for this purpose only, the summer months are considered a quarter) must file an Application for Readmission. For the academic year 1967-1968, the schedule for application is:

For Fall Quarter 1967: All students returning in the same status (graduate or undergraduate) who did not complete the Spring Quarter 1967.

For Winter Quarter 1968: All students returning in the same status (graduate or undergraduate) who were not registered for the Fall Quarter 1967.

For Spring Quarter 1968: All students returning in the same status (graduate or undergraduate) who neither completed the Fall Quarter 1967 nor were registered for the Winter Quarter 1968.

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.

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 August 15 for the Fall Quarter; November 24 for the Winter Quarter; February 15 for the Spring Quarter; May 15 for the Summer 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 August 15 for the Fall Quarter; November 24 for the Winter Quarter; February 15 for the Spring Quarter; May 15 for the Summer 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.

Registration of Candidates for Higher Degrees

Every candidate for a higher degree is required to register at the University at the beginning of each quarter so long as any part of the degree requirement (including the thesis or dissertation and final examination) is not yet fulfilled; and until either the degree shall have been awarded, or the candidate shall have been granted a formal leave of absence or an honorable dismissal by the graduate dean. Failure to register or to take a leave of absence will constitute presumptive evidence that the student has withdrawn from the Graduate Division. If the student plans to be in residence on the campus he must register as a regular student.

A graduate student may register in any one of the following categories: (1) Registration for Courses; (2) Registration for Independent Study; (3) Registration for Thesis or Dissertation only; (4) Intercampus Exchange.

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 enroll by mail, will enroll in classes during registration week at the times and places announced on Official Bulletin Boards. Enrollment in a graduate (200-series) course is normally accomplished by attending the first scheduled meeting of the class.

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 office 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 146 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 F, 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.

Grade points are not assigned to P, F (on a passed/not passed basis), S or U, and the units for courses so graded are not counted in determining grade-point average.

(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.)

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 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 dismissal; 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^o 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

With the exception noted below, every undergraduate entrant must, at the time of his first registration in the University, take an examination known as the *Examination in Subject A*, designed to test his ability to write English without gross errors in spelling, grammar, sentence structure, or punctuation.

The examination in Subject A is given at the opening of each quarter. (See the REGISTRATION CIRCULAR, to be obtained from the Registrar.) A second examination for persons who do not appear at the announced time is given a few days after the first examination in each quarter.

The results of the first examination will be made known not later than the day preceding the date set for enrollment in classes. Papers submitted in the examination are rated as either "passed" or "not passed." A student who is not present at the examination in Subject A which he is required to take will be treated as one who has failed.

Every student who does not pass in the examination in Subject A must, immediately after his failure, 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 residence 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. This 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.

A student who has received a satisfactory rating in the College Entrance Ex-

^o Candidates for teaching credentials must also maintain a C average in supervised teaching.

amination Board examination in English composition will receive credit for Subject A. A student who has passed an examination in Subject A given by the University or given under the jurisdiction of the University at various centers in the State annually in April will receive credit for Subject A.

A student who, at any time, has failed in the University examination in Subject A does not have the privilege of taking a second examination until he has completed the course in Subject A.

A student who enters the University of California, Los Angeles, with credentials showing the completion elsewhere with a grade not lower than C, of one or more transferable college courses in English composition is exempt from the requirement in Subject A.

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 examination. 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 13; History 7A, 7B, 171A, 171B, 172A, 172B, 173A, 173B, 174A, 174B, 175A, 175B, 177A, 177B, 179A, 179B, 180A, 180B, 188; Political Science 1, 114, 140, 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* 11 courses which a student offers for a bachelor's degree nine must be earned in residence in the college or school of the University of California in which the degree is to be taken. Not more than five of the nine courses 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 and are filed 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 (or Summer months) has intervened since the withdrawal. Such application is necessary in order that the Registrar may be prepared to register the student at the scheduled time. The deadlines for filing applications for readmission are not later than one month before the beginning of the quarter in which the student wishes to re-enter.

* 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.

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

The University presumes its students to possess earnestness of purpose and capabilities of self-discipline. Any behavior to the contrary may result in dismissal or disciplinary action, as the situation may warrant.



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.

Incidental Fee

The incidental fee for all undergraduate and graduate students is \$73. 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 \$327 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.

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 D.P.H., \$25.

Special course Subject A, \$45.

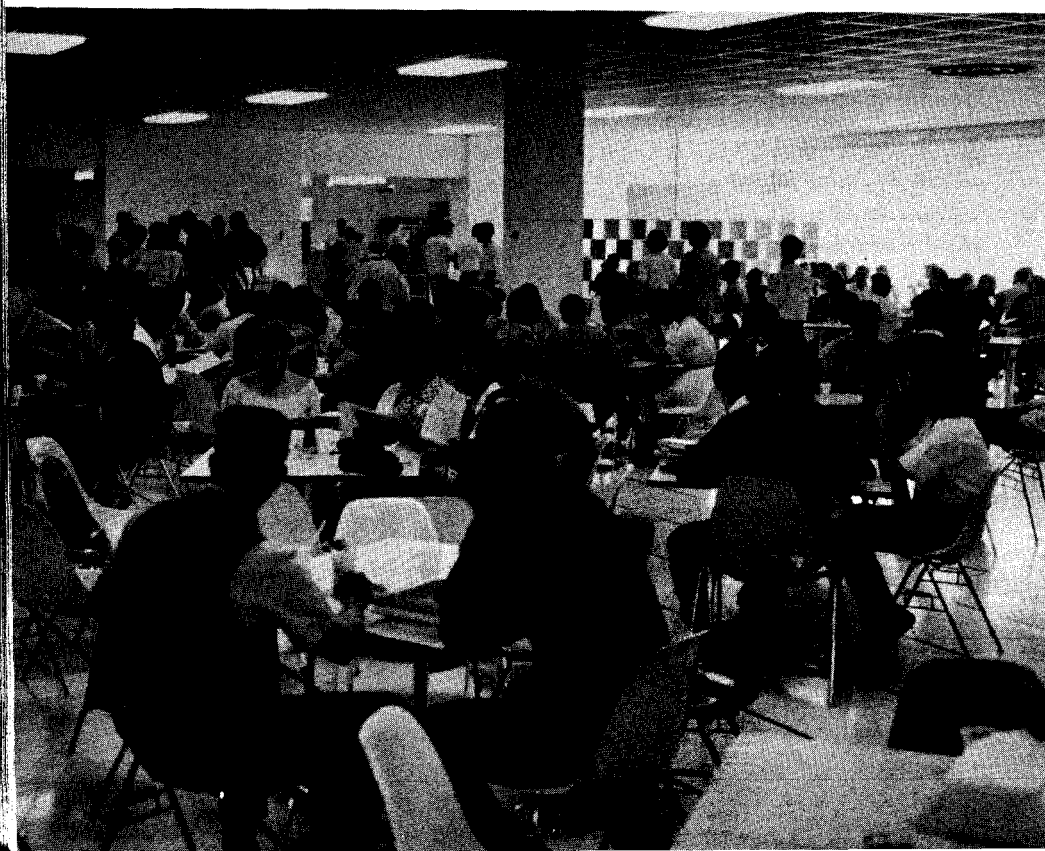
Duplicate diploma, \$15. Replacement cost upon presentation of evidence original is lost or destroyed.

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
Incidental Fee	\$ 219.00	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.....	998.00	Room and Board (20 meals/week) for three quarters in a University residence hall costs, on the average, \$921. 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 plus residence hall membership fees and telephone charge average about \$78 a year. (A refundable deposit of \$30 for breakage is also required.)
Miscellaneous	460.00	An average allowance for variable items such as clothing, transportation and parking, medicine and drugs, laundry and dry cleaning, and the cost of a round trip from home to campus is suggested.
Total	\$1,849.50§	An average budget for a student who is a California resident and who lives in a University residence hall will be approximately \$1,850 an academic year. Students classified as nonresidents of the State must also add to their estimated budgets the tuition fee of \$981 a year.

§ 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 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 \$1,200. 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.

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

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 or students transferring from other campuses of the University 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 Office. Entering students may also obtain forms from high school and junior college counselors.

Continuing Students and University of California transfer students should ask for the continuing student application, and must file this form before January 10.

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.

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.

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

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) are accepted only twice annually, during the months of April and October.

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.

STATE GUARANTEED LOAN PROGRAM

Full-time students who are legal residents of California may obtain an application from their local bank, the State Scholarship and Loan Commission, 520 Capitol Mall, Sacramento, California, 95814, 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 California State Scholarship and Loan Commission. 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 and towels. Students must furnish blankets. There is a telephone in each room except in Hershey Hall.

Present rate for room and board is \$921 for the academic year (exclusive of recesses and holidays), plus a \$23 telephone charge (except Hershey Hall) and \$12 membership fee in the residence hall student association required to cover social events within the halls. 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 April 1 and April 30; for the Winter Quarter, after September 15; and for the Spring Quarter, January 10.

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, 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 in June for the academic year

beginning in the fall; about November 15 for the Winter Quarter and February 15 for the Spring 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 Rieber Hall, and Earle Hedrick Hall.

Dykstra Hall is a 10-story building with men occupying the lower six floors and women occupying the top four floors. Sproul, Rieber and Hedrick Halls are 7-story buildings with separate wings for men and women. Each hall accommodates from 790 to 824 men and women. 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 Quarters beginning April 1, September 15 and January 10, 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 \$175 to \$228 per quarter.

PRIVATE RESIDENCE HALL

Weyburn Hall accommodates both men and women and is operated (with cooperation of UCLA) in a manner similar to the University residence halls. Rate per quarter approximately \$415.

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 \$100 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 Student 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

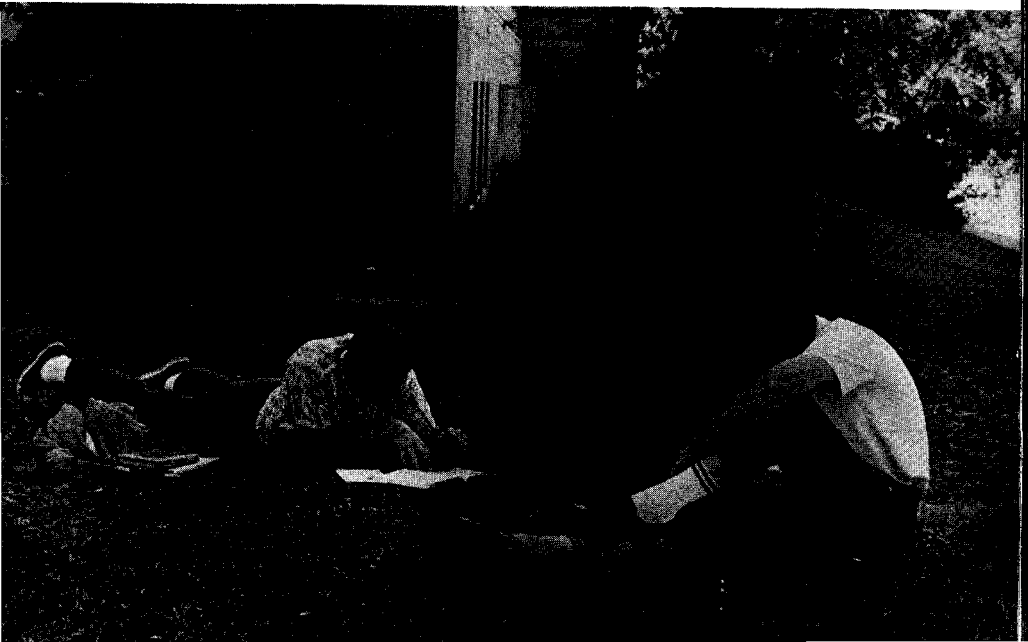
Student parking facilities on campus are subject to a parking fee. Since the full demand may not be met at the present time, the use of public transportation, car pools, bicycles, and motor scooters is encouraged whenever possible. Please contact the Southern California Rapid Transit District or the 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 all motor scooters and motorcycles is required. Permits to park on campus can be obtained from Campus Parking Service or Campus Police Department. Parking regulations, guide maps indicating the location of parking facilities, and additional information may be obtained from either department. 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.

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 30 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 346 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 359 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.

The Air Force ROTC is a two-year program open only to students who have attained at least junior standing and have two years remaining in the University either as an undergraduate or graduate student.

The four-year program is not open to entering freshmen or sophomores in 1967-1968. See page 154 for details.

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 on the 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 semester, 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. Normal progress toward the M.A. degree of two years and three additional years for the doctor's degree is required.

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 to 75 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.

A Rehabilitation Counselor is available on the Los Angeles campus for interviewing applicants and counseling clients. Appointments may be made in the Office of Special Services, Administration Building, 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 nonprofit agencies.

THE ASSOCIATED STUDENTS

The Associated Students consists of the Undergraduate Student Association, the Graduate Student Association, and several boards and commissions with special areas of operation. A staff of professional employees is maintained under the Executive Director of ASUCLA.

All undergraduates are members of the Undergraduate Student Association. They elect annually a president and a legislative council to administer the general business of the association and to coordinate the various cocurricular activities pertaining to publications, athletics and recreation. Members are admitted free to many athletic, social, cultural and educational events and at reduced rates to others.

All graduate students belong to a parallel organization, the Graduate Student Association. The association is governed by elected departmental representatives who form the Council and by a president elected by the Council from its own membership. The association maintains its own separate program geared to the interests and needs of graduate students.

Generally speaking students may participate in the many ASUCLA activities without regard to their status as graduate or undergraduate. All may obtain the *DAILY BRUIN*, the campus newspaper, without charge. All may attend the Speakers Program or participate in Tutorial Project, as well as Homecoming, Mardi Gras and Spring Sing.

Both the undergraduate and graduate associations have offices in Kerckhoff Hall, given to the University by Mrs. William G. Kerckhoff of Los Angeles. Kerckhoff Hall facilities have recently been supplemented by one of the finest student union buildings in the United States, in which the cafeteria and student store, owned and operated by the ASUCLA, are now located. Recreational and educational programs are provided, as well as a variety of student services.

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.

A number of specific programs and services are offered by this office. It programs and coordinates Uni-Prep Freshman Orientation, University Colloquium and Omnibus.

New ideas for activities are welcomed by and initiated in the Student Activities Office. A philosophy of co-operative programming—involving students, 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 these services. Opportunities for informal participation in swimming, body conditioning, basketball, handball, volleyball, badminton, tennis, 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 Kerckhoff Hall 600.

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 new 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

The facilities of the department are available for recreational use at any time during which classes are not regularly scheduled. (See section dealing with Cultural-Recreation Affairs for complete information.)

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

PART-TIME STUDENT EMPLOYMENT

Currently enrolled students desiring employment during the regular quarters and summer vacation periods may register with the Student and Alumni Placement Center in Temporary Building 1G. Professional staff interviewers assist the student in finding suitable employment emphasizing, whenever possible, the career job which affords work experience related to the student's major field.

The new student who plans to be self-supporting is advised not to begin his University course without sufficient funds to cover the major expenses 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, care of children, housework, manual labor, tutoring, and other specialized types of work 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.

FULL-TIME CAREER PLACEMENT

Through the full-time placement service of the Student and Alumni Placement Center, a staff of professional interviewers is available for consultation and guidance on career planning and placement.

Candidates for a degree, graduate or undergraduate, are urged to register as soon as possible in their last year in order that they may be referred well in advance of graduation to employers from business, industry, and government. Such referrals may involve off-campus interviews at plant headquarters, or on-campus interviews by employer representatives who visit the Placement Center annually from October through May. All majors are afforded a wide range of career opportunities. Graduate and professional school information is also available.

This service is available to all regularly enrolled students of the University, their spouses, and alumni of the University who desire career assessment and/or re-direction.

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 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 $\frac{1}{4}$ courses (105 units) toward the degree, no further unit credit will be allowed 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 (G) inclusive (see pages 66-71 of this bulletin) or (A) to (I) inclusive (see pages 71-75 of this bulletin), whichever set of requirements applies. See below.

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.

FOR ADVANCED STUDENTS

The following requirements are to be completed by students who had 24 semester units of credit before September 26, 1966.

A. General University Requirements

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.

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

B. Foreign Language

The old requirement is at least 16 semester units in not more than two languages.

1. The first two years of high-school work in a foreign language will be counted in satisfaction of four units of this requirement; the third and fourth years in the same language will be counted in satisfaction of four units each. Only work of grade C or higher may be counted.†

2. If a new language is begun on the college level it may not apply on this requirement unless course 2, or the equivalent, with its prerequisites is completed.

3. This requirement may also be satisfied in one of the following ways: (a) by passing a proficiency examination on this campus in one foreign language; or (b) on petition, by presentation of credentials from a secondary school in which the language of instruction is a foreign language.

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

5. 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.

6. During the transfer from the semester to the quarter calendar, students who have partially fulfilled the foreign-language requirement will complete it according to the following schedule:

Credits for Work Taken Prior to September, 1966

Additional Quarter Courses Required

4 semester units (college)	{ (a) Course 2 in same language and through course 3 in another language, or (b) through course 5 in the same language, or (c) through course 5 in another language.
2 years high school in one language	{ (a) Course 2 in same language and through course 3 in another language, or (b) through course 5 in the same language, or (c) through course 4 in another language.
8 semester units (college) or 3 years high school in one language or 12 semester units (college) or 4 years high school in one language.	{ (a) Through course 5 in same language, or (b) through course 2 in another language.

C. Mathematics

If the entrance requirement in mathematics has not been completed in high school, suitable courses to meet the requirement may be taken in University of California Extension, but will not be counted as part of the 180 units. See page 66 of this bulletin for regulations concerning concurrent enrollment.

† Any student who because of lapse of time or other circumstances feels unable to continue successfully a language begun in high school may consult the department of the language concerned regarding the possibility of repeating all or a part of the work for credit. Such credit would count on the 180 units required for the bachelor's degree; but credit is not allowed toward the required 20 units in foreign language for both the high-school and college work thus duplicated. No credit will be allowed for completing a less advanced course after satisfactory completion of a more advanced course in grammar and/or composition.

D. English Composition

At least three semester units or one course (4 quarter units) in English composition (English 1A or 1) with a grade of C or better. For alternative methods of satisfying this requirement see page 72 of this bulletin.

E. Natural Sciences†**PHYSICAL SCIENCES**

At least five units chosen from the following semester courses:	<i>or</i>	At least two courses chosen from the following quarter courses:
Astronomy 1		Physical Sciences 3A
Astronomy 100		
Astronomy 101		Astronomy 101
Chemistry 1A		Chemistry 1A
Chemistry 3A		Chemistry 1A, 1B
Chemistry 2 }		Physical Sciences 2
Chemistry 2A }		
Geography 1		Geography 1A
Geology 2, 2L		Physical Sciences 3C
Geology 3		Geology 4
Geology 101		
Meteorology 3		Physical Sciences 3M
Physics 1A		Physics 1A
Physics 1B		Physics 1B
Physics 1C		
Physics 1D		
Physics 2A		Physics 2A
Physics 2B		Physics 2B
Physics 10		Physical Sciences 1
One course from:		
Mathematics 114		Mathematics 100
Statistics 1		Mathematics 50
Philosophy 31		Philosophy 31
Any lower division course in Mathematics offered at UCLA except 38 and 41 }	 same

BIOLOGICAL SCIENCES

At least five units chosen from the following semester courses:	<i>or</i>	At least two courses chosen from the following quarter courses:
Anthropology 1		Anthropology 1A, 1B, 11.
Bacteriology 1		
Bacteriology 4		
Bacteriology 5		
Bacteriology 6		Bacteriology 6
Biology 1A		Biology 1A
Biology 1B		Biology 1B
Biology 2A-2B (both must be completed to count)		Biology 2A-2B
Biology 12 }		Biology 21
Botany 3 }		Biology 181A-181B.
Botany 101		
Paleontology 101 }		Geology 115
Paleontology 110 }		
Paleontology 111 }		
Paleontology 135 }		
Paleontology 136 }		
Paleontology 137 }		

† The student should be careful not to duplicate courses. The dotted lines indicate duplication.

Psychology 1B Psychology 12
 Zoology 15
 Zoology 102

F. Social Sciences‡

- | | | |
|--|-----------|--|
| 1. A year course in history chosen from the following semester courses: | <i>or</i> | Two quarter courses in history chosen from one of the following sequences: |
| History 1A-1B | | History 1A, 1B, 1C |
| History 5A-5B | | History 5A, 5B |
| History 6A-6B | | History 6A, 6B |
| History 7A-7B | | History 7A, 7B |
| History 8A-8B | | History 8A, 8B |
| | | History 9A-9B-9C-9D |
| 2. At least six units in social sciences other than history and including courses in two departments, chosen from: | <i>or</i> | Two quarter courses, not in the same department, chosen from: |
| Anthropology 2 | | Anthropology 2A or 12 |
| Economics 1A | | Economics 1 |
| Economics 1B | | Economics 2 |
| Economics 13 | | Economics 10 |
| Economics 101 | | Economics 100 |
| Geography 2 | | Geography 1B |
| Political Science 1 | | Political Science 1 |
| Political Science 101A | | |
| Political Science 101B | | |
| Psychology 1A | | Psychology 10 |
| Psychology 101 | | Psychology 101 |
| Public Health 5 | | Public Health 5 |
| Sociology 1 | | Sociology 1A |
| Sociology 101 | | Sociology 101 |

G. Humanities‡

Two of the following three groups:

LITERATURE

- | | | |
|--|-----------|--|
| At least four units in English, American, or any foreign literature, in the original language or in translation, chosen from the following semester courses: | <i>or</i> | Two quarter courses in literature chosen from the following: |
| African Languages 150A, 150B | | African Languages 150A, 150B |
| Arabic 150A, 150B | | Arabic 150A, 150B |
| Classics 113 | | Classics 142 |
| English 30A, 30B | | English 102 |
| English 46A, 46B | | English 10A, 10B, 10C, 100, 101 |
| English 115 | | English 104 |
| English 116A, 116B | | English 105 |
| English 117J | | English 103 |
| English 125C, 125D | | English 140, 141 |
| English 130 | | English 102 |
| English 133 | | English 107 |
| English 135 | | English 108 |
| English 136 | | |

‡ The student should be careful not to duplicate courses. The dotted lines indicate duplication.

English 151M	English 109
English 153	English 158, 159
English 190A, 190B	Finno-Ugric 138
Finno-Ugric 110	Finno-Ugric 158
Finno-Ugric 111	French 114A, 114B, 114C
French 114A, 114B	French 145A, 145B, 145C
French 114M, 114N	French 115A, 115B, 115C
French 115M, 115N	French 116A, 116B, 116C, 116D
French 116A, 116B	French 117A, 117B, 117C
French 117A, 117B	French 118A, 118B, 118C, 118D
French 118A, 118B	French 119A, 119B, 119C, 119D, 119E
French 119A, 119B, 119M	French 120A, 120B, 120C, 120D
French 120A, 120B, 120N	French 131
French 131	French 132A, 132B
French 132A, 132B	German 103
German 103	German 104
German 104	German 105
German 105	German 105
German 121A, 121B	German 121A, 121B
German 123	German 123
German 124	German 124
German 125	German 125
German 132	German 132
Greek 102	Greek 101
Greek 103	Greek 111, 112
Greek 180	Classics 141
Hebrew 150A, 150B	Hebrew 150A, 150B
Humanities 1A, 1B	Humanities 1A, 1B, 1C
Indo-European Studies 168	Indo-European Studies 168
Indo-European Studies 188	Indo-European Studies 188
Italian 103A, 103B	Italian 110A, 110B
Italian 109A, 109B	Italian 100A, 100B, 100C
Italian 152A, 152B	Italian 140
	Italian 150
Latin 4	Latin 106, 107
Latin 101	Classics 143
Latin 180	Oriental Languages 140A, 140B
Oriental Languages 112, 132	Persian 150A, 150B
Persian 150A, 150B	Portuguese 120A, 120B
Portuguese 120	Portuguese 121A, 121B
Portuguese 121	Scandinavian 141, 142, 143
Scandinavian 141A, 141B	Scandinavian 144, 145
Scandinavian 142	Scandinavian 143
Scandinavian 143	Russian 120A, 120B
Slavic Languages 130, 132	Slavic Languages 137
Slavic Languages 137	Slavic Languages 143A, 143B
Slavic Languages 143A, 143B	Russian 124
Slavic Languages 144	Russian 125
Slavic Languages 145	Polish 152
Slavic Languages 147	Serbo-croatian 145
Slavic Languages 150	Czech 155
Slavic Languages 160	Spanish 120A, 120B
Spanish 120A, 120B	Spanish 121A, 121B
Spanish 121A, 121B	Spanish 160A, 160B
Spanish 160A, 160B	Spanish 162

PHILOSOPHY

A year course in philosophy chosen from the following semester courses:	or	One of the following pairs of two-quarter courses:
Philosophy 6A-6B		Philosophy 6-7
Philosophy 20A-20B		Philosophy 20-21

THE ARTS

At least four units chosen from the following semester courses:	or	Two quarter courses chosen from the following:
Art 1A, 1B		Art 1A, 1B, 1C
Art 7		
Art 100A, 100B		
Art 108		
Art 109		Art 110A, 110B, 110C
Integrated Arts 1A, 1B		Integrated Arts 1A, 1B, 1C
Music 30A, 30B		Music 2A, 2B
Music 136A, 136B		Music 140A, 140B
Music 150		Music 133
Music 151		Music 134
Music 152		Music 135A, 135B, 135C
Music 153		Music 132
Theater Arts 5A		Theater Arts 5A, 5B
Theater Arts 102		Theater Arts 102A, 102B

FOR FIRST-YEAR STUDENTS

The following requirements are to be completed by entering freshmen and other students who had less than 24 semester units of credit before September 26, 1966.

A. General University Requirements

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.

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

B. 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.

C. Mathematics

If the entrance requirement in mathematics has not been completed in the high school, suitable courses to meet the requirement must be taken in University Extension, University of California, or elsewhere, but they will not be counted as part of the 45 courses (180 units) required for the bachelor's degree. See page 66 of this bulletin for regulations concerning concurrent enrollment.

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.*

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:

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

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, Physics; (2) Physical Sciences 2, Chemistry; (3) one of the following: (a) Physical Sciences 3A, Astronomy; (b) Physical Sciences 3G, Geology; (c) Physical Sciences 3M, Meteorology.

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.

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: (1) Biology 2A-2B, § Principles of Biology; or (2) Biology 181A-181B, Biology for majors in Physical Sciences and Engineering.

Students in the Humanities and Social Sciences will take: (1) Biology 2A-2B, § Principles of Biology, and (2) one of the following: (a) Anthropology 1A, The Principles of Human Evolution; (b) Anthropology 11, The Evolution of Man; (c) Bacteriology 6, Introduction to Microbiology; (d) Biology 21, Field Biology; (e) Botany 10, Plants and Civilization; (f) Geography 5, Man and the Earth Ecosystem; (g) Geology 115, Principles of Paleontology; (h) Psychology 12, Introductory Physiological Psychology; (i) Psychology 115, Physiological Psychology.

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

This requirement may also be satisfied by Biology 1A–1B–1C, Introductory Biology, or, for transfer students, by three quarter courses (two semester courses, totalling 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 2A–2B, Introduction to Cultural and Social Anthropology; Anthropology 12, Anthropology and the Modern World; Economics 1, 2, Principles of Economics; Economics 10, Evolution of Economic Institutions in America; Economics 100, Economic Principles and Problems; Geography 1B, Introduction to Geography: Cultural Elements; Geography 120, Cultural Bases of Geography; History 1A–1B–1C, Introduction to Western Civilization; History 5A–5B, History of England and Greater Britain; History 7A–7B, Political and Social History of the United States; History 8A–8B, History of Latin America; History 9A–9B–9C–9D, Introduction to Asian Civilizations; Political Science 1, Introduction to American Government; Political Science 2, World Politics; Psychology 10, Introductory Psychology; Sociology 1A, Introductory Sociology; Sociology 1B, Sociological Analysis; Sociology 101, Principles of Sociology.

H. Humanities

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

Philosophy. Students in the Social Sciences may take either Philosophy 6, 7 or Philosophy 20, 21. Students in the Physical Sciences or Life Sciences may take either Philosophy 6, 7 or Philosophy 20, 21, plus a third course which is offered by the Department of Philosophy and for which the student is eligible.

Literature. Students in the Social Sciences may take two courses and students in the Physical Sciences and Life Sciences may take three courses from the following list: (a) Humanities 1A–1B–1C, World Literature; (b) English 10A–10B–10C, Introduction to British and American Literature; (c) English 100, Major British Authors before 1800; (d) English 101, Major British Authors, 1800 to the Present; (e) English 102, Major American Authors; (f) English 103, Shakespeare; (g) English 105, The Bible as Literature; (h) English 107, American Life in American Letters; (i) English 108, The American Novel; (j) English 109, Introduction to Poetry.

Any of the courses in foreign literature, either in the original language or in translation offered by the departments of Classics, French, Germanic Languages,

¶ A student may not satisfy this requirement and the requirement in American History and Institutions with the same course.

Italian, Linguistics (African Languages), Near Eastern Languages, Oriental Languages, Slavic Languages, and Spanish and Portuguese (see page 271 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.

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.

The requirements for each major, including upper division courses, prerequisites, alternative electives, and the general University and College requirements, shall be available to students and others in printed form.

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.

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

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

¶ Only courses offered by a department of history apply. A student may not satisfy this requirement and the requirement in American History and Institutions with the same course.

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

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	Prephysical Therapy*
Latin American Studies	Presocial Welfare
Linguistics	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. B. E. Thomas (chairman), D. P. Kunene, P. Schachter, L. M. Thompson, C. S. Whitaker, Jr.

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 2A-2B; Economics 1, 2 or 100; Geography 1A-1B or 101; History 1A-1B-1C or 5A-5B; Sociology 1A 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 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, 2A-2B or 12; Economics 1, 2; Geography 1A-1B; Sociology 1A-1B.

Upper Division. Political Science 110, 120, 121, 140, 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. Also required: Anthropology 125; Economics 180, 190; Geography 140; History 141F-141G, 178A-178B; Sociology 140. 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), J. C. Crowell, 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 122; 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 180A; 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 180A-180B-180C; and either Mathematics 130A-130B-130C or 131A-131B.

Major in Latin American Studies

Committee in Charge. E. T. Glauert (chairman), C. F. Bennett, B. H. Herrick, C. L. Hulet, M. B. Nicholson.

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 five upper-division courses in the Department of Spanish and Portuguese, including Portuguese 121A-121B or Spanish 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, 133A*-133B*, 134*, 199*; Art 119*; Economics 108, 111, 112*, 190, 192, 199*; Education 104; Folklore 101; Geography 110, 120, 181*, 182*, 199*; History 160*, 162A*-162B*, 163A*-163B*, 166*, 167A*-167B*, 169*, 188, 199 (Sec. 9); Linguistics 100; Music 131*; Philosophy 156; Political Science 120, 121, 131*, 168A*-168B*, 198*, 199*; Portuguese 101A*-101B, 120A*-120B*, 199*; Public Health 161; Sociology 125, 126, 131*, 155, 199*; Spanish 100, 103*, 105, 109, 118, 120A-120B, 124, 127, 137*, 139*, 143*, 149*, 151*, 160B*, 199*.

Major in Linguistics

Committee in Charge. R. P. Stockwell (chairman), H. Birnbaum, R. N. Campbell, H. Hoijer, J. Puhvel.

This major is designed for 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. Such preparation will enable the student whose primary interests are linguistic and philological to take early cognizance of the entire field and decide about the proper direction of graduate work (general and descriptive linguistics, or historical-comparative linguistics, or philological specialization).

Preparation for the Major. (1) Three courses in Latin or Greek (Greek, if Latin was studied in high school); (2) course 6 in German, French or Russian, or course 16 in Russian; (3) sufficient lower division preparation in a foreign language other than that chosen in (2) above to enable the student to fulfill the major requirement (5) in a single foreign language; (4) Philosophy 31; and (5) Philosophy 32, or Anthropology 2A-2B.

The Major. The major consists of 13 upper division courses distributed as follows: (1) Linguistics 100, 110, 120, 150; (2) Anthropology 110; (3) English 121 and 122; (4) Indo-European Studies 160; (5) three upper division courses in a single foreign language chosen in consultation with the student's adviser; (6) two courses in a non-Indo-European language unless covered under (5) above; (7) one of the following: Philosophy 125, 127A-127B, 133, 134 or 191; or Psychology 122.

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

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 2A-2B; Economics 1, 2; Geography 1B, 10C; Sociology 1A.

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 132A-132B, 135, 136, 138A-138B-138C, 139A-139B, 200A-200B or 209A-209B; four courses in at least two disciplines selected from: Anthropology 124, 125, 130A-130B, 147; Geography 187, 188; History 117A-117B, 123A-123B-123C, 126, 131A-131B, 133C-133H, 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.A. El-Sayed, 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 3C, 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 106A-106B (History of Science).

Major in Prephysical Therapy

Committee in Charge. G. W. Gardner (chairman), M. S. Gordon, V. V. Hunt, E. H. Rodnick, R. E. Worden.

This major is designed primarily to prepare a student for professional training in physical therapy, but the selected areas of the life and social sciences serve also to provide a broad foundation for understanding the structure and nature of man.

Completion of this major does not guarantee admission to a school of physical therapy for postgraduate (certificate) training or graduate education. The student should consult the school of physical therapy which he hopes to attend regarding specific admission requirements.

Preparation for the Major. Psychology 10, 12; Biology 1A-1B-1C; Chemistry 1A-1B-1C, 4A-4B; Physics 2A-2B-2C; Mathematics 1; Physical Education 43. Recommended: Physical Education 10A, 10B.

The Major. Psychology 115, 130, 133 (Section B), 127; Zoology 101, 109, and either 107 or 159; Physical Education 110A-110B; and four courses selected from: Psychology 117B, 125, 135; Physical Education 122; Public Health 101, 160A.

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

Major in Presocial Welfare

Committee in Charge. H. H. L. Kitano (chairman), J. Rabow, D. E. Smith, M. A. Wenger.

This major is designed to give the student what is currently regarded as the most 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 1A or 101 and 1B; Psychology 10 or 101; Sociology 18, 19, or Psychology 141, or Mathematics 50. Recommended: Anthropology 2A-2B.

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 may be elected are:* Psychology 112, 133, 145, 148, 168; 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, 140, 141, 174, 186.

It is strongly recommended that majors see their adviser regularly.

Major in Psychology-Mathematics

Committee in Charge. T. R. Trabasso (chairman), M. P. Friedman, H. Garfinkel, R. H. Sorgenfrey, J. D. Swift.

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 2A-2B, 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, J. F. Weston.

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 110, 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 110, 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 110, 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 110. (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), C. A. Crabtree, E. A. Engelbert, S. J. Surace, B. E. Thomas.

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 3A; Music 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 105A, 105B, 106A, 106B, 121A, 121B, 141A-141B, 141C, 163A-162B, 166, 177A-177B, 178A, 178B, 179A, 179B, 180A-180B, 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: 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, 140, 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, 105, 106, 107, 108, 109, 140, 141, 156, 157, 158, 159, and 170.

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: Anthropology 12, 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 1A, 1B.

Criminology (Social Science Emphasis). Biology 2A-2B; 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.

Pre dental Curriculum: Two Years

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

Advisor for Applicants to Dental Schools. Donald Novin, College of Letters and Science.

The College of Letters and Science offers a preidental 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 preidental 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.

Preidental 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 year 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 preidental 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).

Premedical Studies: Four Years‡

Program Adviser. See major department.

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

* School of Dentistry, page 117.

† Other dental schools may have different requirements.

‡ 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).

§ 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.

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 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.

‡ 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.

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-4B-4C; 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 12; Psychology 10; Sociology 1A or 101; (9) Humanities: two courses in literature or Philosophy 6, 7 or 20, 21; (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.

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); (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

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

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.

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.

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 one department and one in another; (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

§ 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 preceding 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.

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, College 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 76 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 (Greek and Roman Mythology); English 105 (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 121B (The Later Middle Ages), History 122A–122B (History of the Church in the Middle Ages), History 124A–124B (History of Religions), History 131A–131B (Armenian History), History 135 (Introduction to Islamic Culture), History 138A–138B–138C (Jewish History), History 141B (The Reformation), History 177A–177B (Intellectual History of the United States); History 196A (Early History of India), History 207 (Intellectual and Cultural History of Armenia); 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 AGRICULTURE

Students electing any major in the plant science curriculum—agronomy, genetics, landscape horticulture, park administration, plant pathology, pomology, vegetable crops, and viticulture—may satisfy lower division requirements in courses in other departments at Los Angeles and then transfer to the campus, Berkeley, Davis, or Riverside where their major work is offered. The same is true of students electing certain other curricula in the College of Agriculture—agricultural business management, agricultural economics, agricultural education, agricultural production, agricultural sciences, animal science, entomology and parasitology, food science and technology, home economics, irrigation sci-

ence, nutritional sciences, range management, soil science, preforestry, and pre-veterinary medicine. 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 any curriculum of the College may obtain information and advice through the Office of the Chairman of the Department of Agricultural Sciences at Los Angeles.

Every student must consult his adviser each semester for guidance in meeting the requirements of the curriculum of his choice, and his study list must be approved by the Chairman's office.

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 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 98 of this bulletin and to the announcement of the Graduate Division, GRADUATE STUDY AT UCLA.

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, 1967-1968.

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 22-29 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	½ 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:

	<i>Minimum Number of</i>	
	<i>Semester Units</i>	<i>Quarter Units</i>
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 45½ courses (182 quarter units) which consists of a required core of fundamental subjects and disciplines (31½ 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 meas-

urements, 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 45½ courses, scheduled for completion in 12 academic quarters of *full-time* study. These 45½ 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 above for transfer students.)

	Units First Quarter	Units Second Quarter	Units Third Quarter
Freshman Year			
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

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

Sophomore Year

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
	16	16	16

UPPER DIVISION

Prerequisite for junior status: satisfactory completion of a minimum of 84 quarter units (60 semester units) including the minimum subject requirements specified on page 92.

	Units First Quarter	Units Second Quarter	Units Third Quarter
Junior Year			
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
	16	16	16

Senior Year

Engineering 104C-104D	-	4	4
Engineering 107A	4	-	-
Engineering 109A	-	-	2
Humanities Elective	-	4	-
Major Field Electives	12	8	4
	16	16	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:

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 CATALOGUE.

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 95) 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 ceramic engineering, civil engineering, electrical engineering, engineering science, industrial engineering, mechanical engineering, and metallurgy. 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 CATALOGUE, UNIVERSITY OF CALIFORNIA, BERKELEY, and the GENERAL CATALOGUE, 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, 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 Ph.D. graduate status 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 Ph.D. graduate status 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 particular area Division, the Divisions are expected to serve as centers of activity for graduate studies. The Divisions are as follows:

Applied Mechanics

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

Astronautics

Celestial mechanics as applied to orbit theory, perturbations, observation and prediction; vehicle dynamics in relation to the problem of attitude, optimum trajectories, navigation and instrumentation. This Division will be concerned also with space technology in its broad interpretation.

Chemical, Nuclear, Thermal

This Division includes the study of heat and mass transfer, radiation transfer, molecular flow, aerothermochemistry, thermodynamics, applications of chemical physics, chemical processes, energy conversion and utilization, nuclear processes and nuclear reactor analysis and design.

Design, Management, Planning

The complexity of developing advanced devices and systems has focused attention on the central problems of engineering design, management and planning: theory, methodology, and the broader problems of design, the management of the engineering function and the planning of engineering projects.

Electronics and Electromagnetics

This Division includes circuit and network theory, basic magnetics, electron devices, transistors, electromagnetic theory, solid state electronics, dielectric and magnetic properties of matter, antenna theory, microwaves, ion dynamics, plasma, paramagnetic and ferromagnetic resonance and masers.

Environmental Systems and Resources

Graduate programs concerned 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, soil mechanics, sanitary engineering, traffic and transportation engineering and the resource aspects of urban and regional planning.

Information Systems

Students study analogue 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

This area covers metallography, electron microscopy, x-ray diffraction, ceramics, mechanical and physical metallurgy, structure of solids and related properties of materials and thermodynamics of metals and ceramics.

Structures

Comprises soil mechanics, static and dynamic analysis and design of engineering structures, shells and arches, advanced strength of materials, optimum design of structures, and elastic and inelastic stability.

REQUIREMENTS FOR ADMISSION TO GRADUATE STATUS

Applications for admission will be received from graduates of recognized colleges and universities. The basis of selection is promise of success in the work proposed, which is judged largely on previous college record. Each application

will be referred by the Dean of the Graduate Division to the Department of the applicant's proposed major for recommendation before admission is approved.

In addition to meeting the requirements of the Graduate Division, the student must have completed an undergraduate curriculum in engineering substantially equivalent to that given at the University of California with an undergraduate scholarship record equivalent to at least a B average in all course work taken in the junior and senior years. An applicant who fails to meet the requirement above must complete additional course work before being admitted to graduate status. These courses will not be accepted toward the course requirement for the master's degree.

Students who have completed other curricula may be required to enroll in certain undergraduate engineering courses which generally will not be accepted in fulfillment of the requirements for advanced degrees.

Applicants are required to file a special application 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. Eleven 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 and industrial experience. 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. There are nominal assignments during the summer. 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 has just completed his requirements for the M.S. degree and desires to proceed toward the Ph.D. must file *Form 1*, Notice of Intention to Proceed to Candidacy for the Degree Doctor of Philosophy, 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:

Biotechnology	Heat and Mass Transfer
Communications Systems	Large Scale Engineering Systems
Computers	Mathematical Theory of Systems
Control Systems	Nuclear Reactors
Electromagnetics	Structures
Electronic Systems	Minor Field Only:
Fluid Mechanics	Applied Mathematics

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. In most cases 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, College Library.

Continuing Engineering Studies

Continuing education of the practicing engineer is a growing concern of the profession. Engineering Extension in cooperation with Physical Sciences Extension brings to this field the structure and facilities of the statewide University of California Extension organization. An extensive program of evening classes, conferences, concentrated short courses, correspondence work, sequential certificate plans and special events is 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 refer to the Engineering Extension bulletin.

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 School of Education and the State Department of Education, students may also qualify for standard teaching credentials (see the ANNOUNCEMENT OF THE 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

Nine of the final 11 courses completed for the bachelor's degree must be earned in residence in the College of Fine Arts. Not more than five of the nine courses may be completed in summer session on the Los Angeles campus.

Students transferring from other institutions or from University Extension with senior standing must complete while enrolled in the College of Fine Arts at least seven upper division courses, including four courses 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.

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, students may apply high school work in foreign language toward this requirement by satisfactorily passing a placement test in the language concerned. College credit will not be granted for courses which duplicate the high school work validated by placement tests. 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 2A, Botany 12). Also, Anthropology 1A, 1B, 11, Geology 115, Physical Education 15, 111.

Elective Science. History 106A, 106B.

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.

Philosophy. All courses in philosophy. Also, Anthropology 124 and History 142A-C.

Departmental Requirements

THE MAJOR

Each candidate for the bachelor's degree shall have completed a major or curriculum 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 shall have

been recommended by the chairman of his major department or curriculum committee.

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.

A *curriculum* is composed of not less than 14 courses (56 units) nor more than 20 courses (80 units) from several departments, including at least nine upper division courses (36 units). The curriculum includes both lower and upper division courses, selected and supervised by a curriculum committee 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 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

The College Committee on Honors will award College Honors to students with a superior overall grade-point average at graduation. 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 student 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 in the Fall, 1967.

The School of Architecture and Urban Planning is currently 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 Coordinator 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 undergraduate degree of Bachelor of Science and 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 Program for foreign scholars.

The Undergraduate Program

The School is terminating 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, 1968. Re-entrants who have completed at least one year of residence in the School of Business Administration, but who cannot complete the degree requirements by September, 1968, should consult the dean regarding their programs.

Undergraduate students majoring in fields other than business administration may elect courses offered by the Department of Business Administration. The Department's undergraduate offerings subsequent to 1968 will include courses designed for such election, as well as courses needed to support graduate programs of the School. In particular, the Department will continue to offer undergraduate courses required for the master's degree in accounting.

Counselors in the Graduate School of Business Administration will welcome the opportunity to advise undergraduate students on preparation for graduate work in business administration. Detailed information about the accounting program, including preparation for Certified Public Accountancy, can be obtained from the Accounting Area Office in the Graduate School of Business Administration building.

LOWER DIVISION REQUIREMENTS

A program of study in preparation for the professional curriculum in the School must satisfy: (1) the general University requirements, listed in this catalog; (2) the lower division requirements of one of the colleges of the University of California. For example, these may be fulfilled by meeting the requirements for upper division standing in the College of Letters and Science (Berkeley or Los Angeles), or upper division standing in the College of Fine Arts (Los Angeles). Organized programs of study offered by departments within such colleges as Engineering, Agriculture, or Letters and Science, at any campus of the University of California are acceptable if junior standing is achieved; (3) the following specific requirements or their equivalents: (a) Business Administration 1A-1B, Elementary Accounting; (b) Economics 1A-1B, Principles of Economics; (c) Mathematics 11A (previously 3A), Analytic Geometry and Calculus, First Course, or Mathematics 2C (previously 37B), **Mathematics for Social and Life Sciences**; (d) English 1A, English Composition with grade C or better.

DEGREE OF BACHELOR OF SCIENCE

The degree of Bachelor of Science will be granted upon fulfillment of the following conditions: (1) a minimum of 45 courses (180 quarter units) with a grade C average or twice as many grade points as units attempted; (2) registration in the program while completing the final nine courses of work following an organized program approved by the Dean. This regulation applies both to students entering the program from another university and to students transferring from other colleges within this University. Students admitted to senior standing in the program on the basis of credit from another institution or University Extension, must complete in residence, subsequent to such admission, a minimum of nine courses of the last 11 courses including at least seven upper division courses in Business Administration, and (3) completion of requirements listed below:

UNIVERSITY REQUIREMENT

American History and Institutions.

BASIC COURSES

Completion of the following courses in their proper sequence:

Business Administration 100. Business Economics
 Business Administration 101. Business Fluctuations and Forecasting
 Business Administration 108A. Legal Analysis for Business Managers
 Business Administration 108B. Legal Analysis for Business Managers
 * Business Administration 109. Business Communications
 Business Administration 115A. Business Statistics
 Business Administration 120M. Managerial Accounting, or
 Business Administration 120A-120B. Intermediate Accounting
 Business Administration 190A. Organization and Management Theory
 Business Administration 190B. Organization and Management Theory
 Economics 135. Money and Banking

FUNCTIONAL COURSES

Completion of the following courses:

Business Administration 130. Business Finance
 Business Administration 140. Elements of Production and Operations
 Management
 Business Administration 150. Elements of Industrial Relations
 Business Administration 160. Elements of Marketing

Courses 100, 109, 115A, and 120A or 120M are to be taken by students majoring in Business Administration in their first quarter in the Program and should be completed before enrolling in the functional courses; course 101 and Economics 135 are to be taken in the second quarter, and courses 108A-108B during the junior year. Variations in these requirements can only be made when necessitated by subject deficiencies or other compelling reasons, and must be approved by the Assistant Dean for the Undergraduate Program.

* Students may be exempted from course 109 by examination.

ELECTIVES

At least six courses in departments other than Business Administration of which three must be in upper division courses.

SCHOLARSHIP REQUIREMENTS

At least a C average in all work undertaken in the University. At least a C average in all upper division courses taken in Business Administration and Economics.

Fields of Concentration

Students may elect to take additional work in a field of concentration. The Assistant Dean for the Undergraduate Program will certify completion of a field of concentration if students complete at least three courses with a C average, comprising not less than three courses of specified work beyond the basic required courses, in one of the areas listed below. Students should consult the Assistant Dean for information about individual fields.

Accounting

Finance

Marketing

Operations Management

Quantitative Methods

Industrial Relations

Insurance

Urban Land Economics

Transportation and Traffic Management

HONORS

The Executive Committee of the School will recommend for Honors Privileges and for Honors or Highest Honors with the bachelor's degree such students as it may judge worthy of that distinction.

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 documenta-*

tion* 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
Fall	May 15	April 15	April 1
Winter	October 15	October 15	July 1
Spring	January 15	January 15	October 15
Summer	April 15	No admissions	January 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 have an undergraduate scholarship record of a grade B average 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.

* 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*.

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.

	MBA Curriculum	Integrated MBA Program
Eligibility	Recognized bachelor's degree in business or non-business field	Recognized bachelor's degree in a field other than business
Admission	Any Quarter	Fall Quarter only
Sequence of courses	Student selects from recommended sequence of courses	Faculty team builds sequence into an integrated program
Student relations	Student enrolls in each course as an individual	Student becomes member of group which stays together for two years
Special features	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
Time Commitment	Varies with individual class schedule	Full-time commitment Monday-Friday
General requirements	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)

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.

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-third course). *Second quarter:* Business Fluctuations 406, Business Statistics 407, Business Finance 408, Management Theory and Policy 409, and Business Communications 405B (one-third course). *Third quarter:* Behavioral Science Foundations 404, Operations Management 410, Elements of Marketing 411, Business Communications 405C (one-third course), and one elective.

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	Marketing
Business Economics	Mathematical Methods
Finance	Risk Bearing and Insurance
Industrial Relations	Socio-Technical Systems
Information Systems	Statistics
International and Comparative Management	Transportation and Traffic Management
Operations Management	Urban Land Economics
Management Theory and Policy	

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 courses or their equivalents, which may be completed before or after admission, are prerequisite to advanced work in the M.S. program: Business Economics 401, Mathematics for Management 402, Financial and Managerial Accounting 403, Business Fluctuations 406, 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.

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 either complete a master's thesis or pass a comprehensive examination in his major field. Comprehensive examinations are required for majors in accounting, management theory and policy, and business economics. In the following fields, a comprehensive examination is normally required, but a thesis may be substituted, with faculty approval: information systems, mathematical methods, operations management, and statistics. A thesis is required in all other fields.

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 148-151.

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 requirement. 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 150 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 will accommodate entering classes of 96 students each year in a four-year course of study leading to the degree of Doctor of Dental Surgery. Students will 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 84 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 1968, should be submitted as early as possible, but no later than December 31, 1967. 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.*

* Additional documents available in the Office of Subject Services of the Graduate School of Education include: *Credentia Programs and Teaching Minors; Announcements of Scholarships, Fellowships, Assistantships, Internships; Early Childhood Education; Programs on the Education of Exceptional Children; and others.*

The Graduate School of Education offers curricula leading to state credentials authorizing service in the following fields: elementary; secondary; junior college teaching; teaching exceptional children (mentally retarded); school librarianship; pupil personnel services (counseling, child welfare and attendance, school psychometry, school psychology); supervision; and school administration. In addition, the Graduate School of Education provides opportunity for individual programs of study meeting the requirements of the State Board of Education for credentials in certain other fields.

These curricula are maintained through regular sessions of the University and in Summer Session. During the Summer Session an attempt is made to offer the basic programs leading to credentials and to graduate degrees, as well as specific courses directed toward the in-service education of teachers. See the SUMMER SESSIONS bulletin for information.

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 educational psychology, 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 and higher 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 Department of Education, and two associates. One associate dean is responsible for courses of instruction, Summer Session programs, and publications. The second is responsible for budgetary and financial matters.

Admission to 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 formally admitted to a credential program may enroll for a second quarter. The requirements are:

Communication Skills

During the first quarter the student must pass standardized tests given by the Office of Student Services in English and arithmetic. The standard for passing is equivalent to the junior level in liberal arts colleges. The student must also demonstrate that he is free from gross speech defects.

† For added information, consult an adviser in the Office of Student Services in the Graduate School of Education.

Academic Achievement

The student's transcripts must show an overall C scholastic average or higher if an undergraduate. If he is a graduate, he must meet the admission requirements of the Graduate Division including a B scholarship 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 B scholastic 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. If a student's history is such that there is doubt on this matter, he should consult a counselor in the Office of Student Services.

University Elementary School

The University Elementary School is a laboratory facility of the Department of Education which serves nearly twenty departments of the University for purposes of research, experimentation, demonstration, and teaching. Reports of research studies completed are disseminated through the professional literature by those conducting them. The School carries on its own program of experimentation and innovation and, increasingly, research. A limited number of opportunities to participate in these programs is made available to outstanding prospective teachers who serve as aides and interns. Some teaching and research posts are available to doctoral candidates, and existing personnel policies permit the short-term employment of able teachers from school districts in the United States and from abroad.

The faculty includes a Director, a principal, teachers, and specialists in fields closely related to education, all of whom work together in teams or in modified self-contained classrooms. More than 400 children between the ages of three and twelve progress through nongraded programs emphasizing many alternatives in learning determined from individual pupil diagnosis.

Increasingly heavy visitation has necessitated the restriction of visits from the surrounding lay community to a day each month. Visitation by educators from the UCLA campus or elsewhere is arranged by appointment. Requests for permission to conduct research studies are forwarded to the Director on forms which are secured from his office or at the reception desk.

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, referral to community agencies for preteaching experience with children, referral to a remedial program, 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; conducts programs for lower division students at the University and in junior colleges to interest them in and facilitate their preparation for work in education; 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 during his first quarter on campus 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 scholarship average of at least B in all 100 series courses; and (4) have earned a scholarship average of at least B 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, 1967, is May 15, 1967; the Winter Quarter, 1968, is October 15, 1967; the Spring Quarter, 1968, is January 15, 1968; and the Summer Quarter, 1968, is April 15, 1968.

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. Candidates for higher degrees must apply to and be accepted for admission by the Graduate Division even if they expect to attend only during the summer.

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 B scholastic average in all courses elected at any campus of the University of California subsequent to the bachelor's degree; this includes all courses included 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, *GRADUATE STUDY AT UCLA*.

‡ 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.

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 at the graduate level 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 two 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.

Check List and Advising

A check list indicating step-by-step progress in the program is available 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 there.

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 a 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 two 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.

Check List and Advising

A check list indicating step-by-step progress in the program is available 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 there.

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 B+ 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 chairman of his guidance 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 guidance committee may specify, ordinarily at least two full years (six quarters of at least two 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

The minimum period of residence for the Ed.D. program is two years before advancement to candidacy and one thereafter. In order to facilitate the orderly completion of the program, all doctoral candidates will be required to engage in three or more quarters of full-time resident study, i.e., enroll for each of three consecutive quarters in three or more courses, or seminars, or individual research courses related to the doctoral dissertation and requiring extensive library or field work and frequent consultation with the candidate's chairman. While in full-time resident study the candidate must be able to devote a major portion of his time to study.

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 area of concentration, his minor area and his related field. 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 "For Dissertation Only" 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.

Instructions for the preparation and submission of the dissertation may be secured from the Graduate Division. In addition, the University Archivist must check the format of each dissertation before it is accepted by the Graduate Division; it is the responsibility of the candidate to secure from the University Archivist a memorandum of approval to submit with the dissertation to the Graduate Division. Candidates are urged to attend an orientation meeting with the University Archivist before preparing the final copies of the document.

Four copies of the approved dissertation must be submitted. The original and two copies must be filed with the Graduate Division before the deadlines published in the 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 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 there.

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 of Arts degree or the equivalent 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 B+ 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 chairman of his guidance 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 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 guidance committee, consisting of two members of the Department of Education and a member of the cognate department.

Residence

The minimum period of residence for the Ph.D. is two academic years in graduate status, of which, ordinarily, the second must be spent in continuous residence at the University of California, Los Angeles. The Ph.D. in education is ordinarily a four-year program beyond the baccalaureate, two or three years beyond a master's degree. While in full-time resident study the candidate must be able to devote a major portion of his time to study. If more than four years elapse between the beginning of course work and advancement to candidacy, or four additional years from advancement to candidacy to completion of the dissertation he must petition for an extension of time to his sponsor and 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. In the case of the cognate field, he must pass an examination set by the department which is at least equivalent to that required for the master's degree or for the Ph.D. preliminary examination.

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 "For Dissertation Only" until the dissertation is completed.

Dissertation

The dissertation will embody 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. Approval of the dissertation by the committee and the Graduate Council is required before he is recommended for the degree. Instructions for the preparation and submission of the dissertation may be secured from the Graduate Division. Approval of format by the University Archivist must also be secured. Four copies of the approved dissertation must be submitted, the original and two copies to the Graduate Division and the fourth copy to the Dean of the School of Education.

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 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 there.

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 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. In addition to required courses offered by the School of Library Service, elective courses in library service and in other University departments are recommended to provide a basis for specialized preparation. 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 the professional M.L.S. degree and 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) undergraduate and graduate scholarship records; (2) score on the Aptitude Test of the Graduate Record Examination; (3) 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 (4) 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 1968. Applications for the class entering in September, 1968, with all transcripts of record and other necessary documents, must be filed between May 1, 1967, and October 31, 1967, 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 (including vertebrate embryology and genetics)	20	13¾
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.

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 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 March 1, 1967 for the fall quarter; November 1, 1967 for the winter quarter; January 1, 1968 for the spring quarter; May 1, 1968, for the summer quarter. Applications for admission to the graduate program should be filed not later than May 15, 1967 for the fall quarter; October 15, 1967 for the winter quarter; January 15, 1968 for the spring quarter; April 15, 1968, for the summer 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, GRADUATE STUDY AT UCLA.

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 as a field of professional activity includes 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.

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, mental health, the health education of the public, organization of medical care, gerontology, international 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 (School) Health Education, 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

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 87 and 88 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 the Master of Science Degree and the Master of Public Health Degree in the following areas of concentration: (1) Aerospace Medicine, (2) Biostatistics, (3) Community Health Education, (4) Community Mental Health, (5) Comparative and International Health, (6) Environmental Health, (7) Epidemiology, (8) Gerontology, (9) Hospital Administration, (10) Infectious and Tropical Diseases, (11) Maternal and Child Health, (12) Medical Care Organization, (13) Occupational Health, (14) Preventive Medicine and Public Health, (15) Public Health Administration, (16) Public Health Nutrition, (17) Radiological Health, (18) School Health Education.

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 fully recognized 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 is required of which at least five must be graduate level, 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).

A student is required to specialize in one of the areas listed under "Fields of Concentration" and normally should expect to take at least three graduate courses in that area. These and other courses, including electives from other departments, will be chosen with the guidance of his adviser.

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 is required at least five of which are in strictly graduate work in biostatistics or mathematical statistics, including at least three courses in biostatistics. A comprehensive examination 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, physiology, public health, sampling theory, mathematics.

Master of Science in (School) Health Education

The master's degree in school health education is designed to provide preparation for qualified, high level, competent health educators for colleges and universities and elementary and secondary schools.

For admission to the Master of Science program in school health education, the student must have completed in the bachelor's degree program at least three courses in approved upper division school health education courses and three courses in approved upper division courses from at least one of the following fields: other public health subjects, anthropology, sociology, psychology, physical education, zoology, education.

REQUIREMENTS

A minimum of nine courses is required including five graduate courses in health education and a thesis. The student's program is planned in consultation with his graduate adviser in accordance with his undergraduate preparation and his professional goals.

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 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, 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.

Summer positions and field work are available in health department agencies and for graduate students with the Institute of Nutrition for Central America and Panama in Guatemala City.

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 a fully recognized college or university, with adequate preparation in sciences basic to public health. Such sciences basic to public health include various combinations of: (a) Life sciences (zoology, botany, bacteriology, physiology, etc.); (b) Physical sciences and mathematics (physics, chemistry, mathematics, etc.); (c) Social sciences (economics, history, political science, administration, etc.); (d) Behavioral sciences (psychology, sociology, anthropology, etc.).

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.

No field experience is required as a condition of admission to the M.P.H. program. A background of three years of public health experience, however, may be considered as a factor in evaluating eligibility for admission.

GENERAL REQUIREMENTS FOR THE DEGREE

Award of the M.P.H. degree requires: (1) a minimum of 11 acceptable courses. For students with suitable previous graduate studies in public health subjects, this may be reduced to a requirement of 10 courses. Full-time study requires a minimum of three quarters in academic residence, more often four; (2) a comprehensive final examination in (a) the general field of public health, and (b) the student's field of major concentration; (3) for candidates who have not had adequate previous experience in public health or closely related fields, field training in an approved health program of 10 weeks may be required. In selected cases, this requirement may be met by a period of further academic education, or a combination of education and field training. Students majoring in hospital administration are required to take an administrative residency up to 12 months; (4) 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 organization (usually Public Health 200A).

These courses are intended to familiarize all students with the fundamental, scientific aspects of public health regardless of the specialization.

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).

A student is required to concentrate in one of the areas listed under "Fields of Concentration."

At least 4½ courses are required in the field of major concentration, beyond the mandatory courses. Additional courses may be chosen from 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.

Candidates must have a master's degree in public health or an equivalent master's degree in an appropriately related field such as hospital administration, education, social work, psychology, etc. 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.

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: Biostatistics, Environmental Health, Epidemiology, Gerontology, Health Education, Medical Care and Hospital Administration, Occupational Health, Public Health Nutrition, Radiologic Health.

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 dis-

sertation 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. Completion of the dissertation may take place off the campus if the student has already satisfied the residence requirements. He must, however, be registered in the final semester for the award of his degree.

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

Applications for transfer from another institution 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 17, New York. 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 443 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 Library Science, Master of Nursing, Master of Public Administration, Master of Public Health, Master of Science, Master of Social Welfare, Doctor of Philosophy, Doctor of Education, 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 STANDARDS AND PROCEDURES FOR GRADUATE STUDY AT UCLA, and the offerings of the major department under the appropriate section of this bulletin.

Definition of Academic Residence

A graduate student must register for, attend, and complete at least 1½ courses (six quarter units or the equivalent) of upper division work in order to satisfy the minimum residence requirement in any one quarter for a higher degree or certificate issued by the University.

Study List Limits

The minimum study list for all graduate students holding Teaching and Research Assistantships is 1½ courses per quarter or the equivalent.

Graduate students holding fellowships administered by the University are required to carry a minimum of two full courses per quarter, both before and after advancement to candidacy. In either period, with the approval of the department, these may include individual study or research courses.

In the first quarter of their appointments as Teaching or Research Assistants, the maximal program limit for graduate students is no more than two full courses.

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, comparable in standard and content to a bachelor's degree from the University of California, based on a curriculum that includes the prerequisites for graduate study in the department of his major subject.

The minimum requirements for the masters' 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 bulletin.

The Master of Arts is offered in the following fields:

African Area Studies	German	Music
Anthropology	Greek	Near Eastern Languages 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	Meteorology	Zoology
Geochemistry	Microbiology	
Geography		

The Master of Science is offered in the following fields:

Anatomy	Information Sciences (Documentation)	Physical Education
Biochemistry	Journalism	Physics
Biological Chemistry	Medical Microbiology and Immunology	Physiology
Biostatistics	Medical Physics (Radiology)	Planetary and Space Physics
Business Administration	Nursing	Plant Science
Chemistry	Nutritional Sciences	Preventive Medicine and Public Health
Engineering	Pharmacology	Public Health
Geology		
Health Education		

* Master of Arts in Teaching.

Other master degrees offered:

Architecture (M. Arch. U.D.)	Education (M.Ed.) Engineering (M.E.)	Public Administration (M.P.A.)
Art (M.F.A.)	Library Science (M.L.S.)	Public Health (M.P.H.)
Business Administration (M.B.A.)	Nursing (M.N.)	Social Welfare (M.S.W.) Theater Arts (M.F.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 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 determine the candidate's capability in his field.

Comprehensive Examination Plan. The required minimum standard is a program of nine upper division and graduate 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.

Masters' Degrees Other Than M.A. or M.S.

For those departments offering masters' 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.

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 knowledge of a foreign language forms part of the student's preparation for the master's degree. If language capability is assessed by written examination(s), the candidate first takes a preliminary screening test, which is designed simply to determine his readiness for examination and may be repeated if necessary. The written Educational Testing Service Graduate School Foreign Language Tests are used for the more common languages and UCLA examinations for all others. Students are advised to consult their major department regarding its foreign language requirements and the Student and Academic Affairs Section of the Graduate Division for further information on foreign language examinations.

RESIDENCE

The minimum residence for the master's degree is three quarters in graduate status at UCLA, of which at least two quarters are to be on the UCLA campus. The minimum study list for academic residence for advanced degrees is 1½ upper division or graduate level courses during a regular session.

* 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.

By petition, work done in residence on other campuses of the University of California may satisfy one third the residence requirement, one half the total course requirement, and one half the graduate course requirement.

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.

THE THESIS

The thesis is the student's report, in as brief a form as possible, of the results of his original investigation. Before beginning his work on a thesis, the student obtains the approval of his major department and the instructor concerned, on the subject and general plan of investigation. A booklet, *STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION*, is available in the Student and Academic Affairs Section of the Graduate Division.

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 ability to make original contributions to knowledge in their field. 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, comparable in standard and content to a bachelor's degree from the University of California, based on a curriculum that includes the prerequisite for graduate study in the department of his major subject.

The **Ph.D.** is offered in the following fields:

Anatomy	Geology	Music
Anthropology	Germanic Languages	Near Eastern Languages and Literatures
Anthropology-Sociology	Hispanic Languages and Literatures	Oriental Languages
Art History	History	Pharmacology
Astronomy	Indo-European Studies	Philosophy
Biochemistry	Islamic Studies	Physics
Biological Chemistry	Italian	Physiology
Biostatistics	Linguistics	Planetary and Space Physics
Botany	Mathematics	Plant Science
Business Administration	Medical History	Political Science
Chemistry	Medical Microbiology and Immunology	Psychology
Classics	Medical Physics (Radiology)	Slavic Languages and Literatures
Economics	Meteorology	Sociology
Education	Microbiology	Speech
Engineering	Molecular Biology	Theater History
English		Zoology
French		
Geochemistry		
Geography		

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 upper-division or graduate level work during any regular University term.

NOTICE OF INTENTION

Notice of intention to pursue a doctor's degree should be given as early as possible during the graduate student's career, preferably at the end of the first quarter of graduate study. The student's department will assist him in arranging his program and will counsel him regarding the various elements essential to its completion.

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 first takes a preliminary screening test, which is designed simply to determine his readiness for examination and may be repeated if necessary. The written Educational Testing Service Graduate School Foreign Language Tests are used for the more common languages and UCLA examinations for all others. Students are advised to consult their major department regarding its foreign language requirements and the Student and Academic Affairs Section of the Graduate Division for further information on foreign language examinations.

**DEPARTMENTAL GUIDANCE COMMITTEE AND
PRELIMINARY WRITTEN QUALIFYING EXAMINATION(S)**

At a time the department deems appropriate, a departmental guidance committee is appointed. Ordinarily, this committee later conducts the preliminary written qualifying examination(s).

**DOCTORAL COMMITTEE AND
ORAL QUALIFYING EXAMINATION**

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 (see also the brochure, **STANDARDS AND PROCEDURES FOR GRADUATE EXAMINATIONS**).

ADVANCEMENT TO CANDIDACY

Upon receipt of the report of a successful oral qualifying examination, an application form for Advancement to Candidacy is sent to the candidate by the Registrar's Office. The candidate completes this form, obtains the signature of approval of the Chairman of his doctoral committee, pays the Advancement to Candidacy Fee at the Cashier's Office, and files his application in the Student and Academic Affairs Section of the Graduate Division.

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.

A brochure on STANDARDS AND PROCEDURES FOR ADVANCED DEGREE MANUSCRIPT PREPARATION is available in the Student and Academic Affairs Section of the Graduate Division.

FINAL ORAL EXAMINATION

The candidate's final examination is conducted by his doctoral committee, with such additional examiners as the department may wish to invite, with approval of the Dean of the Graduate Division. 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 or pages 126-128 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 142-143 of this bulletin.

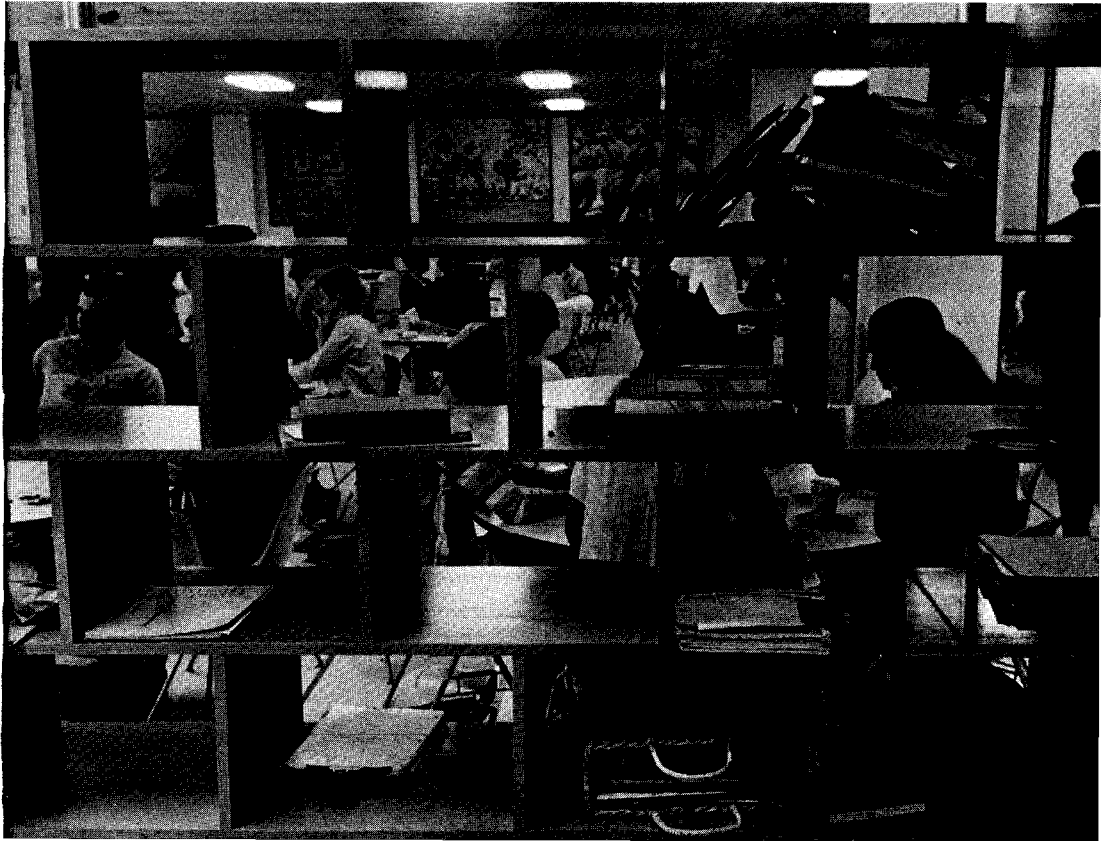
Second Bachelor's Degrees for Graduate Students

In general, the University of California discourages candidacy for a second bachelor's degree, even if the proposed major is in a new field; at the same time, it recognizes that there are cases in which such a degree may legitimately be sought. Students wishing to become candidates for a second bachelor's degree will apply to the Admissions Office for admission as undergraduate students. Admission is subject to the approval of the Director of Admissions and of the

dean of the appropriate college who shall also set requirements and make recommendations for the degree. No persons will be recommended for the bachelor's degree who have not satisfied substantially, at the time of procedure to the degree, the conditions imposed upon other undergraduate students at the University of California, including the completion of at least nine courses in continuous residence.

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 that 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.

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 the listing

Mathematics 11A-11B-11C. Calculus and Analytic Geometry.
indicates three full courses, 11A, 11B, and 11C; while the 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,

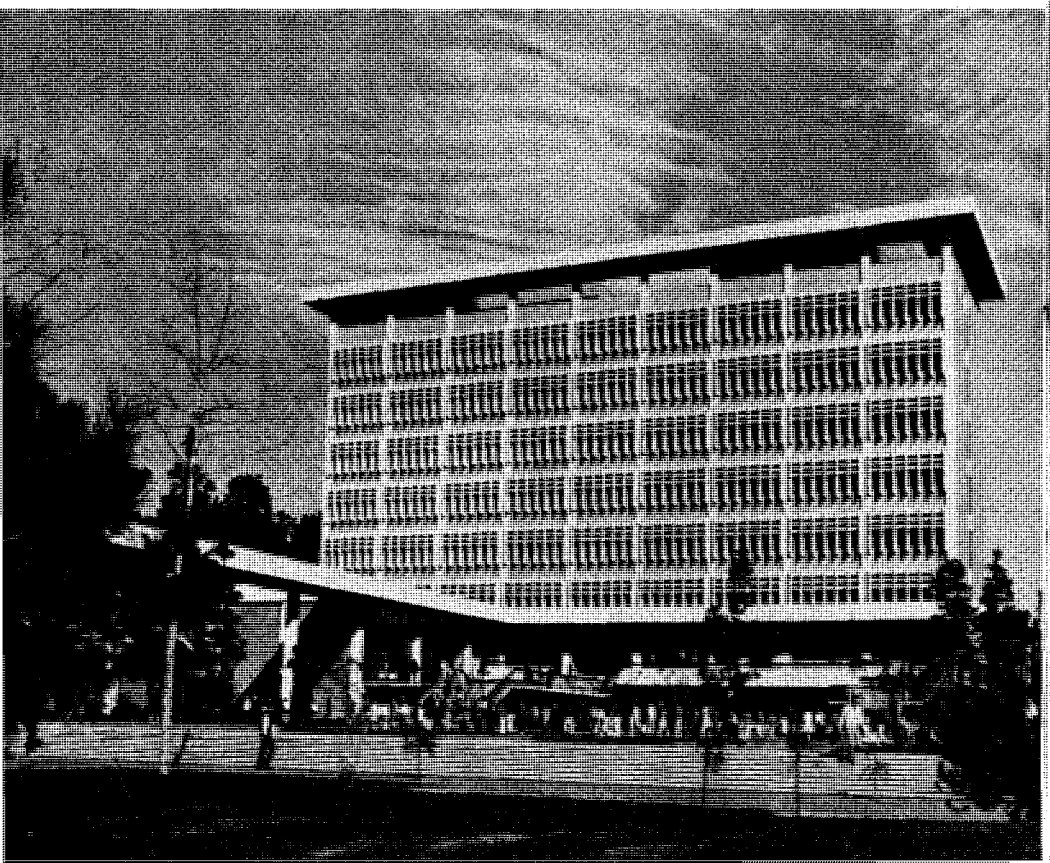
Business Administration 596A-596N. Research in Business Administration.
($\frac{1}{4}$ to $1\frac{1}{2}$ courses)

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)

Albert M. Elton, A.B., Lt. Colonel, U. S. Air Force, *Professor of Aerospace Studies (Chairman of the Department)*.

Sidney A. Sosnow, B.S., Major, U. S. Air Force, *Assistant Professor of Aerospace Studies*.

Stephen L. Sutton, B.A., M.A., Major, U. S. Air Force, *Assistant Professor of Aerospace Studies*.

Air Force Reserve Officers Training Corps

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 United States Air Force. The purpose and objectives of the program are: (1) to develop in cadets an understanding of the Air Force mission, organization, operation, problems and techniques; (2) to develop in cadets the ability to work with others on group activities and assume a leadership role when required; and (3) to educate and prepare cadets to discharge the responsibilities required of them as Air Force officers.

Two-Year Program

The two-year 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 \$120. Students enrolled in the two-year program receive a \$40 per month retainer fee for ten months in each of the two years of the program.

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 35½ hours of flight training in civilian aircraft during

their second year of the program 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. Applicants desiring to enter flying training as pilots or navigators must not have reached 26½ years of age at the time of their commissioning.

Students who do not desire flying training must have distance vision of at least 20-400 or better bilaterally, 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.

Six-Week Field Training Course.

This course comprises 296 hours of six-week duration. Academics; physical training; individual weapons; familiarization flying; field exercises; United States Air Force base.

Field Training Course Staff

131A. Growth and Development of Aerospace Power.

Prerequisite: completion of Basic Course or FTU (I course). 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. Leadership Laboratory.

The Staff

131B. Growth and Development of Aerospace Power.

Prerequisite: completion of Aerospace Studies 131A (I course). 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. Leadership Laboratory

The Staff

131C. Growth and Development of Aerospace Power.

Prerequisite: completion of Aerospace Studies 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. Leadership Laboratory.

The Staff

141A. The Professional Officer.

An introduction to the foundation of the military profession, management and human relations. Leadership theories and their practical application. Leadership Laboratory. The Staff

141B. The Professional Officer.

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. Leadership Laboratory. The Staff

141C. The Professional Officer.

An introduction to the principles and functions of management. The junior officer as an administrator and the Military Justice System. Briefing for commissioned service. Leadership Laboratory. The Staff

Four-Year Program

The four-year program is in the process of being phased out.

* Not offered 1967-1968.

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 76 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. 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's 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

Freshman Year

***1A-1B-1C. World Military Systems.**

(½ course each)

Sophomore Year

***21A-21B-21C. World Military Systems.**

(½ course each)

Junior Year

131A-131B-131C. Growth and Development of Aerospace Power.**Four-Week Field Training Course.**

This course comprises 232 hours of four-week duration. Academics; physical training; individual weapons; familiarization flying; field exercises; United States Air Force base.

Field Training Course Staff

Senior Year

141A-141B-141C. The Professional Officer.

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 146.

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.

Qualifying Examination. The student must demonstrate in a written and/or oral examination his knowledge of African peoples, cultures, geography, history, and government.

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 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.

Final Examination. 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 integrate 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.
- 269. African Arts.
- 596. Directed Studies (Africa).

Art 118A-118B-118C. Primitive Art.

- 220. Seminar in Primitive Art.

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.

French 221A. French African Literature of Madagascar and Bantu Africa.

- 221B. French African Literature of Berbero-Sudanese and Arabo-Islamic Africa.
- 221C. Special Topics in French African Literature.
- 257A-257B. Studies in French African Literature.

Geography 188. Northern Africa.

- 189. 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.
- 128. 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.

111A-111B-111C. Elementary Yoruba.

112A-112B-112C. Intermediate Yoruba.

113A-113B-113C. Elementary Igbo.

115A-115B-115C. Elementary Twi.

131A-131B-131C. Elementary 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. (¾ 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.

110A-110B-110C. Spoken Moroccan 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.

180A-180B-180C. Structure of Literary Arabic.

190A-190B-190C. Arabic Dialectology.
 199. Special Studies in Arabic.
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.

Political Science 115. Theories of Political Change.
 130. New States in World Politics.
 166. Government and Politics in Tropical Africa.
 250E. African Studies.
 271. Seminar in Political Change.
 596. Directed Studies (Africa).
 Sociology 130. Social Processes in Africa.
 199. Special Studies in Sociology (Africa).
 596. Directed Studies (Africa).

■ AGRICULTURAL SCIENCES

(Department Office, 280 Kinsey Hall)

John G. Bald, Ph.D., *Professor of Plant Pathology*.
 Sidney H. Cameron, Ph.D., *Emeritus Professor of Plant Physiology*.
 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*.
 William H. Chandler, Ph.D., LL.D., *Emeritus Professor of Horticulture*.
 Anton M. Kofranek, Ph.D., *Professor of Floriculture*.
 Wesley P. Hackett, Ph.D., *Assistant Professor of Ornamental 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.

Graduate Study

The Department of Agricultural Sciences offers a program of study and research leading to the M.S. and Ph.D. degrees in Plant Science. More detailed information may be obtained by writing to the Department of Agricultural Sciences.

Graduate Courses

- 596. Directed Individual Studies.**
 (1 to 2 courses)
 Independent study of an advanced nature.
 The Staff
- 597. Preparation for the Comprehensive Examination for the Master's Degree or the Qualifying Examination for the Ph.D. Degree.** The Staff
- 598. Research for and Preparation of the Master's Thesis in Plant Science. (1 to 2 courses).**
 The Staff
- 599. Research for and Preparation of the Doctoral Dissertation. (1 to 2 courses).** The Staff

■ 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.*
 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.*
 David S. Maxwell, Ph.D., *Associate Professor of Anatomy.*
 Arnold B. Scheibel, M.D., *Associate Professor of Anatomy and Psychiatry.*
 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.*
 Kathryn H. Green, Ph.D., *Assistant Professor of Anatomy.*
 James N. Hayward, 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.*



- Elmer Belt, M.D., *Lecturer in Surgical Anatomy and Medical History and Clinical Professor of Surgery.*
 Ralph J. Berger, Ph.D., *Assistant Research Anatomist.*
 Jan Berkhout, Ph.D., *Assistant Research Anatomist.*
 Donald J. Davenport, M.D., *Assistant Clinical Professor of Anatomy.*
 Thelma Estrin, Ph.D., E.E., *Associate Research Engineer in Anatomy.*
 Joaquin M. Fuster, M.D., *Lecturer in Psychiatry and Research Anatomist.*
 Rochelle J. Gavalas, 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., *Assistant 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.*
 Harold C. Nielson, Ph.D., *Assistant Research Anatomist.*
 Allen C. Norton, Ph.D., *Assistant Research Physiologist and Anatomist.*
 Robert W. Porter, M.D., *Associate Clinical Professor of Anatomy and Surgery.*
 Robert H. Schiffman, Ph.D., *Associate Research Anatomist.*
 Horst O. Schwassmann, Ph.D., *Assistant Research Anatomist.*
 Robert Siminoff, Ph.D., *Assistant Research Anatomist.*
 Donald O. Walter, Ph.D., *Assistant Professor of Physiology in Residence and Assistant Research Anatomist.*
 Wanda Wyrwicka, Ph.D., *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, 103 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, 103, 207; Chemistry 152A-152B (Biological Chemistry 101 may be substituted); Physiology 101; 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 and Anatomy 209 and 211 are required of all candidates studying the central nervous system.

To satisfy the foreign language requirement, the student may substitute Russian for French, or some other language if he can demonstrate its superior value to his particular area of study. 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

100. Introduction to Human Anatomy. (½ course)

One 4-hour session and one 1-hour session per week in the winter quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Lectures and demonstration-discussions dealing with human anatomy from its embryological, gross, neuro-anatomical and radiological aspects. Emphasis on the functional anatomy of the head.

Mr. Maxwell, Mr. Sauerland

101. Microscopic Anatomy. (2 courses)

Three 3-hour sessions and one 2-hour session 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

102. Human Gross Anatomy. (2 courses)

Four 4-hour sessions per week in the spring quarter. Prerequisite: enrollment in School of Dentistry or consent of the instructor. Laboratory dissection of the human body, supplemented by lectures and demonstrations. Emphasis on the head and neck.

Mr. Maxwell, Mr. Sauerland

103. Basic Neurology. (2 courses)

Two 4-hour sessions, one 3-hour session, and one 1-hour session per week in the spring quarter. Prerequisite: enrollment in School of Medicine or consent of the instructor. 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.

Mrs. Green

Graduate Courses

207A. Gross Anatomy. (2 courses)

Four 4-hour sessions per week in the fall quarter. Prerequisite: consent of the instructor. Credit and grade will be given only upon completion of 207B. Medical students enroll for Gross Anatomy 105A. Lectures and dissection of the human body.

Mr. Sawyer and Staff

207B. Gross Anatomy.

Two 4-hour sessions and one 1-hour session per week in the winter quarter. Prerequisite: course 207A. Medical students enroll for 105B. Lectures and dissection of the human body.

Mr. Sawyer and Staff

208A. Electronics for Research in Experimental Anatomy and Basic Neurology.

Two 1-hour lectures and one 4-hour lab per week in the fall quarter. Prerequisite: consent of the instructor. Credit and grade will be given only upon completion of 208B and 208C. Lectures and discussions on the applications of electronic instrumentation to the problems of data acquisition, recording and analysis. Emphasis placed on practical solutions to problems. Mr. Kado

208B. Electronics for Research in Experimental Anatomy and Basic Neurology.

Two 1-hour lectures and one 4-hour lab per week in the winter quarter. Prerequisite: course 208A. Mr. Kado

208C. Electronics for Research in Experimental Anatomy and Basic Neurology.

Two 1-hour lectures and one 4-hour lab per week in the spring quarter. Prerequisite: courses 208A and 208B. 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. Selected Techniques in Anatomical Research. (½ course)

One 4-hour session per week in the winter quarter. 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

210B. Selected Techniques in Anatomical Research. (½ course)

One 4-hour session per week in the spring quarter. Prerequisite: course 210A. Mr. Young

211A. Anatomical and Physiological Substrates of Behavior.

One 2-hour lecture and demonstration per week in the fall quarter 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

211B. Anatomical and Physiological Substrates of Behavior.

One 2-hour lecture and demonstration per week in the winter quarter with labs scheduled by instructor. Prerequisite: course 211A. 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 will be given to the re-

cent concepts of inhibition at the behavioral level and their implications for learning, emotion and mental health. Mr. Sterman

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 summer quarter. Prerequisite: consent of the instructor. Mr. Gorski and Mr. Sawyer

256A. Survey of the Basic Neurological Sciences. (½ course)

One 2-hour session per week in the winter quarter. 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

256B. Survey of the Basic Neurological Sciences. (½ course)

One 2-hour session per week in the spring quarter. Prerequisite: Basic Neurology. 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 and 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 Hoijer, 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 Shevky, 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.*
 Lewis R. Binford, Ph.D., *Assistant Professor of Anthropology.*
 Mary B. Black, Ph.D., *Assistant Professor in Residence of Anthropology and Public Health.*
 Robert B. Edgerton, Ph.D., *Assistant Professor in Residence of Anthropology and Psychiatry.*
 James N. Hill, Ph.D., *Assistant Professor of Anthropology.*
 Paul E. Hockings, Ph.D., *Assistant Professor of Anthropology.*
 Yolanda Lastra, Ph.D., *Assistant Professor of Linguistics.*
 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.*
 ———, *Assistant Professor of Anthropology.*
 ———, *Assistant Professor of Anthropology.*



- John G. Kennedy, Ph.D., *Visiting Assistant Professor in Residence of Anthropology.*
 Madeleine Mathiot, Ph.D., *Lecturer of Anthropology.*
 Sterling Robbins, B.A., *Acting Assistant Professor of Anthropology.*
 Norman B. Tindale, Ph.D., *Visiting Professor of Anthropology.*

Preparation for the Major

Required: Anthropology 1A-1B, 2A-2B, 80A-80B.

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 sci-

ence departments, or additional anthropology courses.

Note: Students intending to continue for a graduate degree are advised to take (a) Anthropology 162, and (b) at least one course in field training (Group 8). 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. requirements. Students who have not had course 162 and a course in the 180 series (or 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 requirement, see page 147). The students must demonstrate reading proficiency in one foreign language by passing the Language Examination administered by the Graduate Division, preferably in French, German or Russian.

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 library problem 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 148. 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 distributions. 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 or Russian 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.

The Staff

2A-2B. Introduction to Cultural and Social Anthropology.

Lecture, three hours; discussion section, one hour. Course 2A is prerequisite to course 2B. The nature of culture and society. Concepts and theories for the analysis and understanding of both. Survey of topics such as prehistory and culture growth, cultural ecology, social organization, religion, language, art.

The Staff

3. Introduction to Archeology: Prehistory and Culture Growth.

Development of archeology as an anthropological study; objectives and methods of modern archeology;

important archeological discoveries throughout the world; contributions of archeology toward understanding the development of human culture.

Mr. Hill

11. The Evolution of Man.

Not open for credit to students who have had Anthropology 1A-1B. 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

12. Anthropology and the Modern World.

Lecture, three hours; discussion section, one hour. Prerequisite: two quarter courses in social sciences other than anthropology. 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. Case studies will be examined.

Mr. Oswalt

80A-80B. Research Strategy and Techniques in Anthropology.

Lecture, three hours; discussion, one hour. Course 80A is prerequisite to 80B. 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.

Mr. Newman

Upper Division Courses

Courses 1A-1B, 2A-2B, 12 or upper division standing are prerequisite to all upper division courses, except as otherwise stated.

GROUP I

102. World Ethnography.

Survey of principal culture types and their distribution; discussion of ethnological problems.

Mr. Oswalt

Area Courses. Prerequisite: courses 2A-2B, 12 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. Hockings
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.

Mr. Beals

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.

Mr. Beals

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 political relations of political to other institutions of society.

Mr. Smith

125. Comparative Society.

Prerequisite: course 2A-2B, 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. Binford

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 146) 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.

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.

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. Edgerton

123. Culture and Personality.

Theories of the relations of variations in personality to culture and group life in primitive and modern societies and the influence of social role in behavior. 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: course 2A-2B or 12. 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. 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.

GROUP IV**130A-130B. Origins of Old World Civilization.**

Prerequisite: course 2A-2B, 3 or 12. 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: course 2A-2B, 3 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 2A-2B, 3, or 12 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: course 2A-2B, 3, or 12 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. Nicholson

134. Ancient Civilizations of Andean South America.

Prerequisite: course 2A-2B, 3, or 12 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: course 2A-2B, 3, or 12 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 3 and 80. 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. (½ course).

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.

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.**

The study of language as an aspect of culture; the relation of habitual thought and behavior to language; the problem of meaning.

Miss Black

***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 Linguistics 117.) Prerequisite: reading knowledge of Spanish. The Nahuatl (Aztec) language and historical sources published in Nahuatl.

Mr. Bright

* Graduate courses in linguistics (see page 314) 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.

118A-118B-118C. Quechua.

(Same as Linguistics 118A-118B-118C.) Prerequisite: course 118A prerequisite to 118B; course 118B prerequisite 118C. The language of the Incas and its present day dialects, as spoken in Andean South America.

Miss Lastra

GROUP VII**161. Social Anthropology.**

Prerequisite: course 2A-2B or 12 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. Rodgers

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

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.

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 Mathiot

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. 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.

Intensive examination of current theoretical views; research methods; modern form of analysis.

Mr. Moerman

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.

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

230. Analytical Methods in Archeological Studies.

Mr. Hill

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

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

253A-253B. 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. 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.
Mr. Newman

262A-262B. 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.
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

266A-266B. Culture and Personality.

Mr. Robbins

267. Culture Change.

Prerequisite: course 165 or consent of the instructor.
Mr. Moerman

268A-268B. European Archeology.

(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.

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

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

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.

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. (¼ to 1½ 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. (¼ 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-118B-118C. Primitive Art.

119. Pre-Columbian Art.

220. Primitive Art.

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.

Music 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).*

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. Reps, M.A., *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.*

E. Maurice Bloch, Ph.D., *Associate Professor of Art and Curator of Prints.*

Jack B. Carter, M.A., *Associate Professor of Art.*

Elliot J. Elgart, M.F.A., *Associate Professor of Art.*

J. Bernard Kester, M.A., *Associate Professor of Art.*

Lee Mullican, *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 Fine Arts.*

† Absent on leave, 1967-1968.

Melvin Best, B.S., *Assistant Professor of Art.*
 Lois Boyce, M.F.A., *Assistant Professor of Art.*
 †Raymond B. Brown, M.A., *Assistant Professor of Art.*
 Hans Brummer, Ph.D., *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.*
 David Gordon, B.Arch., *Assistant Professor of Art.*
 Robert F. Heinecken, M.A., *Assistant Professor of Art.*
 Arthur M. Levine, M.F.A., *Assistant Professor of Art.*
 Alice E. M'Closkey, M.A., *Assistant Professor of Art.*
 John McCracken, B.F.A., *Assistant Professor of Art in Residence.*
 John Neuhart, *Assistant Professor of Art in Residence.*
 Carlo Pedretti, M.A., *Assistant Professor of Art.*
 Madeleine Boyce Sunkees, B.E., *Assistant Professor of Art.*
 Edward H. Traynor, M.A., *Assistant Professor of Art.*
 David Workman, B.A., *Assistant Professor of Art in Residence.*



Ralph C. Altman, *Lecturer in Art.*
 Warren C. Carter, A.B., *Lecturer in Art.*
 Frank A. Hummelbaugh, B.A., *Associate in Art.*
 Eugene Kleinbauer, M.A., *Acting Assistant Professor of Art.*
 Robert Landman, M.A., *Lecturer in Art.*
 ———, *Lecturer in Art.*
 ———, *Lecturer in Art.*
 ———, *Associate in Art.*

All students majoring in art are required to have each quarter's program approved with 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 from courses 100 to 123, Classics 151A, B, C, Anthropology 127, Oriental Languages 170A, B, Philosophy 136, three courses of art electives. Other related courses in anthropology, classics, literature, foreign languages, history, philosophy, music and theater arts are recommended as non-major electives for the degree.

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, B, C; one course selected from 162 to 165 or 182, one course selected from courses 171 to 175, one course selected from courses 152 to 157; one course from 190, 193 or 195; four courses selected from courses 100 to 123 and six courses in art electives. (Theater Arts 181A may be substituted for an art elective course.)

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.

† Absent on leave, 1967-1968.

Requirements for the Master's Degree

For the general University requirements, see page 146. 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, ceramic, or metal design, 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 ad-

vanced 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 148), 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 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 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, Mr. Landman

10B. Drawing.

Studio, eight hours; six hours arranged. Prerequisite: course 10A. Beginning course in figure drawing.
Mr. Landman

20A. Painting.

Studio, eight hours; six hours arranged. Prerequisite: courses 10A and 10B. Beginning course in painting.
Mr. Biller

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. Gordon

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.
Mrs. Boyce, Mr. Choate

Related Courses in Other Departments**Integrated Arts 1A-1B-1C. Man's Creative Experience in the Arts.****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.
Miss Downey

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

102A. Egyptian Hieroglyphs and Epigraphy.

(Formerly numbered 110H-110J.) Lecture, three hours; quiz, one hour. Hieroglyphs and epigraphy taught in close correlation with inscribed monuments.
Mr. Badawy

102B. Egyptian Hieroglyphs and Epigraphy.

(Formerly numbered 110H-110J.) Lecture, three hours; quiz, one hour. Prerequisite: course 102A. Continuation of course 102A.
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

104A. Art of the Ancient Near East.

(Formerly numbered 104.) Lecture, three hours; quiz, one hour. Art and architecture of Egypt and Mesopotamia.
Mr. Badawy

105A. Early Christian and Byzantine Art.

(Formerly numbered 111E.) Lecture, three hours; quiz, one hour. Architecture, painting, sculpture, and minor arts of the early Christian period in the Near East to the eighth century A.D. 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. Werckmeister

105C. Romanesque Art.

(Formerly numbered 112B.) Lecture, three hours; quiz, one hour. Art and architecture of Western Europe in the 11th and 12 centuries.
Mr. Kleinbauer, 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

108. Northern Renaissance Art.

(Formerly numbered 114.) Lecture, three hours; quiz, one hour.
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.

110A. Art of the 19th and 20th Centuries.

Lecture, three hours; quiz, one hour. Art and architecture from 1789 to the present.

Mr. Wight

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.

118A. Primitive Art.

(Formerly numbered 110A-110C.) Lecture, three hours; quiz, one hour. The arts of Africa, Australia, the Pacific Islands, and the American Indians after the Conquest.

Mr. Altman

118B. Primitive Art.

(Formerly numbered 110A-110C.) Lecture, three hours; quiz, one hour. Prerequisite: course 118A. Continuation of course 118A.

Mr. Altman

118C. Primitive Art.

(Formerly numbered 110A-110C.) Lecture, three hours; quiz, one hour. Prerequisite: course 118B. Continuation of course 118B.

Mr. Altman

119. Pre-Columbian Art.

(Formerly numbered 110B.) Lecture, three hours; quiz, one hour. The prehistoric arts of the Americas.

Mr. Altman

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

123A. Theory and Criticism of Art.

(Formerly numbered 101.) Lecture, three hours; quiz, one hour. 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; quiz, one hour. Prerequisite: course 123A. Continuation of course 123A.

Mr. Longman

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.

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. Comprehensive Design.

Studio, eight hours; five hours arranged. Prerequisite: course 30A. Abstract structuring in design.

Mrs. Boyce, Mr. Choate

150B. Comprehensive Design.

Studio, eight hours; five hours arranged. Prerequisite: course 150A. Forms for process: fundamentals of modulation, modification, and variation.

150C. Comprehensive Design.

Studio, eight hours; five hours arranged. Prerequisite: course 150A. Design in terms of materials of construction.

Mr. Choate, Mr. Gordon

152. Design in Letter Forms.

(Numbered 155 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisite: courses 150A-150B-150C. Exploration of contemporary design uses of letter and number forms with reference to their historical development from calligraphic and typographic sources.

Mr. Neuhart

153. Graphic Design.

(Numbered 152 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum three courses. Experimental design in two dimensions, including processes of pictorial reproduction.

Mr. Jennings

157. Illustration.

Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Development of pictorial imagination and technical resources in the depiction of specified subject matter.

Mr. Jennings

162. Perspective and Rendering.

(Numbered 167 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C.

Mr. Best

163. Industrial Design.

(Numbered 160 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum three courses. After a first registration in this course, the student should have college physics and engineering drawing or take courses in these subjects concurrently with 163. Design of objects for mass production which meet the requirements of aesthetic appeal, social need, and practical function.

Mr. Diffrient

165. Studies in Industrial Design.

(Formerly numbered 165A-165B.) Studio, eight hours; five hours arranged. Prerequisite: courses 150A-150B-150C. Maximum two courses. Studies in three dimensions using common materials such as clay, paper, wood, etc., as sketch media for representation of design concepts. Graphic communication; analysis of production methods and characteristics of materials.

Mr. Best

171. Theory of Environmental Design.

(Numbered 173 in 1966-67.) Pro-seminar, four hours. Study of the fundamental concepts of architectural design.

Mr. Choate

172. Methods of Environmental Designing and Planning.

(Numbered 175 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Projects that teach the student to express concepts in the process of designing objects related to shelter.

Mr. Gordon

173. Visual Presentation.

(Numbered 171 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Analysis of artifacts and natural form and phenomena via drawing. Expression of conceptual forms via graphics using vocabulary given through analysis.

Mrs. Boyce, Mr. Choate

174. Concepts of Landscape Environment.

(Numbered 177 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C, Botany 12 and/or consent of the instructor. Studio projects in the use of plant materials in landscape design, with particular emphasis on visual and ecological considerations.

175. Environmental Design.

(Numbered 170 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum three courses. The design of the environment man inhabits, satisfying the requirements of use and beauty in original solutions of group and individual problems.

Mrs. Fetty in charge

181. History of Costume. (½ course)

(Numbered 124 in 1966-67.) Lecture, two hours. History of Western and Oriental costume.

Mrs. M'Closkey

182. Costume Design.

(Numbered 180 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum three courses. Studies dealing with the historic, contemporary, and projected image of man as expressed through costume.

Mrs. M'Closkey

190. Ceramics.

Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum three courses.

Miss Andreson, Mr. Traynor

192. History of Decorative Arts. (½ course)

(Numbered 125 in 1966-67.) Lecture, two hours. History of interior design, furniture, and objects of utility.

Mrs. Sunkees

193. Materials of Design: Fiber.

(Formerly numbered 187A-187B.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum two courses. Design of printed and woven textiles.

Mr. Kester, Mrs. Sunkees

195. Materials of Design: Metal.

Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Maximum two courses. A laboratory exploration of the basic properties of metals and their aesthetic and functional implication for the designer.

Mr. W. Carter

196. Three Dimensional Design.

(Numbered 197 in 1966-67.) Studio, eight hours; five hours arranged. Prerequisites: courses 150A-150B-150C. Studio projects in advanced three dimensional design.

Mr. Gordon

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.

The Staff

Graduate Courses

Prerequisite for all courses: consent of the instructor. All courses may be repeated for credit upon recommendation of adviser.

201. Bibliography and Research Methods.

Seminar, two hours.

Mr. Werckmeister, Mr. Kleinbauer

206. Studies in Drawings.

Seminar, two hours. Mr. Bloch, Mr. Rothlisberger

210. Egyptian Art.

Seminar, two hours.

Mr. Badawy

220. Primitive Art.

(Formerly numbered 250.) Seminar, two hours.

Mr. Altman

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.

253. Modern Art.

(Formerly numbered 258.) Seminar, two hours.

Mr. Wight

255. American Art.

Seminar, two hours.

Mr. Bloch

260. Indian Art.

Seminar, two hours.

Mr. Davidson

261. Chinese Art.

Seminar, two hours.

Mr. Davidson

262. Japanese Art.

Seminar, two hours.

263. 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. Elgart

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. Difrient

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. M'Closkey

284. Graduate Ceramics. (½ to 2 courses)

Hours to be arranged.

Miss Andreson, Mr. Traynor

285. Graduate Design and Structure: Metal.

(½ to 2 courses)

(Formerly numbered 285A.) Hours to be arranged.
Mr. W. Carter**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**403. Restoration, Preservation and Conservation.**Prerequisite: B.A. in Art History and course 201.
The Staff

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, 8105 Mathematical Sciences Building)

Lawrence H. Aller, Ph.D., *Professor of Astronomy (Chairman of the Department)*.Samuel Herrick, Ph.D., *Professor of Astronomy and Engineering*.Daniel M. Popper, Ph.D., *Professor of Astronomy*.George O. Abell, Ph.D., *Associate Professor of Astronomy*.Robert D. Chapman, Ph.D., *Assistant 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: a reading knowledge of French, German, and/or Russian.

** Member of the Institute of Geophysics and Planetary Physics.

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: 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 146. 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 148. 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 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.

Lower Division Courses**Physical Sciences 3A. Astronomy.**

(Formerly numbered Astronomy 1.) See Physical Sciences, page 387.

2. Practice in Observing. (1/2 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 elementary 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-103B-103C. Intermediate 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. Course 103A is prerequisite to course 103B; course 103C may be taken with either 101 or 103A-103B as prerequisite. Thus a nonastronomy major may take courses 101 and 103C. Course 103A-103B: spherical astronomy, celestial mechanics, binary stars, planets and the interplanetary medium, astronomical optics, photometry, fundamental properties of stars. Course 103C: distribution of stars in space, the stellar population, star systems, our galaxy, extragalactic systems.

The Staff**117A-117B-117C. Introduction to Astrophysics.**

Meets three hours per week. Prerequisites: senior standing in astronomy or physics, or consent of the instructor. The physics of stars, interstellar matter and stellar systems.

The Staff**199. Special Studies. (1/2 or 1 course)**

Prerequisite: senior standing in astronomy or physics, with an outstanding record and consent of the instructor. May be repeated for credit, but not more than 12 units may be applied toward the bachelor's degree.

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.

Mr. Aller, Mr. Chapman

***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

250. Seminar on Current Astronomical Research.

(1/2 course)

The Staff

281. 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.) Nucleosynthesis; hypotheses of stellar formation:

gravitational and thermal instabilities in a dust cloud, hydromagnetic effects, Helmholtz contraction, evolution of luminosity and temperature, mass loss; planetary formation: instabilities in the solar nebula, turbulence, magnetic fields, condensation mechanisms, loss of gases; origin of satellites; evidence from the dynamics of the solar system and its apparent evolution; evidence from solar spectroscopy and geochemistry; evidence from the chemistry and physics of meteorites.

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. (1/2 to 2 courses)

The Staff

596L. Advanced Study and Research at the

Lick Observatory. (1/2 to 3 courses)

Intended for graduate students who require observational 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. Astrodynamics and Rocket Navigation.

160B. The Determination of Orbits.

260A-260B. Celestial Mechanics.

260C. Nongravitational Astrodynamics.

261A. Advanced Orbit Theory.

Meteorology 228A-228B. Theory of Radiation Transfer in Planetary Atmospheres.

244. Solar and Geomagnetic Influences.

Planetary and Space Science 180A-180B-180C. Introduction to Planetary Physics.

220A-220B-220C. Gravity and Geodynamics.

225A-225B. Physics and Chemistry of Planetary Interiors.

228A-228B-228C. Magnetic Fields of the Earth and Planets.

260A-260B. Physics of Low Density Plasmas in the Solar System.

262A-262B. Particles and Fields in Outer Space.

* Not to be given, 1967-1968.

■ 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 (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.*

William R. Romig, 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.*

Eli E. Sercarz, Ph.D., *Assistant Professor of Bacteriology.*



Wilbur T. Ebersold, Ph.D., *Associate Professor of Botany.*

Dan S. Ray, Ph.D., *Assistant Professor of Zoology.*

Richard W. Siegel, Ph.D., *Associate 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 152, or 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 346). 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)

6. 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 136. 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 100A; 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: course 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. Proseminar. (½ course)

Discussion, two hours. Prerequisite: senior standing 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. Prerequisite: course 107. Gene structure (position effects, pseudo-allelism, fine structure); recombination; protein synthesis (the Hoagland-Crick System); coding (chemical and genetic approaches) and the molecular basis of mutation.

Mr. Krieg, Mr. Siegel

203. Regulatory Genetics.

(Same as Botany 203 and Zoology 203.) Lecture and discussion, three hours. Prerequisite: course 107. Biochemical and developmental circuitry; the operon; feed-back inhibition; nucleo-cytoplasmic relations; temporal sequences in gene action; genetic control of nuclear and cytoplasmic differentiation.

Mr. Romig, Mr. Siegel

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 mechanisms 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)

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. 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 180), in the Division of Biochemistry, Department of Chemistry

(see page 202), and in the Department of Botanical Sciences (see page 185). 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 Nuclear Medicine and Professor of Biological Chemistry.*

David R. Howton, Ph.D., *Professor of Biophysics and Nuclear Medicine 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 Nuclear Medicine 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).*

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.*

Wendell H. Griffith, Ph.D., *Emeritus Professor of Biological Chemistry, of Chemistry and of Public Health.*

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.*

Richard F. Riley, Ph.D., *Associate Professor of Radiology and 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 and Nuclear Medicine in Residence and Assistant Professor of Biological Chemistry in Residence.*

Bruce D. Howard, Ph.D., *Assistant Professor of Biological Chemistry.*

Francis S. Markland, *Assistant Professor of Biological Chemistry in Residence.*

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 146; for the Ph.D., page 148 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 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.

Requirements for the M.S. degree

1. General University Requirements, see page 146.

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 148.

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 and 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 113B-113C 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. Snoke

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-262B-262C. 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

263. Cellular Metabolism.

(Formerly numbered 246. Same as Chemistry 263.) Lecture or recitation, four hours. Prerequisites: Chemistry 153 or Biological Chemistry 101B and Chemistry 113B or equivalent. Patterns of biological degradation and synthesis; metabolic interrelationships and control; energetics of metabolism; protein biosynthesis and molecular genetics. The Staff

264A-264B. Regulation of Cell Metabolism.

(½ 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. (1 to 2 courses)

Preparation of research data and writing Ph.D. dissertation. Prerequisite: consent of graduate adviser. The Staff

BIOLOGY

(See also Bacteriology, Botany, and Zoology)

Lower Division Courses

1A-1B-1C. Introductory Biology.

Lecture, three hours; laboratory, three hours. Prerequisite: Chemistry 1A-1B-1C. Offered primarily for majors in bacteriology, botany, zoology, and other sciences, as well as premedical and predoctoral students. The general principles of biology. The Staff (F-W-Sp)

2A-2B. Principles of Biology.

Lecture, three hours; demonstration, 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 (F-W-Sp)

21. Field Biology.

(Formerly numbered Biology 12.) Lecture, three hours; required field trips. Prerequisite: Biology 2A-2B. An introduction to the natural history and ecology, interrelationships, and classification of the common animals and plants, with emphasis on western North America. Mr. Norris (W)

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 2A-2B in fulfillment of two quarters of the life sciences re-

quirements 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 (Sp)

BIOPHYSICS

(Department Office, B1-153 Health Sciences Center)

Isaac Harary, Ph.D., *Professor of Biophysics and of Biological Chemistry.*

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).*

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.*

Mary A. B. Brazier, D.Sc., *Professor of Anatomy, of Biophysics, and of Physiology in Residence.*

Kathryn F. Fink, Ph.D., *Professor of Biophysics in Residence.*

David R. Howton, Ph.D., *Professor of Biophysics and of Biological Chemistry in Residence.*

Esther F. Hays, M.D., *Associate Professor of Biophysics and of Medicine in Residence.*

Norman S. MacDonald, Ph.D., *Associate Professor of Biophysics and of Radiology in Residence.*

Ralph E. Nusbaum, Ph.D., *Associate Professor of Biophysics in Residence.*

Armand J. Fulco, Ph.D., *Assistant Professor of Biophysics and of Biological Chemistry in Residence.*

John C. Kennady, M.D., *Assistant Professor of Surgery (Neurosurgery) and of Biophysics 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 stu-

dent 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. For the general requirements for the M.S. degree, see pages 146-148. A foreign language is not required for the master's degree. The general University requirements for the Ph.D. degree are given on pages 148-151. 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. 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. The Staff

199. 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. Kolin

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. The Staff

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. The Staff

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

† Given alternate years only. To be given, 1967-1968.

‡ Given alternate years only. Not to be given, 1967-1968.

260. Seminar on the Physics of Viruses. (¼ 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. Hennessy

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)

Prerequisite: Successful completion of oral and written qualifying examinations. 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. Hammer, Ph.D., *Professor of Botany.*

George G. 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.*

Harold A. Mooney, Ph.D., *Associate Professor of Botany.*

Alfred G. Diboll, Ph.D., *Assistant Professor of Botany.*

⁵Park S. Nobel, Ph.D., *Assistant Professor of Molecular Biology.*

◇

Albert A. Barber, Ph.D., *Associate Professor of Zoology.*

Thomas W. James, Ph.D., *Associate Professor of Zoology.*

David R. Krieg, Ph.D., *Associate Professor of Bacteriology.*

Blaine H. Levedahl, Ph.D., *Associate Professor of Zoology.*

William R. Romig, Ph.D., *Associate Professor of Bacteriology.*

Otto H. Scherbaum, Ph.D., *Associate Professor of Zoology.*

Richard W. Siegel, Ph.D., *Associate Professor of Zoology.*

Vernon T. Stoutemyer, Ph.D., *Professor of Ornamental Horticulture.*

⁵ Absent on leave, fall quarter, 1967-1968.

Preparation for the Major

Biology 1A-1B-1C, Chemistry 1A-1B-1C, 4A-4B-4C, 6A-6B-6C, Physics 1A, 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 Department grants advanced degrees with specialization in areas of anatomy, morphology, ecology, systematics, genetics, evolution, paleobotany, plant physiology, plant biochemistry, and soils.

Requirements for the Master's Degree

General requirements are given on page 146. 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 in two 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 2A-2B 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 2A-2B, 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.

(2 courses)

(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. The evolution and development of plant form; a comparison of vegetative and reproductive systems among major plant groups. **Mr. Diboll in charge**

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. Diboll 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**

* Not to be given, 1967-1968.

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. Diboll

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

191. Special Studies in Plant Structure. (½ course)

Prerequisite: senior standing and consent of the instructor. Mr. Diboll, Mr. Schroeder

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. Prerequisite: course 107. Gene structure (position effect, pseudo-allelism, fine structure); recombination; protein synthesis (the Hoagland-Crick System); chemical and genetic approaches to coding, and the molecular basis of function. Mr. Carlson, Mr. Krieg

203. Regulatory Genetics.

(Formerly numbered 223. Same as Microbiology 203 and Zoology 203.) Lecture, three hours; discussion, one hour. Prerequisite: course 107. Biochemical and developmental circuitry; the operon; feedback inhibition; nucleocytoplasmic reaction; temporal sequences in gene action; genetic control of nuclear and cytoplasmic differentiation and patterns. Mr. Romig, Mr. Siegel

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. Carlson, 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)

Ralph M. Barnes, Ph.D., *Professor of Operations Management and Engineering.*George W. Brown, Ph.D., *Professor of Business Administration and Engineering.*William F. Brown, Ph.D., *Professor of Marketing.*Elwood S. Buffa, Ph.D., *Professor of Operations Management.*Joseph D. Carrabino, Ph.D., *Professor of Management Theory.*A. B. Carson, Ph.D., C.P.A., *Professor of Accounting.*Fred E. Case, D.B.A., *Professor of Urban Land Economics.*Ralph Cassady, Jr., Ph.D., *Professor of Marketing.*Louis E. Davis, M.S., *Professor of Operations Management (Acting Vice-Chairman—Operations Management and Quantitative Methods).*Benjamin Graham, B.S., *Professor of Business Administration in Residence.*Leo Grebler, Ph.D., *Professor of Urban Land Economics.*James R. Jackson, Ph.D., *Professor of Business Administration (Chairman of the Department).*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 (Vice Chairman—Accounting and Business Law).*Harold Koontz, Ph.D., *Mead Johnson Professor of Management.*Wayne L. McNaughton, Ph.D., *Professor of Business Administration.*Frederic Meyers, Ph.D., *Professor of Industrial Relations.*Cyril J. O'Donnell, Ph.D., *Professor of Business Organization and Policy.*Irving Pfeffer, Ph.D., *Professor of Insurance.*George W. Robbins, M.B.A., *Professor of Marketing.*Harry Simons, M.A., C.P.A., *Professor of Accounting.*R. Clay Sprowls, Ph.D., *Professor of Business Statistics.*George A. Steiner, Ph.D., Litt. B., *Professor of Business Administration.*Robert Tannenbaum, Ph.D., *Professor of Behavioral Science.*Eric L. Trist, M.A., *Professor of Management Theory.*J. Fred Weston, Ph.D., *Professor of Finance and Business Economics (Vice-Chairman—Finance, Insurance, Urban Land Economics and Business Economics).*Robert M. Williams, Ph.D., *Professor of Business Economics and Statistics.*John C. Clendenin, Ph.D., *Emeritus Professor of Finance.*

- Ira N. Frisbee, M.B.A., C.P.A., *Emeritus Professor of Accounting.*
 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.*
 Theodore A. Andersen, Ph.D., *Associate Professor of Business Economics and Finance.*
 Eugene F. Brigham, Ph.D., *Associate Professor of Finance.*
 Leland S. Burns, Ph.D., *Associate Professor of Urban Land Economics.*
 James V. Clark, D.B.A., *Associate Professor of Business Administration (Vice-Chairman—Behavioral Science, Marketing and Business Communications).*
 David K. Eiteman, Ph.D., *Associate Professor of Finance.*
 John Hutchinson, Ph.D., *Associate Professor of Industrial Relations.*
 Harold H. Kassarjian, 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.*
 Alfred Nicols, Ph.D., *Associate Professor of Business Economics.*
 Frank E. Norton, Ph.D., *Associate Professor of Business Economics.*
 Barry M. Richman, Ph.D., *Associate Professor of Management and International Business (Vice-Chairman—Management Theory, Transportation and Industrial Relations).*
 John P. Shelton, Ph.D., *Associate Professor of Finance.*
 William J. Abernathy, D.B.A., *Assistant Professor of Operations Management.*
 Robert B. Andrews, Ph.D., *Assistant Professor of Operations Management.*
 H. Robert Bartell, Ph.D., *Assistant Professor of Finance.*
 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.*
 Walter A. Fogel, Ph.D., *Assistant Professor of Industrial Relations.*
 Arthur M. Geoffrin, Ph.D., *Assistant Professor of Business Administration.*
 Maurice Goudzwaard, Ph.D., *Assistant Professor of Finance.*
 Glenn W. Graves, Ph.D., *Assistant Professor of Business Administration.*
 Robert L. Hagin, Ph.D., *Assistant Professor of Business Administration.*
 Nils H. Hakansson, Ph.D., C.P.A., *Assistant Professor of Business Administration.*
 Alfred E. Hofflander, Jr., Ph.D., *Assistant Professor of Insurance.*
 James N. Holtz, Ph.D., *Assistant Professor of Finance.*
 Michael N. Kawaja, Ph.D., *Assistant Professor of Business Economics.*
 Archie Kleingartner, Ph.D., *Assistant Professor of Industrial Relations.*
 Robert Knapp, Ph.D., *Assistant Professor of Business Economics.*
 Robert H. Mason, Ph.D., *Assistant Professor of Business Administration.*
 Anthony A. Mastor, Ph.D., *Assistant Professor of Operations Management.*
 William H. McWhinney, Ph.D., *Assistant Professor of Organizational Behavior.*
 Frank G. Mittelbach, M.A., *Assistant Professor of Business Administration in Residence.*
 Harold T. Moody, Ph.D., *Assistant Professor of Business Economics.*
 Anant R. Negandhi, Ph.D., *Assistant Professor of Management Theory.*
 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.*

§ Recalled to active service.

M. Ali Raza, D.B.A., *Assistant Professor of Industrial Relations and Business Law.*
 R. Bruce Ricks, Ph.D., *Assistant Professor of Finance.*
 Thomas S. Robertson, Ph.D., *Assistant Professor of Business Administration.*
 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.*
 Jerome D. Wiest, Ph.D., *Assistant Professor of Operations Management.*
 Donald Woods, D.B.A., *Assistant Professor of Finance.*
 Michael Yoshino, Ph.D., *Assistant Professor of Business Administration.*



John W. Buckley, D.B.A., *Acting Associate Professor of Accounting.*
 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.*
 Richard A. Goodman, M.S., *Acting Assistant Professor of Business Administration.*
 Clarence J. Huizenga, M.S., *Lecturer in Business Administration.*
 Joan K. Lasko, Ph.D., *Lecturer in Behavioral Science.*
 S. H. Nerlove, A.M., *Senior Lecturer in Business Economics and Policy.*
 Paul Prasow, Ph.D., *Senior Lecturer in Industrial Relations.*
 Michael Quinn, M.B.A., *Acting Assistant Professor of Business Administration.*
 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. Economics 1 and Economics 2 or their equivalent are prerequisite to course 100.

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 indices 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, 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. C. W. Brown

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. Jessen

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. Jessen

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. Jessen

116A. Statistical Methods: Inference.

Prerequisite: course 115A or graduate status. Statistical decision under uncertainty; statistical decision rules and their evaluation; Bayesian inference; applications to business problems.

Mr. Jessen, Mr. Nelson

116B. Statistical Methods: Analysis.

Prerequisite: course 116A. Analysis of variance; design and analysis of statistical experiments and surveys; multiple regression and correlation, curvilinear regression; analysis of enumeration data; nonparametric methods.

Mr. Jessen

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. Butrey

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. Goudzwaard, Mr. Kawaja, Mr. Smith

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. Shelton

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

PRODUCTION AND 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. W. 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. W. Brown

* Course to be phased out, presumably by 1969.

***169. Marketing Policies. (1 1/2 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. W. 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 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, Mr. Gillies

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, Mr. Gillies

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.

The Staff

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.

Mrs. Lasko, Mr. Massarik, Mr. Peters

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. Yoshino

ADVANCED STUDY IN BUSINESS ADMINISTRATION**199. Special Studies in Business Administration.**

($\frac{1}{4}$ 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, Mr. Knapp

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: course 412 or equivalent. 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. Knapp

205B. Comparative Market Structure and Competition.

Prerequisite: course 202B 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

208. Selected Topics in Business Economics.

Prerequisite: courses 200, 201. Special topics in business economics. Current development in theory or practice in business economics.

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 152A. 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

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. Nelson

211A. Nonlinear Mathematical Programming.

Prerequisite: Mathematics 12B, and either BA 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 216.) Prerequisite: course 116A. 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.

Mr. G. Brown

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.

Mr. G. Brown

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.

Mr. G. Brown

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.

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.

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.

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.

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 course 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

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. Carson

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. Bartell, Mr. Case, Mr. Shelton

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. Bartell, Mr. Brigham

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. Bartell, Mr. Brigham

231A. Business Financial Policies.

(Formerly numbered 232.) Prerequisite: course 130 or 133 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, and individual student reports of financial problems of particular corporations. Mr. Holtz, Mr. Kawaja, Mr. Smith

231B. Business Finance Theory.

(Formerly numbered 231.) Prerequisite: courses 130 and 120, or 120M or 403 and 133 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. Shelton, Mr. Weston

231C. International Business Finance.

Prerequisite: courses 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, Mr. Knapp, Mr. Woods

232A. Investment Analysis.

(Formerly numbered 134.) Prerequisite: courses 120 or 120M or 403, and 133 or 408. 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, Mr. Shelton

232B. Investment Policy.

(Formerly numbered 233.) Prerequisite: courses 120 or 120M or 403, and 133 or 408, or consent of the instructor. Discussion of current problems faced by individual and institutional investors; critical review of special studies made by members of the class on topics relating to investment. Mr. Eiteman, Mr. Ricks, Mr. Shelton

232C. Investment Theory.

Prerequisite: courses 232A and 232B. Review of theoretical literature on investment analysis, valuation, and management. Topics include mathematical techniques for valuation of growth securities, competitive returns on alternative investments, computers in investment decision-making, and functioning of securities markets in the U. S. and abroad. Mr. Eiteman, Mr. Shelton, Mr. Woods

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. Hofflander, Mr. Pfeffer

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. The Staff

OPERATIONS MANAGEMENT**240A-240B. Analysis of Operational Systems.**

Prerequisite: Mathematics 11A-11B-11C, courses 115A, 113A (mathematics through introductory calculus, introductory statistics, and computer programming). Conceptual foundations of operational systems. Analytical methods for relative location and design of facilities and for planning and control of schedules, inventories, man-machine systems and quality. Network, stochastic, optimizing, waiting line and informational models applicable to operational system. Mr. Buffa, Mr. Wiest

240C. Synthesis of Operational Systems.

Examination of the synthesizing processes underlying the creation of operational systems. Special emphasis is given to broad aspects of the problem of organizing elements into a unified entity and to applications of formal methods to this problem. Mr. Andrews, Mr. Mastor

240D. Simulation of Operational Systems.

Prerequisite: course 214C. A study of the techniques and applications of simulation for the analysis and design of operational systems; review of large-scale simulation efforts; production and operations management games. Mr. Nelson, Mr. Wiest

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

243A. Inventory Management.

(Formerly numbered 245A.) Prerequisite: courses 240A-240B or equivalent. Analysis of inventory systems, including continuous, discontinuous, and stochastic demand for perishable and nonperishable products. 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. Wiest

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: course 243A-243B. Design and analysis of models of integrated operational systems. Business games and applications of simulation techniques. Mr. Nelson

244A-244B. Management of Industrial Research.

(Formerly numbered 241A-241B.) It is not necessary to have credit for course 244A before taking course 244B. The managerial problems and policy decisions concerning technological research; budgeting for research; contributions of fundamental, engineering, and market research; management of research and development; research and industrial progress; social aspects of technological change; product diversification and standardization; case studies. The Staff

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. Andrews, Mr. Buffa

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 interna-

tional 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

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.
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

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. W. Brown, Mr. Dalrymple

261B. Marketing Institutions: International.

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: course 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. Jessen, 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. Dalrymple

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. W. 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. W. Brown

266B. Advertising Policy.

Prerequisite: course 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

268. Selected Topics in Marketing.

($\frac{1}{4}$ to $\frac{1}{2}$ 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 knowl-

edge and thought. Specific subjects discussed to be changed each semester depending on the particular interests of the instructor and students. Individual projects and reports. **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 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.
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. 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

281A. Behavior in Organizations.

(Formerly numbered 205.) Prerequisite: courses 180, 404, or consent of the instructor. Interrelations among cultural assumptions about organization, technology, administrative behavior, social structure, productivity, motivation and satisfaction. Conceptual schema, research and theory from the behavioral sciences will be applied to cases and simulations in small task-group, intergroup and total organizational settings.
Mr. Clark, Mr. Trist, Mr. Vaill

281B. Models of Behavior in Organizations.

Prerequisite: consent of the instructor. A systematic view of behavior in modern complex organizations studying, via formal and organic models, the relation between the individual members and the prevailing administrative philosophy, the social and economic environment and the technical realities of operations.
Mr. McWhinney

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. Massarik, Mr. Tannenbaum

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 set-

ting. Concepts and methods will be examined and tested by laboratory and field experiences.

Mr. Tannenbaum, Mr. Vaill

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, Mr. McWhinney

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.
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.
Mr. Koontz, Mr. Richman, Mr. Trist

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.
Mr. Carrabino, Mr. Koontz, Mr. Steiner

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. 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. Negandhi, Mr. Richman

298A. Special Topics in Management Theory.

Prerequisites: 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.

298B. Special Topics in International and Comparative Management.

Prerequisites: 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.

298C. Special Topics in Socio-Technical Systems.

Prerequisites: 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.

298D. Special Topics in Business Administration.

Prerequisites: 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.

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 indi-

vidual behavior. The managerial environment as a field for systematic behavioral science investigation. **The Staff**

405A-405B-405C. Business Communications.

(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 130G.) 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 nonunion 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

596A-596N. Research in Business Administration.

(¼ to 1½ courses)

Prerequisites: consent of Director of Master's Programs or Director of Doctoral Program by special petition. Directed individual study or research.

597. Preparation for Examinations in Business Administration.

Prerequisites: consent of Director of Master's Programs or Doctoral Program by Special petition. Preparation for comprehensive examination for the master's degree or the qualifying examination for the Ph.D. degree.

598. Thesis Research in Business Administration.

Prerequisites: consent of Director of Master's Program by special petition. Research for and preparation of the master's thesis.

599. Dissertation Research in Business Administration.

Prerequisites: consent of Director of Doctoral Program by special petition. Research for and preparation of the doctoral dissertation.

■ BUSINESS EDUCATION

(Department Office, 310 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; (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 or English 10A, 10B, 10C or English 100, 101, 102, 103, 105, 107, 108, 109. 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, 101C, 160; three courses from Economics 107, 130, 150, 170, 180, 190, Business Administration 108A, 109, 113A, 115A or Economics 120, 130, 140; 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 series in major; student teaching: Education 330A, 330B, 330C.

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

596. 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

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.*

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).*

• Robert L. Scott, Ph.D., *Professor of Chemistry.*

Kenneth N. Trueblood, Ph.D., *Professor of Chemistry (Chairman of the Department).*

Saul Winstein, 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.*

Wendell H. Griffith, Ph.D., *Emeritus Professor of Chemistry, of Biological Chemistry and of Public Health.*

† For further information, see Professors Erickson or Wanous.

•• Member of the Institute of Geophysics and Planetary Physics.

- G. Ross Robertson, Ph.D., *Emeritus Professor of Chemistry.*
 Hosmer W. Stone, Ph.D., *Emeritus Professor of Chemistry.*
 *Kyle D. Bayes, Ph.D., *Associate Professor of Chemistry.*
 †Mostafa A. El-Sayed, Ph.D., *Associate Professor of Chemistry.*
 ‡Christopher S. Foote, Ph.D., *Associate Professor of Chemistry.*
 *Paul Haake, Ph.D., *Associate Professor of Chemistry.*
 Herbert D. Kaesz, Ph.D., *Associate Professor of Chemistry.*
 Verne N. Schumaker, Ph.D., *Associate Professor of Chemistry.*
 Roberts A. Smith, Ph.D., *Associate Professor of Chemistry.*
 Charles A. West, Ph.D., *Associate Professor of Chemistry.*
 Alan L. Balch, Ph.D., *Assistant Professor of Chemistry.*
 Mario E. Baur, 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 L. Sudmeier, *Assistant Professor of Chemistry.*
 John T. Wasson, Ph.D., *Assistant Professor of Chemistry.*
 ———, *Assistant Professor of Chemistry.*



**George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*

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.

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.

† Absent on leave, 1967-1968.

* In residence spring quarter only, 1967-1968.

* Absent on leave, fall quarter, 1967-1968.

** Member of the Institute of Geophysics and Planetary Physics.

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 2110, 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 146. The Department of Chemistry makes use of the Thesis Plan. The General University requirements for the Ph.D. degree are given on page 148. 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 387.

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 about 10 days before instruction begins. Enrollment priority will be given 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 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.

The Staff in Freshman Chemistry

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.

The Staff in Freshman Chemistry

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.

The Staff in Freshman Chemistry

4A. Elementary Organic and Biochemistry.

(½ course)

Prerequisite: course 1C with the grade C or higher, or consent of the instructor. Students in course 4A may be required to enroll concurrently in course 6A. Organic structure; the functional and hydrocarbon groups; compounds with saturated functional groups; compounds with unsaturated functional groups; reactions.

Mr. Cram, Mr. Geissman, Mr. Jacobs

4B. Elementary Organic and Biochemistry.

(½ course)

Prerequisite: courses 4A and 6A with the grade C or higher, or consent of the instructor. Students in course 4B may be required to enroll concurrently in course 6B. Stereochemistry; structure and reactivity; substitution, addition and elimination reactions; synthesis; special topics.

Mr. Cram, Mr. Jacobs

4C. Elementary Organic and Biochemistry.

(½ course)

Prerequisite: courses 4B and 6B with the grade C or higher, or consent of the instructor. Students in course 4C may be required to enroll concurrently in course 6C. Enzymes, amino acids, peptides and proteins; nucleic acids and nucleotides; RNA, DNA and genetic code; metabolism; glycolysis and citric acid cycle; carbon transformation.

Mr. Smith

5. Quantitative Analysis. (½ course)

Lecture, two hours; laboratory, four hours. Prerequisite: one year of college chemistry. 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.

The Staff in Analytical Chemistry

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. Students in course 6A may be required to enroll concurrently in course 4A. Elementary knowledge of calculus will be helpful. Phase equilibria; chromatography; spectra; structure determination.

Mr. Foote, Mr. Lightner, Mr. Sudmeier

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 in course 6B may be required to enroll concurrently in course 4B. Polarimetry; mass spectrometry; isotopic labeling; electrochemistry; acidity; chelates; reaction kinetics.

Mr. Farrington, Mr. Pecsok

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

in course 6C may be required to enroll concurrently in course 4C. Enzyme kinetics; radioisotope applications; macromolecules; ion exchange; viscosity.

Mr. Fahrney, Mr. Sudmeier

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 interest 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.

Mr. Wasson

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. Baur, Mr. El-Sayed, 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. Garner, Mr. Knobler, 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. Deutsche, 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. Baur, Mr. El-Sayed, 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. Garner, Mr. Knobler, 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. Deutsche, 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). Lecture: techniques of physical measurement, error analysis and statistics, special topics. Laboratory: ultraviolet, infrared, Raman, electron spin resonance, charge transfer spectroscopy; dipole moment, magnetic sus-

* Not to be given, 1967-1968.

ceptibility; light scattering, viscosity of polymers; calorimetry; gas thermometer; thermal conductivity; conductance; phase diagrams; kinetics; effusion.

The Staff in Physical Chemistry

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.

The Staff in Physical Chemistry

115A. Quantum Chemistry.

Lecture and quiz, four hours. Prerequisite: course 113A. Classical mechanics and vectors; postulates of quantum mechanics; square well, harmonic oscillator, rotor and hydrogen atom problems; approximation techniques; chemical bonding and spectroscopy.

Mr. Deutsche, 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. Deutsche, Mr. Kivelson

123A. Classical and Statistical Thermodynamics.

Lecture and quiz, four hours. Prerequisite: course 113C. 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. Baur, Mr. Scott

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. Baur, Mr. Scott

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 or organic reactions and synthesis; techniques of product isolation.

Mr. Geissman, Mr. Haake

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. Geissman, Mr. Haake

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. Haake

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. Haake

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. Foote, Mr. Haake

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, Mr. Winstein

143B. Advanced Organic Chemistry.

Lecture and quiz, three hours. Prerequisite: course 143A. Organic reactions; organic synthesis; naturally-occurring compounds.

Mr. Lightner

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 113B-113C, 133A. Survey of biochemistry, with emphasis on chemical properties associated with biological function.

The Staff in Biochemistry

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.

The Staff in Biochemistry

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. Balch, 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 oxanions; photochemical reactions; electron-transfer and free-radical reactions of inorganic species.

Mr. Garner

° Not to be given, 1967-1968.

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

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.

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. Mr. Baur

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

228A–228F. 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, Mr. Winstein

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, Mr. Winstein

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)

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)

Seminars will be presented by staff, outside speakers, postdoctoral fellows and graduate students. Satisfactory/unsatisfactory grades are used for this course.

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.

The Staff in Biochemistry

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

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.

Mr. Garner, Mr. Libby, Mr. Wasson

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

Individual Study and Research**596A–ZZ. Directed Individual Study or Research.**

(½–2 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. (½–2 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–ZZ. Research for and Preparation of the Master's Thesis. (½–4 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–ZZ. Research for and Preparation of the Doctoral Thesis. (½–4 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; 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; P. Haake, 599PH; 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; 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 Vasil Anastos, Ph.D., *Professor of Byzantine Greek.*

Paul Augustus 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 Hartman Travis, Ph.D., *Professor of Classics (Chairman of the Department).*

Frederick Mason Carey, Ph.D., *Emeritus Professor of Classics.*

Paul Friedlander, Ph.D., *Emeritus Professor of Latin and Greek.*

Herbert Benno Hoffleit, Ph.D., *Associate Professor of Classics.*

John Norman Henry Austin, Ph.D., *Assistant Professor of Classics.*

Leonardo Tarán, Ph.D., *Assistant Professor of Classics.*

———, *Assistant Professor of Mediaeval Latin.*

———, *Assistant Professor of Classics.*

———, *Assistant Professor of Classics.*



Helen Florence Caldwell, M.A., *Senior Lecturer in Classics.*

Evelyn Venable Mohr, M.A., *Lecturer in Classics.*

Barbara Elizabeth Smith, M.A., *Lecturer in 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).*

Raimo A. Anttila, Ph.D., *Assistant Professor of Indo-European Studies.*

Hartmut E. F. Scharfe, Ph.D., *Assistant Professor of Indo-European Studies.*

———, *Assistant Professor of Indo-European Studies (Iranian).*



Marianna D. Birnbaum, M.A., *Lecturer in Finno-Ugric Studies.*

Gyula Décsy, Ph.D., *Visiting Associate Professor of Finno-Ugric Studies.*

Inkeri A. Rank, M.A., *Lecturer in Finno-Ugric Studies.*

Juozas Tininis, M.A., *Lecturer in Indo-European Studies.*

———, *Visiting Associate Professor of Finno-Ugric Studies.*

———, *Visiting Professor of Indo-European Studies (Archaeology).*

———, *Visiting Professor of Indo-European Studies (Celtic).*

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: 12 language courses, six in Greek and six 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 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 departmental graduate advisers.

General University Requirements for the Master's Degree

See page 146. 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 148-150.

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 the *Rhetoric*. Mr. Tarán

151A. Classical Archaeology: Graeco-Roman Architecture.

A general introduction to the study of Aegean, Greek, and Roman architecture. Mr. Clement

151B. Classical Archaeology: Graeco-Roman Sculpture.

A general introduction to the study of Aegean, Greek, and Roman sculpture. Mr. Clement

151C. Classical Archaeology: Graeco-Roman Painting.

A general introduction to the study of Aegean, Greek, and Roman painting. Mr. Clement

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.

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

Graduate Courses

251A. Seminar in Classical Archaeology.

The Aegean Bronze Age. Mr. Clement

251B. Seminar in Classical Archaeology.

Graeco-Roman architecture. Mr. Clement

251C. Seminar in Classical Archaeology.

Graeco-Roman sculpture. Mr. Clement

251D. Seminar in Classical Archaeology.

Graeco-Roman painting. Mr. Clement

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

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

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.

2. Elementary Greek.

Lecture, four hours per week. Prerequisite: course 1.

3. Elementary Greek.

Lecture, four hours per week. Prerequisite: course 2.

4. Selected Prose and Composition.

Prerequisite: course 3. Mr. Tarán

5. Homer: *Odyssey*.

Prerequisite: course 4. Mrs. Mohr

10. Introduction to Mediaeval and Modern Greek.

A study of the forms, syntax, and vocabulary of the mediaeval and modern language. A knowledge of ancient Greek is desirable, but is not a prerequisite.

11. Readings in Mediaeval and Modern Greek.

Prerequisite: course 10. Selected texts in prose and poetry from the 10th century to modern times; emphasis is placed on the demotic language.

12. Advanced Readings in Mediaeval and Modern Greek.

Prerequisite: course 11.

13. Modern Greek Conversation and Composition.

Prerequisite: course 11.

40. The Greek Element in English.

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. Advanced Greek Prose Composition.

(½ course)

(Formerly numbered 165A-165B.) A study of Greek prose style, with exercises in translation from English into Attic Greek. The Staff

101. Homer: *Iliad*.

(Formerly numbered 102.) Mrs. Mohr

102. Lyric Poets.

(Formerly numbered 107.) Selections from Archilochus to Bacchylides. Mr. Hoffleit, Mr. Tarán

103. Aeschylus.

(Formerly numbered 104.) Mr. Hoffleit

104. Sophocles.

(Formerly numbered 104.) Mr. Hoffleit

105. Euripides.

(Formerly numbered 105.) Mrs. Mohr, Mr. Tarán

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. Tarán

121. Plato.

(Formerly numbered 101.) Mr. Tarán

122. Plato: Republic.

(Formerly numbered 106.) Mr. Hoffleit, Mr. Tarán

123. Aristotle: Poetics and Rhetoric.

(Formerly numbered 109.) Mr. Tarán

124. Aristotle: The Ethics.

Prerequisite: three quarters of upper division Greek or consent of the instructor. Selected readings from the *Nicomachean Ethics*. Mr. Tarán

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.

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.

211A-211B. Herodotus.

212A-212B. Thucydides.
(Formerly numbered 203.) Mr. Hoffleit

213. Seminar in Greek Historiography.

221. Seminar in the Presocratic Philosophers.

Studies in the reconstruction of the philosophies of the predecessors of Plato; emphasis is placed on reading and interpretation of texts. Mr. Tarán

222A-222B. Plato.
(Formerly numbered 261.) Mr. Tarán

223A-223B. Aristotle. Mr. Tarán

224. Seminar in Post-Aristotelean Philosophy.
Mr. Tarán

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.) 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.

2. Elementary Latin.
Lecture, four hours per week. Prerequisite: course 1.

3. Elementary Latin.
Lecture, four hours per week. Prerequisite: course 2 or two years of high school Latin.

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.

40. The Latin Element in English.
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. Advanced 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.) Miss Caldwell

103. Lucretius. Mr. Hoffleit, Mr. Tarán

104. Vergil: Georgics.
(Formerly numbered 107.)

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.

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.

132. Founders of the Middle Ages.

(Formerly numbered 122.) Prerequisite: course 131 or consent of the instructor. A survey of the period 300-750, with selected readings of important texts and authors, e.g., Benedict's *Regula Monachorum*, Boethius, Cassiodorus Gregory the Great, Isidore, Bede. The stress is laid on the intellectual and cultural achievements of the age as revealed by the texts.

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.

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. Hoffeit

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.**206. Horace.**

Mr. Austin

211. Seminar in the Roman Historians.

(Formerly numbered 203.) Study of considerable parts of the writings of Sallust, Livy, and Tacitus. Mr. Hoffeit

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. Mr. Tarán

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.

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.

242A-242B. Italic Dialects and Latin Historical Grammar. (½ course each)

(Formerly numbered 225 and same as Indo-European Studies 218A-218B.) 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.**

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.**

(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

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.

251A-251B. Seminar in Ancient History.

Indo-European Studies**Preparation for the Major**

Required: Anthropology 3; 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 148.

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.

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.

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.

(Same as Philosophy 182.) 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. Tininis

171. Intermediate Lithuanian.

Prerequisite: course 170 or equivalent. Grammar and readings. Mr. Tininis

172. Advanced Lithuanian.

Prerequisite: course 171 or equivalent. Readings in Lithuanian texts, with grammatical and stylistic considerations. Mr. Tininis

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. Tininis

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.

190. Elementary Hindi.

(Formerly numbered 163. Same as Oriental Languages 180A.) Introduction to script and grammar, with reading and conversation exercises. Mr. Scharfe in Charge

191. Intermediate Hindi

(Formerly numbered 164. Same as Oriental Languages 180B.) Prerequisite: course 190 or equivalent. Grammar, readings, and practice in the spoken language. Mr. Scharfe in Charge

192. Advanced Hindi.

(Formerly numbered 165.) Prerequisite: course 191 or equivalent. Readings in Hindi texts, with grammatical and stylistic considerations.

Mr. Scharfe in Charge

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. Hoijer

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. 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 grammar, 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

222. Vedic.

Prerequisite: a knowledge of Sanskrit equivalent to course 161, and consent of the instructor. Characteristics of the Vedic dialect and readings in the Rig-Vedic hymns.

Mr. Scharfe

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.

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, Sakian).

232. Indo-Iranian Linguistics.

Prerequisite: course 222 and 230A, or consent of the instructor. Studies in the historical grammars of Old Indic and Old Iranian, with a view to Indo-Iranian and Indo-European reconstruction.

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.

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. Fuhvel

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-139B. Introduction to Finnish Folklore and Mythology.

(Same as Folklore 124A-124B.) 139A deals with the methods and results of Finnish folklore studies and the mythic traditions of the Finns. In 139B emphasis is laid on the material manifestations of Finnish folklore and folk culture, village layout and architecture, technology, arts, crafts, textiles, 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

153. 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

158. 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. Mr. Décsy

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. Mr. Décsy

Related Courses in Other Departments

Anthropology 3. Introduction to Archeology: Prehistory and Culture Growth.

130A-130B. Origins of Old World Civilization.

131A-131B. Old Stone Age Archeology.

138A-138B. The Strategy 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.** History of the English Language.
 211. Readings in Old English Literature.
- German 230.** Survey of Germanic Philology.
 231. Gothic.
 232. Old High German.
 233. Old Saxon.
 245. Germanic Mythology.
 290. Seminar in Germanic Linguistics.

- Linguistics 100.** Introduction to Linguistics.
 120. Linguistic Analysis.
 200A. Phonology I.
 225A. Linguistic Structures: Indo-European.
- Scandinavian 151.** Elementary Old Icelandic.
 152. Intermediate Old Icelandic.
- Semitic (Near Eastern Languages)**
 160A–160B. Introduction to Near Eastern Archaeology.
- Slavic 220A–220B–220C.** Old Church Slavic and Recensions.
 222A–222B–222C. Comparative Slavic Linguistics.
- Urdu (Near Eastern Languages)**
 101A–101B–101C. Elementary Urdu.

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.

Business Administration

Master of Business Administration, Master of Science, and Ph.D. degree programs with specialization in data processing.

Engineering

Master of Science and Ph.D. degree programs with specialization in control systems, communication theory, computer applications, computer languages, and computer systems.

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.

DANCE

(Department Office, 122A 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*.

Shirley Wimmer, M.A., *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.*

John Martin, *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 103.

Preparation for the Major

Dance 35, 36A-36B-36C, 37A-37B-37C, 38 and 70A; Psychology 10, Physical Education 15, 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 13½ courses including Dance 150A-150B-150C, 151A-151B, 152A-152B, 153A-153B-153C, 154, 158A-158B, and 159; Physical Education 111, 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, GRADUATE STUDY AT UCLA, 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 147). 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 Wimmer

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. The Staff

71A-71O. Performance Courses in Ethnic Dance.

(½ course for two quarters)

Students may take a maximum of 12 units in courses 71 and 171: (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; (J) Dance of Mexico; (K) Dance of Philippines; (L) Dance of Scotland; (M) Dance of Spain; (N) Dance of Thailand; (O) 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. **Miss Wimmer**

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). **Miss Wimmer 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. **Miss Wimmer**

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. **Miss Wimmer**

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 and 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-1710. Performance Courses in Ethnic Dance. (½ course for 2 quarters)

Students may take a maximum of 12 units in courses 71 and 171: (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; (J) Dance of Mexico; (K) Dance of Philippines; (L) Dance of Scotland; (M) Dance of Spain; (N) Dance of Thailand; (O) 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

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. (2-4-2)

Prerequisite: course 153C 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

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

251. Dance in Rehabilitation.

Prerequisite: consent of the instructor. Dance in the therapeutic setting.

Miss Hawkins

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.

Miss Wimmer

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.*

⁵George 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.*

Roland N. McKean, 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.*

⁵ Absent on leave, fall quarter, 1967-1968.

† Absent on leave, 1967-1968.

§ Recalled to active service, 1967-1968.

Earl J. Miller, Ph.D., LL.D., *Emeritus Professor of Economics.*

§Dudley F. Pegrum, Ph.D., *Emeritus Professor of Economics.*

John F. Barron, Ph.D., *Associate Professor of Economics.*

†Michael D. Intriligator, 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.*

Joseph M. Burns, Ph.D., *Assistant Professor of Economics.*

Yung-Ping Chen, Ph.D., *Assistant Professor of Economics.*

H. Robert Heller, Ph.D., *Assistant Professor of Economics.*

‡Bruce H. Herrick, Ph.D., *Assistant Professor of Economics.*

J. Clayburn LaForce, Jr., Ph.D., *Assistant Professor of Economics.*

Sam Peltzman, Ph.D., *Assistant Professor of Economics.*

Robert F. Rooney, 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.*



Barry R. Chiswick, M.A., *Acting Assistant Professor of Economics.*

Peter B. Clark, B.A., *Acting Assistant Professor of Economics.*

William Gibson, M.A., *Acting Assistant Professor of Economics.*

Larry J. Kimbell, B.A., *Acting Assistant Professor of Economics.*

Axel Leijonhufvud, M.A., *Lecturer in Economics.*

Eugene L. Loren, M.A., *Acting Assistant Professor of Economics.*

Charles T. Nisbet, M.B.A., *Acting Assistant Professor of Economics.*

Alice John Vandermeulen, Ph.D., *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. Majors who envisage a business career can arrange a plan of study which provides the basic training for such a career and the foundation for graduate work in schools of business administration.

Economics majors wishing also to obtain a business teacher's credential should see "Business Education," page 201.

Upper division programs are worked out for each student in consultation with a departmental adviser.

* 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, 1967-1968.

‡ Absent on leave, fall and winter quarters, 1967-1968.

§ Recalled to active service, 1967-1968.

Preparation for the Major

Required: Economics 1-2; one course in calculus; 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. Upon petition, one or two of the nine courses may be chosen from certain upper division courses in 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 the general University requirements (see page 146), 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. These courses must be distributed as follows: 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 lower or upper division courses offered by the Department of Mathematics with the exception of Mathematics 1. 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 148-150.

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 lower or upper division courses offered by the Department of Mathematics, with the exception of Mathematics 1. 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 may take his written qualifying examinations in general economic theory and in one other field in one quarter and his other two written examinations in the following quarter. 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. Feltzman

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. Clark, Mr. Herrick**

111. Theories of Economic Growth and Development.

(Numbered 109 in 1966-67.) Prerequisite: course 110 or 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. Clark, Mr. Herrick**

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**

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. McKean, 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

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

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

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

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, Mr. Loren

151. Labor, Wages, and the Economy.

Prerequisite: course 150. Changes in real wages. Inflation, unemployment, distribution of income. Manpower planning. Economic security.

Mr. Chiswick, Mr. Loren

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, Mr. Loren

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. 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

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, Mr. Rooney

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.

Mr. Rooney

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 or 190. 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 or 190. 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. (1/2 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-201B-201C. Micro Economic Theory.**

(Formerly numbered 201A-201B.) Prerequisites: course 101A-101B. Mr. Alchian, Mr. Hirshleifer

202A-202B. Income, Employment, and Monetary Theory.

(Formerly numbered 201C and 202.) Prerequisite: course 102. 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.) Prerequisite: courses 201A-201B-201C. Mr. Alchian

205. Fluctuations and Growth: Measurement and Theory.

(Numbered 254A in 1966-67.) Prerequisite: courses 102, 160.

206. Fluctuations and Growth: Analysis of the U. S. Record.

(Numbered 254B in 1966-67.) Prerequisite: course 205.

207. History of Economic Theory.

(Numbered 250 in 1966-67.) Prerequisite: courses 101B, 102. Mr. Allen

211. Economic Growth of Underdeveloped Areas: Theory and Structure.

(Numbered 268A in 1966-67.) Prerequisite: course 111 or 201B. Mr. Clark, Mr. Herrick

212. Economic Growth of Underdeveloped Areas: Models and Policy.

(Numbered 268B in 1966-67.) Prerequisite: course 211. Mr. Clark, Mr. Herrick

213. Selected Problems of Economic Development.

(Numbered 269 in 1966-67.) Mr. Herrick

221. Urban and Regional Economic Analysis I.

(Numbered 220A in 1966-67.) Prerequisite: course 121. Mr. Hirsch

222. Urban and Regional Economic Analysis II.

(Numbered 220B in 1966-67.) Prerequisite: course 221. Mr. Hirsch

231. Public Finance.

(Numbered 261 in 1966-67.) Prerequisite: course 130. Mr. Somers

232. Economics of Government Expenditures.

Prerequisite: course 130. Mr. McKean

245. Mathematical Economics.

(Numbered 243 in 1966-67.) Prerequisite: courses 145, 146. Mr. Intriligator

247. Econometrics I.

(Numbered 242A in 1966-67.) Prerequisite: course 147. Mr. Intriligator

248. Econometrics II.

(Numbered 242B in 1966-67.) Prerequisite: course 247. Mr. Intriligator

249. Econometrics III.

(Numbered 242C in 1966-67.) Prerequisite: course 248. Mr. Intriligator

251. Labor Economics I. Seminar.

(Numbered 270A in 1966-67.) Prerequisite: course 150. Mr. Herrick

252. Labor Economics II. Seminar.

(Numbered 270B in 1966-67.) Prerequisite: course 251. Mr. Herrick

253. Seminar in Labor Problems.

(Numbered 271 and 272 in 1966-67.) Prerequisite: course 252. Mr. Herrick

261. Monetary Theory. Seminar.

Prerequisite: course 161. Mr. Thompson

262. Monetary Policy. Seminar.

(Numbered 258 in 1966-67.) Prerequisite: course 261. Mr. Thompson

271. Industrial Organization, Price Policies, and Regulation: Theory. Seminar.

(Numbered 260A in 1966-67.) Prerequisite: course 170. Mr. Barron, Mr. Pegrum

272. Industrial Organization, Price Policies, and Regulation: Policy. Seminar.

(Numbered 260B in 1966-67.) Prerequisite: course 271. Mr. Barron, Mr. Pegrum

275. National Transport Policy. Seminar.

(Numbered 265 in 1966-67.) Mr. Hilton

276. Urban Transportation. Seminar.

Mr. Hilton

281. Evolution of Economic Institutions in Western Europe. Seminar.

(Numbered 263 in 1966-67.) Prerequisite: course 181. Mr. LaForce, Mr. Scoville

282. Soviet Economic Theory and Organization. Seminar.

(Numbered 212 in 1966-67.) Prerequisite: course 182. Mr. Murphy

283. Evolution of Economic Institutions in the United States. Seminar.

(Numbered 262 in 1966-67.) Mr. Scoville

291. International Trade Theory. Seminar.

(Numbered 266A in 1966-67.) Prerequisite: course 191. Mr. Allen, Mr. Arndt, Mr. Heller

292. International Finance. Seminar.

(Numbered 266B in 1966-67.) Prerequisite: course 192. Mr. Allen, Mr. Arndt, Mr. Heller

293. International Economics: Selected Topics. Seminar.

(Numbered 267 in 1966-67.) Prerequisite: course 291, 292. Mr. Allen

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., *Professor of Education and Director of University Elementary School.*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 (Acting Chairman of the Department).*William H. Lucio, Ph.D., *Professor of Education.*Lynne C. Monroe, Ed.D., *Professor of Education.*C. Robert Pace, Ph.D., *Professor of Education.*May V. Seagoe, Ph.D., *Professor of Education.*Paul H. Sheats, Ph.D., *Professor of Education.*Lawrence E. Vredevoe, Ph.D., *Professor of Education.*

- Samuel J. Wanous, Ph.D., *Professor of Education.*
 Jesse A. Bond, Ed.D., *Emeritus Professor of Education.*
 William S. Briscoe, Ed.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.*
 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., LL.D., *Emeritus Professor of Education.*
 Watson Dickerman, Ph.D., *Associate Professor of Education.*
 Lawrence W. Erickson, Ed.D., *Associate Professor of Education.*
 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.*
 John D. McNeil, Ed.D., *Associate Professor of Education and Head of Supervised Teaching.*
 Francis M. Obst, Ed.D., *Associate Professor of Education and Head of the Office of Student Services.*
 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.*
 Merlin C. Wittrock, Ph.D., *Associate Professor of Education.*
 Marvin C. Alkin, Ed.D., *Assistant Professor of Education.*
 Carole E. Bare, Ph.D., *Assistant Professor of Education.*
 Arthur M. Cohen, Ph.D., *Assistant Professor of Education.*
 Charlotte Crabtree, 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.*
 Robert D. Glasgow, Ph.D., *Assistant Professor of Education.*
 Frank M. Hewett, Ph.D., *Assistant Professor of Education and Medical Psychology.*
 Bruce L. Hood, Ph.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.*
 Gordon C. Ruscoe, Ph.D., *Assistant Professor of Education.*
 Jay D. Scribner, Ed.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.*
- ◇
- Byron H. Atkinson, Ed.D., *Lecturer in Education.*
 Webster Callaway, M.A., Ed.S., *Acting Assistant Professor of Education.*
 Sol Cohen, Ph.D., *Lecturer in Education.*

Robert B. Kindred, Ed.D., *Lecturer in Education.*

Richard R. Olmsted, M.A., Ed.S., *Acting Assistant Professor of Education.*

James Yelvington, M.A., *Acting Assistant Professor of Education.*

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.*

Burnham O. Campbell, Ph.D., *Assistant Professor of Economics.*

Margherita Cottino-Jones, Ph.D., *Assistant Professor of Italian.*

David G. Farrelly, Ph.D., *Associate Professor of Political Science.*

Waldo H. Furgason, Ph.D., *Professor of Zoology.*

Maurice Gerow, Ph.D., *Lecturer in Music.*

Donald T. Handy, Ed.D., *Associate Professor of Physical Education.*

Andrew H. Horn, Ph.D., *Professor of Library Services.*

Gregory J. Jann, Ph.D., *Associate Professor of Bacteriology.*

Wendell E. Jeffrey, Ph.D., *Associate Professor of Psychology.*

Edward B. Johns, Ed.D., *Professor of Public Health.*

Herbert D. Kaesz, Ph.D., *Associate Professor of Chemistry.*

Erwin M. Keithley, Ed.D., *Associate Professor of Business Administration.*

J. Bernard Kester, M.A., *Associate Professor of Art.*

Walter Kingson, 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.*

Vladimir Markov, Ph.D., *Professor of Slavic Languages.*

Herbert Morris, Ph.D., *Professor of Philosophy and Law.*

Philip Newman, Ph.D., *Professor of Anthropology.*

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.*

Daniel Rosenthal, Ph.D., *Professor of Engineering.*

Barbara E. Smith, M.A., *Lecturer in Classics.*

Norman A. Watson, Ph.D., *Professor of Physics.*

Robert A. Wilson, Ph.D., *Associate Professor of History.*

Ruth R. Wu, M.S., *Assistant Professor of Nursing.*

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, Mr. Weinberg

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

† All courses four class hours except where otherwise indicated.

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. Critical examination of the elementary school curriculum; principles and methods in developing instructional programs in social studies; participation in schools. 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.

Mr. Fleming, Miss Warner

124C. The Elementary Curriculum: Mathematics and Science.

(Formerly numbered 124B.) Principles and methods in developing instructional programs in mathematics and science; participation in schools.

Mr. Dutton, Mrs. Kipps, Mr. Troost

128A-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 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. Documentary Research.

The materials and techniques of documentary 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. Ancient and Medieval Education.

The development of educational institutions in European, Asian and African cultures from pre-historic times to 1500. Mr. S. Cohen

201B. Education from 1500 to the Present.

(Formerly numbered 201A.) The development of educational institutions in European, Asian and African cultures from 1500 to the present, with emphasis on the rise of national and colonial educational systems. Mr. S. Cohen

201C. American Education.

(Formerly numbered 201B.) The historical development of education in the Americas, with emphasis on the United States. Mr. S. Cohen

‡ Open only to students in graduate status. Consent of the instructor is required. All courses four class hours except where otherwise indicated.

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 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. Mr. Ruscoe

206A-206B. Philosophy of Education.**206A. The Philosophy of Education.**

The relation of systematic philosophies to educational thought and practice, including theories of knowledge, value, and ethics as they apply to the solution of educational problems. Mr. Kneller

206B. The Logic and Language of Education.

Use of the tools of logic and analysis to clarify educational language and concepts; consideration of didactics, order of subject matter, and the strategies and tactics of teaching. Mr. Hood

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. Education and Social Change.

Prerequisite: course 108 or equivalent. Analysis of the changing functions of educational organizations in society; the role of formal education as a transmitter of culture, and the consequences of education for cultural innovation and social change. 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. Mr. Popham

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. Sorenson

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. Sorenson

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.
Mrs. Bare

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.
Mrs. Bare

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.

(Formerly numbered 149 and 236A-236B.) Survey of the field of adult education; functions, development, clientele, institutions, personnel and practices.
Mr. Dickerman

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. Finance and Business Management.

(Formerly numbered 242A-242B and 243.) Prerequisite: course 240A or consent of instructor. Theoretical and functional aspects of federal, state and local financing and business management.

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-251B-251C. Seminars: Philosophy of Education.

251A. Philosophy of Education. Mr. Kneller

251B. The Logic and Language of Education.

Mr. Hood

251C. Classics in Education.

Mr. Hood

252A-252B. Seminars: Sociology of Education.

252A. Educational Organizations. Mr. Gordon

252B. Education and Social Change. Mr. Gordon

253A-253D. Seminars: Comparative Education.

253A. Current Problems in Comparative Education.

(Formerly numbered 253A-253B.) Prerequisite: course 204A. Mr. W. Jones, Mr. Ruscoe

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. Mr. Ruscoe

255. Seminar: Measurement and Research Design.

(Formerly numbered 256A-256B.) Mr. Husek

256. Seminar: School Learning and Development.

(Formerly numbered 255A-255B.)

Mrs. Feshbach, Mr. Keislar, Mr. Wittrock

257. Seminar: Pupil Personnel Services.

(Formerly numbered 258A-258B.)

Mrs. Bare, Mr. Sorenson

258A-258B. Seminars: Instructional Research and Development.

258A. Problems in Instructional Research.

(Formerly numbered 257A-257B.)

258B. Problems in Programmed Instruction.

(Formerly numbered 257C-257D.)

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.) Miss Warner

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

262F. Home Economics Education.

(Formerly numbered Home Economics 229.)

Miss Obst

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-263C. Seminars: Education of Exceptional Children.

263A. Education of Exceptional Children.

Mrs. Seago

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

S324A-324B-324C. Supervised Teaching:**Elementary. Mr. McNeil and Staff**

- 324A. Supervised Teaching: Elementary.** (1½ courses)
(Formerly numbered 322C and 324A.)

- 324B. Supervised Teaching: Elementary.** (1½ courses)
Prerequisite or concurrent: course 324A.

- 324C. Supervised Teaching: Supplementary Teaching in the Elementary School.** (¼ to 1½ courses)

S328ER. Supervised Teaching: Educable Mentally Retarded. (1½ courses)

- Prerequisite: courses 128A and 128B. **Mr. McNeil and Staff**

S328SR. Supervised Teaching: Severely Mentally Retarded. (1½ courses)

- Prerequisite: courses 128A and 128C. **Mr. McNeil and Staff**

S329. Supervised Library Service. (½ to 1 course)

- (Formerly numbered 328L.) Prerequisite: limited to students or alumni of the UCLA School of Library Service. **Mr. McNeil and Staff**

S330A-330B-330C. Supervised Teaching: Secondary.**Mr. McNeil and Staff**

- 330A. Supervised Teaching: Secondary.**

- 330B. Supervised Teaching: Secondary.**
Prerequisite: course 330A.

- 330C. Supervised Teaching: Supplementary Teaching in Secondary School.**
(Formerly numbered 330E.)

S334A-334B. Supervised Teaching: Junior College.**Mr. A. Cohen and Staff**

- 334A. Supervised Teaching: Junior College.** (1 course)
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)

§ 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.

- (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. **Mrs. Bare**

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. **Mrs. Bare**

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 knowledge, skills and attitudes through audiovisual 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. McNeil

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. Technological Tools in Education.

(Numbered 233A in 1966-67.) History and current status of technological tools for instruction, problems of utilization, and economics of film, recordings, television, teaching machines, and related devices and systems.

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.

435A-435B-435C. Home Economics Education.

435A. Problems in Home Economics Education.

(Numbered 235A in 1966-67.) Special problems in teaching home economics with specific reference to reimbursement and evaluative criteria for selection of instructional materials. Miss Obst

435B. History and Organization of Home Economics Education.

(Numbered 235B in 1966-67.) Historical development, legislation and organizational status of home economics education. Miss Obst

435C. Home Economics Education: Advanced.

(Numbered 235C in 1966-67.) Advanced study

in home economics education with a critical analysis of research applicable to teaching practices at the secondary and college level. **Miss Obst**

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.

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.

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.

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**

449. Internship in Junior College Administration.

461. Adult Education.

(Numbered 261G in 1966-67.) Prerequisite: course 232A-232B. **Mr. Dickerman**

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.

($\frac{1}{2}$ 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, 7408 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.*
 Ralph M. Barnes, Ph.D., *Professor of Engineering and Production Management.*
 Joseph S. Beggs, D.Eng., *Professor of Engineering.*
 Alexander W. Boldyreff, Ph.D., *Professor of Engineering.*
 George W. Brown, Ph.D., *Professor of Engineering and Business Administration.*
 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.*
 Kurt Forster, Ph.D., *Professor of Engineering.*
 Jacob P. Frankel, Ph.D., *Professor of Engineering.*
 Louis L. Grandi, M.S., *Professor of Engineering (Vice-Chairman, Laboratories and Facilities).*
 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 (Vice-Chairman, Budget).*
 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.*
 Michel Melkanoff, Ph.D., *Professor of Engineering.*
 Antony J. A. Morgan, 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 (Vice-Chairman, Instruction)*.
 Allen B. Rosenstein, Ph.D., *Professor of Engineering*.
 Nicholas Rott, Ph.D., *Professor of Engineering*.
 Francis R. Shanley, B.S., *Professor of Engineering*.
 George 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*.
 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 Russell, Ph.D., *Associate Professor of Engineering*.
 Bonham Campbell, A.B., E.E., *Associate Professor of Engineering*.
 Donald K. Edwards, Ph.D., *Associate Professor of Engineering*.
 Ellis F. King, M.S., E.E., *Associate Professor of Engineering*.
 Richard C. Mackey, M.S., *Associate Professor of Engineering*.
 Ken Nobe, 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*.
 William D. Van Vorst, Ph.D., *Associate Professor of Engineering*.
 Andrew J. Viterbi, Ph.D., *Associate Professor of Engineering*.
 Jack Willis, B.Sci., *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*.
 G. Joseph Buck, Ph.D., *Assistant Professor of Engineering*.
 Jack W. Carlyle, 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*.
 Traugott H. K. Frederking, Ph.D., *Assistant Professor of Engineering*.
 Jacob J. Gustinic, Ph.D., *Assistant Professor of Engineering*.
 David Isaacs, Ph.D., *Assistant Professor of Engineering, Resident at Irvine*.
 William E. Kastenber, Ph.D., *Assistant Professor of Engineering*.
 Leonard Kleinrock, Ph.D., *Assistant Professor of Engineering*.
 William Klement, Ph.D., *Assistant Professor of Engineering*.
 Peter Kurtz, Ph.D., *Assistant Professor of Engineering*.
 Kenneth L. Lee, Ph.D., *Assistant Professor of Engineering*.
 Panos A. Ligomenides, Ph.D., *Assistant Professor of Engineering*.
 Peter W. Likins, Ph.D., *Assistant Professor of Engineering*.

§ Recalled to active service, 1967-68.

Chung-Yen Liu, Ph.D., *Assistant Professor of Engineering.*
 Thomas J. Manetsch, Ph.D., *Assistant Professor of Engineering.*
 Ralph B. Matthiesen, Ph.D., *Assistant Professor of Engineering.*
 Lawrence P. McNamee, Ph.D., *Assistant Professor of Engineering.*
 Anthony F. Mills, Ph.D., *Assistant Professor of Engineering.*
 George P. Moore, Ph.D., *Assistant Professor of Physiology and 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.*
 Awtar Singh, Ph.D., *Assistant Professor of Engineering.*
 Craig B. Smith, Ph.D., *Assistant Professor of Engineering.*
 Oscar M. Statsudd, Jr., Ph.D., *Assistant Professor of Engineering.*
 Edwin B. Stear, Ph.D., *Assistant Professor of Engineering.*
 Richard Stern, Ph.D., *Assistant Professor of Engineering.*
 Allen Stubberud, Ph.D., *Assistant Professor of Engineering.*
 Tien-Fan Tao, Ph.D., *Assistant Professor of Engineering.*
 John E. Taylor, Ph.D., *Assistant Professor of Engineering.*
 Jacques J. Vidal, 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., Ph.D., *Assistant Professor of Engineering.*
 Kung Yao, Ph.D., *Assistant Professor of Engineering.*



Robert M. L. Baker, Jr., Ph.D., *Lecturer in Engineering.*
 Julian Bigelow, Ph.D., *Acting Professor of Engineering and Physiology.*
 John F. Brahtz, Ph.D., *Lecturer in Engineering.*
 William S. Butcher, M.S., *Lecturer in Engineering.*
 John C. Dillon, B.S., *Lecturer in Engineering.*
 Edward P. French, Ph.D., *Lecturer in Engineering.*
 Julian S. Hatcher, Ph.D., *Lecturer in Engineering.*
 Jiri Klir, Ph.D., *Lecturer in Engineering.*
 Winfield B. Heinz, B.S., *Lecturer in Engineering.*
 Julia B. Kessler, M.S., *Lecturer in Engineering.*
 Levi J. Knight, Jr., M.S., *Associate in Engineering.*
 Nhan Levan, Ph.D., *Lecturer in Engineering.*
 Yoshikazu Nishikawa, *Visiting Assistant Professor of Engineering.*
 Johanna E. Tallman, A.B., Cert. in Lib., *Lecturer in Engineering Bibliography.*
 George J. Tauxe, M.S., *Lecturer in Engineering.*
 Tracy Y. Thomas, Ph.D., *Visiting Professor of 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-

roduction to the general method of engineering design. Case studies of engineering designs, including possible field trips.

Mr. Beggs 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 92. 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. A group of systems experiments, required and elective, applicable to a variety of fields and functions and an individual project involving extension of theoretical analysis by experimental investigation in the solution of an engineering design or research problem. Opportunity is also available upon advance application for qualified students to do the majority of their experimental work in a group project.

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: course 100B. 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 magnetic 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. Applications of Electromagnetic Theory.

Prerequisite: course 100B or equivalent. Special relativity, static electric fields, Lorentz transformation of Coulomb's law, static magnetic fields, Maxwell's equations, dielectric, permeable and resistive materials.

Mr. Elliott in charge

117B. Applications of Electromagnetic Theory.

Prerequisite: course 117A. Transmission lines, basic theorems concerning time harmonic fields and the behavior of electromagnetic radiation, particularly in the microwave range.

Mr. Schott in charge

117C. Applications of Electromagnetic Theory.

Lecture, three hours; laboratory, three hours. Prerequisite: course 117B. Behavior of fully and partially guided waves and cavity resonators, particularly in the microwave range. Laboratory experiments and demonstrations.

Mr. Gustincic, 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. Carlyle, 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, Mr. Rogers 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. Stubberud 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 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 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. Kleinrock 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 Transport Phenomena.

(Formerly numbered 150A.) Prerequisite: course 105C. The study of the principles of energy and mass transport including transport by molecular motion in solids, liquids, and gases; transport in laminar and turbulent flows; transport between phases; and transport by radiation. Examples from engineering practice.

Mr. Buchberg in charge

131B. Intermediate Transport Phenomena.

(Formerly numbered 152A.) Prerequisite: course 131A. Equations of change and transport coefficients for multi-component mixtures of chemically inert fluids; analogies between mass, momentum and energy transfers; dimensionless parameters of transport processes in flow systems; transfer of mass, momentum and energy in laminar and turbulent boundary layers.

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

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.

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, magneto-hydrodynamic 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 Engineering Process Principles.

Prerequisite: course 105B. Principles of material and energy balances and their application to industrial chemical processes. Stoichiometry and introduction to unit operations.

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. Chemical Engineering Kinetics.

Prerequisite: course 137A. Application of principles of chemical reactor kinetics to homogeneous batch and flow systems. The effect of thermodynamic variables on kinetics.

Mr. Bennion in charge

138A. Cryogenics.

(Formerly numbered 158A.) Prerequisite: course 105B. Gas liquefaction; 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. 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

143A. Mechanical Behavior of Solids.

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. Prerequisite: 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. Knapp, 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, Mr. Kurtz 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, Mr. Kurtz 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. Flanigan 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.

(Formerly numbered 120A, 121A, and 122A.) Prerequisite: course 103A. General equations of motion of compressible viscous fluid. Discussion of viscous effects. Inviscid flows. Potential equation, elements of complex variable, simple incompressible flows. Normal and oblique shocks, one dimensional adiabatic and diabatic compressible flows. Elements of compressible aerodynamics; similarity parameters.

Mr. Charwat in charge

150B. Intermediate Fluid Mechanics II.

(Formerly numbered 120A, 121A and 122A.) Prerequisite: course 150A. Incompressible viscous flow. Channel flows, Stokes flow. Elements of boundary layer theory for laminar and turbulent flow; simple methods of solution. Applied aerodynamics: infinite and finite wing theory, aerodynamic coefficients, Prandtl-Glavert rule, elements of supersonic small disturbance theory.

Mr. Charwat in charge

153A. Engineering Acoustics.

(Replaces 124A.) Prerequisite: senior standing in engineering or consent of the instructor. 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

160A. Astrodynamics and Rocket Navigation.

(Formerly numbered 191A.) Prerequisite: Mathematics 13A. 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. 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. Application to frames, rings, arches, cables, and multicellular structures.

Mr. Rubinstein in charge

166. Structures III.

Prerequisite: course 165B. Generalization of linear analysis as applied to advanced structural systems. Plastic analysis and design of continuous beams and frames. Introduction to matrix and computer methods. Topics related to analysis and design of structural boundaries and connections.

Mr. Shanley in charge

167. Design of Structural Systems.

(Formerly numbered 167A-167B and 168A.) Lecture, two hours; laboratory, four hours. Prerequisite: course 165A; course 165B prerequisite or concurrent. Design of structural systems such as aircraft, bridges, buildings. 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

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, three hours; laboratory, two hours. Prerequisite: course 6B, Mathematics 13C or equivalent. Statistical design of sampling plans and control pro-

cedures 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, three hours; laboratory, two hours. Prerequisite: course 6B, Mathematics 13C or equivalent. 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 in charge

177A. Economic Analysis of Engineering Investment.

Prerequisite: courses 106A and 6B or 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 102B. 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: courses 102B, 106B. Methods and practice in design of machines and machine elements for mass production and job-shop production, under tight and loose constraints. Design projects. Critiques of case histories. Critical review of information sources on common machine elements and commercial subsystems.

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. Boldyreff 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 130B.) 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 131A.) 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. Ferrine 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: Chemistry 1B; Geology 2 or 101; Engineering 15B or Physics 1B. 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

185A. Principles of Soil Mechanics.

(Formerly numbered 164A.) Prerequisite: course 15AB 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. Singh in charge

185B. Soil Mechanics—Laboratory Practices.

(½ course)

Lecture, one hour; laboratory, three hours. Prerequisite: course 185A. 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; warrants interrelationships of capacity and safety; 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 13C. 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 Probabilistics 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, three hours; laboratory, two hours. 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. (1/2 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. O'Neill in charge

199. Special Studies. (1/2 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 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.

The Staff, Electronics and Electromagnetics Division

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.

The Staff, Electronics and Electromagnetics Division

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 117B. Theory of antennas. Radiation integrals. Array theory. Self and mutual impedance. Aperture antennas. Pattern synthesis. Waveguide radiators.

Mr. Elliott, Mr. Gustincic, Mr. Schott in charge

217B. Electromagnetic Applications: Microwave Networks.

Prerequisite: course 117C. General waveguide theory. Variational solutions. Obstacles. Small aperture coupling. Matrix theory of junctions. Periodic structures.

Mr. Gustincic, 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, Mr. Gustincic in charge

218A. Electromagnetics Seminar: Antennas.

Prerequisite: course 217A. Advanced topics in antenna theory and practice.

Mr. Elliott, Mr. Gustincic in charge

218B. Electromagnetics Seminar: Microwave Circuits.

Prerequisite: course 217B. Advanced topics in guided wave structures.

Mr. Gustincic, 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. Magnetoionic 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 136C.) 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. Rees, Mr. Stear 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. Leondes, 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. Leondes 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 213A.) 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 213B.) 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 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 arithmetics; redundant, signed-digit, residue number systems; error detection in digital arithmetic; algorithm evaluation by analysis and simulation.

Mr. Aviziemis 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. Melkanoff 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 127A or equivalent. Statistical theory of detection as applied to communications, radar and data processing.

Mr. Viterbi 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. Balakrishnan in charge

227C. Mean Square Optimization Methods.

(Formerly numbered 286C.) Prerequisite: course 127A; course 291A or equivalent recommended. Linear and non-linear optimization methods for single and multiple random processes in communication systems.

Mr. Balakrishnan 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.

The Staff, Communications Systems

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 130A 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 Course in Convective Transport.

(Formerly numbered 250A.) Prerequisite: course 131B. Principles of heat and mass transfer in flowing fluids; analysis of heat and mass transfer in internal, external, free, and forced convection laminar and turbulent flows; effects of free stream pressure gradients, compressibility, chemical reaction, and state-dependent transport properties.

Mr. Edwards in charge

231B. Advanced Topics in Heat Transfer.

(Formerly numbered 250B.) Prerequisite: course 231A. A review of current literature in the fields of convective and diffusive heat transfer with and without simultaneous radiation in one- and two-phase flows with special emphasis on analytical methods. Student reports on advanced topics in heat transfer.

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

232A. Aerothermochemistry.

(Formerly numbered 225A.) Prerequisite: courses 130A and 131B. Change equations for multicomponent reactive mixtures; rate equations; rate coefficients and molecular collisions; rate coefficients and irreversible thermodynamics; characteristic times and dimensionless parameters of aerothermochemistry. Applications, including burning of premixed gases, cooling with mass transfer quenching of chemical reactions, etc.

Mr. Knuth in charge

232B. Aerothermochemistry.

(Formerly numbered 225B.) Prerequisite: course 232A or consent of the instructor. Nonequilibrium flows in channels, free jets and shock waves; sound propagations in relaxing gases; chemical reactions, ionization, condensation and sorption rates; relaxation rates for internal and translational degrees of freedom; criteria for equilibrium flows and for frozen flows.

Mr. Knuth 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

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; 291A recommended. The analysis of nuclear reactor systems by analytical and numerical methods. Time, space and energy dependent Boltzmann equation in different approximations; diffusion, P_n , B_n , S_n approximations; integral transport theory, slowing down, thermalization, multigroup diffusion equations, perturbation theory, fast reactors.

Mr. Erdmann in charge

235B. Nuclear Reactor Analysis.

Prerequisite: course 235A. Continuation of 235A. The analysis of nuclear reactor systems by analytical and numerical methods. Time, space and energy dependent Boltzmann equation in different approximations; diffusion, P_n , B_n , S_n approximations; integral transport theory, slowing down, thermalization, multigroup diffusion equations, perturbation theory, fast reactors.

Mr. Erdmann in charge

236A. Nuclear Reactor Systems.

Prerequisite: course 135B. The major nuclear reactor types and their associated power plants including pressurized water systems and liquid metal cooled reactors. Analysis of heat transfer and fluid flow in nuclear reactor design.

Mr. Smith in charge

236B. Nuclear Reactor Materials.

Prerequisite: course 135A; 245A recommended. Mechanism of radiation damage; characteristics and behavior in the radiation environment of nuclear fuel, moderator, structure, coolant, and control materials. Comparison of basic fuel cycles.

Mr. Hicks in charge

236C. Nuclear Reactor Kinetics and Control.

Prerequisite: course 135B. Discussion of reactor kinetics for the more important modes of reactivity time variation and discussion of stability and control by the concept of reactor transfer function analysis. Experimental methods and the analysis of spatially dependent kinetics.

Mr. Kastenbergh 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.

Prerequisite: course 137C; 237A recommended. The design of chemical reactors with emphasis on optimization and control. Consideration of automatic control response to "direct" data input.

Mr. Van Vorst 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 163A. 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: Physics 121 or Physics 115 (an introductory course in atomic physics and wave mechanics). 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: course 163A; Physics 115 or equivalent. 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 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. Flanigan 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.

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; approximate 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.

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. Charwat 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.

252A. Engineering Magneto-hydrodynamics.

(Formerly numbered 226A.) Prerequisite: courses 117A 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.

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.

The Staff, Applied Mechanics Division

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.

The Staff, Applied Mechanics Division

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. Charwat 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 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. Roberts, Mr. Westmann 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. Roberts, Mr. Westmann 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. Lin 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.

(Formerly numbered 260C.) Prerequisite: course 256A or 258A, Mathematics 247A, or consent of the instructor. Elastic waves in an extended medium, surfaces of discontinuity, plane waves; reflection and refraction of plane waves at a straight boundary; surface (Rayleigh) waves; wave propagation in circular cylinders (the Pochhammer-Chree problem), experimental measurements. Mr. Morgan 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 Astrodynamics.

(Formerly numbered 291A.) Prerequisite: course 160A. Advanced problems in celestial mechanics emphasizing non-gravitational and relativistic effects. 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. Forster 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 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 166. Analysis of structural systems by energy methods, difference methods, relaxation and iteration methods. Applications to deflection, stability, and dynamic analysis. Mr. Matthiesen in charge

265B. Advanced Structural Analysis II.

(Formerly numbered 265A.) Prerequisite: course 166. Matrix methods applied to the analysis of frames, plates, and shells. Mr. Rubinstein in charge

266A. Stability of Structures I.

Prerequisite: courses 165B, 166 or equivalent, and Mathematics 13C. 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. Lin in charge

266B. Theory of Stability 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. Lin, Mr. J. E. Taylor in charge

267A. Optimum Structural Design.

(Formerly numbered 168A.) Prerequisite: course 166. Principles of structural design for minimum

weight or cost; relationships between material properties and structural configuration; prediction of weight of structure; relative merits of different materials; analysis of nonoptimum factors; applicable to aerospace and civil structures.

Mr. Shanley in charge

267B. Advanced Structural Design.

(Formerly numbered 267A.) Prerequisite: courses 166, 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. Investigations of Structural Systems.

Prerequisite: consent of the instructor. Seminar on current research in various topics in structures. Topics will vary according to interests of students and staff.

The Staff, Structures Division

269A. Dynamics of Structures I.

Prerequisite: course 155A. 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 269A. 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: 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. Techniques of system optimization, system stability, sensitivity and subsystem compatibility.

Mr. Asimow in charge

270B. Dynamic Elements of Operational Systems.

Prerequisite: courses 191A, 193A and linear algebra or consent of the instructor. Basic theoretical models applicable to a wide range of large-scale stochastic and nonstochastic systems. Stochastic models. Deterministic approximations of dynamic stochastic models, modern linear system theory. Applications to a range of representative system types.

Mr. J. L. Barnes, Mr. Wisner in charge

270C. Techniques of Systems Optimization.

Prerequisite: knowledge of linear algebra and consent of the instructor. Theory, evaluation and computer applications of mathematical techniques for

optimization with and without constraints. Linear, quadratic and nonlinear programming, dynamic programming and stochastic processes. Applications to systems optimization problems. Students will implement the methods by coding and running computer programs.

Mr. Melkanoff 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 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. Brown 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: courses 191A, 193A and B.S. degree in engineering, physics, or mathematics. 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. English 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 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

281A. Seminar in Environmental Resource Management.

Prerequisite: consent of the instructor. Advanced topics in analysis and evaluation of air and water. Design of systems for the control of wastes. Advanced considerations of treatment process systems. Selected problems differ each year.

Mr. Bush 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

283A. 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. Ferrine in charge

284A. 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

284B. 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

284C. 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 queuing theory. Conjunctive utilization of surface water and ground water systems.

Mr. Dracup in charge

284E. Saline Water Conversion.

Prerequisite: course 137A or 137B and Chemistry 110AB or equivalent. Current research and development in saline water conversion, in the fields of distillation, electro dialysis, freezing, reverse osmosis and chemical extraction. A study of process optimization and economics of combined waterpower systems.

Mr. McCutchan in charge

285A. 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. Singh in charge

285B. Foundation Engineering.

(Formerly numbered 264A.) Prerequisite: course 185A; course 285A 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. Lee in charge

287A. 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 12A and 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. Morgan 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. Liu in charge

298. Seminar in Engineering. (1/2 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. The following seminar will be made available during the spring quarter, 1968: *IMPACT, (The Theory and Physical Behavior of Colliding Solids)*. Mr. O'Neill in charge

†470A-470B-470C-470D. **The Engineer in the Technical Environment.** (1, 1, 1, ½ course)

(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. Accounting theory, finance, business economics with special reference to their use in and effect on engineering enterprises. Organization and management of engineering activity; relationship of engineering function with sales, marketing, production, finance. Community, national and international problems—policies effecting these functions. Mr. Orr in charge

† Open only to Engineering Executive Program students. See page 101 of this bulletin.

†473A-473B. **Analysis and Synthesis of a Large-Scale System.** (½, 1 course)

(Formerly numbered 297.) Prerequisite: acceptance in the Engineering Executive Program. 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

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)

Bradford Allen Booth, Ph.D., Litt.D., *Professor of English (Chairman of the Department)*.

J. Donald Bowen, Ph.D., *Professor of English*.

Ralph Cohen, 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*.

Majl Ewing, Ph.D., *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., *Professor of English*.

Earl Roy Miner, Ph.D., *Professor of English*.

- 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 (Vice-Chairman of the Department).*
 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.*
 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.*
 Donald R. Howard, Ph.D., *Associate Professor of English.*
 Jascha Kessler, Ph.D., *Associate Professor of English.*
 Richard D. Lehan, Ph.D., *Associate Professor of English.*
 Lois McIntosh, Ph.D., *Associate Professor of English.*
 Maximillian Erwin Novak, Ph.D., *Associate Professor of English.*
 Florence Ridley, 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.*
 Carl Sawyer Downes, Ph.D., *Emeritus Associate Professor of English.*
 Eugene John Brière, Ph.D., *Assistant Professor of English.*
 Frederick Lorrain Burwick, Ph.D., *Assistant Professor of English.*
 Russell Norman Campbell, Ph.D., *Assistant Professor of English.*
 Thomas Clayton, Ph.D., *Assistant Professor of English.*
 Robert A. Georges, Ph.D., *Assistant Professor of English and Folklore.*
 Gerald Jay Goldberg, Ph.D., *Assistant Professor of English.*
 Christopher Waldo Grose, Ph.D., *Assistant Professor of English.*
 Robert George Guffey, Ph.D., *Assistant Professor of English.*
 Robert Glenn Jacobs, 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.*
 Frank Lentricchia, Ph.D., *Assistant Professor of English.*
 John Joseph McManmon, Ph.D., *Assistant Professor of English.*
 Kenneth Bernard Newell, Ph.D., *Assistant Professor of English.*
 Morriss Henry Partee, Ph.D., *Assistant Professor of English.*
 Roy James Percy, Ph.D., *Assistant Professor of English.*
 John Frederick Povey, 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.*
 Alan Francis Sandy, Jr., Ph.D., *Assistant Professor of English.*
 William David Schaefer, Ph.D., *Assistant Professor of English (Vice-Chairman of the Department).*
 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.*
 Georg Bernhard Tennyson, Ph.D., *Assistant Professor of English.*
 Mardi Valgema, Ph.D., *Assistant Professor of English.*
 Ben Merchant Vorpahl, Ph.D., *Assistant Professor of English.*
 Carey Gail Wall, Ph.D., *Assistant Professor of English.*



H. Bradford Arthur, M.A., *Acting Assistant Professor of English.*
 Jerome Cushman, A.B., B.S.L.S., *Lecturer in English and Library Service.*
 Calvin Israel, M.A., *Acting Assistant Professor of English.*
 L. W. Lanham, Ph.D., *Visiting Professor of English.*
 Robert M. Maniquis, M.A., *Acting Assistant Professor of English.*
 Harriet Ramras Miller, M.A., *Lecturer in English.*
 David Stuart Rodes, M.A., *Acting Assistant Professor of English.*
 Bonifacio P. Sibayan, Ph.D., *Visiting Professor of English.*
 Patrick Lee Story, M.A., *Acting Assistant Professor of English.*
 James Sutherland, Litt.D., *Visiting Professor of English.*
 Bernard Wolfe, B.A., *Lecturer in 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

Required of all Plan I and Plan II majors: English 1, 2, 10A, 10B, 10C taken in sequence, each course being a prerequisite for the next course. In addition, Plan I majors are required to take History 5A-5B; Plan II majors are required to take two one-quarter courses in either English or American History (normally History 5A-5B or 7A-7B) and Speech 4.

For Plan III majors the requirements are: English 1, 2, 10B, 10C in sequence; two one-quarter courses in either English or American history; and Speech 1 or 4.

The Major

Plan I. For the general undergraduate and for those expecting to undertake a graduate degree in English. The following courses are required: (1) English 170; (2) English 171; (3) two courses in the novel sequence (140-142) or two courses in the drama sequence (145-147); (4) four age courses (150-159), of which one must be taken in a period before 1800 (150-153) and one but not more than two in American literature (156-158); (5) one course of specialized studies (160-169) after completion of the corresponding age course; (6) one elective. Courses in the 100 through 103 series may not be applied to the major.

Recommended: Ancient and modern foreign languages. A reading knowledge of

French, German, or Latin is required for the M.A. degree. For the Ph.D. degree a reading knowledge of two of these languages is required; a reading knowledge of Latin is essential for work in some fields. Students planning to enter the M.A. or Ph.D. program in English should take the undergraduate course in Chaucer (172).

Plan II. For the student taking a teaching credential. The following courses are required: (1) English 170; (2) English 120; (3) English 130; (4) one course chosen from English 104, 106, or 109; (5) two courses in the novel sequence (140-142) or two courses in the drama sequence (145-147); (6) three age courses (150-159), one and only one of which must be in American literature (156-158); (7) one course chosen from Speech 111, 112A or 112B.

In the graduate year, the student will take English 300 and additional courses as prescribed by the Graduate School of Education.

Plan III. Open optionally to bona fide foreign students whose mother tongue was a language other than English. The following courses are required: (1) English 109J; (2) English 170; (3) English 120 and 122; (4) English 106J; (5) one course chosen from English 104, 106, or 112; (6) two courses in the novel sequence (140-142) or two courses in the drama sequence (145-147); (7) three age courses (107 or 150-159), one and only one of which must be in American literature (107 or 156-158); (8) English 103J.

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 Plan I major that they have not already taken.

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 average in English and nonmajors with honors status in the College of Letters and Science are encouraged to apply for admission to the Honors Course, English 190-191, upon completion of at least three courses from the 104-173 series. Admission to the course requires, in addition to the minimum grade-point average, a letter of recommendation from a member of the faculty in the Department, satisfactory evidence of ability to write acceptable prose, and consent of the instructor.

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, with their application for admission, to the Graduate Division. 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 146. The Department follows the Comprehensive Examination Plan, as described on page 147. 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 stu-

dents 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 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; 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 148.

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, 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 109, 112, 120 through 122, for which course 1 is prerequisite, and courses 130 through 134, for which courses 1 and 2 are prerequisite. Consent of the instructor is required for enrollment in courses 131 through 134. Courses 100 and 101 are not open to students who have completed courses 10A-10B-10C. Course 102 is not open to students who have completed the courses formerly numbered 30A-30B.

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 156, 157, or 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 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 Literature of Myth and Oral Tradition.

(Same as Folklore 104.) A study of myth, dramatic origins, oral epic, folktale and ballad, emphasizing Indo-European and Semitic examples.

Mr. Wilgus

105. The English Bible as Literature.

The principal literary monuments of the Old and New Testaments in the King James version.

Mr. Dearing, Mr. Jacobs

106. Children's Literature.

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

107. American Life in American Letters.

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

108. The American Novel.

The development, with emphasis on form, of the American novel from its beginning to the present day. Included are the works of such novelists as Hawthorne, James, Fitzgerald, and Faulkner.

Mr. Durham, Mr. Goldberg, Mr. Nevius

109. Introduction to Poetry.

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. McManmon, Mr. Thorslev

112. Survey of African Literature in English.

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

120. Methods and Principles in the Study of the English Language.

Methods and principles in linguistic study and their application to English in its past and present forms (phonetics and phonemics, morphology, syntax, lexicon).

Mr. Arthur, Mr. Matthews

121. History of the English Language.

Prerequisite: course 120 or Linguistics 100. A survey and exemplification of major developments and continuities in the English language from its beginnings to the present.

Mr. Arthur, Mr. Matthews, Mr. Pearcy

122. Present Day American English and Its Background.

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, Mr. Matthews

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.

Mr. Espey

133. 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. Espey, Mr. Gullans

134A-134B-134C. 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. Espey, Mr. Goldberg, Mr. Kessler

135A-135B-135C. Fundamentals of Dramatic Writing.

Mr. Savage

140. The Novel to 1832.

A survey of the major English novelists from Defoe through Scott.

Mr. Novak, Mr. Stephenson

141. The Novel, 1832 to 1900.

A survey of the major English novelists from Dickens through Hardy.

Mr. Booth, Mr. Schaefer

142. The Novel, 1900 to the Present.

A survey of the major English novelists from Conrad to the present.

Mr. Jacobs, Mr. Newell

145. The Drama to 1642.

A survey of the English drama, excluding Shakespeare, from the beginning to the closing of the theaters.

Mr. Dent

146. The Drama, 1660 to 1842.

A survey of the English drama from the Restoration to the Licensing Act.

Mr. Novak, Mr. Stephenson

147. The Drama, 1842 to the Present.

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. Valgmae

150. Age of Chaucer.

Reading and historical explication of a selection of Chaucer's minor poems and of major writers of the fourteenth and fifteenth centuries (e.g., the Gawain-poet, William Langland, John Gower, Sir Thomas Malory, miracle and morality plays, prose, and short poems); more difficult texts will be read in modernized form.

Mr. D. Howard, Miss Ridley

151. Age of Elizabeth.

A survey of English nondramatic literature in the Tudor period, 1485-1603, with special emphasis on the development of such literature during the reign of Elizabeth I. The course treats poetry, prose, fiction, literary theory and criticism, and their interrelationships.

Mr. Dick, Mr. Kinsman, Mr. Phillips

152. Age of the Stuarts.

English literature of the seventeenth century apart from Milton. The course includes the study of poetry,

prose, literary theory and criticism, and drama in themselves and in relation to major trends in the century. Mr. Guffey, Mr. Miner, Mr. Swedenberg

153. Age of Pope and Johnson.

A survey of the major works of the period with particular emphasis on poetry and prose. Students interested in the period are urged to take the novel course (140). Mr. Cohen, Mr. Dearing, Mr. Novak

154. Romantic Age.

An intensive survey of the poetry and critical prose of the six major Romantic poets: Blake, Wordsworth, Coleridge, Byron, Shelley, and Keats; with briefer coverage of the major essayists of the period: Lamb, Hazlitt, and De Quincey.

Mr. Burwick, Mr. Thorslev

155. Victorian Age.

A survey of the major works of poetry and prose, exclusive of the novel and the drama. Students interested in the period are strongly urged to enroll in the novel course (141).

Mr. Booth, Miss Nisbet, Mr. Schaefer

156. American Literature of the Colonial and Early National Period.

A study of the American literature to 1830, covering such works as Bradford's *History of the Plymouth Plantation*, Puritan accounts of the Massachusetts Bay Colony, Franklin's *Autobiography*, and writings of the late eighteenth and early nineteenth centuries.

Mr. Israel, Mr. Lemay

157. Nineteenth Century American Literature.

A study of those writers who represent the "age" from 1830 to 1900, including Poe, Thoreau, Lowell, Holmes, Hawthorne, Melville, Twain, Dickinson, and Howells.

Mr. Falk, Mr. Nevius

158. Twentieth Century American Literature.

A study of those writers who represent the "age" of the twentieth century, including James, Frost, Hemingway, Faulkner, and T. S. Eliot.

Mr. Durham, Mr. Nevius

159. Twentieth-Century British Literature.

A survey of the dominant trends of the twentieth century, including the experimental nature of the fiction, the new poetry, and the contemporary critical sensibility.

Mr. Espey, Mr. Ewing

Specialized Studies. These courses (160 through 169), each of which carries the prerequisite of the corresponding age course, are designed to permit a small group of students (limit: 25) to specialize in a period which they find attractive. For the author, group or genre to be studied see the Schedule of Classes for any given quarter.

160. Specialized Studies in the Age of Chaucer.

161. Specialized Studies in the Age of Elizabeth.

162. Specialized Studies in the Age of the Stuarts.

163. Specialized Studies in the Age of Pope and Johnson.

164. Specialized Studies in the Romantic Age.

165. Specialized Studies in the Victorian Age.

166. Specialized Studies in American Literature of the Colonial and Early National Periods.

167. Specialized Studies in Nineteenth Century American Literature.

168. Specialized Studies in Twentieth Century American Literature.

169. Specialized Studies in Twentieth Century British Literature.

170. Shakespeare.

For English majors (and nonmajors who have completed 10A-10B-10C). An intensive study of Shakespeare's plays, including both early and late comedies, histories, and tragedies selected to represent Shakespeare's breadth, artistic progress, and total dramatic achievement.

The Staff

171. Criticism.

An introduction to the types of literary criticism and their methods of analysis and evaluation.

The Staff

172. Chaucer.

A study of the major works of Chaucer with emphasis on *The Canterbury Tales*.

Mr. D. Howard, Miss Ridley

173. Milton.

A study of the major works of Milton with emphasis on *Paradise Lost*.

Mr. Miner, Mr. Swedenberg

190-191. Honors Course.

See page 260. Three sections of the Honors Course (one in poetry, one in the novel, and one in the drama) will be offered in the winter and spring quarters. Enrollment is limited to ten students in each section. In the first of the two quarters the group will study a sub-genre or the works of a single author. In the second quarter each student will confer with the instructor and under his direction prepare a critical or investigative paper.

199. Special Studies in English (½ to 1 course).

The Staff

Graduate Courses

200. Bibliography.

Mr. Dearing, Mr. Dick, Mr. Gullans

201. The Functions of Literary Criticism.

Mr. Cohen, Mr. Lehan

210. Readings in Old English Literature.

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

213. The Development of Modern English.

Prerequisite: courses 120 and 122; or Linguistics 205A; or courses 210, 211 and 212.

Mr. Bowen, Mr. Stockwell

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. D. Howard, Mr. Matthews, Miss Ridley

221. The Renaissance.

Mr. Dick, Mr. Jorgensen, Mr. Phillips

222. Jacobean and Caroline Literature.

Mr. Miner, Mr. Swedenberg

223. Neo-Classicism.

Mr. Cohen, Mr. Dearing, Mr. Novak

224. Romanticism.

Mr. Cohen, Mr. Thorslev

225. Victorianism.

Mr. Booth, Miss Nisbet

226. American Literature.

Mr. Falk, Mr. L. Howard, Mr. Nevius

227. Twentieth Century Literature: American.

Mr. Espey, Mr. Ewing, Mr. Nevius

228. Twentieth Century Literature: British.

Mr. Espey, Mr. Ewing, 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. D. Howard, Mr. Matthews, Miss Ridley

246. Chaucer and His Contemporaries.

Mr. D. Howard, 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, 1660-1790.

Mr. Novak

257. Dryden and His Contemporaries.

Mr. Dearing, Mr. Miner, Mr. Swedenberg

258. Pope and His Contemporaries.

Mr. Cohen, Mr. Dearing, Mr. Novak

259. Johnson and His Contemporaries.

Mr. Cohen

260. Studies in the Romantic Writers.

Mr. Cohen, Mr. Thorslev

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. Nevius

265. Contemporary British Literature.

Mr. Espey, Mr. Ewing, Mr. Nevius

266. Early American Literature.

Mr. Falk, Mr. L. Howard

267. Major American Writers.

Mr. Falk, Mr. L. Howard

268. Studies in American Literature.

Mr. Falk, Mr. L. Howard

269. Descriptive Bibliography.

Mr. Dearing

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. Ambrose, Mr. Hartung

Individual Study and Research

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 semester 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) All students must complete a program of nine quarter courses. Courses to be taken in the fall quarter are English 370K, Linguistics 100, and a nondepartmental elective (Linguistics 120, Linguistics 230, and appropriate courses in education, folklore, speech, and the structure of the student's mother tongue are especially recommended). Depending upon 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 103K (native and some nonnative speakers will be allowed to substitute Linguistics 103 or Linguistics 200A for this), and a departmental elective (English 109K, English 371K, and an appropriate course in English or American literature are recommended). Courses for the spring quarter are English 380K, English 122, 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, and Linguistics 260K are recommended). (3) Certificate candidates in graduate status must maintain a grade average equivalent to that required of candidates for a University-recommended general 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 lan-

guage 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 three 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. **Mr. Brière**

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. Lanham, Mr. Rand**

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. **Mr. Campbell, Mr. Povey, Mr. Rand**

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. **Mr. Povey, Mr. Rand**

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 Language. Seminar.

Meets five hours weekly. Prerequisites: Linguistics 100, course 370K. Theory and techniques of contrasting the phonological, grammatical, and lexical structures of English with those of other languages. **Mr. Bowen, Miss McIntosh, Mr. Prator**

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. Bowen**

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. **Mr. Brière**

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 in charge

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. Bowen, 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.

Mr. Brière

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. Bowen, Mr. Campbell, Miss McIntosh

■ 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 in Residence.*

D. K. Wilgus, Ph.D., *Professor of English and Anglo-American Folksong and Chairman, Folklore and Mythology Group.*

Frances Obst, Ed.D., *Associate Professor of Education.*

Robert A. Georges, Ph.D., *Assistant Professor of English and Folklore.*

Theodore Schwartz, Ph.D., *Assistant Professor of Anthropology.*

———, *Assistant Professor of Indo-European Studies (Celtic).*



Marianna D. Birnbaum, M.A., *Lecturer in Finno-Ugric Studies.*

Inkeri Rank, M.A., *Lecturer in Finno-Ugric Studies.*



Ralph C. Altman, *Lecturer in Art.*

Alexander Badawy, Ph.D., *Associate Professor of Art.*

Pedro Carrasco, Ph.D., *Associate Professor of Anthropology.*

Anne-Lise Cohen, Ph.D., *Assistant Professor of French.*

John A. Crow, *Professor of Spanish.*

Jerome Cushman, Ph.D., *Lecturer in English and Library Service.*

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.*

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 Associate in Music (Ethnomusicology and Folk Music).*

Eli Sobel, Ph.D., *Professor of German.*

Klaus P. Wachsmann, Ph.D., *Professor of Music.*

Erik Wahlgren, Ph.D., *Professor of Scandinavian Languages.*

Donald J. Ward, Ph.D., *Assistant Professor of German.*

Johannes Wilbert, Ph.D., *Professor of Anthropology.*

Shirley Wimmer, M.A., *Assistant Professor of Dance.*

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 Mr. Wilgus.

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 146.

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; Anthropology 146; Music 140A–140B, 142, 143A–143B, 144, 145, 146, 190A.

Group 2. Folklore 120, 122, 124A–124B, 125, 126, 128, 146, 149, 150, 221, 230A–230B, 241, 249; African Languages 150A–150B; Anthropology 102, 145; French 115A–115B–115C, 215A–215B; 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 six 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 six 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 quali-

fied 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.

Lecture and discussion, three hours; reading period, one hour. Prerequisite: junior standing. A reading knowledge of a foreign language is desirable, but not prerequisite to the course. The various fields of folklore, their literature and problems.

Mr. Georges, Mr. Hand

104. The Literature of Myth and Oral Tradition.

(Same as English 104.)

Mr. Wilgus

105. American Folklore.

Lecture and discussion, three hours; reading-demonstration period, one hour. Prerequisite: junior standing. A survey of American folklore with illustrative materials from the genres of folk tales, legends, superstitions, proverbs, folk speech, etc.

Mr. Georges, Mr. Wilgus

106. Anglo-American Folksong.

Lecture and discussion, three hours; demonstration period, two hours. Prerequisite: junior standing. A survey of Anglo-American balladry and folksong, with attention to historical development, ethnic background, and poetic and musical values.

Mr. Wilgus

117. American Folk Speech.

Lecture and discussion, three hours; reading period, one hour. Prerequisite: course 101 or 105. Verbal art and lore of the folk: proverbs, riddles, onomastics, folk etymology, cant and jargon, nonce formations, folk poetry and verse, etc.

Mr. Georges

118. The Folklore of Material Culture.

Lecture and discussion, three hours; reading-demonstration period, one hour. 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.

120. Historical Survey of the Gypsies. (½ course)

Lecture and discussion, two hours. Prerequisite: junior standing. Study of the history, ethnic origins, and linguistics of the Gypsies.

Mr. Starkie

122. Introduction to Celtic Folklore and Mythology.

Lecture and discussion, three hours; reading period, one hour. 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-124B. Introduction to Finnish Folklore and Mythology. (1 course each)

(Same as Finno-Ugric 139A-139B.) Lecture and discussion, three hours; reading period, one hour. Prerequisite: course 101 or permission of the instructor. 124A deals with the methods and results of Finnish folklore studies and the mythic traditions of

the Finns. In 124B emphasis is placed on the material manifestations of Finnish folklore and folk culture; village layout and architecture, technology, arts, crafts, textiles, etc.

Mrs. Rank

125. Introduction to Finno-Ugric Folklore and Mythology.

Lecture and discussion three hours; reading period, one hour. Prerequisite: course 124A or permission of the instructor. A survey of the tradition of the smaller Finno-Ugric nationalities.

Mrs. Rank

126. Introduction to Baltic and Slavic Folklore and Mythology.

Lecture and discussion, three hours; reading period, one hour. 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.

Lecture and discussion, three hours; reading period, one hour. 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)

Mr. Wilgus

146. Oral Art and Drama of Non-Western Peoples.

(Same as Anthropology 145)

Mr. Schwartz

149. Folk Literature of the Hispanic World.

(Same as Spanish 149)

Mr. Robe

150. Russian Folk Literature.

(Same as Russian 150)

Mr. Markov

161. Decorative Textiles in Folk Cultures.

Lecture and discussion, three hours; reading-demonstration period, one hour. Studies in ethnic origins and historical background of Eastern and Western cultures; illustrated by fabrics and costumes from the traditions.

Miss Obst

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.

Lecture, three hours; laboratory, one hour. Prerequisite: course 101 and any one of the following courses: Course 104, 105, 106, 117, 122, 124A, 125, 126, 146, 149, 150, 230A-230B; Anthropology 102, 124, 145; English 104; 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. Wilgus

213. Folk Belief and Custom.

Lecture, three hours; reading period, one hour. Prerequisites: course 101 and any one of the following courses: Course 105, 118, 122, 124A, 124B, 125, 126, 128; Anthropology 102, 124, 145; Italian 230A-230B; German 134, 240; Russian 150; Spanish 149. **Mr. Hand**

216. The Folk Tale.

Lecture, three hours; laboratory period, one hour. Prerequisites: course 101 and any one of the following courses: Course 105, 122, 124, 126, 128; Anthropology 124, 125; Classics 161; English 104, 243; German 134, 240; Indo-European Studies 140; Italian 230A-230B; Spanish 149, 249. **Mr. Georges, Mr. Hand**

221. Gypsy Folklore. (½ course)

Lecture and discussion, two hours. 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.

Lecture and discussion, two hours. Prerequisites: courses 101; and 105, 106, or 117. 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**

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 251.)

258. Seminar in Anglo-American Folk Music.

(Same as Music 258.) **Mr. Wilgus**

259. Seminar in Folklore.

Discussion, three hours, supplemented by individual study and directed research. 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 104A. Art of the Ancient Near East.

118A-118B-118C. Primitive Art.

119. Pre-Columbian Art.

Classics 161. Introduction to Classical Mythology.

Dance 140A-140B-140C. Dance Cultures of the World.

151A-151B. History of Dance.

English 106. Children's Literature.

French 115A-115B-115C. Old French Language and Medieval Literature.

German 134. German Folklore.

Indo-European Studies 140. Introduction to Indo-European Mythology.

Music 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. Primitive Art.

Dance 226. Dance Expressions in Selected Cultures

227. Advanced Studies in Dance Education.

English 220. Medievalism.

French 215A–215B. The Medieval Language and Literature.

German 240. Folklore of the Germanic Peoples.

245. Germanic Mythology.

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–151B. Survey of Arabic Literature in English.

Armenian 150A–150B. Survey of Armenian Literature in English.

Berber 150A–150B. Survey of Berber 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 155 Survey of Czech Literature.

Finn-Ugric 138. Survey of Finnish Literature in Translation.

158. 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–1B–1C. 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. The Divine Comedy in English.

140. Readings in the Italian Theater in Translation.

150. Modern Italian Fiction in Translation.

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 152. 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.

Serbo-croatian 154. Survey of Yugoslav Literature.

162. Cervantes in Translation.

Spanish 160A–160B. Hispanic Literature 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)*.

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*.

Marc Bensimon, Ph.D., *Associate Professor of French*.

L. Gardner Miller, Docteur de l'Université de Strasbourg, *Associate Professor of French*.

Hassan Nouty, Docteur-ès-Lettres, *Associate Professor of French*.

Anne-Lise Cohen, Ph.D., *Assistant Professor of French*.

Jean Decock, Ph.D., *Assistant Professor of French*.

Anne Fabre-Luce, Ph.D., *Assistant Professor of French*.

Frede Jensen, Ph.D., *Assistant Professor of French*.

Jacques Prévot, Agrégé des Lettres, *Assistant Professor of French*.

Marius Ignace Biencourt, Docteur de l'Université de Paris, *Assistant Professor of French, Emeritus*.



Colette Brichant, Docteur de l'Université de Paris, *Lecturer in French*.

Patrick d'Estivaux, Diplôme d'Études Politiques, *Associate in French*.

Roger Gillioz, M.A., *Associate in French*.

Judith Gollub, Licenciée-ès-Lettres, Ph.D., *Lecturer in French*.

Marie-Claire Hackstaff, M.A., *Lecturer in French*.

Jacqueline Hamel, Licenciée-ès-Lettres, *Lecturer in French*.

Marie-Elisabeth Hubert-Rodier, Licenciée-ès-Lettres, *Associate in French*.

Madeleine Korol, Ph.D., *Lecturer in French*.

Yvone Lenard, M.A., *Lecturer in French*.

Annie Lowitz, M.A., *Associate in French*.

Padous de Martini, B.A., *Lecturer in French*.

Jeanne Perkins, Ph.D., *Acting Assistant Professor of French*.

Claire Saint-Léon, Ph.D., *Acting Assistant Professor of French*.

Liliane Saphier, Licenciée-ès-Lettres, *Associate in French*.

Sylvia Walker, M.A., *Lecturer 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 in literature chosen from the seven-teenth and twentieth century groups of upper division offerings in French literature. Suggested: three courses in Latin, Italian, Spanish or German.

Plan B: With emphasis on literature,

§ Recalled to active service 1967–1968.

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: Mrs. Cohen 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 specializ-

ing 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 3 in German, Latin and either Spanish or Italian. Students may also pass a reading examination in German, Latin and either Italian or Spanish. 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 (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 dissertation, 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 reevaluated 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

1G. Elementary French for Graduate Students.

(No credit)

Sections meet three hours weekly.

Mr. Miller in charge

2. Elementary French.

Sections meet five hours weekly. Prerequisite: course 1 or advanced placement standing.

Miss Hamel in charge

2G. Elementary French for Graduate Students.**(No credit)**

Sections meet three hours weekly. Prerequisite: course 1G or the equivalent. Mr. Miller 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. Mrs. Perkins in charge

5. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 4 or four years of high school French or advanced placement standing Mrs. Perkins in charge

6. Intermediate French.

Sections meet five hours weekly. Prerequisite: course 5 or advanced placement standing. Mrs. Perkins in charge

7. Advanced French.

Sections meet five hours weekly. Prerequisite: course 6 or advanced placement standing. Mr. Miller in charge

8. Advanced French.

Sections meet five hours weekly. Prerequisite: course 7 or advanced placement standing. Mr. Miller in charge

9. Advanced French.

Sections meet five hours weekly. Prerequisite: course 8 or advanced placement standing. Mr. Miller 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 prac-

tice; 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.

114 A. The Middle Ages and Renaissance

114 B. The 17th and 18th Centuries

114 C. The 19th and 20th Centuries

Mrs. Perkins in charge

115A-115B-115C. Old French Language and Medieval Literature.

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. Mr. Jensen

115B. Medieval Literature (Part I). Classes meet two hours weekly. Mrs. Cohen

115C. Medieval Literature (Part II). Classes meet two hours weekly. Mrs. Cohen

116A-116D. The Renaissance.

All classes meet two hours weekly.

116A. Lyric Poetry

Mrs. Perkins

116B. Rabelais and His time.

Mr. Bensimon

116C. Montaigne and His Time.

Mr. Bensimon

116D. Theater.

Mrs. Perkins

117A-117B-117C. The Seventeenth Century.

All classes meet two hours weekly Mr. Prévot

117A. Classical Theater (Corneille, Molière, Racine).

117B. Prose.

117C. Non-Dramatic Poetry

118A-118D. The Eighteenth Century.

Classes meet two hours weekly. Mr. Crowley

118A. The Philosophes.

118B. The Encyclopedistes and Rousseau.

118C. The Novel.

118D. The Theater. Classes meet as announced.

Mr. Crowley

119A-119E. The Nineteenth Century.

All classes meet two hours weekly. The Staff

119A. The Novel.

119B. Theater.

119C. Poetry.

119D. Intellectual Trends.

119E. The Turn of the Century.

120A-120D. The Twentieth Century.

All classes meet two hours weekly.

Mr. Decock and the Staff

120A. Introduction to the Twentieth Century.

120B. The Novel from 1930 to the Present.

120C. The Theater.

120D. Poetry.

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. Miller

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. Mrs. Gollub

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 151 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.

Miss Fabre-Luce

201B. *La Dissertation Française*. Course meets three times weekly. Required for the M.A. and Ph.D. degrees.

Mr. Bonno

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-204B. French Historical Grammar.

(Formerly numbered 201A-201B.) This course will study the development of the French language through texts representative of each period from Latin to the 16th century; the emphasis will be on reading selected texts which will serve as the basis for semantic, syntactical, and grammatical commentary. Required for Ph.D. in Romance Linguistics. Classes will meet twice weekly.

Mr. Jensen

205A-205B. The Intellectual Background of French Literature.

205A. Scholasticism, Humanism, Rationalism, Empiricism. Course meets three times weekly. Required for the Ph.D. degree.

Mr. Pucciani

205B. Positivism, Idealism, Phenomenology, Existentialism. Course meets three times weekly. Required for the Ph.D. degree.

Mr. Pucciani

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.

Mr. La Du

215B. The *Chansons de geste*. Classes will meet twice weekly. Core course.

Mr. La Du

215C. The Romance. Classes will meet twice weekly. Core course.

Mr. La Du

215D. Medieval Theater. Classes will meet twice weekly.

Mrs. Cohen

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-217J. 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. Poetry. Two hours weekly. Mr. Bonno
- 217I. Moralists. Two hours weekly. Mr. Bonno
- 217J. Religious Thought. Two hours weekly. Mr. Bonno

218A-218E. The Eighteenth Century.

- 218A. Voltaire and His Time. Two hours weekly. Core course. Mr. Crowley
- 218B. Rousseau and His Time. Two hours weekly. Core course. Mr. Crowley
- 218C. Diderot and the Encyclopedia. Two hours weekly. Core course. Mr. Crowley
- 218D. The Theater. Two hours weekly. Mr. Crowley
- 218E. The Novel. Two hours weekly. Mr. Crowley

219A-219K. The Nineteenth Century.

- 219A. Romanticism. Two hours weekly. Core course. Mr. Nouty
- 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
- 220N. Religious Thought in the 20th Century. Two hours weekly. 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. French-African Literature of Madagascar and Bantu Africa. Two hours weekly. Core course. Mr. Nouty
- 221B. French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa. Two hours weekly. Core course.
- 221C. Special Topic in French-African Literature. Two hours weekly.

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.

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 General 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

■ GENETICS

For courses in genetics, see under departments of Bacteriology, Botany and Plant Biochemistry, 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; G. 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.A. and Ph.D. in Geochemistry is offered under the sponsorship of the interdepartmental committee. The curriculum is open to students having an outstand-

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

ing 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.*

Howard J. Nelson, Ph.D., *Professor of Geography (Chairman of the Department).*

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.*

Tom L. McKnight, Ph.D., *Associate Professor of Geography.*

Donald W. Griffin, Ph.D., *Assistant Professor of Geography.*

Gerry A. Hale, Ph.D., *Assistant Professor of Geography.*

Placido La Valle, 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.*

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 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.

† Absent on leave, 1967-1968.

‡ Absent on leave, fall quarter, 1967-1968.

§ Absent on leave, winter quarter, 1967-1968.

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, 172, 176; and *two* courses chosen from Group IV—Geography 122, 124, 130, 132, 140, 150, 152, 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.

The Minor

Every geography major shall have a minor. The minor 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 two 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 146, 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 Ex-

amination 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 initially 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 148, 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 205 (Seminar: 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 language-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 cul-

tural 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. Prerequisites: Biology 2A-2B. 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**

10B. 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**

10C. 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. LaValle, 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.

Mr. La Valle

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.

(Formerly numbered 171.) Lecture, three hours; reading period, one hour. Prerequisites: courses 1A-1B, or equivalent, or upper division standing. The geography of major divisions of the world at selected times in the past. The theme for 1967-1968 will be Anglo-America.

The Staff

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.

Mr. Griffin

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 1A-1B-1C, or equivalent, or consent of the instructor. Characteristics, distribution, environmental and cultural relationships of the principal vegetation patterns.

The Staff

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

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.

Mr. La Valle

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 contemporary 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. 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. Griffin, 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. (1/2 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**

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: Physical Geography.

Discussion session, three hours; reading period, two hours. Prerequisites: course 212 or 214, or equivalent, and consent of the instructor. Related research projects growing out of courses 212 and 214.
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. Advanced Historical Geography.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 124, or equivalent, or consent of the instructor. The historical geography of selected regions of the world.
The Staff

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. Griffin, 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. Biogeography.

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 plant and animal distributions.
Mr. Bennett

265. Seminar: Biogeography.

Discussion session, three hours; reading period, two hours. Prerequisites: course 260 or equivalent and consent of the instructor. Research projects related to or growing out of course 260.
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.

Laboratory, three hours; independent work, two hours. Prerequisites: course 172 or equivalent or consent of the instructor. The study of aerial photographs 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

276. 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.
Mr. La Valle

278. Regional Field Investigations. (2 courses)

(Formerly numbered 275.) Field camp; offered in summer quarter only in 1968, 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. Griffin, 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. Seminar: Selected Regions.

(Formerly numbered 273.) Discussion session, three hours; reading period, two hours. Prerequisite: consent of the instructor. A study of the geographic conditions and their relation to economic, social, and political problems in selected regions of the world. Variable each time offered.

The Staff

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. Humid Tropics.

Lecture, two hours; discussion session, one hour; reading period, one hour. Prerequisites: course 160 or 162 or equivalent or consent of the instructor. Analysis of the biophysical and cultural complexes of the humid tropical region.

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 (Vice-Chairman of the Department)*.

Preston E. Cloud, Jr., Ph.D., *Professor of Geology*.

John C. Crowell, Ph.D., D.Sc., h.c., *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*.

** Member of the Institute of Geophysics and Planetary Physics.

- **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.*
 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.*
 Ronald J. Gibbs, Ph.D., *Assistant Professor of Geology.*
 Lincoln S. Hollister, Ph.D., *Assistant Professor of Geology.*



- Ted L. Bear, A.B., *Lecturer in Petroleum Geology.*
 **David T. Griggs, M.A., *Professor of Geophysics.*
 **Willard F. Libby, Ph.D., *Professor of Chemistry.*
 **Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics and Geology.*
 LouElla R. Saul, M.A., *Senior Museum Scientist.*
 Alexander Stoyanow, Ph.D., *Research Associate in Geology.*
 Takeo Susuki, M.A., *Senior Museum Scientist.*
 William S. Ting, Ph.D., *Associate Research Geologist.*
 Peter P. Vaughn, Ph.D., *Associate 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.

The Major

Geology 101A-101B-101C, 111A-111B-111C, 115, 121A-121B; a second year of mathematical, biological, or physical science.

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 146.

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.

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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 148.

Students may proceed directly from the 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 3G. Geology.

See Physical Sciences, page 387.

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

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

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-121B. Advanced Field Geology.

Summer, all day, six weeks in field. Prerequisite: course 111C or consent of the instructor in charge. Preparation of geologic maps and reports on selected regions. The Staff

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

131. Geochemistry.

(Same as Geophysics 131.) Lecture, three hours; discussion, one hour. Prerequisites: junior or senior standing in physical science and consent of instructor. Origin and abundance of the elements and isotopes; distribution and chemistry of elements and isotopes of the earth, oceans, and atmosphere; age of the earth and crustal evolution; phase transformations at pressures and temperatures found in the earth's interior. Mr. Kaplan, Mr. Libby

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

199. Special Studies in Geology.

Students may be allowed to take course more than once for credit.

The Staff

Graduate Courses

200. Problems of Earth History.

Lecture, three hours; discussion, one hour; field trips. Prerequisites: senior or graduate standing in biological, mathematical or physical science. Geological, geochemical, geophysical, and paleontological approaches in elucidating the history of the earth.

The Staff

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

216. Micropaleontology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 115 and 111C or graduate standing in biological science. Systematic, stratigraphic, and ecologic study of microfossils, and the techniques utilized in their study.

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.

230. X-Ray Crystallography and Crystal Chemistry.

Lecture, three hours; laboratory, three to six hours. Prerequisite: course 101C. Theory and techniques of X-ray diffraction; point and space group symmetry; crystal structure determination; chemical bonding; relation of atomic structure to physical properties of crystals; structures of rock-forming silicates.

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

236. Igneous Petrology.

Lecture, two hours; laboratory, six hours. Prerequisites: course 101C. Composition, distribution, and origin of selected igneous rock types using observational techniques and theoretical, experimental, and analytical approaches. Topics covered may include one or more of the following: basalt provinces, batholiths, layered intrusives, and anorthosite and related rocks.

Mr. Hollister, Mr. Watson

238. Metamorphic Petrology.

Lecture, three hours; laboratory, six hours. Prerequisites: course 101C. 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

240. Sedimentary Petrology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 101C. Characteristics and origins of sediments and sedimentary rocks; physical and mineralogical analysis of sediments.

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. 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. Crowell, 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, 598, 599 are to be arranged, all require consent of instructor. Seminars vary in content and instructor according to interests of staff and students. 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 and Mineral Deposits.

The Staff

252. Seminar in Geochemistry.

The Staff

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|---|-----------|--|-----------|
| 253. Seminar in Petrology. | The Staff | 599. Doctoral Research and Dissertation Preparation. (½ to 1 course) | The Staff |
| 254. Seminar in Sedimentology. | The Staff | | |
| 255. Seminar in Structural Geology and Tectonics. | | Related Courses in Other Departments | |
| | The Staff | Geophysics and Planetary Physics 122. Geophysical Prospecting. | |
| 256. Seminar in Physical Geology. | The Staff | 249. Experimental Petrology. | |
| 257. Seminar in Paleontology. | The Staff | 250. Seminar in Geophysics. | |
| 297. Advanced Techniques in Geological Research. | The Staff | 260. Experimental Geology. | |
| 298. Advanced Topics in Geology. (½ to 1 course) | The Staff | Planetary and Space Science 222. Introduction to Seismology. | |
| Individual Study and Research | | 225A-225B. Physics and Chemistry of Planetary Interiors. | |
| 596. Directed Individual Study and/or Research. (½ to 1 course) | The Staff | Zoology 260. Seminar in Vertebrate Paleontology. | |
| 598. Masters Research and Thesis Preparation. (½ to 1 course) | The Staff | | |

■ 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 (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.*
 Stanton J. Peale, Ph.D., *Assistant Professor of Astronomy and Geophysics.*
 John T. Wasson, Ph.D., *Assistant Professor of Chemistry and Geophysics.*



Paul J. Coleman, Jr., Ph.D., *Acting Associate Professor.*

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

† Absent on leave, 1967-1968.

§ Recalled to active service, 1967-1968.

sciences, physics, mathematics or chemistry is expected of students pursuing graduate 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.A. 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

122. Geophysical Prospecting.

Prerequisite: consent of the instructor. The principles of geophysical prospecting for ores, petroleum, and other economic minerals.

131. Geochemistry.

(Same as Geology 131.) Prerequisite: upper division standing in chemistry, physics or geology with consent of the instructor. Origin and abundance of the elements and isotopes; distribution and chemistry of elements and isotopes in the earth, oceans, and atmosphere; age of the earth and crustal evolution; phase transformations at pressures and temperatures found in the earth's interior.

Mr. Kaplan, Mr. Libby

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. (¾ 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.*
 William J. Mulloy, Ph.D., *Emeritus Associate Professor of German.*
 John W. Jacobson, 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.*
 Donald J. Ward, Ph.D., *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.*
 ———, *Instructor in German.*
 ———, *Instructor in German.*
 ———, *Instructor in German.*



- Ehrhard Bahr, Ph.D., *Acting Assistant Professor of German.*
 Stephanie Lombardi, Ph.D., *Lecturer in 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 and four 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 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 adviser. A placement examination in German language and literature may be required of entering graduate students.

Requirements for the General 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 146-148.

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.

3. Application for advancement to candidacy may be made when the student has passed the 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 seminar course.

5. Graduates 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. Students who are accepted on the thesis plan take only an oral examination in the field of the thesis, as provided on page 147.

7. Candidates who expect to terminate their 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. Candidates who plan 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 earliest times to the present.

Requirements for the Doctor's Degree

1. For the general requirements, see pages 148-150.

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. candi-

dates. 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.

The degree is offered in the following four fields, from which one major and one minor field shall be selected: (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. 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 150.

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 and Miss Schulz in charge

1G. 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 and Miss Schulz in charge

3. Elementary German.

Lecture, five hours per week. Prerequisite: course 2 or two years of high school German.
Mrs. Lombardi and Miss Schulz in charge

4. Intermediate German.

Lecture, five hours per week. Prerequisite: course 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. Belgardt 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. Mr. Wilbur in charge

***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. Bäuml, Mr. Schwartz

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. Bäuml, Mr. Oswald

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. 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. Wilson

106A. Advanced Composition, Grammar, and Conversation.

Prerequisite: upper division standing or consent of the instructor. 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: theory and method of descriptive, historical, and comparative linguistics. Mr. Schwartz, Mr. Wilbur

118. German Phonetics.

(Formerly numbered 200.) Mr. Wilbur

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. Oswald, Mr. Wilson

Courses Open to Graduate Students in German**123. Advanced Study in Literature of the Classical Period.**

Lecture, three 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

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. Intensive textual analysis 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

* Not to be offered 1967–1968.

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. Ward

204. Renaissance and Reformation Literature.

Lecture, three hours per week. Mr. Sobel

205. Baroque Literature.

Lecture, three hours per week. Mr. Bäuml

206. Enlightenment and Sturm und Drang.

Lecture, three hours per week.

207. Classicism.

Lecture, three hours per week. Mr. Hagge

208. Romanticism.

Lecture, three hours per week.

209. 19th-Century Literature.

Lecture, three hours per week.

210. German Literature of the Modern Period 1890-1930.

Three hours per week. Mr. Koester

211. Contemporary German Literature, 1930 to the Present.

Lecture, three hours per week. Mr. Oswald

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

254. Seminar in Renaissance and Reformation.

Three hours per week. Mr. Sobel

255. Seminar in Baroque Literature.

Three hours per week. Mr. Sobel

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.

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. Wilbur

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

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, 6, or 11, 12, 13, 14, 15, 16, 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 9 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 desiring a terminal A.B. This plan requires: Scandinavian 141, 142, 143, and 6 courses from Scandinavian 105A-105B, 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, German 101, 103, 104, and 3 courses from the following: Scandinavian 105A-105B, 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 105A-105B, 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**6. Intermediate Swedish.**
Prerequisite: course 5 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**16. Intermediate Norwegian.**
Prerequisite: course 15 or equivalent.
Mr. Chapman in charge**Upper Division Classes****105. Advanced Swedish.**

Lecture, three hours per week and special assignments. Prerequisite: course 6 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 18th 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 6 or 16, 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 6 or 16, 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 6 or 16, 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

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)

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 Grunebaum, 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 Martines, Ph.D., *Professor of History.*
 Hans J. Rogger, Ph.D., *Professor of History (Vice-Chairman of the Department).*
 Theodore Saloutos, Ph.D., *Professor of History.*
 Leonard M. Thompson, D.Litt., *Professor of History.*
 Speros Vryonis, Ph.D., *Professor of History.*
 Eugen Weber, M.Litt., *Professor of History (Chairman of the Department).*
 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.*
 Mortimer H. Chambers, Jr., Ph.D., *Associate Professor of History.*
 Raymond H. Fisher, Ph.D., *Associate Professor of History.*
 Frank Gatell, Ph.D., *Associate Professor of History.*
 Nikki Keddie, Ph.D., *Associate Professor of History.*
 Stanley G. Payne, Ph.D., *Associate Professor of History.*
 Arthur J. Slavin, Ph.D., *Associate Professor of History.*
 Robert A. Wilson, Ph.D., *Associate Professor of History.*
 Stanley Wolpert, Ph.D., *Associate Professor of History.*
 Edward A. Alpers, Ph.D., *Assistant Professor of History.*
 John G. Burke, Ph.D., *Assistant Professor of History.*
 E. Bradford Burns, 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.*
 Earl T. Glauert, 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.*
 Peter Loewenberg, Ph.D., *Assistant Professor of History.*
 D. Cresap Moore, Ph.D., *Assistant Professor of History.*
 Gary B. Nash, Ph.D., *Assistant Professor of History.*
 Richard Rouse, Ph.D., *Assistant Professor of History.*
 Richard Weiss, Ph.D., *Assistant Professor of History.*
 Robert Wohl, Ph.D., *Assistant Professor of History.*
 Isser Woloch, Ph.D., *Assistant Professor of History.*
 Joseph F. Zacek, Ph.D., *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*
 ———, *Assistant Professor of History.*



- Richard Hovannisian, M.A., Ph.D., *Visiting Associate Professor of History.*
 Albert Hoxie, M.A., *Lecturer in History.*
 Larry C. Kincaid, Ph.D., *Acting Assistant Professor of History.*
 Miriam Lichtheim, Ph.D., *Lecturer in History.*
 Peter H. Reill, Ph.D., *Acting Assistant Professor of History.*

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 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 147 and 149 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); (2) two courses selected from: 5A-5B (History of England and Greater Britain), 6A-6B (History of American Civilization), 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 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-plus average in that major and a B average in all courses taken in the junior and senior years. The Department requires the applicant 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 should be submitted by May 15 for admission in the Fall, and by October 15 for admission in the Winter and Spring.

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

Candidates for the degree of Master of Arts must meet the requirements set forth by the Graduate Council as stated on page 146.

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 third quarter of full-time graduate work in the department, each candidate for an advanced degree must pass a screening examination. This examination is designed to test the candidate's general understanding of historical method and his analytical powers. The graduate advisor 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 147). 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 438.

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 Advisor.

Requirements for the Doctor's Degree

Candidates for the degree of Doctor of Philosophy in history must meet the general requirements set forth on pages 148-150. 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. 149), candidates must take a minimum of five quarters of graduate courses. 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 third quarter of full-time graduate work in the department, each candidate for an advanced degree must pass a screening examination. This examination is designed to test the candidate's general understanding of historical method and his analytical powers. The graduate advisor 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 examina-

tion, 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.

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. Full-time graduate students should take their qualifying examinations not later than the end of their ninth quarter of graduate work. Students who fail 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; *History of

* In cooperation with the School of Medicine.

Medicine; Europe, 1454-1789; 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, students 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

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.

The Staff

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.

105A-105B. History of Technology from Antiquity to the Twentieth Century.

A general survey of the history of technology with some consideration of its changing social, economic, and cultural relationships.

Mr. Burke

106A-106B. History of Science.

Scientists and scientific thought in relationship to societies from Aristotle to the present. Mr. Burke

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

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

117A-117B. History of Ancient Egypt.

Prerequisite for course 117B: course 117A. A cultural history of ancient Egypt from predynastic times to the Arab conquest (4000 B.C. to 640 A.D.): the peaks of achievement in the Old, Middle, and New Kingdoms. The periods of foreign domination: Assyrians; Persians; Alexander the Great; Graeco-Roman rule; Christian Egypt. 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. White

121B. The Later Middle Ages.

A continuation of course 121A, from 1050 to about 1450, with the added consideration of the new scientific movements. Mr. White

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. Bolle

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

127. History of East Africa.

Mr. Alpers

128. History of South Africa.

Mr. Thompson

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. Hovannisian

132A-132B. Islamic Iran.

Political, social and cultural history of Persia beginning with the Muslim conquest. Mrs. Keddie

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.

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. 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. 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.

142B. 19th Century.

142C. 20th Century.

Mr. Weber

143A-143E. History of Modern France.

143A. 1480-1640.

Mr. Lossky

143B. 1640-1789.

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. 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.

Mr. Fisher

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.

Mr. Fisher

146C. The Soviet Union, 1917 to the present.

The Bolshevik Revolution, consolidation of the regime, collectivization and industrialization, foreign policy and domestic developments.

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.

Mr. Payne

149A-149B-149C. History of Eastern Europe.

149A. The Balkans. From the 14th century to 1878.

Mr. Vryonis, Mr. Zacek

149B. East-Central Europe to 1800. The Western Slavs, their Baltic and Danubian neighbors.

Mr. Zacek

149C. Contemporary East Central Europe and the Balkans.

Mr. Zacek

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. Slavin

150E. 18th century England.

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.

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. Burns, 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.

Mr. Burns

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.

Mr. Glauert

167A-167B. Social and Intellectual History of Latin America.

The growth of the intelligentsia in Latin America with special emphasis on the impact of European currents of thought, the influence of the American social milieu, the revolutionary manifestos of the Left and Right, and the promotion of liberalism, nationalism, and socialism.

Mr. Glauert

168A-168B. Colonial Latin America.

Studies in the social, political and economic development of Latin America prior to 1825.

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. Burns, 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. Gatell**

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. 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**

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.

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: 8 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.

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 consent of the instructor. The early modern period of Chinese history, emphasizing the evolution of social, political and economic institutions under native and foreign rulers.

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. History of Southeast Asia.

The history and culture of modern Burma, Thailand, Laos, Cambodia, Vietnam, Malaya, Indonesia, and the Philippines from earliest times. Emphasis on the expansion of European influence, and the growth of Nationalism in Burma, Indonesia, Indo-China, and the Philippines. **Mr. Wolpert**

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**

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 Upper Division standing with permission of the instructor.

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

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

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

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

†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

250–282. 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. White

254A–254B. Seminar in the Renaissance.

Mr. Martines

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

258A–258B. Seminar in English History: Middle Ages and Renaissance.

Mr. Rouse, Mr. Slavín

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

262A–262B. Seminar in the Modern History of Spain, Italy and Portugal.

Mr. Payne, Mr. Wohl

263A–263B. Seminar in Russian History.

Mr. Fisher, Mr. Rogger

264A–264B. Seminar in British Empire History.

† Offered as schedule and staff allow.

- 265A-265B. Seminar in African History.**
Mr. Griffith, Mr. Thompson
- 266A-266B. Seminar in Latin American History.**
Mr. Burns, 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 Grunebaum

268A-268B. Seminar in Early American History.
Mr. Nash

270A-270B. Seminar in Recent United States History.
Mr. Daniels

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 Since 900.
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

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.*



J. Norman Austin, Ph.D., *Assistant Professor of Classics.*

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. Special Topic. Mr. Austin, Mr. Pasinetti
Class meets three hours a week.

Related Courses in Other Departments

Integrated Arts 1A-1B-1C. Man's Creative Experience in the Arts.

Engineering 101. Engineering. Its Role and Function in Human Society.

■ INTEGRATED ARTS

The most significant aspects of the arts through the ages, from primitive art to modern mass communication, literature excluded. A nontechnical presentation for the general student.

1A. Man's Creative Experience in the Arts.

Lecture, three hours. Classics through the Middle Ages.

1B. Man's Creative Experience in the Arts.

Lecture, three hours. Renaissance through the German Revival.

1C. Man's Creative Experience in the Arts.

Lecture, three hours. 19th and 20th centuries.

■ 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 (chairman); 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.

■ ISLAMIC STUDIES

For details of the undergraduate major, see Curriculum in Near Eastern Studies, page 79 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

Computer Sciences

Committee in Charge. D. Cantor, Mathematics (chairman); B. Russell, Engineering; E. C. Carterette, Psychology; T. Estrin, Anatomy; B. Fried, Physics; L. Knopoff, Geophysics.

Information concerning times of meetings and general program may be obtained from the offices of the UCLA Computing Facility.

A colloquium on computer sciences will meet biweekly to study technical aspects of application of computers to the solution of scientific research problems. Much attention will be devoted to mechanical languages and to other aspects of the problem of communication between researcher and machine. All facets of the progress of a problem through a computation will be considered; these will include numerical analysis and related mathematical features, translation to codes and related logical features, structure of machines and related engineering features. Excerpts from the proceedings of the colloquium may be submitted for publication in the University of California publication in automatic computation.

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.

for the students seeking a general education and desiring a special emphasis in this particular area or for students who plan to live and work in this area, whose careers will be aided by a knowledge of the peoples, languages, and institutions. (Such careers might be centered on teaching, research, business, engineering, journalism, librarianship, or government service.) Subject to the limita-

tions 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 146.

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. Students entering the program are 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. Candidates for the degree of Master of Arts in Islamic Studies will be required to show proficiency in either French or German, in addition to the language or languages of their field of specialization. The student's knowledge of the chosen language will be examined in the Near Eastern Center at the end of the first quarter of residence, and he must pass the graduate foreign language reading examination in the same language by the end of the second quarter of residence. In view of the scholarly literature in the field, candidates are earnestly advised to acquaint themselves with a second European language in which relevant material for their 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 256 and Sociology 236, 237.

Other study arrangements in the Near Eastern field are available through the Department of Near Eastern and African Languages.

Requirements for the Ph.D. Degree in Islamic Studies

General Requirements. See pages 148-150.

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.
 147. The Cultures of the Arab World.
 148. The Theory of Oral Literature.
Arabic 102A-102B-102C. Intermediate Arabic.
 103A-103B-103C. Advanced Arabic.
 110A-110B-110C. Spoken Moroccan Arabic.
 111A-111B-111C. Spoken Egyptian Arabic.
 112A-112B-112C. Spoken Syrian 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.
 190A-190B-190C. Arabic Dialectology.
 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.
 102A-102B. Egyptian Hieroglyphs and Epigraphy.
 104A. Art of the Ancient Near East.
 105A. Early Christian Art.
 105B. Byzantine Art.
 199. Special Studies in Art.

- Berber** 101A-101B-101C. Elementary Tamazight.
 102A-102B-102C. Advanced Tamazight.
 103A-103B-103C. Shilha.
 105A-105B-105C. Elementary Kabyle.
 120A-120B-120C. Introduction to Berber Literature.
 150A-150B. Survey of Berber Literature in English.
 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.*

* See Department of Near Eastern Languages for complete listing and detailed description.

† See Linguistics Department for complete listing and detailed description.

- History** 117A–117B. 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.
 132A–132B. Islamic Iran.
 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.
 196A. Early History of India.
 196B. Recent History of India and Pakistan.
 199. Special Studies in History.
- Music.** 145. History and Theory of Persian Music.
 171K. Music of Persia.
- Near Eastern Languages** 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.
- 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.
 225. Medieval Art.
- Berber** 201A–201B–201C. Comparative Study of Berber Languages.
 280A–280B. Seminar in Berber Linguistics.
- 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. French-African Literature of Madagascar and Bantu Africa.
 221B. French-African Literature of Berbero-Sudanese and Arabo-Islamic Africa.
 221C. Special Topic in French-African Literature.
 257A–257B. Studies in French-African Literature.
- Geography** 288. Africa.

† See Linguistics Department for complete listing and detailed description.

Hebrew.***History 200A–200B.** History of the Ancient East.

- 201A. History of the Eurasian Nomadic Empires.
 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.
 230J. Advanced Historiography. The Near East.
 240J. Special Topics. The Near East.
 267A–267B. Seminar in Near Eastern History.
 282A–282B. Seminar in the History of Religions.
 596. Directed Studies.

Islamic 596. Directed Individual Study.

597. Examination Preparation.
 598. Thesis Research and Preparation.
 599. Dissertation Research and Preparation.

Linguistics 220A. African Linguistics.

- 225M. Afro-Asiatic.

Near Eastern Languages 200A–200B–200C.

- Bibliography and Method of Near Eastern Languages and Literature.
 241. Folklore and Mythology of the Near East.
 290. Seminar in Paleography.

Persian 220A–220B. Classical Persian Texts.

250. Seminar in Persian Literature.

* See Department of Near Eastern Languages for complete listing and detailed description.

596. Directed Individual Study.

597. Examination Preparation.

Political Science.

215. Comparative Government.
 250F. Seminars in Regional and Area Political Studies. Middle Eastern Studies.
 250K. North African Studies.
 256. Seminar in Comparative Government.

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.
 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.

ITALIAN

(Department Office, 340 Royce Hall)

Pier-Maria Pasinetti, Ph.D., *Professor of Italian.*

Charles Speroni, Ph.D., *Professor of Italian (Chairman of the Department).*

Franco Fido, Dottore in Lettere, *Associate Professor of Italian.*

†Giuse Rimanelli, Dottore in Lettere, *Associate Professor of Italian.*

Margherita Cottino-Jones, Ph.D., *Assistant Professor of Italian.*



Franco Betti, *Acting Instructor in Italian.*

Anna Burney, M.A., *Associate in Italian.*

Mirella Cheeseman, Dottorato Università di Napoli, *Lecturer in Italian.*

Maddalena Mauro, Dottorato Università di Roma, *Lecturer in Italian.*

Angelia Minissi, Dottore in Lettere, *Acting Assistant Professor of Italian.*

Mario Pietralunga, Dottorato Università di Bologna, *Associate in Italian.*

† Absent on leave, 1967–68.

Maria Russell, Dottorato Università di Roma, *Lecturer in Italian.*

Althea Soli, M.A., *Lecturer in Italian.*

Vera Strahl, Dottore in Lettere, *Associate 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 the fine arts; three courses in a second language, either Latin, French, Spanish or German. If the language is begun at UCLA, the student must take it through level 3.

Requirements for the Master's Degree

General Requirements. See page 146. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See page 147.

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 guidance 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 comprehension examination.

2. Courses. Twelve courses with a minimum of nine in the 200 series, chosen from the following: 214, 215, 216A, 216B, 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 148.

Departmental Requirements.

1. Foreign Language. Students 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 Spanist (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 series: 250D, 251-258, 596, 597, 599. In addition, the student will take such courses as his guidance committee will prescribe in preparation for the qualifying examinations.

3. Fields of Specialization. The Department recognizes the following fields of specialization, from which *one major* and *two minor* fields shall 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.

Mrs. Russell in charge

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.

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. Betti

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, Petrarch 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.

Mrs. Minissi

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

26. 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.

100 B. The Renaissance.

100C. From the Renaissance 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 meets three hours weekly.

Mr. Fido

150. Modern Italian Fiction in Translation.

Class meets three hours weekly.

Mrs. Minissi

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. Mr. Jensen

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

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. Mrs. Minissi

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

255. 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. Mrs. Minissi

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.*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.*Robert A. Rutland, Ph.D., *Associate Professor of Journalism.*Maxwell McCombs, Ph.D., *Assistant 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.*David Noyes, *Lecturer in Journalism.*

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, 241, 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. *Degrees:* Students who pass a foreign language examination receive the Master of Arts degree; others will receive the Master of Science 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.

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.

241. Editorial Function of the Mass Media.

Critical analysis of the editorial function of the mass media; study of the editorial, the editorial column, and the editorial campaign. Required for the master's degree.

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.

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 journalism.

401. News Communication II.

Continuation of News Communication I.

402. News Communication III.

Continuation of News Communication I and II.

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 78 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 146.

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 78.

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, of which six must be in the 200 series including the Interdisciplinary Seminar in Latin American Studies 250A-250B. A minimum of three courses must be taken in each of two departments selected from the list below.

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. Ruscoe, Mr. Wilbert

Related Courses

- Anthropology** 107. Peoples of South America.
109. Indians of Modern Mexico and Peru.
114. Introduction to Nahuatl Language and Literature.
118A-118B-118C. Quechua.
121. Latin American Societies.
133A-133B. Ancient Civilizations of Middle America.

134. Ancient Civilizations of Andean South America.
199. (When concerned with Latin America.)
207. Indians of South America.
257. Indians of South America.
264. Problems of Higher Cultures of Nuclear America.
265. Contemporary Latin American Problems.
- 271-272. Historical Reconstruction in Anthropology. (When concerned with Latin America.)
274. Prehistoric Civilizations of the New World.
297. (When concerned with Latin America.)
- Art 119. Pre-Columbian Art.**
- Economics 199.** (When concerned with 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.)
281. Latin America.
290. Seminar: Selected Region. (When concerned with Latin America.)
- Individual Study and Research**
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.
- 167A-167B. Social and Intellectual History of 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-266C. Seminar in Latin American History.
- Political Science 131.** Latin American International Relations.
- 168A-168B. Government and Politics in Latin America.
198. (When concerned with Latin America.)
199. (When concerned with Latin America.)
- 250A. Latin American Studies.
- Portuguese 121A-121B.** Survey of Brazilian Literature.
133. Brazilian Poetry.
199. (When concerned with Brazil.)
203. The Development of the Portuguese Language.
236. Modern Brazilian Novel.
- Spanish 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-Classic 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.
- Sociology 131.** Latin American Societies.
199. (When concerned with Latin America.)

■ 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.*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.*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.*Kenneth W. Graham, Jr., B.A., J.D., *Acting Associate Professor of Law.*†Bernard E. Jacob, B.A., 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.***■ LIBRARY SERVICE**

(Department Office, 326 Powell Library)

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.*

† Absent on leave, 1967-1968.

§ Recalled to active 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.*



Harold Borko, Ph.D., *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.*
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.*

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. Method and Theory of Bibliography.

Lecture and discussion, three hours; laboratory, one to two hours. Introduction to the history, theory and methods of bibliographical research. Analytical or critical bibliography and enumerative or systematic bibliography.

201A. Cataloging and Classification.

Lecture, three hours; laboratory, six hours. The role of the catalog in the library, its functions and constitution; problems of entry and description—the old and the new (revised) rules. See also 201C.

201B. Cataloging and Classification.

Lecture, three hours; laboratory, six hours. Prerequisite: course 201A. The subject treatment of library materials: subject cataloging and classification—their respective functions; problems of design and application of subject headings; principles of classification—the Dewey and LC systems.

201C. Cataloging and Classification.

Lecture, three hours; laboratory, six hours. Prerequisite: course 201B. Problems and principles of corporate authorship—earlier rules and their revision; treatment of special materials: art, manuscripts, maps, motion pictures, music.

201D. Advanced Cataloging.

Prerequisite: course 201C. Discussion of current cataloging problems—problems arising from new library undertakings, the use of new types of library materials, the introduction of new methods in the process of cataloging and other new library developments affecting cataloging.

202A. Basic Sources of Information.

Lecture and discussion, three hours; laboratory and conference, two hours. History, methods and

materials of reference service and information retrieval. Survey of devices for bibliographical control of information. Encyclopedias, dictionaries, biographical compilations, directories, etc.

202B. Comprehensive Bibliography.

Lecture and discussion, three hours; laboratory and conference, two hours. Prerequisite: course 202A. 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.

202C. Secondary Bibliography.

Lecture and discussion, three hours; laboratory and conference, two hours. Prerequisite: course 202A; 202B recommended. 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.

203. Introduction to Librarianship.

Introductory survey of the evolution of libraries and basic information about the principal fields of library service, with emphasis on major trends and problems. Introduction to administrative theory and practice as applied to libraries.

204. Selection and Acquisition of Library Materials.

Lecture, three hours; group conference, one-two hours. Theories, principles, and practice of selecting books and other library materials. Techniques of acquisition by public, school, academic and special libraries.

205. Special Problems in the Selection of Materials and Evaluation of Collections.

Lecture, three hours; group conference, one-two hours. Prerequisite: course 204, or consent of the instructor. Problems in selecting recordings, films, maps, and other library materials in special format; special problems in selecting materials in particular subject fields; methods of evaluating library collections and the effectiveness of the selection process.

209. Special Studies in Children's Literature.

Lecture, three hours; conference and demonstration, one-two hours. Prerequisite: English 106, or consent of the instructor. 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.

211. Historical Bibliography.

Prerequisite: course 200, or consent of the instructor. Early records and the manuscript period; history of the printed book, including materials and methods; parallel history of the book trade and of book collecting in ancient, medieval and modern western civilization; Oriental influences upon western books and libraries.

213. History of Library Technology.

Prerequisite: course 211, or consent of the instructor. Special studies in the history of library techniques, methods, equipment, and organization of information for storage and retrieval. Results of investigations to be prepared with objective of journal publication.

215. Reading and Reading Interests.

Lecture and reports, two hours; conference, two hours. Prerequisite: consent of the instructor (limited to ten students). Reading interests, habits, and needs of different types and groups of readers. The nature of reading; problems of reading; selection of reading by children, young people, college students, and public library patrons. The role of the library in adult education.

217. Bibliography of Science, Engineering and Technology.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. 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.

218. Bibliography of the Medical and Life Sciences.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. 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.

219. Bibliography of the Social Sciences.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. Literature of the social sciences, including monumental source collections, periodicals, bibliographies, catalogs, indexes, abstracts, etc. Libraries notable for holdings in the social sciences.

220. Bibliography of the Humanities and Fine Arts.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. Literature of the humanities and fine

arts, with special emphasis on reference materials, bibliographies, indexes, etc. Notable special collections in the humanities and fine arts.

240. Comparative Librarianship.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. Library development and service patterns in European and other countries; comparisons of these with librarianship in the United States. Inter-library cooperation between types of libraries and also between libraries of different political jurisdictions, including international cooperation.

241. Libraries and Literature of the Southwest.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. 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.

243. Information System Analysis and Design.

Lecture and discussion, two hours; conference and reports, two hours. Prerequisite: consent of the instructor. Theories and principles of specialized systems development. Survey of principal specialized vocabularies, methods of file organization, and information systems. Methodology of system definition, procedural description, and evaluation. Mathematical models.

293. Seminar in Information Science.

(Formerly numbered 252.) Discussions and reports, two hours; additional hours as required by number of students enrolled. Prerequisites: course 243 and consent of the instructor. May be repeated once for course credit. 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. Research methods in information science.

Professional Courses**401. College, University and Research Libraries.**

Lecture, three hours; demonstrations and field trips, one-two hours. 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.

402. Public Libraries.

Lecture, three hours; demonstrations and field trips, one-two hours. Prerequisite: consent of the instructor. The government, organization, and administration of municipal, county, and regional public libraries; developments in the changing patterns of public library service.

403. School Libraries.

Lecture, three hours; demonstrations and field trips, one-two hours. 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.

404. Children's Libraries.

Lecture, three hours; demonstrations and field trips, one-two hours. Prerequisite: English 106 or course 209. 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.

405. Special Libraries and Special Collections.

Lecture, three hours; demonstrations and field trips, one-two hours. Organization, administration, collections, facilities, finances and problems of special libraries and of special collections within general libraries. Methods of handling nonbook materials. Current trends in documentation and mechanization.

406. Data Processing in the Library.

Prerequisite: Business Administration 113A-113B, or consent of the instructor. Principles of application of data processing techniques to library procedures. Survey of available equipment and computer components; methods of using them. Analysis of programs and systems developed for specific procedural and information retrieval processes. Evaluation of operating systems.

418. Medical and Biological Libraries. (½ course)

Lecture and discussion, two hours; demonstrations and field trips, one hour. Prerequisite: course 218 or consent of the instructor. 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.

449M. Medical Library Internship.

Prerequisites: M.L.S. degree or equivalent, graduate status, and consent of the Dean of the School of Library Service. 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.

449S. Internship in Scientific Information Systems.

Prerequisites: admission to graduate status and M.L.S. degree or equivalent; or admission to graduate status with a bachelor's degree in an acceptable subject major and qualifications (including reading knowledge of two modern foreign languages) for admission to the School of Library Service; and, in either case, approval of the Dean of the School of Library Service. Supervised program of observation and apprentice training in science information storage and retrieval systems, including mechanized and computer applications. Weekly critiques of readings and reports on documentation problems. Final examination. Minimum of 120 hours per quarter in Engineering and Mathematical Sciences Library of UCLA. May be repeated twice. Unit credit cannot be applied in satisfaction of M.L.S. degree requirements.

596. Directed Individual Study or Research. (½ to 1 course)

Prerequisite: consent of the Dean of the School of Library Service. Variable conference time and unit credit, depending upon complexity of research project. May be repeated once to a total of 1 course. Directed special studies in the fields of bibliography, librarianship, and information science. Report of studies to be planned for publication.

597. Preparation for the Master's Comprehensive Examination. (1 course)

Prerequisite: approval of the Dean of the School of Library Service. Directed study in preparation for the Comprehensive Examination, M.L.S. degree. Readings, conferences, reports.

598. Research for and Preparation of the Master's Thesis. (½ to 1 course)

Research and writing leading to the Master's Thesis in Information Science (Documentation). May be repeated once to a total of one course.

Related Courses in Other Departments

Education 241D. Junior College Administration.

329. Supervised Library Service.

English 106. 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.*

Daniel P. Kunene, Ph.D., *Assistant Professor of African Languages.*

Peter Lackowski, Ph.D., *Assistant Professor of Linguistics.*

Yolanda Lastra, Ph.D., *Assistant Professor of Linguistics.*

Barbara H. Partee, Ph.D., *Assistant Professor of Linguistics.*

———, Ph.D., *Assistant Professor of Linguistics.*



Henrik Birnbaum, Ph.D., *Professor of Slavic Languages.*

- J. Donald Bowen, Ph.D., *Professor of English.*
 William E. Bull, Ph.D., *Professor of Spanish.*
 James Eckmann, Ph.D., *Professor of Turkish.*
 Harry Hoijer, Ph.D., *Professor of Anthropology.*
 Wolf Leslau, Docteur-ès-Lettres, *Professor of Hebrew and Semitic Linguistics.*
 Clifford H. Prator, Ph.D., *Professor of English.*
 Jaan Puhvel, Ph.D., *Professor of Indo-European Studies.*
 Andreas Tietze, Ph.D., *Professor of Turkish.*
 Dean S. Worth, Ph.D., *Professor of Slavic Languages.*
 Kenneth G. Chapman, Ph.D., *Associate Professor of Scandinavian Languages.*
 Lois McIntosh, Ph.D., *Associate Professor of English.*
 Raimo Aulis Anttila, Ph.D., *Assistant Professor of Indo-European Studies.*
 Eugene J. Briere, Ph.D., *Assistant Professor of English.*
 Giorgio Buccellati, Ph.D., *Assistant Professor of Ancient Near East.*
 Russell N. Campbell, Ph.D., *Assistant Professor of English.*
 Walter J. Dowling, Ph.D., *Assistant Professor of Psychology.*
 Victoria Fromkin, Ph.D., *Assistant Professor of Speech and Linguistics.*
 Charles R. Krahmalkov, Ph.D., *Assistant Professor of Semitics.*
 Earl Rand, Ph.D., *Assistant Professor of English.*
 Stephen P. Schwartz, Ph.D., *Assistant Professor of German.*
 Terence H. Wilbur, Ph.D., *Assistant Professor of German.*



- Bradford Arthur, M.A., *Acting Assistant Professor of English.*
 Gyula Décsy, Ph.D., *Visiting Associate Professor of Finno-Ugric Studies.*
 Martin Kay, Ph.D., *Lecturer in Linguistics.*
 Ronald A. Snoxall, M.A., *Visiting Professor of African Languages.*
 Robert Wilson, Ph.D., *Acting Assistant Professor of Linguistics.*

The Undergraduate Linguistics Curriculum

The interdepartmental curriculum leading to the degree of Bachelor of Arts in linguistics is described on page 79.

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 Program A (see below), Linguistics 110 is 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, at the end of the fall quarter and just after the end of the spring

quarter. 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.

Program. There are two programs for the M.A. degree: Program A is designed to lead on to the Ph.D. for students who intend to teach in colleges and universities. Program B 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 B 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 Program A.

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, 230, 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: Nine courses taken as graduate work, as follows: Linguistics 103 or 200A; Linguistics 120; four courses selected from Linguistics 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 214, 241, 250K. At least five of the nine courses must be graduate courses (200 series). Because most students in Program B 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 Program A (or its 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.

The granting of the Ph.D. 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. Courses specifically intended for Ph.D. candidates are those numbered Linguistics 250–290, 596B, 599, and appropriate seminars in related departments.

Every candidate must take written and oral qualifying examinations in (1) general linguistic theory, (2) a specific language area, and (3) one of the following areas: experimental phonetics, linguistics and language teaching, mathematical and/or computational linguistics, psycholinguistics, ethno-linguistics and/or sociolinguistics, or historical linguistics.

Candidates 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.

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. Campbell, Mr. Hoijer, Mr. Lackowski

103. Introductory Phonology.

Prerequisite: course 100. A practical introduction to the phonology of some of the main languages in the world, with special emphasis on those likely to be of interest to teachers of English as a Second Language.

Mr. Ladefoged

105. Science of Speech.

(Same as Speech 104A.) 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.

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

115. Introduction to Acoustic Phonetics.

(Same as Speech 104B.) Prerequisite: course 100; or Speech 103, 104A. Physical acoustics and the acoustic characteristics of speech, including acoustic analysis and synthesis. Mrs. Franklin, Mr. Ladefoged

120. Linguistic Analysis.

(Formerly numbered 173. Same as Anthropology 114.) Prerequisite: course 100. Descriptive analysis of phonological and grammatical structures.

Mr. Lackowski

125. Cybernetics of Human Communication.

(Same as Speech 105.) An introductory survey of the communication process from the point of view of linguistics, mathematics, engineering, physiology, and psychology.

Mrs. Fromkin, Mr. Ladefoged

130. History of Phonetics.

(Formerly numbered 175. Same as Speech 150.) Prerequisite: course 100. A survey of the development of descriptions of speech in phonetic terms.

Mrs. Fromkin

*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

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

199. Special Studies in Linguistics. (½ or 1 course)

Prerequisite: course 120, and consent of instructor. May be repeated for credit.

The Staff

Graduate Courses

Seminars (numbered 250 and above) may be repeated for credit.

200A. Phonology I.

(Formerly numbered 200. Same as Speech 202.) Prerequisite: course 120 or equivalent. 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. Mrs. Fromkin, Mr. Ladefoged

200B. Phonology II.

(Formerly numbered 203.) Prerequisite: courses 103 and 120, or course 200A. Distributional, prosodic, and distinctive feature analysis of the phonological structure of language.

Mr. Lackowski

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. Hoijer

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

• Not to be given, 1967-1968.

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

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

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.

Miss Lastra

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.)

*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. Afro-Asiatic. (Formerly numbered 215.)

*225N. Athabascan.

225P. Chinese.

230. Experimental Methods in Linguistics.

(Formerly numbered 207. Same as Speech 208.) Prerequisite: course 200A. Techniques of experimental research in linguistics, including instrumentation in experimental phonetics and psycholinguistics, experimental design, and statistical evaluation.

Mr. Brière, Mr. Ladefoged

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

240. 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

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. Lackowski, Mr. Schachter, Mr. Stockwell

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. Same as Speech 280A.) Prerequisite: course 230. The use of instrumental studies in evaluating linguistic hypotheses, including physiological and acoustic phonetics.

Mrs. Fromkin, Mr. Ladefoged

255B. General Phonetics. Seminar.

(Formerly numbered 267B. Same as Speech 280B.) Prerequisite: course 200A. The organization of the phonetic categories required for linguistic descriptions and relations between phonological abstractions and empirical observations.

Mrs. Fromkin, Mr. Ladefoged

255C. Physiological Phonetics. Seminar.

(Formerly numbered 267C. Same as Speech 281.) Prerequisite: course 200A or Speech 202 or consent of the instructor. The anatomy, morphology, and physiology of the organs of speech.

Mrs. Fromkin, Mr. Ladefoged

* Not to be given, 1967-1968.

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. Brière

260B. Psycholinguistics II. Seminar.

(Formerly numbered 262B. Same as Psychology 260B.) Prerequisite: course 260A or equivalent. Continuation of 260A.

Mr. Dowling.

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.

Mr. Brière

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.

Mr. Bright

265B. Sociolinguistics. Seminar.

(Formerly numbered 263B. Same as Sociology 278.) Prerequisite: consent of instructor. Study of the patterned covariation of language and society; social dialects and social styles in language; problems of multilingual societies.

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. Antila

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. Antila

Individual Study and Research

596A. Directed Studies. (1/4 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. Graded satisfactory/unsatisfactory.

The Staff

596B. Directed Informant Work. (1/4 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.

(1/4 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 and his qualifying examinations. Graded satisfactory/unsatisfactory. May not be applied toward fulfillment of M.A. course requirements.

The Staff

599. Research for Dissertation. (1/4 to 4 courses)*

(Formerly numbered 299.) To enroll, student must have been advanced to candidacy for the Ph.D. degree. 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.

The Staff

102A-102B-102C. Intermediate Swahili.

Five hours. Prerequisite: courses 101A-101B-101C or consent of the instructor.

Mr. Snoxall

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. Snoxall

104A-104B-104C. Elementary Luganda.

Five hours. A major language of Uganda.

Mr. Snoxall

***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

111A-111B-111C. Elementary Yoruba.

(Formerly numbered 121A-121B.) Five hours. The major language of western Nigeria.

The Staff

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

* Not to be given, 1967-1968.

***115A-115B-115C. Elementary Twi.**

(Formerly numbered 109A-109B.) Five hours. The major language of Ghana, including Ashanti, Fante, and other mutually intelligible dialects.

Mr. Schachter

***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.

Mr. Schachter

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. Individual Studies for Graduate Students.

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. Quechua.

(Same as Anthropology 118A-118B-118C.) Prerequisite: course 118A prerequisite to 118B; course 118B prerequisite to 118C. The language of the Incas and its present day dialects, as spoken in Andean South America.

Miss Lastra

Related Courses in Other Departments

(Other than Language Courses)

Anthropology 110. Language in Culture.

185A-185B. Linguistic Field Methods in Anthropology.

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. Present Day American English and Its Background.

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-204B. French Historical Grammar.**Germanic Languages 117. Language and Linguistics.**

217. History of the German Language.

* Not to be given, 1967-1968.

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.
- Berber Languages (Department of Near Eastern Languages)** 201A–201B–201C. Comparative Study of Berber Languages.
280A–280B. Seminar in Berber Linguistics.
- Hebrew (Department of Near Eastern Languages)** 190A–190B–190C. Survey of Hebrew Grammar.
210A–210B–210C. 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.
287. Seminar: Philosophy of Language.
- Psychology** 122. Language and Communication.
202. Verbal Behavior and Thinking.
231. Seminar in Language and Communication.
- Slavic Languages** 222A–222B–222C. Comparative Slavic Linguistics.
260. Seminar in Slavic Linguistics.
271. Seminar in Structural Analysis.
- Russian (Department of Slavic Languages)** 225A–225B. Structure of Modern Russian.
229A–229B. History of the Russian Literary Language.
- 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.
210. American Dialects.

■ MATHEMATICS

(Department Office, 6115 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).*
Henry A. Dye, Ph.D., *Professor of Mathematics.*
Thomas S. Ferguson, 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.*

† Absent on leave, fall and winter quarters, 1967–1968.

- Paul B. Johnson, Ph.D., *Professor of Mathematics.*
- **Willem V. R. Malkus, Ph.D., *Professor of Mathematics and Geophysics.*
- T. 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.*
- Robert J. Blattner, Ph.D., *Associate Professor of Mathematics.*
- David Cantor, Ph.D., *Associate Professor of Mathematics.*
- Philip C. Curtis, Jr., Ph.D., *Associate Professor of Mathematics (Vice-Chairman—Undergraduate).*
- Basil Gordon, 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.*
- 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.*
- Y. H. Clifton, Ph.D., *Assistant Professor of Mathematics.*
- Rodolfo DeSapio, Ph.D., *Assistant Professor of Mathematics.*
- °Burton Fein, 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.*
- Paul Hessler, 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.*
- Peter Loeb, 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.*
- Leonard Ross, Ph.D., *Assistant Professor of Mathematics.*
- David Sanchez, Ph.D., *Assistant Professor of Mathematics.*
- David H. Sattinger, Ph.D., *Assistant Professor of Mathematics.*

‡ Absent on leave, 1967–1968.

† Absent on leave, fall and winter quarters, 1967–1968.

§ Absent on leave, winter and spring quarters, 1967–1968.

° Absent on leave, fall quarter, 1967–1968.

** Member of the Institute of Geophysics and Planetary Physics,

- Cedric F. Schubert, Ph.D., *Assistant Professor of Mathematics.*
 Malcolm Sherman, Ph.D., *Assistant Professor of Mathematics.*
 Edward B. Staples, Ph.D., *Assistant Professor of Mathematics.*
 Bertram J. Walsh, Ph.D., *Assistant Professor of Mathematics.*
 Carl M. Weinbaum, 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.*
 ———, Ph.D., *Assistant Professor of Mathematics.*
 ———, Ph.D., *Assistant Professor of Mathematics.*
 ———, Ph.D., *Assistant Professor of Mathematics.*
 ———, Ph.D., *Assistant Professor of Mathematics.*
 ———, *Assistant Professor of Mathematics.*
 ———, *Assistant Professor of Mathematics.*



- Stanislaus Ackermans, Ph.D., *Visiting Assistant Professor of Mathematics.*
³John N. Crossley, Ph.D., *Visiting Associate Professor of Mathematics.*
 Hector Fattorini, Ph.D., *Visiting Assistant Professor of Mathematics.*
 Haim Gaifman, Ph.D., *Visiting Associate Professor of Mathematics.*
³Robin Oliver Gandy, Ph.D., *Visiting Professor of Mathematics.*
 Robert Herrera, M.A., *Lecturer in Mathematics.*
⁷Robert I. Jennrich, Ph.D., *Lecturer in Mathematics and Assistant Professor of Public Health.*
 H. Jerome Keisler, Ph.D., *Visiting Professor of Mathematics.*
²Georg Kreisel, Ph.D., *Visiting Professor of Mathematics.*
 Jan E. Kucera, Ph.D., *Visiting Assistant Professor of Mathematics.*
³David C. Luckham, Ph.D., *Visiting Assistant Professor of Mathematics.*
 John McGhee, M.A., *Lecturer in Mathematics.*
 John Milnor, Ph.D., *Visiting Professor of Mathematics.*
 Frederick Rowbottom, Ph.D., *Visiting Assistant Professor of Mathematics.*
 Joseph Shoenfield, Ph.D., *Visiting Professor of Mathematics.*
 Jun Tomiyama, Ph.D., *Visiting Assistant Professor of Mathematics.*
¹Lucien Waelbroeck, Ph.D., *Visiting Professor of Mathematics.*
¹Michael C. E. Yates, Ph.D., *Visiting Assistant Professor of Mathematics.*

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. 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.

¹ In residence fall quarter only, 1967-1968.

² In residence winter quarter only, 1967-1968.

³ In residence spring quarter only, 1967-1968.

⁷ Absent on leave, spring quarter, 1967-1968.

Transfer Students

Transfer students should 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 should consult an adviser as to the most appropriate method of satisfying the requirement of course 130A.

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 general secondary credential are 1, 2A-2B-2C or 3A-3B-3C or 11A-11B-11C, 41, 50, 103A-103B. Students are required 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 2C or 3C. 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 6115, 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 146-148. 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. The Department also offers a special program leading to the master's degree for those who are primarily interested in the teaching of mathematics in the secondary schools and junior colleges.

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 148-150. 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 of three hours each, given in a three-day period. 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.

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, L. Knopoff.

Foreign Language

No foreign language is required for the M.A. degree. For the Ph.D. degree, one foreign language is required, and in addition, candidates are required to pass the Graduate Division screening examination in a second language. 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. Not open for credit to students with credit in another calculus sequence. Set theory, axiomatic systems, linear algebra and geometry. The calculus of one and of several variables. Applications to models in the social sciences.

3A-3B-3C. Calculus for Life Science Students.

Prerequisite: three years of high school mathematics (including trigonometry) or course 1. Not open for credit to students with credit in another calculus sequence. Functions and their graphs, derivatives and integrals, techniques of integration. Applications. Differential equations, vectors, partial derivatives 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. Differentiation and integration of functions of a single variable. Applications; infinite series; vectors and curves in two and three dimensions; elementary differential equations.

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 either 2C or 3C with consent of the instructor. Course 12A will consist of linear algebra, including real vector spaces, linear transformations, matrices, determinants. Course 12B and 12C will cover vector differential and integral calculus.

12AH-12BH-12CH. Linear Algebra and Calculus— Honors Sequence.

Prerequisite: course 11CH, or 11C and consent of the instructor. An honors sequence parallel to 12A-12B-12C.

13A-13B-13C. Intermediate Calculus and Applications.

Prerequisite: course 11C or either 2C or 3C with consent of the instructor. Linear differential equations and applications, Laplace transforms, vector differential calculus, vector field theory, matrices, linear equations, determination of eigenvalues. Course 13A is independent of courses 13B and 13C.

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 Classes

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 in the arts, humanities, and social sciences with the nature of modern mathematics and the mathematical method.

101A-101B-101C. Topics in Algebra.

Prerequisite: course 12C. 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, non-constructibility, 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 3C. 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, 2C, 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. (¼ 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. 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-120C. 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. Euclidean motions, 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: course 12C. Course 130A is not open for credit to students who have credit for course 13A. 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.

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 Stoke's theorems, Newtonian potential, harmonic functions, Green's function, special problems.

143. Analytic Mechanics.

(Formerly numbered 125.) 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 intro-

duction 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 248A 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 infin-

ity, the continuum hypothesis, inaccessible numbers. Formalization of set theory, Zermelo-Fraenkel theory, von Neumann-Gödel theory. Constructability. 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.

250D. 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. Unisolvence. Smoothing. Approximation in the complex and in geometry. Incompatible systems. Rational and harmonic approximation. Convergence. Classes of approximees. 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, regression 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.

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.

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 Obstetrics and Gynecology and Physiology in Residence in Medical History.*

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 (equally 36 quarter units) will be required, and of these, five courses (equally 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 per-

sonalities 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

240. History of Medical Sciences. (½ course)

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

241. History of Clinical Sciences. (½ course)

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.

(½ course each)

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

596. Directed Individual Studies in Medical History. (½ course)

Investigation of subjects in medical history selected by students with the advice and direction of the instructor in the fall and winter quarters. Individual reports and conferences.

Mr. Agnew, Mr. O'Malley

599. Research for and Preparation of the Doctoral Dissertation. (½ course)

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 and Pediatrics.*
 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).*
 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.*
 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.*
 Jack G. Stevens, D.V.M., Ph.D., *Assistant Professor of Microbiology and Immunology.*
 Maurice L. White, Ph.D., *Instructor of Microbiology and Immunology in Residence.*

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 146-148).
2. Microbiology and Immunology 201A-201B.
3. General Biochemistry 152A-152B or Biological Chemistry 101A-101B.
4. A thesis.

Requirements for the Doctor's Degree

1. The general Graduate Division requirements (pages 148-150). (Proficiency in only one foreign language required.)
2. Three "core" courses in Biochemistry: Biochemistry 153, 253, and 255, or equiva-

lent. 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 oncogenesis 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 oncogenesis 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. Voge**

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. McVickar**

Individual Study and Research

597. Preparation for the Examinations for the M.S. Degree or for the Ph.D.

(½-1½ courses) **The Staff**

598. Research for and Preparation of the M.S. Thesis. (½-1½ 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. (½-1½ 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)

Jürgen Holmboe, M.Sc., *Professor of Meteorology.*

Yale Mintz, Ph.D., *Professor of Meteorology.*

Morris Neiburger, Ph.D., *Professor of Meteorology.*

†Zdenek Sekera, Ph.D., *Professor of Meteorology.*

Ernest H. Vestine, Ph.D., *Professor of Meteorology in residence.*

Morton G. Wurtele, Ph.D., *Professor of Meteorology.*

**Jacob Bjercknes, Ph.D., *Emeritus Professor of Meteorology and Geophysics.*

James G. Edinger, Ph.D., *Associate Professor of Meteorology.*

Sekharipuram V. Venkateswaran, Ph.D., *Associate Professor of Meteorology.*

Akio Arakawa, Ph.D., *Assistant Professor of Meteorology.*

William D. Bonner, Ph.D., *Assistant Professor of Meteorology.*

†Tiruvalam N. Krishnamurti, Ph.D., *Assistant Professor of Meteorology.*

Conway B. Leovy, Ph.D., *Assistant Professor of Meteorology in Residence.*

Hans Pruppacher, Ph.D., *Assistant Professor of Meteorology.*



**Clarence E. Palmer, D.Sc., *Professor of Geophysics.*

Preparation for the Major

Course 4A-4B-4C; Physics 1A-1B-1C-1D; Mathematics 11A-11B-11C; and 12A-12B-12C or 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 atmosphere 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.

† Absent on leave, 1967-1968.

** Member of the Institute of Geophysics and Planetary Physics.

Requirements for the Doctor's Degree

For the general requirements, see pages 148-150.

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 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 374.

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. **Mr. Edinger**

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. Laplacean 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. Holmboe**

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. Holmboe**

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. Holmboe**

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.

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.

(½ or 1 course)

Prerequisite: senior standing and consent of the instructor. Special individual study. **The Staff**

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 stress, solution of simple viscous flows; compressible flow; gravity waves with application to mountain waves; topics on shear flow, with application to cyclone theory. **Mr. Wurtele**

*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. β -plane approximation. Dynamics of ultralong waves. Integral constraints. Wave instability. **Mr. Arakawa**

210B. Theory of Planetary Circulation II.

Lecture, three hours. Thermally forced circulation in a rotating fluid. Hadley regime and Rossby regime. Generation of eddy transports. Theory of finite amplitude disturbances. Vascillation. Maintenance against friction. Effect of topography and heat sources. **Mr. Arakawa**

212A. Numerical Weather Prediction I.

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. Mintz**

*212B. Numerical Weather Prediction II.

Lecture, three hours. Prerequisite: courses 212A, 210A or instructor's consent. Computational design of numerical weather prediction and climate simulation models. Map projection. Barotropic model. Solution of balance equation. Quasi-geostrophic baroclinic model. Balance model. Primitive equation and its initial condition. Inclusion of topography, heat and friction. Objective analysis. **Mr. Mintz**

214A–214B. General Circulation of the Atmosphere.

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. **Mr. Krishnamurti**

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.

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

* Not to be given, 1967–1968.

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 thermodynamics 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

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.

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.

Mr. Leovy

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.

M. 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. Wurtele

261. Seminar in Atmospheric Dynamics. (½ course)

Mr. Holmboe

262. Seminar in Cloud and Precipitation Physics.

(½ course)

Mr. Neiburger, Mr. Pruppacher

263. Seminar in Atmospheric Radiation. (½ course)

Mr. Sekera

264. Seminar in Physics of the Upper Atmosphere.

(½ course)

Mr. Venkateswaran

265. Seminar in Weather Analysis and Forecasting.

(½ course)

Mr. Krishnamurti, 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 1 course)

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.

* Not to be given, 1967-1968.

Physics 108; 110A-110B; 112A-112B; 122; 131.

Planetary and Space Science 180B.

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; 212; 215; 240; 262A-262B; 265.

■ MICROBIOLOGY

Graduate Study

Programs of study and research leading to the M.A. and Ph.D. degrees in the general area of microbiology are offered in the Department of Bacteriology (see page 178), in the Department of Botanical Sciences (see page 185), in the Department of Medical Microbiology and Immunology, School of

Medicine (see page 340), and in the Department of Zoology (see page 473). 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.

■ MILITARY SCIENCE

(Department Office, 132 Men's Gymnasium)

Raymond C. Ashby, Jr., A.B., Colonel, Infantry, *Professor of Military Science (Chairman of the Department)*.

Donald G. Moore, B.A., Lieutenant Colonel, Infantry, *Associate Professor of Military Science*.

Alfred N. Downs, B.A., Major, Ordnance Corps, *Assistant Professor of Military Science*.

Richard R. Dubovick, B.S., Major, Infantry, *Assistant Professor of Military Science*.

John D. Spence, B.S., Major, Chemical Corps, *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 de-

gree 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 \$40 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 \$40 per month, military science books, and uniforms.

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.

The 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 curricu-

lum 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, 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.
(¼ course each)

Prerequisite: course 1A-1B-1C, or may be taken concurrently with 1A-1B-1C.

Two hours of classwork and one hour of leadership laboratory, American military history, map and aerial photography reading, introduction to basic tactics and techniques, 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 A.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.

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 (½ course) elective during one quarter in one of the following fields: effective communications, science comprehension, general psychology, political institutions. **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 (½ 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 should 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)

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.C.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.*

John N. Vincent, Jr., Ph.D., *Professor of Music.*

Klaus P. Wachsmann, Ph.D., *Professor of Music.*

Donald K. Wilgus, Ph.D., *Professor of English and Anglo-American Folksong.*

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.*

Edwin H. Hanley, Ph.D., *Associate Professor of Music.*

Roy E. Travis, M.A., *Associate Professor of Music.*

Robert L. Tusler, Ph.D., *Associate Professor of Music.*

Paul S. Chihara, A.M.D., *Assistant Professor of Music.*

Hormoz Farhat, Ph.D., *Assistant Professor of Music.*

Maureen Hooper, M.A., *Assistant Professor of Music.*

William R. Hutchinson, Ph.D., *Assistant Professor of Music.*

Henri Lazarof, M.F.A., *Assistant Professor of Music.*

David Morton, Ph.D., *Assistant Professor of Music.*

_____, *Assistant Professor of Music.*

_____, *Assistant Professor of Music.*

§ Recalled to active service,



- James R. Bossert, M.A., *Acting Assistant Professor of Music.*
 Murray C. Bradshaw, M.M., *Acting Assistant Professor of Music.*
 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.*
 Maurice Gerow, Ph.D., *Lecturer in Music.*
 Alan Gilbert, *Lecturer in Music.*
 Malcolm Hamilton, D.M.A., *Lecturer in Music.*
 Roy Harris, Hon.Doc., *Lecturer in Music.*
 Freeman K. James, M.A., *Lecturer in Music.*
 Leon Knopoff, Ph.D., *Research Musicologist in Ethnomusicology.*
 Natalie Limonick, B.A., *Lecturer in Music.*
 Sinclair R. Lott, B.A., *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.*
 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.*
 Paul O. W. Tanner, M.A., *Lecturer in Music.*
 Salli Terri, B.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.*
 Erwin Windward, B.A., *Lecturer in Music.*
 Waldo M. Winger, M.A., *Lecturer in Music.*
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 ———, *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 taken courses elsewhere, are required to take aptitude and achievement tests prior to enrollment 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 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 and one year of Performance Organization course 70. 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. Only 7 courses from performance organization courses 70, 71, 170, 171, and from applied music literature courses 60-65 and 160-165 may be applied toward the bachelor's degree.

The Major

A minimum of 14 courses in the upper division, including 100A-100B, 106A, 107A; three courses from 120-144 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 105, 106B, 107B-107C and one elective course from 101, 103, 104, 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: additional courses from 120-125, 141-144, and 191.
3. Ethnomusicology: 140A-140B, one additional period course in Western music from 120-122, and two courses selected from 123-125, 141-144, 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, 110, 111, 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 111, 114, 115A-115B-115C, 116, 193, and a one-half course elective. (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 110, 114, 193, and two elective courses. (Proficiency examinations covering the equivalent of two courses [six quarters] in piano and two courses [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 one course [three quarters] in piano and one course [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

Eleven courses of upper division work distributed as follows: courses 100A-100B, 106A, 107A; three courses from courses 120-144, 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 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 exami-

† 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.

nation(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 (diction, 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 146. 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 146. 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 147, Plan I). 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 residence: 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, 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 the elementary, secondary, or junior college level. The Comprehensive Examination Plan is not acceptable for future Ph.D. candidates. The Comprehensive Examination Plan

† 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.

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 148. 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 352. 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 residence until the Ph.D. qualifying examinations have been passed: historical musicology, courses 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 classic, 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. Hutchison

3. Fundamentals of Voice. (1 course for 3 quarters)

(Formerly numbered 40A.) Three hours weekly. Students must take this course for three quarters in order to receive credit.

Mrs. Patton, Mr. Windward, Mr. Winger

4. Fundamentals of Piano. (1 course for 3 quarters)

(Formerly numbered 40E.) Three hours weekly. Students must take this course for three quarters in order to receive credit. 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 prerequisites see Requirements for Entering Music Students, page 350. 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 350. 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)

Three hours weekly, including one laboratory hour. 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 (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-70L. Performance Organizations.

(½ course each)

(Formerly numbered 42D, 42C, 42F, 42E, 42J, 42G, 42A, 42B, 42K, 42H respectively.) Prerequisites: consent of the instructor. Music majors will be given performance organization credit for one year only.

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. University Orchestra; 70J. Symphonic Band; 70K. Marching and Varsity Bands; 70L. Opera Workshop.

The Staff

|| Does not fulfill the performance organization requirement for music majors unless 70J is taken concurrently.

71A-71M. 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. **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. Rococo 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-103C. Advanced Harmony.**(½ course each)**

(Formerly numbered 103A-103B.) Two 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. Prerequisites: courses 105 and 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. Petran**

110. Study and Conducting of Choral Literature.

(Formerly numbered 110 and 179B.) 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 choral works from the Renaissance to the present day. **Mr. Gerow, Mr. Weiss**

111. 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-115B-115C. Study of Instrumental Techniques. (1 course for 3 quarters)

(Formerly numbered 115A-115B-115C-115D.) Four hours weekly. Prerequisites: courses 10A-10B-10C, 11A-11B-11C, 12A-12B, 13A-13B. Students must take the entire sequence in order to receive credit. The study of instruments and the techniques used in the development of tone, intonation, fingering, relationships, and transposition. **Mr. Plummer, Mr. Sawhill, Mr. Tanner**

116. Study of Instrumental Ensembles.**(½ course)**

Four hours weekly. Prerequisite: course 115A-115B-115C, 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: any one of the following courses: History 162A-162B, 163A-163B, 166 or 167A-167B. 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: Theater Arts 5A-5B, or 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. Rubsamem**

137. Political Influence on Music.

(Formerly numbered 138.) Four hours weekly. Prerequisite: History 1A-1B-1C or 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 and Criticism of Music.

(Formerly numbered 139 and 175.) Four 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, including factors in critical evaluation of performance. **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. 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. Kremeniev**

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. Mr. Wachsmann

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. Mr. Farhat

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

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. (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–170M. 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. Music majors may repeat these classes for credit subject to maximum allowance in courses 70–71 and 170–171.

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. University Orchestra; 170J. Symphonic Band; 170K. Marching and Varsity Bands; 170L. Opera Workshop; 170M. Symphonic Wind Ensemble. The Staff

171A–171M. 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. Music majors may repeat these classes for credit subject to maximum allowance in courses 70–71 and 170–171.

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. The Staff

Proseminars

190A–190B. Proseminar in Ethnomusicology.

(Formerly numbered 197.) Three hours weekly. Prerequisite: course 140A–140B. Mr. Wachsmann

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. Prerequisites: course 100A–100B. 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

199. Special Studies in Music.

Individual studies and Music Department Honors Program. The Staff

Graduate Courses

All seminars may be repeated for credit.

200A. Research Methods and Bibliography.

Three hours weekly. Prerequisite: consent of the instructor. 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

||Does not fulfill the performance organization requirement for music majors unless 170J is taken concurrently.

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. Prerequisites: courses 105 and 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. The Staff

252. Seminar in Composition.

(Formerly numbered 252A-252B.) Three hours weekly. Prerequisites: courses 106B and 107C. 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. Mr. Wachsmann

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. Prerequisite: course 200A-200B. Students may enroll in 200B concurrently. 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. 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. 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. 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

Folklore 106. Anglo-American Folksong.
243. The Anglo-American Folk Ballad.

Integrated Arts 1A-1B-1C. Man's Creative Experience in the Arts.

Psychology 188A-188B. Psychology of Music.

Spanish 262B. Epic Poetry.

■ NAVAL SCIENCE

(Department Office, 123 Men's Gymnasium)

Robert R. Drzyk, 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*.

Albert T. Barr, B.A., Lieutenant Commander, U. S. Navy, *Assistant Professor of Naval Science*.

Harry L. Morris, Jr., A.B., Lieutenant Colonel, U. S. Marine Corps, *Assistant Professor of Naval Science*.

Herbert D. Baker, A.B., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science*.

Jerome C. Fritz, B.S., Lieutenant, U. S. Navy, *Assistant Professor of Naval Science*.

James J. Keatley, B.A., Lieutenant Junior Grade, 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 and have never been married and agree to remain unmarried until commissioned or disenrolled. 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 \$40 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.

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. **LTJG 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. **LTJG 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. **LTJG 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. **LCDR Barr**

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. **LCDR Barr**

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 Baker**

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 Baker**

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 Baker**

†103A. Evolution of the Art of War, I.

Provides history, missions, and organization of the Marine Corps. Examines the evolution of the art of land warfare with emphasis on the principles of offensive and defensive combat employing historical examples. **LT COL Morris**

†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. **LT COL Morris**

†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. **LT COL Morris**

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 Fritz**

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 Fritz**

102C. Leadership, the Naval Judicial System and Functions and Concepts of Naval Management.

Conceptual approaches to leadership, interpersonal relationships, motivational practices and counseling

† 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.

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 Fritz

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 COL Morris

†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 COL Morris

†104B. Amphibious Warfare, II.

Continuation of the examination of the evolution of amphibious warfare techniques with emphasis

†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 COL Morris

† 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-es-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).*

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.*

Charles R. Krahmalkov, Ph.D., *Assistant Professor of Semitics.*

———, *Assistant Professor of Arabic.*

———, *Assistant Professor of Arabic.*

———, *Assistant Professor of Berber Languages.*



Suzan Akkan, B.A., *Lecturer in Turkish.*

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.*

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; 130A-130B; two courses from Hebrew 140A, 140B, 140C, 140D, 160A, 160B; 190A-190B; three addi-

tional 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: 15 courses in Arabic selected with approval of Department Adviser from Arabic 103A-103B-103C, 110A-110B-110C, 111A-111B-111C, 112A-112B-112C, 113A-113B-113C, 130A-130B-130C, 140A-140B-140C, 180A-180B-180C, 190A-190B-190C, 199; one elective in the 200 series; two courses from History 134A, 134B, 134C.

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

General Requirements. See page 146.

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's knowledge of this language will be examined in the Department at the end of the first quarter of residence, and he must pass the Graduate Foreign Language Reading Examination in the same 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 148-150.

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 resi-

dence; 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. Krahmalkov

†102A-102B-102C. Intermediate Ancient Egyptian.

Two hours. Prerequisites: courses 101A-101B-101C or consent of the instructor. Readings in Ancient Egyptian literature. Mr. Krahmalkov

Related Courses in Other Departments

Art 101A-101B-101C. Egyptian Art and Archaeology.

210. Egyptian Art.

History 117A-117B. History of Ancient Egypt.

Arabic

Lower Division Courses

1A-1B-1C. Elementary Arabic.

Sections meet seven hours weekly. Basic structure.

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.

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. Perlmann

110A-110B-110C. Spoken Moroccan Arabic.

Three hours. Prerequisite: consent of the instructor. Introduction to the contemporary Arabic dialect of Morocco. Basic phonology, morphology and syntax will be presented with emphasis on oral practice.

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

112A-112B-112C. Spoken Syrian Arabic.

Three hours. Prerequisite: consent of the instructor. Introduction to the contemporary Arabic dialect of Syria. Phonology, morphology and syntax will be presented with emphasis on oral practice.

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 interpretation of texts from classical Arabic literature: Koran, historiography, biography, geography and travelogues, philosophy, poetry. Mr. Perlmann

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. Perlmann

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.

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.

190A-190B-190C. Arabic Dialectology.

Lecture, three hours. Prerequisite: consent of the instructor. Analysis and comparison of the phonology and morphology of various Arabic dialects.

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. The Staff

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. The Staff

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

* Not to be given, 1967-1968.

† Given in alternate years.

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 literature 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 Languages

Upper Division Courses

***101A-101B-101C. Elementary Tamazight.**

(Formerly numbered 105A-105B.) Lecture, three hours; laboratory, two hours. Introduction to the language of northern and central Morocco. Development of oral proficiency and analysis of basic grammatical structure.

***102A-102B-102C. Advanced Tamazight.**

(Formerly numbered 106A-106B.) Prerequisite: courses 101A-101B-101C or consent of the instructor. Advanced study of Tamazight. Regional and stylistic variants in folk literature.

†*103A-103B-103C. Shilha.

(Formerly numbered 101A-101B.) The language of the Berbers of southern Morocco. Development of oral proficiency with grammatical analysis.

105A-105B-105C. Elementary Kabyle.

(Formerly numbered 104A-104B.) Lecture, three hours; laboratory, two hours. Introduction to the Berber language as spoken in north central Algeria.

120A-120B-120C. Introduction to Berber Literature.

Three hours. Prerequisites: courses 102A-102B-102C or 103A-103B-103C or 105A-105B-105C or consent of the instructor. The development of Berber literary forms; systematic analysis of texts and a study of Berber writing systems.

***150A-150B. Survey of Berber Literature in English.**

Three hours. No knowledge of Berber languages required. A survey of the folk literature and traditions of the Berbers in translation.

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

201A-201B-201C. Comparative Study of Berber Languages.

(Formerly numbered 220A-220B.) Three hours. Prerequisites: courses 102A-102B-102C, or 103A-103B-103C and 120A-120B-120C, or 105A-105B-105C and 120A-120B-120C, or consent of the instructor. Analysis of phonology, morphology, and syntax of the major Berber languages and introduction to Berber dialectology.

***280A-280B. Seminar in Berber Linguistics.**

Prerequisites: courses 201A-201B-201C or consent of the instructor.

Related Courses in Other Departments

Linguistics 225M. Afro-Asiatic.

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

* Not to be given, 1967-1968.

† Given in alternate years.

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 section 3.

Mr. Leslau and 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.

Mrs. Blum

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.

Mrs. Blum

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-130B. Medieval Hebrew Texts.

Three hours. Prerequisite: 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."

Mr. Davidson

†135A-135B. Advanced Medieval Texts.

Three hours. Prerequisite: courses 130A-130B-130C 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.

Mrs. Blum

† Given in alternate years.

†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-210C. 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.

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**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**English 201. The Functions of Literary Criticism.****History 138A-138B. Jewish History.****Islamic****Graduate Courses****Individual Study and Research****596. 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

198. Special Studies in Near Eastern Languages.
($\frac{1}{4}$ to $\frac{1}{2}$ 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 Paleography.

Three hours. To provide the students with the ability to cope with varieties of manuscripts.

Mr. Banani

Individual Study and Research

596. Directed Individual Study. ($\frac{1}{4}$ to $\frac{1}{2}$ 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. ($\frac{1}{4}$ to $\frac{1}{2}$ 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

596. Directed Individual Study. ($\frac{1}{4}$ to $\frac{1}{2}$ courses)

The Staff

597. Examination Preparation. ($\frac{1}{4}$ to $\frac{1}{2}$ courses)

The Staff

Related Courses in Other Departments

History 132A–132B. Islamic Iran.

**Indo-European Studies 160. 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

**160A–160B. Introduction to Near Eastern
Archaeology.**

Terminology, geography, principles, strategy of research, bibliography, and a general survey of Near Eastern archaeology.

Mr. Frierman

Graduate Courses

201A–201B–201C. Old Ethiopic.

Lecture, two hours. Grammar of Old Ethiopic and reading of texts.

Mr. Leslau

* Not to be given, 1967–1968.

† Given in alternate years.

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. 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. Mr. Krahmalkov

†215A-215B-215C. Syriac.

Two hours. Morphology and syntax of the Syriac language; readings in the Syriac translation of the Bible and Syriac literature. Mr. Krahmalkov

†220A-220B-220C. Ugaritic.

Two hours. Prerequisite: Hebrew 103A-103B-103C or the equivalent. Study of the Ugaritic language and literature. Mr. Krahmalkov

240. Seminar in Akkadian Language and Literature.

Two hours. Prerequisite: consent of the instructor. Mr. Buccellati

270. Seminar in Ancient Mesopotamia.

Two hours. Prerequisite: consent of the instructor. Can 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 104A. 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. 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

Individual Study and Research

596. Directed Individual Study. (¼ to 1½ courses)

The Staff

597. Examination Preparation. (¼ to 1½ courses)

The Staff

† Given in alternate years.

* Not to be given, 1967-1968.

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.**199. Special Studies in Urdu.** (¼ to 1½ courses)
Prerequisite: consent of the instructor.

Related Courses in Another Department

Indo-European Studies 190. Elementary Hindi.
191. Intermediate Hindi.
192. Advanced Hindi.**Urdu**

Upper Division Courses

101A–101B–101C. Elementary Urdu.

Three hours. Prerequisite: consent of the instructor. Elements of Urdu, the language of Pakistan.

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.***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).***Beatrice M. Dambacher, R.N., M.S., N.Sc.D.,** *Assistant Professor of Psychiatric Nursing.***Betty Jo Hadley, R.N., M.S., Ph.D.,** *Assistant Professor of Nursing.***M. Margo McCaffery, R.N., M.S.,** *Assistant Professor of Pediatric Nursing.***Phyllis A. Putnam, R.N., Ph.D.,** *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.*———, *Assistant Professor of Nursing.***Marilyn M. Barbour, R.N., M.S.,** *Instructor in Public Health Nursing.***Marie F. Branch, R.N., M.S.,** *Instructor in Nursing.***Carolyn E. Carlson, R.N., M.S.,** *Instructor in Psychiatric Nursing.***Patricia A. Cohen, R.N., Ed.M.,** *Instructor in Medical-Surgical Nursing.***Linda L. Donelson, R.N., M.S.,** *Instructor in Nursing.***Edythe J. Ellison, R.N., M.S.N.,** *Instructor in Nursing.***Ieva-Jurate Kades, R.N., M.S.,** *Instructor in Maternity Nursing.***Karen Kloes, R.N., M.S.,** *Instructor in Psychiatric Nursing.***Noreen T. Meinhart, R.N., M.S.,** *Instructor in Nursing.***Grace A. Millington, R.N., M.A.,** *Instructor in Nursing.***Merle H. Mishel, R.N., M.S.,** *Instructor in Nursing.***Roberta S. O'Grady, R.N., M.A.,** *Instructor in Pediatric Nursing.***Ann J. Schofield, R.N., M.S.,** *Instructor in Medical-Surgical Nursing.***Joan Wilcox, R.N., M.S.,** *Instructor in Nursing.***Clara Arndt, R.N., M.S.,** *Lecturer in Nursing Service Administration.***Jeanine Auger, R.N., M.S.,** *Acting Assistant Professor of Nursing.***Imogene D. Cahill, R.N., M.N., M.A., Ed.D.,** *Lecturer in Nursing.***Amelia H. Dowd, R.N., M.A.,** *Lecturer in Nursing.*

Charles K. Ferguson, Ed.D., *Lecturer in Nursing.*
 G. Marjorie Squaires, R.N., M.A., *Coordinator Administrator, Continuing Education.*
 Muriel Uprichard, Ph.D., *Lecturer in Nursing.*



F. Doris Bresnahan, R.N., M.A., *Associate Clinical Professor of Nursing Service Administration.*
 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.*
 Olive W. Klump, R.N., B.S., *Assistant Clinical Professor of Public Health Nursing.*
 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.*
 Theresa G. Ryan, R.N., B.A., *Clinical Instructor in Nursing Service Administration.*
 Helen L. Salmon, R.N., B.S., *Clinical Instructor in Public Health Nursing and Lecturer in Public Health.*
 Vera Louise Thompson, R.N., M.S., *Clinical Instructor in Public Health Nursing.*
 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 Nursing, 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 87 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

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.

Miss Hadley, Miss Uprichard

104. Introduction to Basic Nursing Science.

Lecture, two hours; laboratory, eight hours. Prerequisites: junior standing and acceptance by the School of Nursing for the baccalaureate program in nursing. A synthesis and ordering of knowledge about biopsychosocial man through the study of integrated behavioral systems as these operate through the life cycle and within the usual fluctuations of the environment.

Miss Dowd, Miss O'Grady and the Staff

105A-105B. Basic Nursing Science.

(1½ courses each)

Lecture, two hours; laboratory, 16 hours. Prerequisites: courses 104, 102A and Medical Science 101A. Examination of human behavior as a reflection of a total response to stress of health-illness nature through the study of the integrated behavioral systems. Study of behavioral stability, precarious behavioral stability and behavioral instability, and those internal and external factors which influence these states. Laboratory problems in hospital and community settings. Mrs. Kades, Mrs. Wu, Mrs. Schofield

110A-110B-110C. Clinical Nursing.

(1½ courses each)

Lecture, two hours; laboratory, 16 hours. Prerequisites: courses 102A-102B, 104, 105A-105B, 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, Miss Barbour, Mr. Kloes and the Staff

155. Changing Perspectives in the Nursing Profession.

Lecture, four hours. 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. Prerequisites: courses 102A-102B-102C, 104, 105A-105B and 110A-110B-110C, 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 Hadley

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 104, 105A-105B, 110A-110B-110C, 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, Miss Olson, Mrs. Wu

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 105A-105B, 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 Hadley 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 Vredevoe

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 authority, 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.

Miss Johnson

Section 2. Management of Developmental Problems.

Miss Cahill, Miss Putnam

Section 3. Problems in Patient Motivation.

Miss Dambacher

Section 4. Problems Related to Medical Pathology.

Mrs. Moidel

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.) 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.) 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.) 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. 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. (1 to 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, and 420. This course provides the opportunity for the graduate nursing student to achieve competency in practice of the consultation process in a clinical area. The Staff

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.
The Staff

598. Research for Thesis.

(Formerly numbered 299.) Prerequisite: one quarter in research; thesis approved.
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.*



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 (Unensečen), M.A., M.S., *Lecturer in Oriental Languages.*

George Takahashi, M.A., *Lecturer in Japanese.*

Thich Thiên-Ân, D.Litt., *Visiting Professor of Oriental Languages.*

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.

A beginning conversation course (5A-5B or 11A-11B) and an elementary language course (9A-9B-9C or 1A-1B-1C) may be taken concurrently but the former may not be taken for credit after satisfactory completion of the latter. A student who has taken 9A, for example, may take 9B together with 5B, but not 5A. A student who has taken 9B may not take 5A nor 5B; he should take 95A. A student who has taken 5A-5B, however, may take 9A-9B-9C.

Preparation for the Major

For the major in Chinese, courses 1A-1B-1C, 9A-9B-9C, 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 2A-2B.

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 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.

† Absent on leave, 1967-1968.

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 146.
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. 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.

Requirements for the Ph.D. Degree

1. For general requirements, see page 148.
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, Anthropology 3 (Introduction to Archaeology: Prehistory and Culture Growth), 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 written and oral preliminary examinations in the areas of Chinese or Japanese literature and language, Far Eastern history and culture, and in the minor field.
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

5A-5B. Spoken Japanese. (½ course each)

Prerequisite: consent of the instructor. Not open to those with previous training. An introduction to standard colloquial Japanese. Emphasis on oral competence with careful attention to grammatical structure. Language laboratory. Mr. Takahashi in charge

7A-7B-7C. Elementary Tagalog.

Lecture, five hours. Introduction to the national language of the Philippines.

9A-9B-9C. Elementary Modern Japanese.

Lecture, five hours. Not open to students with previous training. Mr. Takahashi in charge

11A-11B. Spoken Chinese. (½ course each)

Prerequisite: consent of the instructor. Not open to those with previous training. Language laboratory.

13A-13B. 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 out-

standing 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

95A-95B. Advanced Spoken Japanese.

(½ course each)

A continuation of 5A-5B. Language laboratory.

99A-99B. Advanced Spoken Chinese.

(½ course each)

A continuation of 11A-11B, or consent of the instructor. Language laboratory. Mr. Pao

Upper Division Courses

101A-101B-101C. Intermediate Chinese.

Lecture, three hours; laboratory, one hour. A continuation of 1A-1B-1C. Mr. Chu

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. Lao

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

125A-125B. Sino-Japanese Calligraphy.

(½ course each)

Prerequisite: courses 1A-1B-1C or 9A-9B-9C. The writing systems of China and Japan in their various modern styles. Mr. Ashikaga

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 Translation: lectures and collateral reading of representative works in English translation. Mr. Befu, Father Feifel

144A-144B-144C. Vietnamese.

Lecture, three hours; reading or discussion, one hour. Mr. Thiên-Ân

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 113A-113B. 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 catalogs. 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. Befu, Mrs. Matsunaga

180A-180B. Hindi.

A. (Same as Indo-European Studies 163.) Introduction to script and grammar with reading and conversation exercises. B. (Same as Indo-European Studies 164.) Prerequisite: 180A or equivalent. Grammar, readings, and practice in the spoken language.

195. Chinese Bibliography.

Prerequisite: reading knowledge of Chinese and consent of the instructor. Mrs. Mok

* Not to be given, 1967-1968.

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 Sinological 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, 597, 598 two times and in 599 three times, but only one of these may apply toward the minimum course requirement.

596. Directed Individual Studies.**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)

Raymond A. Allen, M.D., *Professor of Pathology.*

Edward R. Arquilla, M.D., Ph.D., *Professor of Pathology.*

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.*

Ralph F. Coleman, M.D., *Assistant Professor of Pathology in Residence.*

Robert Y. Foos, M.D., *Assistant Professor of Pathology in Residence.*

Shinichi Hamashige, M.D., *Assistant Professor of Pathology.*

Hideo Namiki, M.D., *Assistant Professor of Pathology.*

Gen Niwayama, M.D., *Assistant Professor of Pathology.*

Stanley B. Smith, M.D., *Assistant Professor of Pathology.*

Gary M. Troup, M.D., *Assistant Professor of Pathology and Acting Director, Clinical Laboratories.*

M. Anthony Verity, M.D., *Assistant Professor of Pathology.*

James A. Wilkerson, M.D., *Assistant 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.

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 the study of human pathology. Candidates should make application to the Department of Pathology office. Limited to four students. Demonstrations, dis-

cussions, 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**

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.*

Donald J. Jenden, B.Sc., M.B., B.S., *Professor of Pharmacology.*

Dermot B. Taylor, M.A., M.D., *Professor of Pharmacology (Chairman of the Department).*

Robert George, Ph.D., *Associate Professor of Pharmacology.*

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.*

———, *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.*

Eskil A. Hultin, M.Sc., Ph.D., D.Sc., *Lecturer in Pharmacology.*

Che Su, Ph.D., *Acting 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. Hultin 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 mammalian pharmacology including the classification, description and mode of action of pharmacological agents.

Mr. Taylor in charge

236. 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

596. Directed Individual Research in Pharmacology.

(1 to 3 courses)

The Staff

■ PHILOSOPHY

(Department Office, 321 Social Welfare Building)

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.*

David B. Kaplan, Ph.D., *Associate Professor of Philosophy (Vice-Chairman—Student Affairs).*

Montgomery Furth, 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.*

———, *Assistant Professor of Philosophy.*

———, *Assistant Professor of Philosophy.*

———, *Assistant Professor of Philosophy.*

———, *Assistant Professor of Philosophy.*



Georges-Chehata Anawati, Docteur-es-Lettres, *Visiting Professor of Philosophy.*

Charles H. Chastain, M.A., *Acting Assistant Professor of Philosophy.*

John S. Earman, B.A., *Acting Professor of Philosophy.*

Risieri Frondizi, Ph.D., *Visiting Professor of Philosophy.*

Sandra L. Peterson, B.A., *Acting Assistant Professor of Philosophy.*

John M. Taurek, B.A., *Acting Assistant Professor of Philosophy.*

———, *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, 126, 127AB, 128, 133, 134, 135.

Group III. 150, 151, 152, 155, 156, 157, 160, 161, 162, 164.

Group IV. 175, 176, 178, 180, 182, 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 1½ 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.

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 146.

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), six courses (24 units) of 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

Passage of the written qualifying examinations for the doctorate in philosophy.

Requirements for the Doctor's Degree

General Requirements. See page 148.

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 one or 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 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. Frondizi, Mr. Taurek, Mr. Yost

7. Introduction to Philosophy.

(Formerly numbered 6B.) Lectures, three hours; discussion section, one hour. Selected topics from the following: metaphysics, theory of knowledge, philosophy of science, and philosophy of religion. Mr. Savage, 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. Furth, Mr. Moody, Miss Peterson

21. Modern Philosophical Classics.

(Formerly numbered 20B.) 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. 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. Kaplan, 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. Lewis, 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, 162, 164, 175, 176, 178, 180, 182.

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.) Prerequisite: 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. Mr. Furth, Mr. Moody

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. Sobel

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.

108. Nineteenth Century Philosophy.

Prerequisite: one course in philosophy or consent of the instructor. Selected topics in nineteenth century thought.

110. Islamic Philosophy.

Lectures, three hours. Prerequisite: one course in philosophy or consent of the instructor. The development of Muslim philosophy in its great age (from Kindi to Averroes, 850 to 1200), considered in connection with Muslim theology and mysticism. Mr. Anawati

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. Kalish

126. Philosophy of Science.

(Formerly numbered 148.) Lectures, three hours. Prerequisite: course 32 or consent of the instructor. A survey and philosophical analysis of the concepts and laws of modern natural science. Mr. Lewis

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. Miss Peterson

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-theoretical foundations of systems of numbers; natural numbers, integers, rationals, reals, complex numbers. Foundational approaches of Russell, Hilbert, and Brouwer. Mr. Montague

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

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. Montague

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. Kalish, Mr. Kaplan

GROUP III**150. Society and Morals.**

(Formerly numbered 105.) Lectures, three hours. Analyses of some contemporary moral issues.

Mr. Taurek

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. 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. Sobel

157. Legal Philosophy.

(Formerly numbered 192.) Prerequisite: two courses in philosophy or consent of the instructor. Selected problems in the field of legal philosophy.

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.

162. Philosophy and Criticism.

Lectures, three hours; discussion section, one hour; or lectures, two hours and discussion, two hours. Philosophical analysis of the foundations and presuppositions of literary criticism; relationship between literary descriptions and literary evaluations; the justification of literary judgments; aesthetic theory and practical poetics; some current theories.

164. Philosophy in Literature.

(Formerly numbered 146A-146B.) The study of philosophical ideas expressed in literature.

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.

176. Existentialism and Phenomenology.

(Formerly numbered 123.) A general introduction to basic concepts and methods.

Mr. Frondizi

178. Philosophy of History.

(Formerly numbered 149.) Selected problems in the philosophy of history.

180. Dialectical Materialism.

(Formerly numbered 173.) An analysis of the philosophical foundations and implications of dialectical materialism.

182. Introduction to Indic Philosophy.

(Formerly numbered 124 and same as Indo-European Studies 167.) Prerequisite: consent of the instructor. A survey of the main trends in Indian philosophy from ancient to modern times.

Mr. Scharfe

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. Long

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. Savage

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, persons, knowledge of other minds, and behaviorism and its alternatives.

Mr. Savage

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. Chastain

193. Present Day Philosophical Issues in Latin America.

Lectures, four hours. Prerequisite: consent of the instructor. A discussion of the philosophical issues in Latin America within its historical and cultural background.

Mr. Frondizi

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. Chastain, Mr. Furth

199. Special Studies. (1/2 to 2 courses)

Prerequisite: consent of the instructor.
The Staff, Mr. Kaplan in charge

Graduate Courses

201. Plato.

A study of the later dialogues.

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.

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. Kalish, Mr. Montague

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 Science.

(Formerly numbered 222.) Lectures, three hours. Prerequisite: course 134 or Mathematics 112A-112B or consent of instructor.

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.

226. Topics in Mathematical Logic.

(Formerly numbered 224.) Lectures, three hours. Prerequisite: consent of the instructor. Content will vary from quarter to quarter.

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. Montague

261. Seminar: Logic.

(Formerly numbered 271.) Prerequisite: consent of the instructor.

270. Seminar: History of Ethics.

(Formerly numbered 204.) Prerequisite: consent of the instructor. Selected topics.

271. Seminar: Ethical Theory.

(Formerly numbered 205.) Prerequisite: consent of the instructor. Selected topics. Content will vary from quarter to quarter.

Mr. Frondizi, Mr. Sobel, Mr. Tansik

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.

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.

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. Chastain, Mr. Lewis

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.

286. Seminar: Minds and Machines.

Prerequisite: consent of the instructor. Mechanism, vitalism; minds and machines since Descartes; computer simulation, artificial intelligence, and philosophical analysis.

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

596A-596B. Directed Individual Studies.

($\frac{1}{2}$ 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.

($\frac{1}{2}$ to 1 course)

May be repeated for credit. Offered only on a satisfactory/unsatisfactory basis.

The Staff, Mr. Kaplan in charge

598A-598B. Research for Master's Thesis.

($\frac{1}{2}$ 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.

($\frac{1}{2}$ 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 (Vice-Chairman of the Department).*

Rosalind Cassidy, Ed.D., *Emeritus Professor of Physical Education.*

Carl H. Young, Ed.D., *Emeritus Professor of Physical Education.*

Serena 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.*

Marjorie E. Latchaw, Ph.D., *Associate Professor of Physical Education.*

Wayne W. Massey, Ph.D., *Associate Professor of Physical Education.*

Jeannette B. Saurborn, Ed.D., *Associate Professor of Physical Education.*

David Lamb, Ph.D., *Assistant Professor of Physical Education.*



Ethel T. Bell, Ed.D., *Supervisor of Physical Education.*

Gerald Carr, M.S., *Junior Supervisor of Physical Education.*

Gary Cunningham, M.S., *Junior Supervisor of Physical Education.*

Norman D. Duncan, M.A., *Supervisor of Physical Education (Facility Manager).*

Robert F. Greene, M.A., *Junior Supervisor of Physical Education.*

Cecil B. Hollingsworth, Ed.D., *Lecturer in Physical Education.*

Briggs M. Hunt, B.E., *Supervisor of Physical Education.*

Robert Hutton, M.S., *Junior Supervisor of Physical Education.*

Joan L. Martin, M.S., *Associate Supervisor of Physical Education.*

Nanette T. McIntyre, M.S., *Associate Supervisor of Physical Education.*

Eugene R. O'Connell, M.S., *Assistant Supervisor of Physical Education.*

William F. Pillich, M.S., *Associate Supervisor of Physical Education (Director, Activity Programs).*

Eileen Rahlens, M.S., *Junior Supervisor of Physical Education.*

Arthur D. Shurlock, B.A., *Junior Supervisor of Physical Education.*

Sandra J. Suttie, M.A., *Junior Supervisor of Physical Education.*

Howard S. Thayer, M.S., *Junior Supervisor of Physical Education.*

Sterling S. Winans, M.S., *Lecturer in Physical Education.*

———, *Associate in Physical Education.*

———, *Junior Supervisor of Physical Education.*

———, *Junior Supervisor of Physical Education.*

———, *Junior Supervisor of Physical Education.*

———, *Junior Supervisor of Physical Education.*

Paul Frampton, M.A., *Supervisor of Physical Education, Emeritus.*

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 1, 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. Related Fields: Psychology 10, 12; Sociology 1A; Philosophy 6 or 7.

Plan II. Allied Field, Psychology: Psychology 10, 12. Related Fields: Physical Sciences 1, 2; Biology 2A; Physical Education 15; Sociology 1A; Philosophy 6 or 7.

Plan III. Allied Field, Sociology: Sociology 1A, 1B, 19; Anthropology 2A, 12. Related Fields: Physical Sciences 1, 2; Biology 2A; 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, 118, 119, 136, 193, 199 and Dance 112A. 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, 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) courses from the following: Sociology 120, 124, 145, 148, 149, 152, 153, 154, and 155.

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 80.

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.) Nine (9) courses are required for the teaching minors as follows: Physical Education 1, 10A-10B, 15, 110A-110B, 120, 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 29. 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 147) 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,

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 School of Education in this regard. For admission and program requirements see pages 126 and 148. 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 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 and/or Physical Education 2, or a combination of Physical Education 1 and 2 totalling 4 units, may be counted toward the bachelor's degree. Graduate students may enroll on a Satisfactory/Unsatisfactory basis. Classes† meet for ninety minutes of instruction scheduled in two or three meetings per week dependent upon the nature of the activity. Program content is designated by section each semester in the printed SCHEDULE OF CLASSES. Most classes are coeducational. In general, expert instruction is available on beginning, intermediate and advanced levels in the following activities: aquatics (swimming, synchronized, diving, water polo, water safety instruction, senior lifesaving, skin diving), archery, badminton, basketball, body conditioning, bowling, dance (social, tap, square), field

† 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.

* Prior to Fall Quarter, 1966.

sports, figure control, fencing, golf, gymnastics, handball, ice skating, horseback riding, judo, rugby, self-defense (men and women) skiing, soccer, tennis, track and field, trampoline, volleyball, wrestling, varsity athletics (men), competitive sports (women).
Mr. Fillich in charge

2. Fundamentals of Human Performance (Men and Women). (1/4 course)

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.
Mr. O'Connell 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

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, Mr. Handy, Mr. Keogh

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. Relationship between man's movement and his structure, function and behavior.
Mr. Egstrom, Mr. Gardner

111. Elements of Kinesiology.

Lecture, three hours; laboratory, two hours. Prerequisite: Physical Education 15. Not open to physical education major students. A study of the physical and biological principles of movement and the effects of movement upon the structure and function of the human body.
Miss Hunt

112. Analysis of Expressive Movement.

(Formerly numbered 162A-162L.) Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B or 111. Interpretation of the expressive aspects of human movement.
Miss Hunt

113. Assessment of Human Movement Skill.

(Formerly numbered 162A-162L.) Lecture, three hours; laboratory, two hours. Prerequisite: courses 110A-110B or 111. 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-162L.) 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

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: consent of the instructor. The national and international roles and interrelationships of American sports emphasizing socio-cultural variables, changing patterns, current trends, problems and issues.
Mrs. Bell, Mr. Hollingsworth, Mr. Loy

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

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

280G. Comparative Physical Education and Sports.

Mr. B. Miller

Professional Courses

330. Physical Education in the Elementary School.

Lecture, two hours; laboratory, four hours. Prerequisite: upper division standing and consent of the instructor. The teaching of concepts and skills in physical education. Mrs. Bell, Miss Saurborn

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

596. Directed Individual Study. (1/2 to 1 course)

Used for written project for comprehensive plan. Mr. Snyder

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. 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.

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

3G. 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 from the ground to the fringe of space as studied by geologic processes; historical aspects of geology. satellites, radar, rawinsondes and conventional observations.

The Staff

3M. Meteorology.

Lecture, three hours; laboratory or discussion, two hours. Prerequisite: course 2. A broad course designed to give an understanding of atmospheric phenomena and processes for students not majoring in a physical science or mathematics. Phenomena discussed include the jet stream, hurricanes, thunderstorms and tornados, and the ionosphere, as well as the general structure and motions of the atmosphere

Professional Course in Methods

370. Methods and Materials for Teaching Physical Sciences.

Prerequisite: graduate or senior standing. Methods and materials for teaching physical sciences in secondary schools. Solution of special problems which arise in secondary school physical science 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.*

Robert J. Finkelstein, Ph.D., *Professor of Physics.*

Burton Fried, 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.*

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.*

Nina Byers, Ph.D., *Associate Professor of Physics.*

Marvin Chester, Ph.D., *Associate Professor of Physics.*

Christian Fronsdal, Ph.D., *Associate Professor of Physics.*

Roy P. Haddock, 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.*

James S. Ball, Ph.D., *Assistant Professor of Physics.*

** Member of the Institute of Geophysics and Planetary Physics.

Richard F. Carlson, Ph.D., *Assistant Professor of Physics in Residence.*
 W. Gilbert Clark, Ph.D., *Assistant Professor of Physics.*
 John Cornwall, Ph.D., *Assistant Professor of Physics.*
 Jerome Helland, Ph.D., *Assistant Professor of Physics.*
 Robert Huff, Ph.D., *Assistant Professor of Physics in Residence.*
 Brian Jones, Ph.D., *Assistant Professor of Physics.*
 Walter Kündig, Ph.D., *Assistant Professor of Physics.*
 Moises Levy, Ph.D., *Assistant Professor of Physics.*
 Bernard Nefkens, Ph.D., *Assistant Professor of Physics.*
 Michael Parkinson, Ph.D., *Assistant Professor of Physics in Residence.*
 S. H. Patil, Ph.D., *Assistant Professor of Physics in Residence.*
 Jules W. Sunier, Ph.D., *Assistant Professor of Physics.*
 John E. Verba, Ph.D., *Assistant Professor of Physics.*
 Roscoe White, Ph.D., *Assistant Professor of Physics in Residence.*
 Alfred Wong, Ph.D., *Assistant Professor of Physics.*
 Michael Woolf, Ph.D., *Assistant Professor of Physics.*



Zdenek Sroubek, Ph.D., *Visiting Associate Professor of Physics.*
 Peter 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, 124A, and 140A are recommended.

Transition to the Quarter System for Students Who Entered Before Fall, 1966. Stu-

dents 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: 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 General Secondary Credential

For the requirements, consult the UCLA ANNOUNCEMENT OF THE GRADUATE SCHOOL OF EDUCATION.

† See explanation of lower division courses on page 390.

‡ A mimeographed brochure giving more detailed information than is contained in this bulletin is obtainable from the Office of Undergraduate Affairs, Department of Physics.

Requirements for the Degree of Master of Sciences

Prescribed Courses. The University requires a total of nine courses for the M.S. degree. The Physics Department requires that a minimum of six of the nine be graduate courses in physics of which the student must take 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. Physics 597 and 598 are not acceptable. No more than two of the latter three courses may be chosen from Physics 596 or seminar courses.

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.

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.

§ A brochure giving additional information of interest to graduate students in physics is obtainable from the Office of Graduate Affairs, Department of Physics.

Requirements for the Degree of Doctor of Philosophy

For the general requirements see pages 148-150. 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 387.

†1A. General Physics: Mechanics of Solids.

Lecture and demonstration, three hours; laboratory, two hours; discussion, one hour. Prerequisite: high school physics or chemistry, preferably both; Mathematics 11A completed and 11B concurrent with physics 1A. Mr. Rudnick and Staff

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. Mr. Jones and Staff

†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. Mr. Nefkens and Staff

†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. Mr. Kundig and Staff

2A. General Physics: Mechanics of Solids and Fluids.

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: three years of high school mathematics (or two years of high school mathematics and a one quarter college mathematics course) including trigonometry. Physics 2A is not open for credit to students who have credit for Physics 1A or the equivalent. Mr. Watson and Staff

2B. General Physics: Heat, Sound, and Light.

Lecture and demonstration, four hours; laboratory, two hours. Prerequisite: course 2A or 1A or equivalent. Mr. Watson and Staff

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. Mr. Sunier and Staff

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.

† 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.

105A. Mechanics.

(Formerly numbered 105.) Newtonian mechanics of one and two particles. Harmonic oscillator. Kepler problem. Collisions. Special relativity. Mr. Helland

105B. Mechanics.

Prerequisite: course 105A. Many-particle systems. Rigid body kinematics and dynamics. Coupled oscillators. Mr. White

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. Mr. Satten

110A. Electricity and Magnetism.

Prerequisite: course 131. Electrostatics, magnetostatics and direct current circuit theory. Mr. Balazs, Mr. Braunstein

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. Mr. Balazs, Mr. Braunstein

112A-112B. Thermodynamics.

First and second laws of thermodynamics; entropy and other thermodynamic equations of state. Applications to gases, magnetic and electrically active solids. Thermodynamics of phase transitions, superconductivity, liquid helium, and adiabatic demagnetization. Statistical mechanics of classical and quantum distribution functions. Mr. Bömmel, Mr. Woolf

113. Atomic Structure.

Prerequisites: courses 131 and 115B. The theory of atomic structure. Interaction of radiation with matter. Mr. Satten, Mr. E. Wong

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. Mr. Leonard

115A. Elementary Quantum Mechanics.

Prerequisites: courses 105B and 131 (may be taken concurrently). The classical background, basic ideas and methods of quantum mechanics. Mr. Saxon

115B. Elementary Quantum Mechanics.

Prerequisite: course 115A. Development of the methods and concepts of quantum mechanics. Mr. Slater

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. Mr. E. Wong

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. Mr. Leonard

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. Mr. Huff

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. Mr. A. Wong

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. Mr. Sunier, Mr. Verba

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. Mr. Verba, Mr. Sunier

126. Introduction to High Energy Physics.

Prerequisite: course 115B. Properties of elementary particles. Experimental detection and analysis through the use of bubble chamber, counter, spark chamber and nuclear emulsion techniques. Relativistic kinematics and phase space. Invariance principles and conservation laws. Theoretical description of particle interactions, creation and annihilation. Mr. Schlein

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. Mr. Patil, Mr. Slater

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. Mr. Bömmel, Mr. Clark

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. Mr. Clark

180A. Nuclear Physics Laboratory. (½ course)

Mr. Carlson

180B. Physical Optics and Spectroscopy Laboratory. (½ course)

Mr. E. Wong

180C. Plasma and Solid State Laboratory. (½ course)

Mr. Chester, Mr. Kundig

180D. Acoustics Laboratory. (½ course)

Mr. Levy

198. Special Courses in Physics. (½ to 1½ courses)

The Staff, Mr. Ticho in charge

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.

The Staff, Mr. Wright in charge

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. Mr. Cornwall

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. Mr. Stork

***213A. Advanced Atomic Structure.**

Group representation theory. Angular momentum and coupling schemes. Interaction of radiation with matter. Mr. E. Wong

***213B. Advanced Atomic Structure.**

The n - j symbols, continuous groups, fractional parentage coefficients, n electron systems. Mr. E. Wong

***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. Mr. Satten

214A. Advanced Acoustics.

Propagation of waves in elastic and fluid media. Reflection, refraction, diffraction, and scattering of waves in fluids. Attenuation mechanisms in fluids. Mr. Rudnick

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. Mr. Rudnick

215A. Thermodynamics.

Thermodynamics and statistical mechanics with applications. Mr. Clark

• Not to be given, 1967–1968.

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. Mr. Norton

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. Mr. Pincus

220A. Foundations of Classical and Quantum Mechanics.

An integrated presentation of the foundations of classical and quantum mechanics. Mr. Finkelstein

***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. Mr. Knopoff

221A. Quantum Mechanics.

Foundation of quantum mechanics with applications. Perturbation theory. Theory of scattering. Miss Byers, Mr. Fronsdal

221B. Quantum Mechanics.

Formal theory of scattering. Introduction to relativistic quantum mechanics. Mr. Abers

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. Mr. Fried

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. Mr. Richardson

225A. Advanced Nuclear Physics.

An advanced course in the structure of complex nuclei, nuclear models, and nuclear reactions. Normally preceded by course 224. Mr. Moszkowski

225B. Advanced Nuclear Physics.

Nuclear beta decay, neutrino experiments, parity violation, conserved vector current theory, interaction between nucleons and the electromagnetic field. Mr. Moszkowski

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. Mr. Ticho

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. Mr. Ticho

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. Mr. Orbach

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. Mr. Orbach

230A-230B. Relativistic Quantum Mechanics and Field Theory.

Relativistic wave equations, quantized fields, quantum electrodynamics, S-matrix and formal scattering theory, soluble field theory models, Dyson-Wick perturbation theory of S-matrix, nonelectromagnetic interactions, the Heisenberg picture, axiomatic approaches, dispersion theory. Mr. Cornwall

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. Mr. Baños, Mr. Knopoff

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. Mr. Baños

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. Mr. Knopoff

***232. Relativity.**

The special and general theories with applications to elementary particles and astrophysics. Mr. Finkelstein

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. Mr. Holstein

* Not to be given, 1967-1968.

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. Mr. Holstein

240C. Advanced Solid State Physics.

Prerequisite: course 240B. Transport properties of solids. Block 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. Mr. Holstein

260. Seminar: Problems in Plasma Physics.

Mr. A. Wong

261A. Seminar in Special Problems in Theoretical Physics.

Mr. Moszkowski

261B. Seminar in Special Problems in Theoretical Physics.

Mr. Fronsald

262. Seminar in Physics of the Solid State.

Mr. Bömmel, Mr. Braunstein

264. Seminar in Advanced Acoustics.

Mr. Levy

266. Seminar in Propagation of Waves in Fluids.

Mr. Chester

268. Seminar in Spectroscopy.

Mr. Satten, Mr. E. Wong

269A. Seminar in Nuclear Physics.

Mr. Richardson

269B. Seminar in Elementary Particle Physics.

Mr. Haddock

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. Mr. Richardson

***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. Mr. Leonard

Individual Study and Research

596. Directed Individual Studies. (½ to 2 courses)

The Staff

597. Preparation for Master's Comprehensive Examinations and Doctoral Qualifying Examinations.

The Staff

598. Master's Thesis Research and Writing.

The Staff

599. Doctoral Research and Writing.

Mr. Ticho in charge

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, and 255; Meteorology 129A-129B, 141, 148, 223A-223B, 227A-227B, 228A-228B, 229, 242, 243, and 244; Planetary and Space Science 180A-180B-180C, 225A-225B, 260A-260B, 265, and 281.

Professional Course in Methods

See Physical Sciences, page 388.

* Not to be given, 1967-1968.

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.*

John Field, Ph.D., *Professor of Physiology and Lecturer in Medical History.*

Morton I. Grossman, M.D., Ph.D., *Professor of Physiology and Medicine.*

Victor E. Hall, M.D., *Professor of Physiology (Vice-Chairman of the Department).*

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 and Obstetrics and Gynecology in Residence.*

- Daniel H. Simmons, M.D., Ph.D., *Professor of Physiology and Medicine.*
 Ralph R. Sonnenschein, M.D., Ph.D., *Professor of Physiology.*
 Claude F. Baxter, Ph.D., *Associate Professor of Physiology in Residence.*
 Mary E. Carsten, Ph.D., *Associate Professor of Physiology and Obstetrics and Gynecology in Residence.*
 Jared M. Diamond, Ph.D., *Associate Professor of Physiology.*
 Glenn A. Langer, M.D., *Associate Professor of Physiology and Medicine.*
 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.*
 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.*
 Jennifer S. Buchwald, Ph.D., *Assistant Professor of Physiology in Residence.*
 Louis C. Lax, M.D., Ph.D., *Assistant Professor of Physiology and Surgery in Residence.*
 George P. Moore, Ph.D., *Assistant Professor of Physiology.*
 Michael K. Reedy, M.D., *Assistant Professor of Physiology in Residence.*
 Gordon Ross, M.D., *Assistant Professor of Physiology and Medicine.*
 Maurice B. Sterman, Ph.D., *Assistant Professor of Physiology and Anatomy in Residence.*
 Donald O. Walter, Ph.D., *Assistant Professor of Physiology in Residence.*



- Julian Bigelow, Ph.D., *Acting Professor of Physiology and Engineering.*
 Frank C. Hale, B.A., *Lecturer in Physiology.*
 Thomas W. McIntyre, Ph.D., *Acting Assistant Professor of Physiology and Biophysics.*
 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. In addition to meeting the requirements of the Graduate Division, the students must have received the bachelor's degree in a biological or physical science or in the pre-medical curriculum. Undergraduate courses must include six semester units of college mathematics, eight units of physics, 16 units of chemistry (including quantitative analysis and organic chemistry), and 12 units of zoology (including comparative vertebrate anatomy). Students must either have completed courses in mathematics through calculus and in 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 146-148). 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 and Renal Physiology).

3. Physiology 102. (Respiratory, Gastrointestinal, and Metabolic Physiology).

4. Physiology 103. (Basic Neurology).

5. At least three of the following courses: Physiology 201. (Physiological Methods); Physiology 204. (Cardiovascular Physiology); Physiology 205A. (Theory and Nature of Excitation and Conduction); Physiology 205B. (Molecular Physiology and Biophysics of Muscular Contraction); Physiology 205C. (Physiology of Active Transport); Physiology 206. (Gastrointestinal Physiology); Physiology 207A. (Neurophysiology); Physiology 207B. (Neurophysiology); Physiology 209A. (Mathematical Modeling of Physiological Systems); Physiology 209B. (Mathematical Modeling of Physiological Systems); Zoology 271. (Seminar in Endocrinology).

6. Physiology 251A-251B-251C. (General Seminar) or Physiology 252A-252B-252C (Cardiorespiratory Seminar).

7. Sufficient additional courses to make a total of nine in upper division and graduate courses, of which at least six must be at the graduate level.

8. Mathematics to and including 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 first summer session, and has successfully completed Physiology 200, 101, 102, and 103 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 148-150).

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, and 103) 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 mem-

ber 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 and Renal Physiology); (3) Physiology 102. (Respiratory, Gastrointestinal, and Metabolic Physiology); (4) Physiology 103. (Basic Neurology); (5) Physiology 251A, 251B, and 251C (General Seminar) or physiology 252A, 252B, and 252C (Cardiorespiratory Seminar), to be taken continuously throughout the student's residence; (6) Biophysics 101 (Medical Biophysics); (7) Biological Chemistry 101A, 101B, and 101C or Chemistry 152 (General Biochemistry); (8) Anatomy 101 (Microscopic Anatomy) or Zoology 111 (Functional Ultrastructure of Cells); (9) A course in physical chemistry; (10) Courses in differential and integral calculus; (11) A course in statistical methods. The *second and third phases* will comprise: (1) any of the above courses not already completed; (2) Physiology 299A-299B-299C, 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; (4) Physiology 251A-

251B-251C (General Seminar) or Physiology 252A, 252B, and 252C (Cardiorespiratory Seminar), to be taken continuously throughout the student's residence.

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 148-150 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. White and Staff

101. Cardiovascular and Renal Physiology.

(1¼ courses)

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; and a course in gross anatomy, human or comparative. Primarily for first-year medical students, but open to other students with consent of the instructor. An analysis of the functions of the mammalian cardiovascular system and the kidney, including the metabolism of fluids and electrolytes with special relation to man. Mr. Mommaerts and Staff

102. Respiratory, Gastrointestinal and Metabolic Physiology. (1¼ courses)

Lectures, laboratory, and conferences. A continuation of course 101, primarily for first-year medical students but open to other students with consent of the instructor. Prerequisites: same as for course 101. An analysis of the function of the mammalian respiratory and gastrointestinal systems and of metabolic process, including their relation to muscular activity, with special reference to man.

Mr. Mommaerts and Staff

103. Basic Neurology. (2 courses)

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. Mr. Moore and Staff

199. 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 operation of modern instruments for cardiovascular and respiratory research. Mr. Assali, Mr. Hemingway

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. Hall

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. Molecular Physiology and 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 and the biochemical basis of contraction, and the mechanisms of excitation-contraction coupling. Mr. Brady, Mr. Mommaerts

205C. Physiology of Active Transport. (½ course)

Prerequisite: consent of the instructor. Consideration of the theory and nature of active transport in biological systems, including kinetic and thermodynamic consideration and biological significance. The Staff

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. Mr. Moore

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. Moore

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. Moore

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.

Mr. Hall

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

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

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 ½ courses)

Prerequisite: consent of the instructor.

The Staff

597. Preparation for the Master's Comprehensive Examination or the Doctoral Qualifying Examination. (¼ to ½ courses)

Prerequisite: consent of the instructor.

The Staff

598. Thesis Research for Master's Candidates. (¼ to ½ courses)

Prerequisite: consent of the instructor.

The Staff

599. Dissertation Research for Ph.D. Candidates. (¼ to ½ 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*.

**†Gordon J. F. MacDonald, Ph.D., *Professor of Geophysics and Geology*.

**Willem V. R. Malkus, Ph.D., *Professor of Mathematics and Geophysics*.

**Clarence E. Palmer, D.Sc., *Professor of Geophysics*.

**George W. Wetherill, Ph.D., *Professor of Geophysics and Geology*.

David W. Cummings, Ph.D., *Assistant Professor of Planetary Physics*.

Gerald Schubert, Ph.D., *Assistant Professor of Planetary Physics*.



Lawrence H. Aller, Ph.D., *Professor of Astronomy*.

**David T. Griggs, M.A., *Professor of Geophysics*.

† Absent on leave, 1967–1968.

** Member of the Institute of Geophysics and Planetary Physics.

**George C. Kennedy, Ph.D., *Professor of Geochemistry and Geology.*

**Willard F. Libby, Ph.D., *Professor of Chemistry.*

**Stanton J. Peale, Ph.D., *Assistant Professor of Astronomy and Geophysics.*

Paul J. Coleman, Ph.D., *Acting Associate Professor of Planetary Physics.*

Thomas A. Farley, Ph.D., *Lecturer in Geophysics.*

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 three principal areas of study will be physics of planetary interiors, including magnetic and gravitational fields; physics of the upper atmosphere, including ionospheric physics and the physics of the radiation belts; physics of the interplanetary medium. The program for the individual student will be developed through consultation of the graduate adviser and the student.

Requirements for the Degree of Master of Science

For general University requirements see pages 146-148.

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 180A-B-C and may include additional 100 series courses approved by the student's graduate advisor.

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 148-150.

Each student seeking candidacy for a Ph.D. degree will be required to meet the following departmental requirements. (1) Final examination in four of the five fundamental courses: Physics 210A, 215, 220A, 221A, and 231A. (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 pass the following University examinations: (1) the examination in two foreign languages (French, German, or Russian) or one foreign language plus an approved substitute program of study; (2) a qualifying oral examination; (3) a dissertation on a subject chosen by the candidate with the approval of his doctoral committee; (4) final examination, which will be an oral examination conducted by the doctoral committee. It will cover the dissertation and its relationship to the candidate's special field.

Upper Division Courses

180A. Introduction to Planetary Physics 1.

Inferences of the constitution of the earth's interior from geology, gravity, seismology, heat flow, etc.; dynamics of the solar system; optical, thermal, and radio observations of lunar and planetary surfaces; meteorites and their chemistry; origin and structure of planetary magnetic fields. Mr. Kaula

180B. Introduction to Planetary Physics 2.

(½ course)

Evolution and structure of oceans and atmosphere; planetary magnetospheres and the physics of trapped particles.

180C. Introduction to Planetary Physics 3.

(½ course)

The interplanetary medium, solar radiation, the solar wind, and their interaction with planets; inferences from observations of emissions from the sun; theories of the origin of the solar system.

Graduate Courses

208A-208B. Wave Propagation. (½ course each)

A two-quarter course covering wave propagation in a variety of physical circumstances; electromagnetic waves, waves in conducting fluids, mechanical waves in solid and fluid media. Mr. Schubert

** Member of the Institute of Geophysics and Planetary Physics.

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

212. 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

215. Geophysical Data Analysis.

Stochastic processes and linear operations thereon; spectral representation; filtering, power spectral analysis, nonuniform distribution of observations, statistical inferences, and the prediction or extrapolation problem in geophysics.

Mr. Kaula

220A. Gravity and Geodynamics 1. (½ course)

Theory of rotating fluids, external gravitational field of a planet; Stokes' theorem and the analysis of gravity anomalies; determination of the gravitational field.

Mr. Kaula

220B. Gravity and Geodynamics 2.

Satellite orbit perturbations; dynamics of the earth-moon system; elastic deformation of a planet; Love numbers, viscous deformation, convection, and continental drift; inferences from the gravitational fields as to the state of the earth's and moon's interior.

Mr. Kaula

220C. Gravity and Geodynamics 3. (½ course)

Non-elastic effects in the earth-moon system; variation of the length of day and the Chandler wobble; tidal friction, dissipation of tidal energy, and evolution of the moon's orbit; tidal dissipation in the solar system.

Mr. Kaula, Mr. Peale

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

224. Theoretical Seismology.

The elastic wave equation and elementary solutions; elastic waves in layered media and in other geometrics; scattering and diffraction of elastic waves; attenuation; inversion problems.

Mr. Knopoff

225A. Physics and Chemistry of Planetary Interiors. (½ course)

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. (½ course)

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. (½ course)

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

228B. Magnetic Fields of the Earth and Planets. (½ course)

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

240. Dynamics of the Upper Atmosphere.

Composition and structure of the upper atmosphere; steady motion; the corotation 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. Physics of Low Density Plasmas in the Solar System. (½ course each)

An advanced two-quarter course in the physics of naturally occurring plasmas in the upper atmosphere and the interplanetary medium. Emphasis on current research.

Mr. Cummings

262A-262B. Particles and Fields in Space. (½ course each)

An advanced two-quarter 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. Holzer

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 fields; theories of geomagnetism.

Mr. Malkus

285. Seminar on the Origin of the Solar System.

(Same as Astronomy 285.) Nucleosynthesis; hypotheses of stellar formation; gravitational and

thermal instabilities in a dust cloud, hydromagnetic effects, Helmholtz contraction, evolution of luminosity and temperature, mass loss; planetary formation: instabilities in the solar nebula, turbulence, magnetic fields, condensation mechanisms, loss of gases; origin of satellites; evidence from the dynamics of the solar system and its apparent evolution; evidence from solar spectroscopy and geochemistry; evidence from the chemistry and physics of meteorites. **The Staff**

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.

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 the introductory course in planetary and space physics, 180A-180B-180C, in preparation for the written comprehensive examination for the master's degree, or study and research in the area selected for possible dissertation topic prior to the qualifying examination for advancement to candidacy for Ph.D. **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

Astronomy 201A-201B-201C. Astrophysics of the Solar System.

Engineering 260A-260B. Celestial Mechanics.

Geophysics 131. Geochemistry.

Meteorology 242. Upper Atmospheric Structure.

243. Solar and Geomagnetic Influences on the Upper Atmosphere.

244. Atmospheric Applications of Plasma Physics and Magnetic Hydrodynamics.

■ PLANT SCIENCE

See Department of Botanical Sciences and Agricultural 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.*

† 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.*

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.*

† Absent on leave, 1967-1968.

Malcolm Kerr, Ph.D., *Associate Professor of Political Science (Chairman of the Department)*.

Charles R. Nixon, Ph.D., *Associate Professor of Political Science*.
 Richard N. Rosecrance, Ph.D., *Associate Professor of Political Science*.
 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*.
 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*.
 Martin Edelman, Ph.D., *Assistant Professor of Political Science*.
 Robert C. Fried, 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*.
 Andrzej Korbonski, 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*.
 David C. Rapoport, Ph.D., *Assistant Professor of Political Science*.
 John Charles Ries, 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*.
 E. Victor Wolfenstein, Ph.D., *Assistant Professor of Political Science*.



Leonard Freedman, Ph.D., *Lecturer in Political Science*.

Edward Gonzalez Ph.D., *Lecturer in 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), course 140; 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

† Absent on leave, 1967-1968.

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 semester.

Related Curricula. For the curricula in international relations and public service, see pages 77 and 82 of this bulletin.

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 29-31 of this catalog or the UCLA announcement of the Graduate Division, *Graduate Study at UCLA*.

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 not be sent to the Graduate Division. They 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 several foreign countries. Applications may be secured by applying to the Educational Testing Service, 4640 Hollywood Blvd., Los Angeles, California 90027. Telephone: 254-5236 (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 examined 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 *four* fields, three of which must be within the six fields offered by the Department.

Ph.D. candidates, with the approval of the Department, may take a fourth field outside those offered by the Department. Among the programs which may constitute a fourth field are *African Studies, Latin American Studies, Middle Eastern Studies, Russian and East European Studies, National Defense Studies and Political Sociology*. It should be noted that outside fields are not permitted for the M.A. program.

Language Research Tool Requirements. (1) For the master's degree, all students will be required *either* to pass one foreign language reading examination (at the "standard" level of performance) *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 (a) they

demonstrate by examination a fluency in their native language and (b) the Graduate Committee accepts the language as one in which academic research is likely to be pursued by these students.

(2) As one condition for advancement to candidacy for the doctorate, graduate students will—in addition to fulfilling the requirement in (1) above—fulfill one of the following three requirements: (a) pass a reading examination at the “standard” level of performance in a second foreign language; (The same conditions regarding acceptability apply as in (1) above.); (b) 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; (c) 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 the doctoral levels.

Graduate students will be required to get the approval of their doctoral advisers regarding their choices among these three requirements.

The M.A. Program

1. 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.

2. *One foreign language and nine courses (36 quarter units) in graduate status are required for the M.A. degree.* Five of the nine must be 200 series courses in political science. One course may be taken in another department with the approval of the Political Science Department, but this course may not apply toward the five courses in the 200 series. During the first three quarters in residence a candidate must normally complete a minimum of seven courses (28 units) distributed as follows: A graduate course, a graduate seminar and a reading course in his chosen field in political science; and courses in at least two other fields in political science, one of which must be a 200 series course.

The language-research tool requirement (see page 403) must be met within the first five quarters in residence, or further graduate work will not be permitted until the requirement is satisfied.

Students are encouraged to carry a full time program, which consists of three full courses per quarter.

3. *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 (200 series) 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.

4. 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 of residence. The written examination is in one of the six fields. The oral examination is not restricted to one field but tests the candidate’s ability to deal with general problems and concepts. 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 candidate’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: (a) that the candidate receive the M.A. degree and be encouraged to proceed toward the Ph.D. (when all departmental and University requirements are met); (b) That the candidate receives 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. (c) That the candidate not be awarded the M.A. degree and that his status as a graduate student in the Department be terminated. A candidate is allowed to take the M.A. examination *one time only.*

5. *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 Stu-

dies must approve any special sequences of study. In such cases, the evaluation examination will be taken near the end of the quarter in which 36 units will be completed.

Ph.D. Sequence

1. An M.A. in Political Science or the equivalent is a prerequisite. A student entering with an M.A. from another university must pass a screening examination in one field during the first year in residence.

A candidate is allowed to take the screening examination *one time only*.

2. *Language-Research Tool Requirement*. See page 403.

3. *Preliminary Examinations*. Within two years after the M.A. field or screening examination, a student going on to the Ph.D. will be required to take preliminary written examinations in four fields, three of which must be within the Department, and an oral examination.

As partial preparation for the preliminary examinations, a student will take, as a general rule, the graduate course and a seminar in each of the four fields in which he is to be examined.

The preliminary examinations will be administered by the Department twice a year—in the spring and fall.

The student, before being considered for advancement to candidacy for the Ph.D. must have successfully passed in one sequence of two to three weeks, four written preliminary examinations.

A student who fails any one of the examinations may be permitted to repeat the entire sequence of examinations within the next three quarters. A student is permitted to re-take the written preliminary examinations only once.

4. *Fourth 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 fourth field. The proposal must state the substantive material to be covered, the course program, and why the outside field is being proposed. At a minimum, the course program must include eight graduate units outside the Department. The proposal must be signed by the student's adviser and the outside instructor, submitted one year in advance of the time the student expects to take his (her) preliminary examinations, and approved by the Graduate Studies Committee.

5. *Doctoral Committee*. Immediately upon the successful completion of the 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.

6. *Dissertation*. The candidate has seven years from advancement to candidacy to write the dissertation and successfully defend the dissertation in an oral examination with his Doctoral Committee.

Pre-Arrival Information

(See pages 50 and 145–151 of this catalog or the announcement of the Graduate Division, *Graduate Study at UCLA*.)

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).

General Requirements. See page 146 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.

Residence Requirement. The candidate must complete at least three quarters of graduate residence at the University of California.

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. An introduction to the 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. Ashcraft, Mr. Rapoport, Mr. Smith**

112. Nature of the State.

(Formerly numbered 110.) A systematic analysis of modern concepts and problems of political association. **Mr. Rapoport, Mr. Smith**

113. Late Modern and Contemporary Political Theory.

An exposition and critical analysis of the major political philosophers and schools from Hegel to the present. **Mr. Ashcraft, Mr. Nixon, Mr. Rapoport, Mr. Wolfenstein**

114. American Political Thought.

A survey of the development of American ideas concerning political authority from Cotton and Williams to the present. **Mr. Farrelly, Mr. Nixon, Mr. Smith**

115. Theories of Political Change.

Prerequisite: course 112 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; comparison of methods and procedure in making and enforcing law in Roman and common law systems; consideration of fundamental legal concepts; contributions and influence of modern schools of legal philosophy in relation to law and government. **Mr. Edelman, Mr. Sherwood**

119. Special Studies in Political Theory.

Prerequisites: course 112 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, Mr. Miller

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. Rosecrance, 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. The Staff

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. The Staff

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 in the Nuclear Age.

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. Mr. Ries

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.

The Staff

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**140. American Government and Politics.**

Lecture, three hours; discussion, one hour. Core Course. An introduction to the institutions and practices of American political life, with attention to recruitment of political leaders; pressure groups; public opinion; elections, voting behavior, and political party processes; legislative politics; executive and bureaucratic politics; judicial politics; and community political systems. The Staff

141. Public Opinion and Propaganda.

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. Congress and Legislative Politics.

A study of the functions and operations of Congress within the total governmental and political structures, and similar examination of the problems of American state legislatures.

Mr. Gerberding, Mr. Snowiss

144. The Presidency and Executive Politics.

A study of problems in contemporary presidential leadership in relations with Congress, the bureaucracy, political parties and the public; and similar examination of the problems of state executives.

Mr. Longaker, Mr. Snowiss

145. Political Parties.

(Formerly numbered 140.) 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 140 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, Mr. Scheinman

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. 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 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.

The Staff

168B. Government and Politics in Latin America.

A comparative study of governmental and political development, organization and practices in the states of South America.

The Staff

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, three 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.

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. Farrelly, Mr. Hobbs, Mr. Longaker

172B. American Constitutional Law.

The protection of civil and political rights and liberties under the Constitution.

Mr. Farrelly, Mr. Hobbs, Mr. Longaker

173. Government and Business.

(Formerly numbered 178.) 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; prob-

lems 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 Proseminars.**

Prerequisite: 12 upper division units of political science and a general grade-point average of 3.0. Several proseminars will be offered each quarter, dealing with selected research topics to be announced during the preceding quarter. Admission to non-majors by consent of the Department and the instructor. 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 6 units of 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 the historical development of political science, of its relation to other social sciences, of methods of dealing with problems of political science, and of techniques of research.

The Staff

211. Political Theory.

An analysis of the central problems of political theory and their relation to allied disciplines.

The Staff

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

214. Politics.

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.

The Staff

215. Comparative Government.

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

216. 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

218. Public Administration and Local Government.

The nature and scope of public administration and its role in a democratic society; basic problems in the execution of public policies on all levels of government, such as organization, personnel, finance, internal management, administrative powers and responsibilities, intergovernment relationships, and the impact of public opinion, pressure groups, and political parties on administration.

The Staff

220. Special Studies in Political Theory for M.A.**Candidates.**

Directed work in the history of political theory for students preparing for the M.A. examination in political theory.

Mr. Nixon

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.

Mr. Nixon

224. Politics and Society.

An analysis of party and group processes, attitude formation and electoral behavior, and political socialization and recruitment, with special emphasis upon American materials.

The Staff

228. Administrative Management.

An analysis of the major processes involved in the management of modern governmental organizations. Particular attention will be paid to staff functions, notably the budget process.

Mr. Ries

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.

Mr. Rosecrance

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. The Staff
262. Seminar in Municipal Government. The Staff
263. Seminar in Political and Administrative Aspects of Planning. The Staff
264. Seminar on National Defense Problems. Mr. Brodie
271. Seminar in Political Change. The Staff

An interdisciplinary seminar directed toward the analysis of political change. To be offered by members of the Department of Political Science.

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 may be 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 596 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 (Chairman of the Department).*

James T. Marsh, Ph.D., *Professor of Medical Psychology.*

Ivan N. Menseh, Ph.D., *Professor of Medical Psychology.*

Frank F. Tallman, M.D., *Professor of Psychiatry and Public Health.*

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.*

Justin D. Call, M.D., *Associate Professor of Psychiatry.*

Pietro Castelnuovo-Tedesco, M.D., *Associate Professor of Psychiatry in Residence.*

Samuel Eiduson, Ph.D., *Associate Professor of Biological Chemistry and Psychiatry in Residence.*

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.*

Philip R. A. May, M.D., *Associate Professor of Psychiatry in Residence.*

Arnold B. Scheibel, M.D., *Associate Professor of Psychiatry and Anatomy.*

Robert J. Stoller, M.D., *Associate Professor of Psychiatry.*

- 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.*
 Stephen Bernstein, 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.*
 Paul W. Clement, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Roberta Crutcher, M.D., *Assistant Professor of Psychiatry in Residence.*
 Robert B. Edgerton, Ph.D., *Assistant Professor of Anthropology in Residence.*
 Robert J. Elstad, M.D., *Assistant Professor of Psychiatry in Residence.*
 Herbert H. Eveloff, M.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.*
 Ronald J. Griffith, 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.*
 Frank M. Hewett, Ph.D., *Assistant Professor of Medical Psychology in Residence and Assistant Professor of Education.*
 Lewis L. Judd, M.D., *Assistant Professor of Psychiatry and Psychology in Residence.*
 Anthony Kales, M.D., *Assistant Professor of 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.*
 Paul Naitoh, Ph.D., *Assistant Professor of Medical Psychology in Residence.*
 Edward M. Ornitz, M.D., *Assistant Professor of Psychiatry in Residence.*
 James O. Palmer, Ph.D., *Assistant Professor of Medical Psychology and Psychology 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.*
 Eugene L. Ringuette, 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.*
 James Q. Simmons, 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.*
 Maury T. Carlin, Ph.D., *Instructor in Medical Psychology in Residence.*
 Louis F. Friedman, 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.*
 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.*
 Joaquin M. Fuster, M.D., *Lecturer in Psychiatry.*
 Betty L. Harker, M.S.S., *Lecturer in Social Work.*
 Norma E. Lappen, M.S.W., *Associate in Social Work.*
 Perry C. Lessin, M.S.W., *Associate in Social Work.*
 Frederick R. Penrose, M.S.W., *Associate in Social Work.*
 Margarete Ruben, *Associate in Psychiatry.*
 Barbara R. Salkin, M.S.W., *Associate in Social Work.*
 Judith A. Sliney, M.S.W., *Associate in Social Work.*
 Anne D. Stevenson, M.S.W., *Associate in Social Work.*
 Sue Taylor, M.S.W., *Associate in Social Work.*

Program

The Department of Psychiatry 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 141 of this bulletin. The Department also participates in an interdisciplinary program of mental health research training.

Upper Division Courses

105. The Social Sciences in Psychiatry.

Prerequisite: consent of the instructor. An introduction to the fields of social psychology, sociology, cultural anthropology, and ethology. **The Staff**

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. **The Staff**

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. 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 interdisciplinary evolution of social psychiatric research methods. **The Staff**

458. Social Class, 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. **The Staff**

459. The Social Epidemiology of Mental Illness.

(½ course)

(Formerly numbered 254.) Prerequisite: graduate standing in social science discipline and consent of the instructor. Historical review of development of the field, and examination of the contribution of factors of ethnicity, social class and urban residence to the development of mental illness symptomatology. **The Staff**

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**

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, 3283 Franz Hall I)

- 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.*
 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.*
 Laurence A. Petran, Ph.D., F.A.G.O., *Professor of Music and 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. Doreus, 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.*
 William E. Broen, Jr., Ph.D., *Associate Professor of Psychology.*
 Edward C. Carterette, Ph.D., *Associate Professor of Psychology.*
 Morton P. Friedman, Ph.D., *Associate Professor of Psychology.*
 Michael J. Goldstein, Ph.D., *Associate Professor of Psychology.*
 Wendell E. Jeffrey, Ph.D., *Associate Professor of Psychology.*
 George E. Mount, Ph.D., *Associate Professor of Psychology.*
 Charles Y. Nakamura, Ph.D., *Associate Professor of Psychology.*
 Allen Parducci, Ph.D., *Associate Professor of Psychology.*
 Bertram H. Raven, Ph.D., *Associate Professor of Psychology.*
 Jessie L. Ruhlman, Ed.D., *Associate Professor of Psychology.*
 S. Carolyn Fisher, Ph.D., *Emeritus Associate Professor of Psychology.*
 Peter M. Bentler, Ph.D., *Assistant Professor of Psychology.*
 Alan A. Benton, Ph.D., *Assistant Professor of Psychology in Residence.*
 Bradley D. Bucher, Ph.D., *Assistant Professor of Psychology.*
 Daphne E. Bugental, Ph.D., *Assistant Professor of Psychology in Residence.*
 Barry E. Collins, Ph.D., *Assistant Professor of Psychology.*
 Kent Dallett, 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.*
 Gaylord D. Ellison, Ph.D., *Assistant Professor of Psychology.*
 Marcel L. Goldschmid, Ph.D., *Assistant Professor of Psychology in Residence.*
 Edward Gould, Ph.D., *Assistant Professor of Psychology in Residence.*
 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.*
 Allan L. Jacobson, Ph.D., *Assistant Professor of Psychology.*
 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.*
 Millard C. Madsen, Ph.D., *Assistant Professor of Psychology.*
 Albert Mehrabian, Ph.D., *Assistant Professor of Psychology.*
 James C. Miller, Ph.D., *Assistant Professor of Psychology.*
 Ira A. Nathanson, Ph.D., *Assistant Professor of Psychology in Residence.*
 Donald Novin, Ph.D., *Assistant Professor of Psychology.*
 Robert Schwitzgebel, Ed.D., Ph.D., *Assistant Professor of Psychology.*
 David O. Sears, Ph.D., *Assistant Professor of Psychology.*
 James P. Thomas, Ph.D., *Assistant Professor of Psychology.*
 Tommy Tomlinson, Ph.D., *Assistant Professor of Psychology.*
 Thomas R. Trabasso, Ph.D., *Assistant Professor of Psychology.*
 Crayton C. Walker, Ph.D., *Assistant Professor of Psychology.*
 Bernard Weiner, Ph.D., *Assistant Professor of Psychology.*
 Helen D. Wright, Ph.D., *Assistant Professor of Psychology in Residence.*
 Florry P. Bowen, Ph.D., *Instructor in Psychology.*



Howard S. Adelman, Ph.D., *Lecturer in Psychology.*
 Dorothy V. Anderson, Ph.D., *Assistant Clinical Professor of Psychology.*
 Frances B. Berres, M.A., *Supervisor in the Clinic School.*
 Edward L. Burke, Ph.D., *Lecturer in Psychology.*
 Paul V. Carlson, Ph.D., *Chief Psychologist in the Clinic School.*
 Phillip M. Carman, Ph.D., *Associate Clinical Professor of Psychology.*
 Harvey F. Dingman, Ph.D., *Lecturer in Psychology.*
 Carl A. Faber, Ph.D., *Lecturer in Psychology.*
 Myron Feld, M.D., *Associate Clinical 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 Psychology.*
 Margaret Hubbard Jones, Ph.D., *Research Associate in Psychology.*
 Jaques W. Kaswan, Ph.D., *Lecturer in Psychology.*
 F. Monroe Ledyard, Ph.D., *Lecturer in Psychology.*
 Leonore Rice Love, Ph.D., *Lecturer in Psychology.*
 Benson H. Marsten, 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., *Research Fellow in Psychology.*
 John W. McKelligott, Ph.D., *Associate Clinical Professor of Psychology.*
 Wilbur E. Morley, Ph.D., *Lecturer in Psychology.*
 James O. Palmer, Ph.D., *Lecturer in Psychology and Assistant Professor of Medical Psychology in Residence.*
 Thomas W. Richards, Ph.D., *Clinical Professor of Psychology.*

Alexander C. Rosen, Ph.D., *Lecturer in Psychology and Assistant Professor of Medical Psychology in Residence.*

George F. Seacat, Ph.D., *Clinical Professor of Psychology.*

Manuel J. Smith, Ph.D., *Assistant Research Psychologist.*

Zanwil Sperber, Ph.D., *Lecturer in Psychology.*

Richard E. Walton, Ph.D., *Research Psychologist.*

Leonard V. Wendlund, Ph.D., *Associate Clinical Professor of Psychology.*

Barbara Stewart Wilbur, Ph.D., *Associate Clinical Professor of Psychology.*

Extra-Departmental Requirements. Biology 2A-2B or Biology 1A-1B-1C; Mathematics 2A 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 admission 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 ad-

ditional 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 418), 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 81.

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 31 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 147. 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. Krasne

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-112D. 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.

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. Holman

115. Physiological Psychology.

(Formerly numbered 108.) Prerequisite: Biology 2A-2B or Biology 1A-1B-1C 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. Jones, Mr. Krasne

***116. Physiological Psychology Laboratory. (½ course)**

Prerequisite or concurrent: course 115. Laboratory experience with various topics in physiological psychology.

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:

* Not to be given, 1967-1968.

***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. Thomas

121. Perception Laboratory. (½ course)

Prerequisite or concurrent: course 120. Laboratory experience with various topics in perception. Mr. Carterette, Mr. Dowling, Mr. Thomas

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

***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. Weiner

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. Coleman, Miss Henker, Mr. Tomlinson

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, Mr. Burke**

132B. Learning Disorders: Laboratory.
(½ to 1 course)

(Formerly numbered 167B.) It is recommended that the course be taken concurrently with 132A. This course provides supervised laboratory experience with remedial cases in the Clinic School. May be repeated for credit to a maximum of two courses. **Mr. Carlson, Mr. Marsten**

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**

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 Rhulman**

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.

137A-137B-137C. Preseminars in Social Psychology.

Prerequisite: course 135. Advanced topics in social psychology. May be taken independently and in any order.

* Not to be given, 1967-1968.

137A. Group Behavior.

Psychology of interdependence, group membership, leadership, and social influence. **Mr. Raven**

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. Students who have credit for any other course in statistics will receive only one-fourth course credit for the course. Measures of central tendency, variability and correlations. Applications of statistical inference to research in psychology. Reliability and validity of psychological tests and measurements. **Mr. Holman, Mr. Trabasso, Mr. Walker**

142. Advanced Psychometric Methods.

(Formerly numbered 107.) Prerequisite: course 141. The application of higher statistical methods to psychological data. **Mr. Gengerelli**

***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 relation. 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. 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. Carterette, 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. **Mr. Schwitzgebel**

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. **Mr. Seward and Staff**

201. Advanced Learning.

(Formerly numbered 219.) A critical analysis of contemporary theory and research. **Mr. Trabasso**

***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. Houston**

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. **Mr. Lindsley and 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, Mr. Liebeskind

***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. **Mr. Jones and 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.)

220. Social Psychology.

(Formerly numbered 205.) An intensive consideration of the concepts, theories, and major problems in social psychology. **Mr. Kelley**

***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. Kelley, 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**

* Not to be given, 1967-1968.

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. Collins, Mr. Sears

***231. Seminar in Language and Communication.**

(Formerly numbered 283.)

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.

Mr. Feshbach, Mr. Weiner

***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. Lehn

***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. Madsen

243A-243B. Seminar in Clinical Child Psychology.

(Formerly numbered 255A-255B.) 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

247. 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

* Not to be given, 1967-1968.

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. Brière

260B. Psycholinguistics II. Seminar.

(Same as Linguistics 260B.) Prerequisite: course 260A. Continuation of course 260A. Mr. Dowling

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

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.

Mr. Goldstein, Mr. Sheehan and 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, Mr. Nakamura

273. Advanced Clinical Interpretation.

(Formerly numbered 225.)

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

* Not to be given, 1967-1968.

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. Mr. Tomlinson

***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 dur-

ing 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

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

■ PUBLIC HEALTH

(Department Office, 1209 Public Health Building)

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.*

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 Epidemiology and Professor of Public Health.*

Wilfrid J. Dixon, Ph.D., *Professor of Biostatistics and Professor of Preventive Medicine and Public Health.*

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 Geriatrics.*

Carl E. Hopkins, Ph.D., *Professor of Public Health in Residence.*

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, 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.*

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 Biological Chemistry.*

Frank F. Tallman, M.D., *Professor of Public Health Psychiatry and Professor of Psychiatry.*

George Tarjan, M.D., *Professor of Psychiatry and Public Health in Residence.*

Daniel M. Wilner, Ph.D., *Professor of Public Health and Professor of Preventive Medicine and Public Health.*

Charles M. Carpenter, M.D., *Emeritus Professor of Medical Microbiology and Immunology.*

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, *Emeritus Professor of Home Economics.*
- Olive Jean Dunn, Ph.D., *Associate Professor of Biostatistics and Associate Professor of Preventive Medicine and Public Health.*
- 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.*
- Carol M. Newton, Ph.D., M.D., *Associate Professor of Preventive Medicine and Public Health.*
- Robert S. Pogrud, Ph.D., *Associate Professor of Public Health in Residence.*
- Leo G. Reeder, Ph.D., *Associate Professor of Public Health and Associate Professor of Sociology.*
- 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. Afifi, Ph.D., *Assistant Professor of Biostatistics.*
- Mary Black, Ph.D., *Assistant Professor of Public Health and 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.*
- Suzanne E. Dandoy, M.D., M.P.H., *Assistant Professor of Epidemiology.*
- 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.*
- 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.*
- 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.*
- Suebelle Arrowsmith, M.S., M.P.H., *Associate in Public Health.*
- Katherine S. Bao, M.D., *Assistant Clinical Professor of Preventive Medicine and Public Health.*
- Charles I. Barron, M.D., B.S., *Associate Clinical Professor of 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.*
- Allan B. Caldwell, M.D., *Lecturer in Hospital Administration.*
- 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.*
- Alexander A. Doerner, M.D., *Associate Clinical Professor of Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*

- Kenneth M. Eastman, B.S., *Associate Clinical Professor of Public Health.*
- Seymour Eiseman, M.S., M.P.H., *Associate in Public Health.*
- Philip J. Epling, M.A., *Lecturer in Public Health.*
- Seymour Fisher, M.D., *Associate Clinical Professor of Medical Care and Hospital Administration.*
- 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, M.P.H., B.S., *Lecturer in Public Health.*
- John R. Goldsmith, M.D., M.P.H., *Lecturer in Public Health.*
- Sidney Goren, Sc.D., *Lecturer in Public Health.*
- Robert W. Hayes, B.A., M.P.H., *Lecturer in Mental Hospital Administration.*
- Gerald A. Heidbreder, M.D., M.P.H., *Lecturer in Public Health and Assistant Clinical Professor of Medical Microbiology and Immunology.*
- 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.*
- Arthur C. Hollister, M.D., M.P.H., B.S., *Lecturer in Public Health.*
- Josef Hrachovec, M.D., Sc.D., M.Sc., *Associate Researcher in Public Health.*
- Raymond J. Jessen, Ph.D., *Lecturer in Epidemiology and Biostatistics.*
- Olive G. Johnson, B.A., *Lecturer in Public Health and Lecturer in Preventive Medicine.*
- Rutherford T. Johnstone, A.B., M.D., *Lecturer in Public Health, Clinical Professor of Preventive Medicine and Public Health and Clinical Professor of Medicine.*
- Charles Keeran, M.S.W., *Lecturer in Mental Hospital Administration.*
- Jean S. Kerrick, Ph.D., *Lecturer in Public Health.*
- Benjamin A. Kogan, M.D., Dr. P.H., *Lecturer in Public Health.*
- Betty-Jo Korney, M.P.H., *Associate in Public Health.*
- Howard Laitin, Ph.D., *Associate Clinical Professor of Hospital and Medical Care Organization.*
- 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.*
- 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.*
- Byron O. Mork, M.D., M.P.H., *Lecturer in Public Health and Associate Clinical Professor of Preventive Medicine and Public Health.*
- Sister Mary Catherine Moroney, B.Sc., *Associate in Medical Records.*
- 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.*
- 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.*
- Clark M. Richardson, M.D., M.P.H., *Lecturer in Public Health.*

- Robert S. Rocke, M.D., M.P.H., *Lecturer in Public Health.*
 Jack C. Rogers, B.S., *Lecturer in Occupational Health.*
 James A. Roman, M.D., B.S., *Associate Clinical Professor of Public 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.*
 David Sanders, M.D., M.P.H., *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.*
 Wayne Smith, Ph.D., *Assistant Research Biostatistician.*
 ———, *Associate Professor in Residence.*
 ———, *Clinical Professor of Psychiatry.*
 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. Viseltar, 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.*
 Louis H. Wegner, Ph.D., *Lecturer in Public 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, polynomial 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 of 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. Afifi

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, canonical analysis. Mrs. Dunn, Mr. Massey

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

268. Seminar in Health Record Systems.

(½ course each)

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

269A–269B–269C. Seminar in Biostatistics.

(½ course each)

Prerequisite: consent of the instructor.

Mrs. Clark, Mrs. Dunn, Mr. Massey, Mr. Afifi

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.

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

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. Chapman and Staff

245A. Research Methods in Community Health.

(½ course)

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. Mr. Reeder and the Staff

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

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. Chapman

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 and Staff

249A. Society, Culture and Health. (½ course)

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

249B. Social and Cultural Aspects of Health and Illness. (½ course)

Prerequisite: master's degree or equivalent in one of the social sciences. This course is concerned with the social and community aspects of health, health behavior, and health organizations.

Mr. Reeder

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 and Staff

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 fundamentals of environmental sanitation, including an introduction to the relationship of the physical environment to preventive medicine.

Mr. Senn

112. Public Health Engineering.

Prerequisite: course 110, and consent of the instructor. Public health engineering principles for nonengineers, relating to surveys, reviews and sanitary control of water supplies, waste disposal, ventilation and air pollution, drainage and building design and equipment.

Mr. Senn

210. Advanced Environmental Health.

Prerequisite: course 110, or equivalent. Theoretical considerations of the complex relationship of the physical environment to preventive medicine and public health.

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. The identification, measurement and evaluation, of physical and chemical environmental factors affecting the health of industrial workers.

The Staff

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.

Prerequisite: courses 221A-221B, 274A-274B 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, and the toxic manifestations in man.

Mr. Bryan, Mr. Miller

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 emotional and psychiatric problems of the 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.

Prerequisite: consent of the instructor. Man's physiologic responses to work and his adaptation and reaction to physical agents in his environment, including temperature, atmospheric pressure, gravity, radiation and light.

Mr. Miller, Mr. Pogrud

228A-228B. Occupational Diseases.

Prerequisite: courses 221A-221B, 274A-274B, 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. Miller

229. Control of Health Hazards in the Work Environment. (½ course)

Prerequisite: courses 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

274A-274B. Seminar in Occupational Health. (½ course each)

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

290H. Special Group Studies. (½ to 1 course)

Occupational health. Prerequisite: consent of the instructor.

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.

Mr. Rice

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. Richardson

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. Richardson

203A-203B. Maternal and Child Health. (½ course)

Prerequisite: consent of the instructor. Study of medical and social programs affecting the life and health of mothers and children; problems of fertility, conception and pregnancy wastage, and the association of abnormal maternal factors with premature birth and with later abnormalities in children.

Mr. Wagner

208. Legal Aspects of Public Health Administration. (½ course)

Prerequisite: course 200A or 200B. Exploration of legal principles and precedents affecting public health administration. General legal principles and specific applications of constitutional, statutory, administrative and common law will be discussed.

Mr. Forgotson

209. Legal Issues in Medical Care and Hospital Administration. (½ course)

Prerequisite: course 201A or 202A. Exploration of legal principles and precedents affecting medical care and hospital administration. The course will deal with the role of law; principles of legislative, administrative and constitutional law; and specific laws of hospital and medical care administration.

Mr. Forgotson

252A-252B. Seminar in Public Health Psychiatry. (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

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. Rice

257A-257B. Seminar in Health Administration and Organization (½ course each)

Prerequisite: consent of the instructor. Administrative leadership of health services for the public. The student explores in depth the planning, development and supervision of community health services.

Mr. Richardson

290A. Special Group Studies. (½ to 1 course)

Prerequisite: consent of the instructor. Community and institutions.

Mr. Wilner

290E. Special Group Studies. (½ to 1 course)

Prerequisite: consent of the instructor. International health.

Mr. Rice

290F. Special Group Studies. (½ to 1 course)

Prerequisite: consent of the instructor. Maternal and child health. **Mr. Wagner**

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, Mr. Caldwell

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. **Mr. Caldwell**

400. Field Studies in Public Health.

(½ or 1 course)

Field observations and studies in selected community organizations for health promotion or medical care. **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. Caldwell, 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, Mr. Caldwell**

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, Mr. Caldwell**

MEDICAL CARE ORGANIZATION**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. Viseltar**

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 elements of medical care, methods of quality evaluations, and legislative issues. Development and features of medical care programs in other nations. **Mr. Kisch**

204. Area-wide Planning of Health Facilities

(½ course)

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**

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**

253A. Seminar in Medical Care Administration. (½ course)

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**

253B. Seminar in Medical Care Administration. (½ course)

Prerequisite: consent of the instructor. Analysis of findings of new research on critical problems of medical care organization in different social contexts. **Mr. Hopkins**

258. Seminar in Social Work in Public Health. (½ course)

Prerequisite: consent of the instructor. Philosophy, methodology and research bases of social work in organized health service programs. **Mr. Katz**

260. Public Health Aspects of Rehabilitation of the Disabled. (1/2 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. (1/2 to 1 course)

Prerequisite: consent of the instructor. Medical Care Organization.

The Staff

COMMUNITY HEALTH EDUCATION**134. Community Health Education.**

Lectures, three hours; laboratory, three hours. The theory, principles and practices of education and community organization involved in promoting health. Consideration of health facts and fallacies, communication and motivation of individuals, groups and communities.

Mr. Stewart, Mr. Torribio

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. Stewart

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. Stewart

261A-261B. Seminar in Community Health Education. (1/2 course)

Prerequisite: consent of the instructor.

Mr. Stewart and the Staff

290K. Special Group Studies. (1/2 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. School Health Education.

Prerequisite: course 44 or consent of the instructor. Organization and administration of the School health program; underlying principles, including legal aspects, administrative divisions of health instruction, health services, and healthful school living; and interrelationships with community health agencies.

Mr. Johns

130B. School Health Education.

Prerequisite: course 44, 130A or consent of the instructor. Health instruction as an integral part of the total school and college program, and plans for in-service education.

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.

The Staff

290N. Special Group Studies. (1/2 to 1 course)

Prerequisite: consent of the instructor. School health education.

The Staff

GERONTOLOGY**270A. Basic Processes and Clinical Aspects of Aging. (1/2 course)**

Prerequisites: graduate study and enrollment in course 271A. Review of basic physiological, medical, and psychological issues in human aging; review of factors in rehabilitation and reeducation of persons in middle and later life.

Mr. Goldman, Mr. Rocke

270B. Seminar: Advanced Study in Gerontology. (1/2 course)

Prerequisites: courses 271A and 270A or consent of the instructor. Critical problems in gerontology, including public health and behavioral science aspects; review of program trends; review of research trends.

Mr. Wilner and the Staff

271A. Gerontology: Public Health and Psychosocial Factors. (1/2 course)

Prerequisites: graduate status. A systematic review of epidemiologic, demographic, psychosocial and mental health issues regarding persons in middle and later life. Emphasis is on world comparative information of developed and developing countries.

Mr. Kalish, Mr. Wilner

271B. Gerontology: Public Health, Economic and Social Programs. (1/2 course)

Prerequisites: courses 271A and 270A or consent of the instructor. A systematic review of governmental, voluntary and proprietary programs for persons in middle and later life and underlying philosophies in developed and developing countries are compared. Stress is placed on effectiveness and evaluation of programs.

Mr. Kalish

290P. Special Group Studies. (1/2 to 1 course)

Prerequisite: one year of biochemistry and one year of physiology. The Biochemistry and physiology of aging.

Mr. Sobel

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. **The Staff**

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**

216. Infectious Diseases in Tropical Regions.

Prerequisite: course 147 or 246A, or consent of the instructor. Lectures and demonstrations concerning the laboratory diagnosis and public health practices relating to infectious diseases encountered in the tropics. **Mr. Work**

217. Advanced Public Health Microbiology.

Lecture, two hours; laboratory, six hours. Prerequisite: course 153. Advanced principles and applications of microbiology in maintenance of health and solution of public health problems in control of infectious diseases, contaminated effluents, edible products, and the safe use of biologicals. **The Staff**

266A-266B. 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**

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**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**11. Nutrition and Food.**

Lecture, two hours; laboratory, six hours. Nutrition with emphasis on the experimental preparation of foods. **Mrs. Carlisle**

100. Institutional Food Economics. (½ course)

Lecture, one hour; laboratory, three hours. Production and distribution methods in food industries; grades and standards; legal control; the cost to consumers in relation to nutritive values. **Mrs. McGucken**

101. Food Analysis.

Lecture, three hours; laboratory, six hours. Prerequisite: course 113. The application of quantitative methods to the chemical and microbiological assay of foods. **Mrs. Alfin-Slater**

102. Food Science.

Lecture, two hours; laboratory, six hours. Prerequisite: course 11, Chemistry 1A-1B-1C. The study of chemical enzymatic and physical properties in food preparation. **Mrs. Carlisle**

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. (Not open to students who have had Nutritional Sciences 11.) **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 Swendseid**

114. Methods in Metabolism.

Lecture, three hours; laboratory, six hours. Prerequisite: course 101 or equivalent. The influence of special diets on various phases of metabolism; methods for determining constituents in blood and urine. **Mrs. Alfin-Slater, 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. Alfin-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**

121. Quantity Food Study.

Lecture, two hours; laboratory, six hours. Prerequisite: course 102 and Economics 1A-1B. A study of economic principles and problems involved in the purchase and preparation of foods in quantity. **Mrs. McGucken**

122. Institutional Organization and Management.

Lecture, two hours; laboratory, six hours. A study of organization and administration as applied to institutional households such as residence halls, hotels, hospitals, and school cafeterias.

Mrs. McGucken

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)

Prerequisite: Biological Chemistry 101A-101B-101C or equivalent and consent of the instructor. Biochemical aspects of nutrition; metabolic and nutrient interrelationships.

Mrs. Alfin-Slater, Mrs. Emerson, Miss Swendseid

212A-212B. Laboratory Techniques in Nutrition.

(½ course each)

Lecture, one hour; laboratory, three 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.)

Miss Swendseid

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)

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 Nutrition Staff

599. Doctoral Dissertation Research.

(½ to 1 course)

The Nutrition Staff

■ RADIOLOGY

(Department Office, B5-117 Center for the Health Sciences)

Norman A. Baily, Ph.D., *Professor of Radiology in Residence.*

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.*

Amos Norman, Ph.D., *Professor of Radiology.*

Richard E. Ottoman, M.D., *Professor of Radiology and Anatomy.*

Leo G. Rigger, 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.*

DeLores E. Johnson, M.D., *Associate Professor of Radiology and Medicine in Residence.*

Edward A. Langdon, M.D., *Associate Professor of Radiology.*

Norman S. MacDonald, Ph.D., *Associate Professor of Radiology and Biophysics in Residence.*

Gerald M. McDonnell, M.D., *Associate Professor of Radiology.*

Richard F. Riley, Ph.D., *Associate Professor of Radiology.*

William A. Weidner, M.D., *Associate Professor of Radiology.*

Joseph L. Westover, M.D., *Associate Professor of Radiology.*

John H. Woodruff, Jr., M.D., *Associate 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.*

James W. Lecky, M.D., *Assistant Professor of Radiology.*

Lawrence S. Myers, Jr., Ph.D., *Assistant Professor of Radiology in Residence.*

John C. Osmer, M.D., *Assistant Professor of Radiology.*

Richard J. Steckel, M.D., *Assistant Professor of Radiology.*

Edgar L. Surprenant, M.D., *Assistant Professor of Radiology in Residence.*

Leonard A. Swanson, M.D., *Assistant Professor of Radiology in Residence.*

Manuel Tubis, Ph.D., *Assistant Professor of Radiology in Residence.*

Milo M. Webber, M.D., *Assistant Professor of Radiology.*

Marvin Weiner, M.D., *Assistant Professor of Radiology.*

Gabriel H. Wilson, M.D., *Assistant 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.*

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.*

Karl H. Falkenbach, M.D., *Assistant Clinical Professor of Radiology.*

Bernard H. Feder, *Clinical Professor of Radiology.*

Lowell S. Goin, M.D., *Clinical 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.*

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.*

Robert A. Ledner, M.D., *Assistant Clinical Professor of Radiology.*

Kenneth H. 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.*

Jasper E. Morgan, Ph.D., *Clinical Professor of Radiology.*

Ronald J. O'Reilly, M.D., *Clinical Instructor in Radiology.*

Joseph A. Parks, Jr., M.D., *Assistant Clinical Professor of 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.*
 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.

($\frac{1}{2}$ 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, two hours. Prerequisite: course 206A, B, C; Physics 221A, B; Physics 224; Physics 225A, B or equivalent. This course will include comprehensive treatment of the basic phenomena in the dosimetry of ionizing radiations, the interpretation of physical measurements and dosimetric units, and the philosophy of protection design. By permission of instructor. Mr. Baily

208A-208B. Medical Physics Laboratory.

($\frac{1}{2}$ to 1 course each)

(Formerly numbered 206C-206D.) Laboratory, four to eight hours. Techniques for measuring ionizing radiation; applications to X-ray and isotope dosimetry, radiation surveys. Mr. Greenfield

209. The Quantitative Culture of Mammalian Cells.

($\frac{1}{2}$ 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.

($\frac{1}{2}$ 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.

($\frac{1}{2}$ 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. ($\frac{1}{2}$ 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. Mr. Baily

265A-265B-265C. Seminar in Dosimetry.

($\frac{1}{2}$ 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. Special geometric configurations such as bone-soft tissue interfaces will be emphasized. By permission of instructor. Mr. Baily

266A-266B-266C. Seminar in Nuclear Medicine.

($\frac{1}{2}$ 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 and 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.

($\frac{1}{2}$ course each)

Presentation of selected current therapeutic problem cases of general interest. Mr. Stein and the Staff

405A-405B-405C. Consultative Tumor Board.

($\frac{1}{2}$ course each)

Presentation of tumor cases for diagnosis and appropriate therapy with discussion of differential diagnosis and combinations of therapy such as surgery, X-ray, radium therapy, and isotopes. Mr. Dowdy and Mr. Stein

413. Radiation Safety. ($\frac{1}{2}$ 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.

($\frac{1}{2}$ 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.

($\frac{1}{2}$ 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. Dowdy

452. Radiation Therapy. ($\frac{1}{2}$ 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. McDonnel and the Staff

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. McDonnel 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. Hanafee 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. Westover 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. Westover 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. McDonnel 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. Golden, 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.) Lecture, one to two hours; laboratory, three to six hours. May be taken any number of times on a "Satisfactory" (S) or "Unsatisfactory" (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.) Lecture, one to three hours; laboratory, ten to thirty hours. 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.

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 (Chairman of the Department).*

Thomas Eekman, Ph.D., *Professor of Slavic Languages.*

¹Kenneth E. Harper, Ph.D., *Professor of Slavic Languages.*

†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.*

Michael Shapiro, Ph.D., *Assistant Professor of Slavic Languages.*



Edward Denzler, M.A., *Associate in Slavic Languages.*

Margarita Gisetti, M.A., *Associate in Slavic Languages.*

Peter C. L. Hodgson, M.A., *Acting Assistant Professor of Slavic Languages.*

Halyna Karpiv, Diploma, *Associate in Slavic Languages.*

Galina Koulaeff, M.A., *Associate in Slavic Languages.*

Goldie Meyerstein, Ph.D., *Lecturer in Slavic Languages.*

Rochelle Stone, M.A., *Associate in Slavic Languages.*

Preparation for the Major

The following courses are required: Russian 11, 12, 13, 14, 15, 16; Slavic 99.

The Major

Russian 101A-101B-101C, Russian 120A-120B, and four courses chosen (with approval of departmental undergraduate adviser) from Russian 130A-130B, Russian 140A-140B-140C-140D, Russian 150, Polish 152, Czech 155, and Serbocroatian 154.

Related courses. The Slavic major will include either History 146A or 146B, and one of the following: History 146A, 146B and 146C. The departmental undergraduate adviser must be consulted in this regard.

¹ In residence fall quarter only, 1967-1968.

† Absent on leave, 1967-68.

Admission to Graduate Status

The completion of the undergraduate major or its equivalent is required. Students entering from other institutions may be required to take a placement examination in Russian language and literature before enrolling in classes.

Requirements for the Master's Degree

1. For the general requirements, see pages 146-148. The Department follows the Comprehensive Examination Plan.

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 written examinations.

3. *Language requirements.* The student must demonstrate a fluent reading, writing, and speaking knowledge of Russian and a reading knowledge of one western or southern Slavic language.

4. *Course requirements.* Nine courses in Slavic languages, of which at least six must be on the graduate level. The graduate adviser must be consulted in the selection of courses.

5. A final written examination, based both on course work and on reading suggested by the Department, will cover the following fields: (a) Linguistics: a thorough knowledge of Russian grammar and phonology, and an acquaintance with comparative Slavic linguistics and the history and dialectology of Russian; (b) Literature: an acquaintance with the history of Russian literature from its Kievan origins through the Soviet period, and a thorough knowledge of the major developments and figures of the nineteenth and early twentieth centuries.

6. A final oral examination will test the student in the fields of his major interests and on his general background. This examination will be conducted partly in English, partly in Russian.

Requirements for the Doctor's Degree

1. General requirements. See pages 148-150 of this bulletin.

2. Foreign languages. French and German are required.

3. Qualifying examinations. The nature and scope of a series of written qualifying examinations will be prescribed for each candidate by the Department. All candidates are expected to have a sound general knowledge of both Slavic philology and Slavic literary history, at least equivalent to that required for the master's degree at this University. In particular, candidates specializing in Slavic literatures will be expected to demonstrate thorough knowledge of the history and structure of the language in which their major literature is written. In addition, candidates specializing in linguistics and literary history respectively will be expected to demonstrate a more detailed mastery of either: (a) Slavic linguistics, including Old Church Slavic and comparative Slavic Linguistics and the history and structure of one major and two minor Slavic languages (one each from the eastern, western, and southern groups), which presupposes a reading knowledge of a third Slavic language in

addition to Russian and the second language chosen for the master's degree; or (b) Slavic literatures, including the entire body of Russian literature from its origins until the present, and basic knowledge of the principles and problems of comparative Slavic literary history, which presupposes a knowledge of the major figures and developments in the literature of a second Slavic country.

Slavic

99. Slavic Peoples and Cultures.

Four hours per week.

Mr. Birnbaum

199. Special Studies.

No scheduled hours. Prerequisite: senior standing or consent of instructor.

The Staff

201. Bibliography and Research Methods.

Two hours weekly. Individual consultation.

The Staff

220A-220B-220C. Old Church Slavic and Recensions.

Three hours weekly. 220A. Introduction to phonology, grammar, and reading. 220B. Advanced readings.

220C. Paleography.

Mr. Birnbaum, Mrs. Worth

222A-222B-222C. Comparative Slavic Linguistics.

Three hours weekly. 222A. Indo-European to Common Slavic. 222B. Development of Common Slavic and divergence into East, West, and South Slavic groups. 222C. Typology of Slavic Languages.

Mr. Birnbaum

226A-226B. Western Slavic Languages.

Three hours weekly. 226A. Introduction to Western Slavic languages. 226B. Grammar and readings.

Mr. Birnbaum, Mrs. Meyerstein

227A-227B-227C. Eastern Slavic Languages.

Three hours weekly. 227A. Old Russian grammar and readings (eleventh to fourteenth centuries). 227B. Russian grammar and readings (fourteenth to nineteenth centuries). 227C. Ukrainian and Belorussian.

Mrs. Worth

228A-228B. Southern Slavic Languages.

Three hours weekly. 228A: Introduction to Southern Slavic languages. 228B: Grammar and Readings.

Mr. Albin

230A-230B-230C. Comparative Slavic Literature.

Three hours weekly. 230A. From the Middle Ages to Classicism. 230B. From Romanticism through the inter-war period. 230C. Seminar in Slavic Literature.

Mr. Birnbaum, Mr. Eekman

260. Seminar in Slavic Linguistics.

(Formerly numbered 271.) Three hours weekly. Selected topics.

Mr. Birnbaum, Mrs. Worth

271. Seminar in Structural Analysis.

(Formerly numbered 270.) Three hours weekly. Selected topics.

Mr. Worth

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

1. Elementary Russian.

Five hours weekly; one hour per week in laboratory. The Staff

1G. Elementary Russian. (No credit)

Five hours weekly. Reading course for graduate students. The Staff

2. Elementary Russian.

Five hours weekly; one hour per week in laboratory. The Staff

2G. Elementary Russian. (No credit)

Five hours weekly. Reading course for graduate students.

3. Elementary Russian.

Five hours weekly; one hour per week in laboratory. The Staff

4. Intermediate Russian.

Five hours weekly; one hour per week in laboratory. The Staff

5. Intermediate Russian.

Five hours weekly; one hour per week in laboratory. The Staff

6. Intermediate Russian.

Five hours weekly; one hour per week in laboratory. The Staff

11. Elementary Russian (Intensive). (1½ courses)

Eight hours weekly. Regular class periods and laboratory sections. The first course in the Russian language, recommended for majors. The Staff

12. Elementary Russian (Intensive). (1½ courses)

Eight hours weekly. Regular class periods and laboratory sections. Recommended for majors. The Staff

13. Elementary Russian (Intensive). (1½ courses)

Eight hours weekly. Regular class periods and laboratory sections. Recommended for majors. The Staff

14. Intermediate Russian (Intensive). (1½ courses)

Eight hours weekly. Regular class periods and laboratory sections. Recommended for majors. The Staff

15. Intermediate Russian (Intensive). (1½ courses)

Eight hours weekly. Regular class period and laboratory sections. Recommended for majors. The Staff

16. Intermediate Russian (Intensive). (1½ courses)

Eight hours weekly. Regular class periods and laboratory sections. Recommended for majors. The Staff

101A-101B-101C. Advanced Russian.

(Formerly numbered 104A-104B and 122A-122B.) Three hours weekly of reading, composition; two hours weekly of lectures on the structure and development of Russian. Prerequisite: Russian 16. Mr. Worth in charge

102A-102B-102C. Advanced Composition and Conversation.

(Formerly numbered 124A-124B and 120A-120B.) Four hours a week. Prerequisite: Russian 101C. Mr. Worth in charge

Literature Courses

120A-120B. Survey of Russian Literature.

(Formerly numbered 130 and 132.) Four hours a week. Prerequisite: upper division standing. (Slavic majors should take during their sophomore year.) Lectures and readings in English. Mr. Harper

124. Dostoevsky.

(Formerly numbered 144.) Four hours a week. A study of Dostoevsky's principal novels and short stories. Lectures and readings in English. Mr. Harper

125. Tolstoy.

(Formerly numbered 145.) Four hours a week. A study of Tolstoy's principal novels, short stories, and plays. Lectures and readings in English. Mr. Harper

130A-130B. Russian Poetry.

(Formerly numbered 147 and 149.) Four hours a week. Prerequisite: Russian 16. Lectures and readings in Russian. 130A. Emphasis on historical development. 130B. Emphasis on poetics. Mr. Markov

140A-140D. Russian Prose.

Four hours a week. Prerequisite: Russian 16. Lectures and reading in Russian. 140A. Major writers from Karamzine 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 a week. Prerequisite: Russian 16. Lectures and readings in Russian. Mr. Markov

199. Special Studies.

No scheduled hours. Prerequisite: senior standing and consent of instructor. The Staff

225A-225B-225C. Structure of Modern Russian.

Three hours a week. 225A. Phonology. 225B. Morphology. 225C. Syntax. Mr. Worth

228. Evolution of Literary Russian.

Three hours a week. Prerequisite: course 101C and Slavic 99. Introductory survey of literary Russian (eleventh to fourteenth centuries) in its cultural and historical setting. Mr. Shapiro, Mrs. Worth

229A-229B. History of the Russian Literary Language.

Three hours a week. Lectures and text analysis. 229A. Eleventh to seventeenth centuries. 229B. Eighteenth to twentieth centuries. Mrs. Worth

240A-240B-240C. Old Russian Literature.

(Formerly numbered 240, 241 and 273.) Three hours a week. 240A. 11-14cc. 240B. 14-17cc. 240C. Seminar in Old Russian Literature.

Mr. Birnbaum, Mr. Worth

241. 19th Century Russian Literature.

Three hours a week. Lectures and readings in major and secondary writers.

Mr. Harper, Mr. Markov

242. 20th Century Russian Literature.

Three hours a week. Lectures and readings in major and secondary authors.

Mr. Harper, Mr. Markov

243. 18th Century Russian Literature.

Three hours a week. Lectures and readings in major and secondary writers.

Mr. Markov

252. Seminar in Russian Literary Criticism.

(Formerly numbered 267.) Three hours a week.

Mr. Harper

254. Seminar in 19th Century Russian Literature.

(Formerly numbered 268.) Three hours a week. Selected authors and works.

Mr. Eekman, Mr. Harper

256. Seminar in Russian Poetry.

(Formerly numbered 266.) Three hours a week.

Mr. Markov

258. Seminar in 20th Century Russian Literature.

(Formerly numbered 266.) Three hours a week. Selected authors and works.

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

Polish

101A-101B-101C. Elementary Polish.

(Formerly numbered 111A-111B.) Five hours a week. Basic course in the Polish language.

Mrs. Stone

101D-101E-101F. Advanced Polish.

(Formerly numbered 111C-111D.) Four hours a week. Prerequisite: 101C.

Mrs. Stone

152. Survey of Polish Literature.

(Formerly numbered 150.) Four hours a week. Lectures and readings in English.

Mr. Birnbaum, 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

Czech

101A-101B-101C. Elementary Czech.

(Formerly numbered 113A-113B.) Five hours a week. Basic course in the Czech language.

Mrs. Meyerstein

101D-101E-101F. Advanced Czech.

(Formerly numbered 113C-113D.) Four hours a week. Prerequisite: 101C.

Mrs. Meyerstein

155. Survey of Czech Literature.

Four hours a week. Lectures and readings in English.

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

101A-101B-101C. Elementary Serbocroatian.

(Formerly numbered 112A-112B.) Five hours a week. Basic course in the Serbocroatian language.

Mr. Albin

101D-101E-101F. Advanced Serbocroatian.

(Formerly numbered 112C-112D.) Four hours a week. Prerequisite: course 101C.

Mr. Albin

154. Survey of Yugoslav Literature.

(Formerly numbered 160.) Four hours a week. Lectures and readings in English.

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, as well as several of the graduate courses in linguistics.

■ SOCIAL WELFARE

(Department Office, 238 Social Welfare Building)

- Eileen Blackey, D.S.W., *Professor of Social Welfare (Chairman of the Department)*.
 Nathan E. Cohen, Ph.D., *Professor of Social Welfare*.
 Donald S. Howard, Ph.D., L.H.D., *Professor of Social Welfare*.
 Alfred H. Katz, *Professor of Social Welfare and Professor of Public Health*.
 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*.
 ———, *Assistant Professor of Social Welfare*.
- ◇
- Rosalyn Benitez, 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.S., *Lecturer in Social Welfare*.
 Elsie Giorgi, M.D., *Lecturer in Human Behavior*.
 Florence Goldy, 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*.
 Julianna Schmidt, D.S.W., *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*.
 Mary Vaughan, 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 only at the completion of the sequence. 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, 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. Connerly, Miss Schmidt

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. The Staff

241A. Advanced Theory of Social Work Method (Community Organization) IV. (½ course)

Concurrent social work practicum is required. Emphasis is placed on various patterns of community action as strategies of intervention for attaining social welfare objectives. Special focus is given to legislative processes, social policy issues at local, state and national levels, and their relationships are analyzed. Mr. N. Cohen

241B. Advanced Theory of Social Work Method (Community Organization) V. (½ course)

Concurrent social work practicum is required. A seminar in which students deal with social problems such as poverty, delinquency and mental health within the context of community planning. Emerging patterns of physical, economic and social planning are identified and evaluated within the framework of social change theory. Mr. N. Cohen

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)

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. 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. (1½ 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.*

Svend Riemer, Ph.D., *Professor of Sociology.*

Melvin Seeman, Ph.D., *Professor of Sociology.*

Ralph H. Turner, Ph.D., *Professor of Sociology and Anthropology (Chairman of the Department).*

Charles R. Wright, Ph.D., *Professor of Sociology.*

Eshref Shevky, Ph.D., *Emeritus Professor of Sociology.*

Oscar Grusky, Ph.D., *Associate Professor of Sociology.*

Raymond J. Murphy, Ph.D., *Associate Professor of Sociology.*

Leo G. Reeder, Ph.D., *Associate Professor of Sociology and Public Health.*

Georges Sabagh, Ph.D., *Associate Professor of Sociology.*

John E. Horton, Ph.D., *Assistant Professor of Sociology.*

Gene N. Levine, Ph.D., *Assistant Professor of Sociology.*

George A. Miller, Ph.D., *Assistant Professor of Sociology.*

Peter A. Orleans, Ph.D., *Assistant Professor of Sociology.*

Harvey Sacks, Ph.D., *Assistant Professor of Sociology.*

Samuel J. Surace, Ph.D., *Assistant Professor of Sociology.*

Warren D. TenHouten, Ph.D., *Assistant Professor of Sociology.*

———, *Assistant Professor of Sociology.*



Phillip Bonacich, B.A., *Acting Assistant Professor of Sociology.*

John D. Brewer, M.A., *Acting Assistant Professor of Sociology.*

Earl I. Hopper, *Acting Assistant Professor of Sociology.*

Jerome Rabow, M.A., *Acting Assistant Professor of Sociology.*

Hari Prakash Sharma, Ph.D., *Lecturer in Sociology.*

Basil J. Sherlock, Ph.D., *Assistant Research Sociologist.*

Gerald T. Slatin, M.A., *Acting Assistant Professor of Sociology.*

Andrea Tyree, M.A., *Acting Assistant Professor of Sociology.*

Roland Wulbert, M.A., *Acting Assistant Professor of Sociology.*

Preparation for the Major

Required: courses 1A or 101, 1B, 18, and 19, and fulfillment of the general requirements of the University and the College of Letters and Science. Recommended: Anthropology 1A or 11, and 2A-2B; 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 departmental 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 and four outside, are required for the major, as follows: (1) a total of nine courses (not including 101, 198, 199), in at least three of the core areas, with at least two courses in each core area chosen; (2) course 111, 112, or 113, which may 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 requirements of the major in sociology or of the curriculum in presocial welfare. (See page 81.) 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 complete course 200A-200B-200C satisfactorily or give evidence of equivalent sociological research training and experience; (3) to pass a departmental examination in statistics or complete courses 110A-110B with a grade of C or better; 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. Stu-

dents 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 course 200A-200B-200C satisfactorily or give evidence of equivalent sociological research training and experience; (4) pass a written comprehensive examination; (5) pass written examinations in two special fields; (6) pass a qualifying 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**1A. Introductory Sociology.**

Survey of the characteristics of social life, the processes of social interaction, and the tools of sociological investigation. The Staff

1B. Sociological Analysis.

(Formerly numbered 12.) Prerequisite: course 1A or 101. Required of majors. Development and application of the basic tools and concepts of course 1A 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. Oberschall, Mr. TenHouten**

Upper Division Courses

Course 1A 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 1A has been completed. For upper division students who have not taken Sociology 1A. A more intensive introduction to sociology than is given in course 1A. 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 1B 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. 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. **Mr. Murphy**

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. Murphy, 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. 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. Orleans, 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

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. Orleans, 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

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. 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 perceived normal interpersonal environments. Mr. Garfinkel

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. Sacks

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, Mr. Wulbert

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. Turner, Mr. Sacks

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

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. Grusky, 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, Mr. Wulbert

198. Special Courses. (1/2 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. (1/2 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

200A-200B-200C. Methods and Techniques of Sociological Research.

A year course providing firsthand field and laboratory experience in original research. Problems of methodology and technique: selection and formulation of problem, selection of sample, questionnaire and schedule construction, collection of data, processing and tabulation, presentation of findings. **The Staff**

201A-201B. Proseminar 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, Mr. Murphy

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**

214. The Measurement of Sociological Variables.

Prerequisite: courses 18, 19, and 110A. Theory and technique of measurement in sociology. Construction, application, and interpretation 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**

216. Questionnaire and Schedule Construction.

Prerequisite: courses 200A-200B-200C or the equivalent and consent of the instructor. Procedures, methods, and problems in the collection of data by means of interview and questionnaire. **Mr. Wright**

217. Interviewing and Interviewer Training.

Prerequisite: courses 200A-200B-200C or equivalent and consent of the instructor. Problems and methods of sociological interviewing; development of interview skills; the selection and training of interviewers; the administration of interview studies. **Mr. Morris**

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, familial, 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. Kuper, 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

Seminars

250. **Methodological Problems.** 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. Kuper
 256. **Demography.** Mr. Sabagh
 257. **Sociology of the Arts.** Mr. Horton, Mr. Murphy
 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. Orleans, Mr. Riemer
 263. **Social Stratification.** Mr. Morris
 264. **Professions in the American Society.** Mr. Murphy
 265. **Critical 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. 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.**278. Sociolinguistics.**

(Same as Linguistics 265B.)

Mr. Bright

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

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 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.*Stanley L. Robe, Ph.D., *Professor of Spanish.*Aníbal Sánchez-Reulet, Ph.D., *Professor of Spanish.*Joseph H. Silverman, 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.*
 Anna Krause, Ph.D., *Emeritus Professor of Spanish.*
 Marion Albert Zeitlin, Ph.D., *Emeritus Professor of Spanish and Portuguese.*
 Samuel G. Armistead, Ph.D., *Associate Professor of Spanish.*
 Claude L. Hulet, Ph.D., *Associate Professor of Spanish and Portuguese.*
 C. P. Otero, Ph.D., *Associate Professor of Spanish.*
 Shirley L. Arora, 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.*
 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.*



- Virginia G. Baños, Ph.D., *Lecturer in Spanish.*
 Rubén Angel Benítez, Lic. en Letras, *Acting Assistant Professor of 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.*
 Jose Garcia Lora, M.A., *Visiting Professor of Spanish.*
 Mariano González, Lic. en Fil., *Associate in Spanish.*
 Raul N. Gutiérrez, Ed.D., *Associate in Spanish.*
 Isabel L. Herwig, M.A., *Lecturer in Spanish and Portuguese.*
 Josefina M. Méndez, Ed.D., *Associate in Spanish.*
 Carmen Sadek, M.A., *Associate in Spanish.*
 Affonso Romano de Sant' Anna, Lic. en L., *Lecturer in Portuguese.*
 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 146. The Department favors the Comprehensive Examination Plan, but, with departmental approval, the Thesis Plan may be followed. See page 147.

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 attain a 3.5 grade-point rating in these examinations 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 attain a 3.5 grade-point rating in the examination will be encouraged to proceed to candidacy for the Ph.D. degree.

Ph.D. Degree in Hispanic Languages and Literatures

General Requirements. See page 148.

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 202 and 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. It 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 pass an oral examination which will cover principally the field within which the dissertation falls.

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

1G. 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 two 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.

A background course for the study of Peninsular literature. Mr. Dudley

44. Civilization of Spanish America and Brazil.

A background course for the study of Spanish American and Brazilian literatures. Mr. Fogelquist

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. Robe, 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. Mrs. Arora

105. Intermediate Composition.

(Formerly numbered 101.) Concentration on idiomatic expressions, paraphrasing, summarizing, and transformational systems. 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

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. Armistead

120A-120B. Survey of Spanish Literature.

Beginning each quarter. An introduction to the principal authors, works and movements of Spanish literature. Mr. Dudley, Mr. Johnson

121A-121B. Survey of Spanish American Literature.

Beginning each quarter. An introduction to the principal authors, works, and movements of Spanish American literature. Mr. Englekirk, Mrs. Arora

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. Armistead

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. Starkie

128. Neoclassicism and Romanticism in Spain.

The main manifestations of thought and literature from 1700 to 1850 with emphasis on representative works. Mr. Dudley

130. Spanish Literature from 1850 to 1898.

The development of post-Romantic literature with emphasis on representative works. Mr. Machado da Rosa

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. Barcia

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 1880. Mr. Sánchez-Reulet

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. Sánchez-Reulet

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. Mr. Crow

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. Johnson, Mr. Englekirk

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 a 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: senior standing and consent of adviser and instructor. 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

201. Literary Criticism.

(Formerly numbered 201B.) Meets three hours weekly. Definition and discussion of methods of literary criticism. 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. Armistead

223. Medieval and Renaissance Prose.

Meets three hours weekly. Readings and lectures on Spanish prose from the beginnings to 1550. Mr. Armistead

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. Andrews

225. The Drama of the Golden Age.

Meets three hours weekly. Readings and lectures on the "comedia." Mr. Silverman

226. Prose of the Golden Age.

Meets three hours weekly. Readings and lectures on fictional, didactic, religious, and historical writings. **Mr. Silverman**

227. Cervantes.

Meets three hours weekly. Readings and lectures on the works of Cervantes. **Mr. Andrews**

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. Dudley**

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, Mr. Fogelquist**

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. Armistead, Mr. Robe**

Seminars**253. Studies in Medieval Spanish and Portuguese.**

Meets two hours weekly. Prerequisite: course 203 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. Armistead**

262B. Epic Poetry.

Meets two hours weekly. Prerequisite: course 222. **Mr. Armistead**

262C. Prose Writers.

Meets two hours weekly. Prerequisite: course 223. **Mr. Armistead**

264A-264D. Studies in the Golden Age.

264A. Poetry.

Meets two hours weekly. Prerequisite: course 224. **Mr. Garcia Lora**

264B. The "Comedia."

Meets two hours weekly. Prerequisite: course 225. **Mr. Silverman**

264C. The Picaresque Novel.

Meets two hours weekly. Prerequisite: course 226. **Mr. Silverman**

264D. Don Quijote.

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. Dudley**

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

286. Studies in Hispanic Folk Literature.

(Same as Folklore 286.) Meets two hours weekly.
Prerequisite: courses 222, or 239 or 249 or consent
of the instructor. Problems related to the different
aspects of folklore in Spain, Portugal, Spanish
America or Brazil. Mr. Robe

Individual Study and Research

596. Directed Individual Studies. (½ to 1 course)

Prerequisites: graduate status and consent of
graduate advisor. Directed Individual Studies on
subjects not offered as regular courses.
The Staff (F,W,Sp)

597. Directed Individual Preparation for Graduate Degrees. (½ to 1 course)

Individual preparation for the comprehensive ex-
amination for the master's degree or the qualifying
examinations for the Ph.D. degree. Restricted to
those who have already been officially accepted by
the department as candidates. The Staff (F,W,Sp)

598. Research on Master's Thesis. (½ to 1 course)

Research in preparation of the master's thesis.
Prerequisite: consent of guidance committee.
The Staff (F,W,Sp)

599. Research on Dissertation. (½ to 1 course)

Research for and preparation of the doctoral dis-
sertation. Restricted to those who have passed the
qualifying examinations for the doctor's degree.
The Staff (F,W,Sp)

Professional Courses

310. The Teaching of Spanish in the Elementary School.

Meets three hours weekly. Prerequisite: course
115. Mr. Otero

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 materi-
als. Equipment, techniques, and problems related to
the operation of the language laboratory. Mr. Otero

Portuguese**Preparation for the Major**

Courses 3, 25, Spanish 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 se-
lected by the student and approved by the
Department, in history, philosophy, or an-
other 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)

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 indi-
vidual needs. Mr. Dias, Mr. Sant'Anna (Sp)

101A. Advanced Reading and Conversation.

Meets three hours weekly. Reading and discussion
of writings by modern Brazilian and Portuguese
authors. Mr. Hulet, Mr. Sant'Anna (F,Sp)

101B. Advanced Composition and Style.

Meets three hours weekly. Correction of student's
composition and analysis of basic stylistic elements.
Mr. Hulet, Mr. Sant'Anna (W)

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. 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.

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, Mr. Sant'Anna (F)

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. Sant'Anna (F)

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)

253. Studies in Luso-Brazilian Literature.

Meets two hours weekly. Study of outstanding Portuguese and Brazilian authors with emphasis on their relations with other literatures. Mr. Machado, Mr. Hulet (W)

Individual Study and Research

596. Directed Individual Studies. (½ to 1 course)

Prerequisites: Graduate status and consent of graduate adviser. Directed Individual Studies on subjects not offered as regular courses. The Staff (F,W,Sp)

597. Directed Individual Preparation for Graduate Degrees. (½ to 1 course)

Individual preparation for the comprehensive examination for the master's degree or the qualifying examinations for the Ph.D. degree. Restricted to those who have already been officially accepted by the department as candidates. The Staff (F,W,Sp)

599. Research on Dissertations. (½ to 1 course)

Research for and preparation of the doctoral dissertation. Restricted to those who have passed the qualifying examinations for the doctor's degree. The Staff (F,W,Sp)

■ SPEECH

(Department Office, 4303 Humanities Building)

Peter Ladefoged, Ph.D., *Professor of Phonetics*.

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*.

Victoria A. Fromkin, Ph.D., *Assistant 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.*

———, *Assistant Professor of Speech.*



Ned Alan Shearer, Ph.D., *Acting Assistant Professor of Speech.*

———, *Lecturer in Speech.*

Preparation for the Major

The major in speech studies the process of oral 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 four aspects included in the discipline, and supplements this emphasis with courses in allied disciplines.

Preparation for the Major

Speech 1, 2, 4; or 4 and 101, 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, 103, 107, 111, and 133; three additional courses from the group selected for specialization; and one additional elective course from each of two groups other than the one selected for specialization.

Group I. Speech Science: communication theory, phonetics, physiology and acoustics of speech. 102, 103, 104A, 104B, 105, 150.

Group II. Rhetorical Criticism: nature of criticism, uses of criticism in evaluating speeches as instruments of decision making in an historical setting, history of public address. 133, 134, 135, 137A, 137B, 138, 197A.

Group III. Persuasion and the Group Process: logical structure of discourse, interaction of audience and speaker, group interaction, decision making through debate and discussion. 106, 107, 108, 109.

Group IV. Oral Interpretation of Literature: the analysis of literature, the process

of the oral communication of literary works. 111, 112A, 112B, 197B.

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. Speech Science: Anatomy 100; English 121, 122; Folklore and Mythology 105, 117; Linguistics 100, 120; Physiology 103; Psychology 115, 116, 120, 121, 122, 141, 184.

Group II. Rhetorical Criticism: English 103, 107, 171, any course from 152 through 159; History, any course from 150A-150G, 171A through 188; Political Science 141, 142, 145, 172A, 172B, 152, 180; Psychology 135, 136, 137A, 137B; Sociology 122, 150, 152, 155; Journalism 183, 191.

Group III. 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.

Group IV. Oral Interpretation of Literature: Anthropology 145; Classics 146; English 104, 109, 171; Philosophy 160, 161, 162, 164; Psychology 122.

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 following courses: Speech 1, 2, 4, 103, 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, 2, 4, 102, 106, 111; two courses from Speech 103, 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, 2, 4, 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 de-

partmental 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 146. The Department follows the Comprehensive Examination Plan, as described on page 147.

The departmental requirements are as follows: (a) nine courses, including Speech 200, one seminar, and at least one course from each of three of the following groups: (1) 234, 235, 236, 237; (2) 211A, 211B, 211C; (3) 206, 207; (4) 202, 208, 214; 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 102, 103, 104A; (2) courses 106, 107, 108, 109; one course from each of the following groups (1) courses 111, 112A, 112B; (2) courses 133, 134, 135, 137A, 137B, 138. (b) The student must pass a comprehensive final examination consisting of three parts: a general paper in basic concepts; a paper in the major area covering at least two fields from that area as follows: public address (1. argumentation, 2. discussion and the group process, 3. rhetorical theory, 4. history and criticism of public address); oral interpretation (1. history, 2. theory); phonetics (1. general and experimental, 2. phonology of English); a paper in a minor area covering one field from that area. These Master's Comprehensive Examinations are given toward the end of each quarter.

Requirements for the Doctor's Degree

For the general Graduate Division requirements, see page 148.

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 examination 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**

4. Elementary Interpretation.

Principles and methods of the oral communication of prose and poetry with understanding and appreciation. **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**

104A. 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 signa. **Mrs. Fromkin**

104B. Introduction to Acoustic Phonetics.

(Same as Linguistics 115.) Prerequisite: Linguistics 100; or courses 103, 104A. Physical acoustics and the acoustic characteristics of speech, including acoustic analysis and synthesis. **Mrs. Fromkin, Mr. Ladefoged**

105. Cybernetics and Human Communication.

(Same as Linguistics 125.) An introductory survey of the communication process from the point of view of linguistics, mathematics, engineering, physiology, and psychology. **Mrs. Fromkin, Mr. Ladefoged**

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**

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. Vandraegen**

112A-112B. Oral Interpretation of Literature.

Prerequisite: course 4 or the equivalent. A study of the literary, aesthetic, and oral bases for the analysis of communication of (112A.) prose and (112B.) poetry. **Mr. Hargis, Mr. Vandraegen**

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**

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. **Mr. Lomas**

137A. Colonial period to 1865; 137B. 1865-1930.

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**

150. History of Phonetics.

(Same as Linguistics 130.) Prerequisites: courses 103 and 104 or Linguistics 100. A survey of the development of descriptions of speech in phonetic terms. **Mrs. Fromkin, Mr. Ladefoged**

190A-190B. Forensics. (½ course each)

Prerequisite: consent of the instructor. May be repeated once for credit. **The Staff**

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. **The Staff**

197A. Proseminar in Speech: Public Address.

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**

197B. Proseminar in Speech: Interpretation.

Intensive analysis of a body of literature limited by author, period, or genre and leading to the preparation of a critical lecture recital. Limited to seniors and graduate students in speech, English, and theater arts with at least one upper division course in oral interpretation. **The Staff**

199. Special Studies.

Prerequisite: senior standing and consent of instructor. **The Staff**

Graduate Courses**200. Bibliography and Methods of Research.**

Mr. Hargis, Mr. Shearer

201. Experimental Design and Analysis.

Prerequisite: course 200. Theory and practice, control and measurement encountered in experimental research in speech.

Mrs. Fromkin, Mr. Ladefoged

202. Phonology I.

(Same as Linguistics 200A.) Prerequisite: Linguistics 120 or equivalent. 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.

Mrs. Fromkin, Mr. Ladefoged

206. Backgrounds and Theories of Discussion.

Mr. Leathers

207. Forms and Methods of Argumentation.

Mr. Rosenthal

208. Experimental Methods in Linguistics.

(Same as Linguistics 230.) Prerequisite: course 200A or consent of instructor. Techniques of experimental research in linguistics, including instrumentation in experimental phonetics and psycholinguistics, experimental design, and statistical evaluation.

Mr. Brière, Mr. Ladefoged

210. American Dialects.

Prerequisite: course 101 or 202. Descriptive and comparative survey of the phonological, grammatical and lexical differences of regional and social group dialects in America. **Mrs. Fromkin, Mr. Ladefoged**

211A-211B-211C. Backgrounds and Theories of Oral Interpretation.

211A. From Plato to Sheridan. **Mr. Vandraegen**

211B. From Sheridan to Curry. **Mr. Hargis**

211C. From Curry to Present. **Mr. Hargis, Mr. Vandraegen**

214. Phonology of English.

(Same as English 214.) Prerequisite: English 103 or course 103. Students may not receive credit for both English 214 and Speech 214.

Mrs. Fromkin, Mr. Ladefoged

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

250A-250B. Seminar in Oral Interpretation.

250A. Theory.

Mr. Hargis

250B. Analysis of Materials.

Mr. Vandraegen

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

280A. Acoustic Phonetics: Seminar.

(Same as Linguistics 255A.) Prerequisite: course 208. **Mrs. Fromkin, Mr. Ladefoged**

280B. General Phonetics: Seminar.

(Same as Linguistics 255B.) Prerequisite: courses 202 and 208 or consent of the instructor.

Mrs. Fromkin, Mr. Ladefoged

280C. Physiological Phonetics: Seminar.

(Same as Linguistics 255C.) Prerequisite: course 202 or Linguistics 200A; or consent of the instructor. The anatomy, morphology, and physiology of the organs of speech. **Mrs. Fromkin, Mr. Ladefoged**

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.**

($\frac{1}{2}$ to 1 course)

The Staff

597. Preparation for the Comprehensive Examination for the Master's Degree or for the Qualifying Examination for the Ph.D.

($\frac{1}{2}$ to 1 course)

The Staff

599. Research for and Preparation of the Doctoral Dissertation. ($\frac{1}{2}$ to 1 course)

The Staff

■ SUBJECT A: ENGLISH COMPOSITION

(Department Office, 306 Royce Hall)

———, *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 C. Martin, M.A., *Lecturer in Subject A.*

Cathleen H. Wheat, Ph.D., *Lecturer in Subject A.*

Hortense H. Williams, M.A., *Lecturer in Subject A.*

Subject A. (0)

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 pass the examination in Subject A is required to take, in the quarter immediately following

this failure, 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.*

Hugh Gray, Ph.D., *Professor of Theater Arts.*

Edward Hearn, M.A., *Professor of Theater Arts.*

Walter Kingson, Ed.D., *Professor of Theater Arts.*

George M. Savage, Ph.D., *Professor of Theater Arts.*

William W. Melnitz, Ph.D., *Emeritus Professor of Theater Arts.*

Samuel Selden, Litt.D., *Emeritus Professor of Theater Arts.*

Marvin S. Borowsky, A.B., *Associate Professor of Theater Arts.*

Robert F. Corrigan, M.A., *Associate Professor of Theater Arts.*

Arthur Friedman, Ph.D., *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.*

John H. Jones, M.A., *Associate Professor of Theater Arts.*

James Kerans, Ph.D., *Associate Professor of Theater Arts (Vice-Chairman—Theater).*

Lewis Palter, 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).*

William Adams, M.A., *Assistant Professor of Theater Arts.*

Edgar L. Brokaw, A.B., *Assistant Professor of Theater Arts.*

John Cauble, M.A., *Assistant Professor of Theater Arts.*

Donald Crabs, M.A., *Assistant Professor of Theater Arts.*

Frank La Tourette, 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.*

———, *Assistant Professor of Theater Arts.*

———, *Assistant Professor of Theater Arts.*

———, *Assistant Professor of Theater Arts.*

———, *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.*

William Crocken, *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.*

J. Palmer Schoppe, *Lecturer in Theater Arts.*

Ruth Schwartz, Ph.D., *Lecturer in Theater Arts.*

William Shull, B.S., *Senior Lecturer in Theater Arts.*

Jerzy Toeplitz, Ph.D., *Visiting Professor of Theater Arts.*

Lyne S. Trimble, M.S., *Lecturer in Theater Arts.*

John W. Young, M.A., *Lecturer in Theater Arts (Vice-Chairman—Motion Pictures).*

Marvin Young, LL.B., *Lecturer in Theater Arts.*

Basil Wright, *Lecturer in Theater Arts.*

———, *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 103), and the requirements under one of the following four specializations: theater, secondary teaching credential, motion picture, and television-radio.

Preparation for the Major

Theater Specialization. Courses 5A-5B-5C, 20A, 40, 41, 42.

Secondary Teaching Credential Specialization. Courses 5A-5B-5C, 20A, 40, 41, 42, and Humanities 1A-1B-1C, or English 10A-10B-10C.

Special Programs in Theater. In the academic year 1967-68 the Theater Division is initiating three special programs: 1) Acting; 2) Playwriting; 3) Design/Technical Theater. Students in these programs will be given opportunity to concentrate their work in their chosen areas. All students choosing a special program must take the following:

courses 20A, 5A, 5B, 40, 41, 42, 105, 172A, 172B, Classics 142, and English 103, 110, and 111. The Acting program includes: courses 21A-21E, 122, 124A, 124B, 121A-121F, Dance 20, Speech 123, and Music 65. The Playwriting program includes: 43, 130A, 130B, 130C, 160A, and 170. The Design/Technical program includes: course 43, Art 30B, 130A, 160A, 170. Each of these programs assumes that further course work will be specified by the student's adviser.

Admission into and continuance in the special programs within the Theater Division are by consent of the Division. Information concerning these programs may be had verbally or by correspondence from the Head of the Theater Division.

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 5A-5B-5C, 20A, 108, 110, 136A. Students electing to specialize in television-radio for their B.A. degree are expected to complete the general University and College requirements before entering the Television-Radio

program, however the student is urged to take the above listed courses concurrently with general University and College requirements.

The Major

Theater Specialization. Courses 105, 130, 140A, 141A, 142A, 143A, 160A, 170, 172A-172B, Classics 142, English 103, 147 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.

Motion Picture Specialization. Lecture courses in film history are open to enrollment by consent of instructor. Students wishing to take any other upper division (100 series) courses in motion pictures or be accepted at the Junior level as motion picture majors, must first be accepted as students of the University in the usual way (see page 24 for regulations governing admissions), and in addition must file application to the Department of Theater Arts. Applications may be obtained from the offices of the Department, and of the College of Fine Arts. A statement of intent, letters of recommendation, and proof of imaginative thought and work must be submitted with the application. Deadlines for general admission by the University are published at the front of this catalog; departmental applications for the motion picture major are due in the Theater Arts office at least five weeks before the end of the term prior to anticipated enrollment in upper division motion picture courses. Applications for the Fall must be in hand five weeks prior to the end of the Spring term. Departmental applications will not be processed during the Summer Session.

All motion picture majors must complete the following courses: Film Project 1 (179A), 5B, 5C, 106A, 106B, 108 and 134A, plus an area requirement of ten courses. These ten courses must be selected, with the approval of an adviser, from the areas of film-making, writing or history. In addition, each student will choose three general elective courses in consultation with this adviser. Since 179A is a double course (8 units), the total major requirement is thus 21 courses.

Ordinarily, in the first term or two, the entering motion picture student takes a course in film history (5C, 106A, 106B or 108), a course in writing (134A), and makes

a short sound film (Project 1). Based on the outcome of this work, a student's eligibility for an area of specialization is evaluated. To continue beyond the beginning courses in film-making, writing or history requires outstanding performance. A student who has attempted all three areas and has failed to meet this standard has two alternatives: take a general major in theater arts (which must be approved by the Department) or choose another major.

Television-Radio Specialization. All television-radio specialization students are required to take courses 5A-5B-5C, 20A, 108, 110, 136A, 153B, 166A, 179A, and 185A. Upon completion of these courses the student will choose an area of concentration in *production-direction* which requires the following courses: 185B-185C, and four courses or 16 units of approved electives, or an area of concentration in *writing* which requires courses 136B-136C-136D, 132, and five courses of approved electives. The five five courses of approved electives will bring the total number of units in the student's specialization to 84. All Junior and Senior students during each quarter of residence are responsible for completing specific crew assignments related to production activity 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, 210, 236A and 247. The student will choose the remaining five 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, 2, and 3 (179A-179B; 180A-180B). 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.

1. Production-Direction. The base of this program is the B.A. in television at UCLA, or its equivalent, including successful completion of Film Project 1 (course 179A) and the television sequence (185A-185B-185C). The end projects at the graduate level will be a production, or 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 successful completion of an undergraduate program in writing including: courses 132, 136A-136B-136C-136D. 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 Arts History

In addition to the general University regulations for the doctor of philosophy degree, including the dissertation and final examinations (see page 148), 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 in all 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 and motion picture majors specializing in writing or projects. 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. Mrs. Foulger

21A. Intermediate Acting. (½ course)

Lecture, four hours; laboratory, three hours. 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. Mrs. Hungerland

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 playwriting.

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 and the 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.
Mrs. Foulger

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. Required of television majors with specialization in writing. 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, 142B 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, 142B 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

144. Production Techniques for the Stage.

Lecture, three hours; laboratory, to be arranged. Prerequisite: consent of the instructor. Not open to theater arts majors without consent. Suitable for dance, opera, and other students in fine arts. A survey of production techniques in costume, lighting, and scenery for the stage. The Staff

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

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. 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**

175A-175B-175C. Summer Theater Workshop.

Hours to be arranged. Prerequisite: consent of the instructor. Offered in summer quarter only. Practice in and observation of the complete operation of a summer theater on a semiprofessional level. Participation in the production and performance of full-length plays for the general public. **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. Toeplitz**

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. Kingdon**

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**

134C. Film Writing. (1 to 2 courses)

Seminar, three hours; tutorial, one hour. Prerequisite: courses 134A, 134B, 179A and/or consent of the instructor. The preparation and analysis of the full-length script for motion pictures. May be repeated for a maximum of four courses credit. **Mr. Borowsky in charge**

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. **The Project Faculty, Motion Pictures**

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 credit. Repetition may be required before admission to Film Project 3. The completion of a second film, including its writing, production and editing. **The Project Faculty, Motion Pictures**

180A-180B. Film Project 3. (1 to 2 courses)

Hours to be arranged. Prerequisites: Film Project 2 (course 179B) and consent of the instructor. The completion of a third film, including its writing, design, production and editing. **Mr. J. Young in charge**

181A. Animation Design in Theater Arts.

Lecture, three hours; laboratory, three hours. 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**

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. Mr. Toeplitz

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.

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

234. Advanced Film Writing. (1 to 2 courses)

Prerequisites: courses 134A-134B-134C, 179A, and/or consent of the instructor. May be repeated for a maximum of four courses credit. Advanced problems in the writing of feature-length scripts. Mr. Borowsky, Mr. Menger

236A-236B. Advanced Television Writing.

(Formerly numbered 206E-206F.) Prerequisites: courses 134A-134D and/or consent of the instructor. Advanced problems in writing for television. Mr. M. Young

237. Nondramatic Writing for Television.

(Formerly numbered 292A.) Advanced problems in the field of documentary and special feature programs. Mr. La Tourette

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

246. Production Planning in Motion Pictures.

(½ to 1 course)

Prerequisite: courses 179A-179B, 180A-180B, and/or consent of the instructor. Mr. McCarty, Mr. J. Young

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

257. Design for Television.

(Formerly numbered 248C.) 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

260A-260B-260C. Problems in Stage Direction.

Special problems in the direction of the full-length play.
Mr. Boyle

264A-264B. Motion Picture Direction. (1 to 2 courses)

Prerequisites: courses 179A, 179B, 180A, 180B, and consent of the instructor. Special problems in the direction of fictional and documentary motion pictures.
Mr. J. Young in charge

266A-266B. Advanced Television Direction. (2 courses each)

(Formerly numbered 252D.) Prerequisite: consent of instructor. Special problems in the direction of dramatic and documentary television programs.
Mr. Wollock

282. Animation Workshop. (1 to 2 courses)

Prerequisites: courses 181A, 181B and consent of the instructor. May be repeated once for credit. Organization and integration of various creative arts used in animation, resulting in the production of a complete animated film.
Mr. Shull

285. Production of Nondramatic Television.

Prerequisite: course 237. The student will plan, conceive and direct under laboratory conditions the scripts he has written the previous quarter in 237. Exploration of creative ideas under production conditions.
Mr. La Tourette

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.

Professional Course in Method

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

Individual Study and Research

596A. Directed Individual Studies: Research. (½ to 2 courses)

Section 1. In Theater. Section 2. In Motion Pictures. Section 3. In Television-Radio. The Staff

596B. Directed Individual Studies: Writing. (½ to 2 courses)

Section 1. In Theater. Section 2. In Motion Pictures. Section 3. In Television-Radio. The Staff

596C. Directed Individual Studies: Directing. (½ to 2 courses)

Section 1. In Theater. Section 2. In Motion Pictures. Section 3. In Television-Radio. The Staff

596D. Directed Individual Studies: Design. (½ to 2 courses)

Section 1. In Theater. Section 2. In Motion Pictures. Section 3. In Television-Radio. The Staff

596E. Directed Individual Studies: Acting. (½ to 2 courses)

Section 1. In Theater. Section 2. In Motion Pictures. Section 3. In Television-Radio. The Staff

596F. Directed Individual Studies: Production. (½ to 2 courses)

Section 1. In Theater. Section 2. In Motion Pictures. Section 3. In Television-Radio. 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

Humanities 1A-1B-1C. World Literature, or English 10A-10B-10C.

Classics 142. Ancient Drama.

English 147. The Drama, 1842 to the Present.

Related Courses in Another Department

Dance 20. Movement for the Stage.

121. Movement for the Stage.

152A-152B. Organization of Dance Performances.

English 106. Children's Literature.

135A-135B-135C. Fundamentals of Dramatic Writing.

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.*

Herbert Friedmann, Ph.D., *Professor of Zoology in Residence.*

Waldo H. Furgason, Ph.D., *Professor of Zoology.*

Thomas R. Howell, Ph.D., *Professor of Zoology.*

Theodore L. Jahn, Ph.D., *Professor of Zoology.*

Thomas W. James, Ph.D., *Professor of Zoology (Chairman of the Department).*

Fritiof S. Sjöstrand, M.D., Ph.D., *Professor of Zoology.*

Clara M. Szego (Mrs. Sidney Roberts), 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.*

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.*

Elof A. Carlson, 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.*

J. Lee Kavanau, Ph.D., *Associate Professor of Zoology.*

Kenneth S. Norris, Ph.D., *Associate Professor of Zoology.*

Otto H. Scherbaum, Ph.D., *Associate Professor of Zoology.*

Richard W. Siegel, Ph.D., *Associate Professor of Zoology.*

Peter P. Vaughn, Ph.D., *Associate Professor of Zoology.*

Vladimir Walters, Ph.D., *Associate Professor of Zoology.*

Sarah Rogers Atsatt, Ph.D., *Associate Professor of Zoology, Emeritus.*

Martin L. Cody, Ph.D., *Assistant Professor of Zoology.*

Paul C. Denny, 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.*

J. Richard Whittaker, Ph.D., *Assistant Professor of Zoology.*



John E. Bleck, B.S., *Museum Scientist, Ichthyology.*

Eugene C. Bovee, Ph.D., *Research Zoologist.*

———, *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.*

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.*

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 biology are usually met by examinations in two 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 adult forms, embryos, and fossils.

Mr. Vaughn, Mr. Walters (F,Sp)

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 (F,W)

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 (F,W)

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 (F,W)

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 (F,Sp)

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 (F,Sp)

113. General and Cell Physiology.

(Formerly numbered 104B.) Lecture, three hours; laboratory, three 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 (W,Sp)

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, Mr. Whittaker (F,Sp)

116. Advanced Developmental Biology.

(Formerly numbered 209.) Lecture, four hours. Prerequisite: course 115. Advanced discussion of cellular problems in development. Mr. Denny (W)

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 (F)

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.

121A-121B. Parasitology and Symbiosis.

(Formerly numbered 111 and 111C.) Lecture, two 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 in man. Mr. Belkin, Mr. MacInnis (A;W; B;Sp)

123. Entomology.

(Formerly numbered 150.) Lecture, three hours; laboratory, six hours; several field trips. Prerequisite: course 103, or consent of the instructor. Comparative anatomy, bionomics, taxonomy, and phylogeny of insects. Mr. Belkin (Sp)

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 (F)

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 (F)

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 (Sp)

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 (Sp)

131. The Gene: A Critical History.

Lecture, three hours. Prerequisite: course 107 or the equivalent. A philosophical and historical analysis of the gene concept emphasizing the survival of ideas, how concepts arise, how experiment, luck, personality, etc., determined the acceptance of various models of the gene from Pre-Mendelian conceptual units to the operon. Mr. Carlson (W)

139. Analysis of Ecological Data.

Lecture, three hours; laboratory, three hours. Prerequisite: Biology 1A-1B-1C, or the equivalent. 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. (W)

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 (W)

143. Comparative Physiology.

(Formerly numbered 109.) Lecture, two 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 (W)

145. General Physiology.

(Formerly numbered 101.) Lecture, four 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 (F)

151. General Endocrinology.

(Formerly numbered 118.) Lecture, three hours. Prerequisite: organic chemistry and course 113 or 109 (former may be taken concurrently). Principles of chemical integration in biological systems. Miss Szego (W)

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 (W)

157A. Introduction to the Nervous System.

(Formerly numbered 122.) Lecture, three hours; discussion, one hour. Prerequisite: course 109, or 159 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 (W)

***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: Biology 1A-1B-1C, 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 (Sp)

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 (F)

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 (F)

202. Gene Structure and Function.

(Formerly numbered 222 and same as Microbiology 202 and Botany 202.) Lecture. Prerequisite: course 107. Gene structure, position effect, pseudoallelism, fine structure; recombination; protein synthesis (the Hoagland-Crick System); chemical and genetic approaches to coding, and the molecular bases of function. Mr. Kreig (Sp)

203. Regulatory Genetics.

(Formerly numbered 223 and same as Microbiology 203 and Botany 203.) Lecture and discussion, three hours. Prerequisite: course 107. Biochemical and developmental circuitry; the operon; feed-back inhibition; nucleio-cytoplasmic interaction; temporal sequences in gene action; genetic control of nuclear and cytoplasmic differentiation and patterns. Mr. Romig, Mr. Siegel (F)

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 (F)

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 (W,Sp)

* Not to be given, 1967-1968.

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 (F)

207. Molecular Genetics.

Prerequisite: course 107, Chemistry 4A-4B-4C, Chemistry 6A-6B-6C, Chemistry 152A-152B or Chemistry 153, Physics 1A-1B-1C-1D or consent of the instructor. A survey of biophysical and biochemical investigations of the organization of DNA in bacteria and bacterial viruses, the replication of DNA and RNA *in vivo* and in cell-free systems, and the cellular control of DNA replication. Mr. Ray (F)

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. Mr. Whittaker (W)

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, Mr. Whittaker

213. Principles of Animal Taxonomy.

(Formerly numbered 152.) Lecture. Prerequisite: course 103. Taxonomic concepts, principles, and methods. Mr. Belkin (W)

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 (W)

215. Field Ecology.

Lecture, two hours; laboratory and discussion, six hours plus required weekend field trips. Prerequisite: courses 105 and 139 or their equivalents. Limited enrollment. Qualified undergraduates may enroll in this course. Field and laboratory research in ecology: the collection, analysis, and write-up of numerical data. Mr. Cody (Sp)

***216. Advanced Population Ecology.**

(Formerly numbered 236.) Lecture. Prerequisite: courses 105 and 139 or their equivalents. The mechanisms that regulate the numbers of animals. Mr. Cady

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 (W)

218. 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 (W)

219. Advanced General Physiology. (½ course)

(Formerly numbered 202A-202B-202C.) Lecture. 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 (W)

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 (W)

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 (S)

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 (W)

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 (F)

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 (W)

227. The Vertebrate Eye. (½ course)

(Formerly numbered 208.) Lecture. 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 (Sp)

229. Physiology of Circulation.

(Formerly numbered 240B.) Lecture, two 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 (F)

***233. Biochemistry of Parasitism.**

Biochemical and physiological aspects of parasite-host relationships. Laboratory emphasis on individual research projects. Offered in alternate years. Mr. MacInnis (Sp)

***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.

* Not to be given, 1967-1968.

***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 (F)

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 (A:F; B:W; C:Sp)

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. Mr. Furgason (F)

Seminar Courses**251. Seminar in Genetics. (½ course)**

(Formerly numbered 253A-253B.) Mr. Siegel (Sp)

252. Seminar in Developmental Biology. (½ course)

Mr. Denny, Mr. Whittaker (W,Sp)

253. Seminar in Invertebrate Zoology. (½ course)

(Formerly numbered 268.) Mr. Muscatine (W)

254. Seminar in Entomology. (½ course)

(Formerly numbered 271A-271B.) Mr. Belkin (F,W)

255. Seminar in Parasitology. (½ course)

(Formerly numbered 255A-255B.) Mr. MacInnis (F,W)

256. Seminar in Ichthyology. (½ course)

(Formerly numbered 260A.) Mr. Walker, Mr. Walters (W,Sp)

257. Seminar in Biology of Reptiles and Amphibians. (½ course)

(Formerly numbered 251A-251B.) Mr. Norris (Sp)

258. Seminar in Biology of Birds and Mammals.

(½ course)

(Formerly numbered 251C-251D.) Mr. Bartholomew, Mr. Howell (F)

259. Seminar on Aquatic Mammals. (½ course)

Mr. Norris (F)

***260. Seminar in Vertebrate Paleontology. (½ course)**

(Formerly numbered 266.) Mr. Vaughn (Sp)

261. Seminar in Ecology. (½ course)

(Formerly numbered 274.) (Sp)

262. Seminar in Environmental Physiology.

(½ course) Mr. Lasiewski (W)

263. Seminar in Marine Biology. (½ course)

Mr. Gordon, Mr. Muscatine (W,Sp)

264. Seminar on Animal Behavior. (½ course)

(Formerly numbered 269.) Mr. Collias (Sp)

265. Seminar on Behavior Research Problems.

(½ course) Mr. Kavanau (Sp)

266. Seminar in Comparative Physiology.

(½ course) (Formerly numbered 257.) Mr. Gordon, Mr. Grinnell (W)

267. Seminar in Physiology of Microorganisms.

(½ course) (Formerly numbered 263.) Mr. Jahn (W,Sp)

268. Seminar in Cell Physiology. (½ course)

(Formerly numbered 261.) Mr. Jahn (F)

269. Seminar in the Physiology of Growth.

(½ course) (Formerly numbered 270.) Mr. Scherbaum (F)

270. Seminar in Insect Physiology.

(½ course) (Formerly numbered 259.) Mr. Engelmann (F)

271. Seminar in Endocrinology. (½ course)

(Formerly numbered 252A-252B.) Miss Szego (Sp)

***272. Seminar on Interfacial Phenomena in Biology.**

(½ course) Mr. Kavanau

273. Seminar in Comparative Neurology. (½ course)

Mr. Grinnell (Sp)

274. Seminar in Comparative Cell Physiology.

(½ course) Mr. Barber, Mr. James (W,Sp)

275. Seminar in Cardiovascular Problems.

(½ course) Mr. Cascarano (W)

276. Seminar in Molecular Biology. (½ course)

(Formerly numbered 278.) Mr. Sjöstrand (F,W)

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)

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

* Not to be given, 1967-1968.

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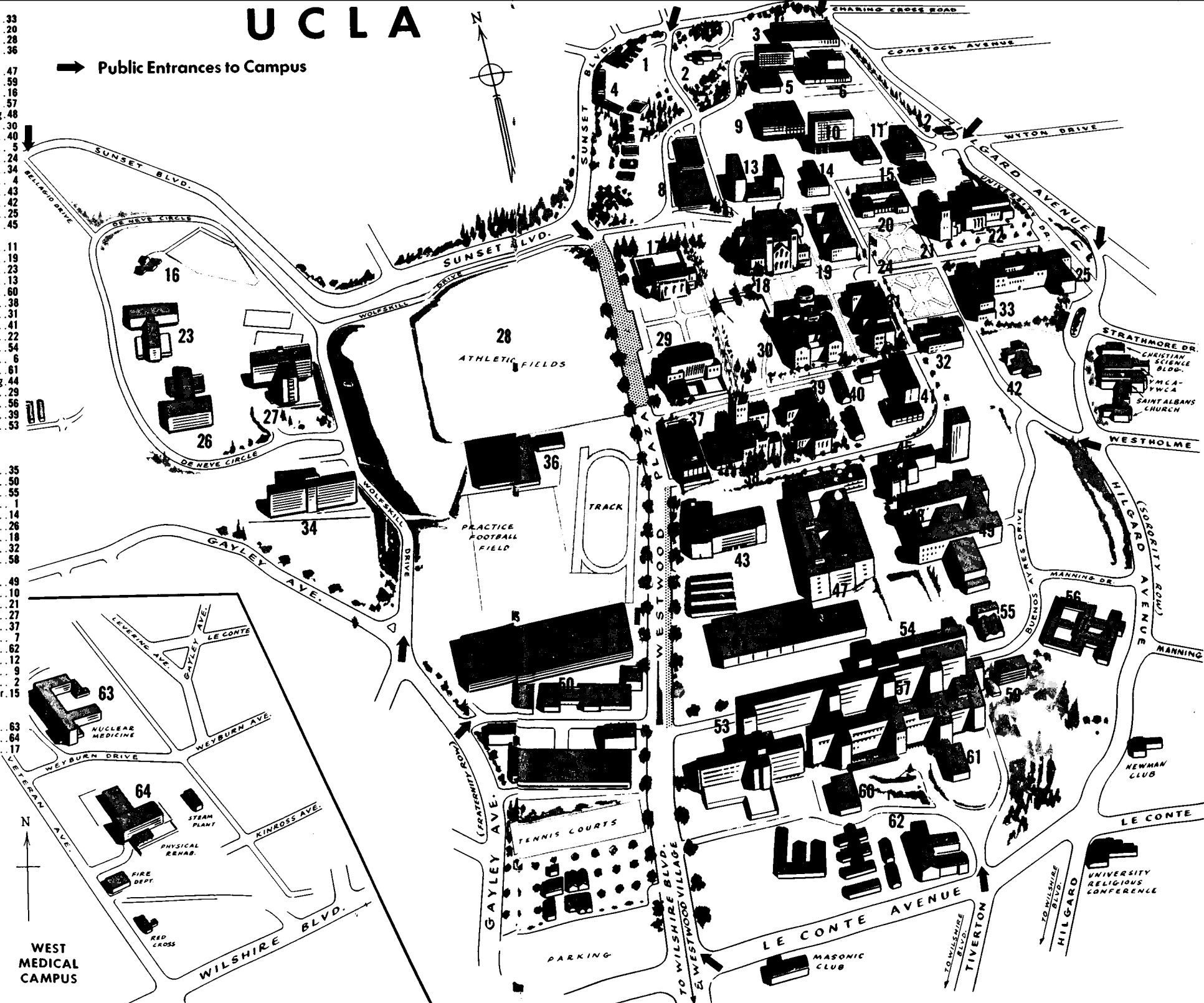
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FRANKLIN D. MURPHY
UCLA Chancellor